

PROCEEDINGS

BEEF IMPROVEMENT FEDERATION

RESEARCH SYMPOSIUM & ANNUAL MEETING



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PROCEEDINGS OF BEEF IMPROVEMENT FEDERATION

RESEARCH SYMPOSIUM AND ANNUAL MEETING

Compiled and Edited by Frank H. Baker With Assistance from Miss Vicky Kobes

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EFFECTS OF SELECTION ALTERNATIVES ON EFFICIENCY IN SIMULATED BEEF HERDS^{1,2}

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Selection is an effective method of changing level of performance for many characters of economic importance in beef production. The dilemma of the seedstock producer is that of deciding upon specific selection criteria to employ in his herd. Several considerations enter into this decision. Potential response to selection is important; exerting selection pressure on an unchangeable character is not a logical course of action. Expenses associated with collecting data, analyzing records, interpreting results, disposing of cull animals and other factors should not be overlooked. Requirements and desires of potential customers are of concern; the purpose of the seedstock producer should continue to be efficient provision of cattle suited for use in commercial beef production. Of course, these and other important factors are not independent and cannot be evaluated independently. Primary attention in this discussion will be focused on the impact of certain selection alternatives in commercial beef production; other factors will be discussed when appropriate.

Much emphasis in recent years has been placed on selection programs for increasing weaning weights and yearling weights of cattle. Positive genetic and phenotypic correlations have been reported among weaning weight, yearling weight, birth weight, 18-month weight and mature weight as well as between mature weight and rate of gain during different growth periods (Brinks et al., 1964). These results imply that rank for weight in a group of cattle of the same age would tend to be similar at any point in their lives and that animals larger at maturity have a tendency to produce offspring larger at birth, weaning, 12 months, 18 months and maturity. These results also indicate that selection for fast rate of gain, which is usually considered a desirable trait, would tend to increase mature weights in a herd. Koch, Gregory and Cundiff (1973) reported that weaning weight and yearling weight were increased by selection; increased birth weight was a correlated response in both cases. Heritability estimates from these two studies and elsewhere have indicated that one may expect appreciable change when selecting for weight and growth rate in most herds of cattle. However, increases in these traits will likely be accompanied by increased birth weight and mature weight, which are not of direct economic benefit and which may actually be detrimental in effect.

¹The simulation study discussed in this paper was conducted at Texas A&M University and funded by the Texas Agricultural Experiment Station.

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A character that is closely related to weaning weight in beef cattle is milk production of cows. Results of direct selection for milk yield in dairy cattle indicate that this character can be altered by selection. Because of the close association between weaning weight and milk yield, one would expect selection for heavy weaning weight to result in some correlated increase in milk yield in a beef herd.

The two characters, (1) cow size and related progeny performance and (2) milk level, are economically important components of herd performance which are changeable by selection. An examination of the direct and correlated effects of these variables on efficiency of beef production systems should increase understanding of the potential impact of alternative selection goals.

One of the problems of evaluating productive efficiency of systems is the number of considerations necessary to properly examine a system. It is virtually impossible to examine complete production systems by conventional experimental techniques. Simulation techniques provide a means of conducting comprehensive studies of systems employing several alternative levels of performance.

A simulation study was conducted at Texas A&M University to examine effects of different levels of performance for several characters on productive efficiency (Long, Cartwright and Fitzhugh, 1973). Performance data on Angus, Charolais, Hereford and Jersey cows and their progeny as well as results from other research formed the basis of the model. In order to examine productive efficiency, it was necessary to give consideration to all facets of production including cow size and progeny performance, milk level, fertility, calf survival, cow longevity, replacement requirements, nutritional needs, sale prices and fixed costs. Annual fixed costs per cow of \$57 charged in this study included labor, \$12; depreciation, \$5; interest on cattle investment and operational expenses, \$13; non-nutrient costs per replacement heifer, \$6; taxes, fees and similar charges, \$4; veterinary expenses, \$2.50; repairs on facilities, \$2; service sire, \$6; transportation, \$5; salt and minerals, \$1.50. Two nutritional regimes, based on results of nutritional research and conventional recommendations, were employed as a basis for estimating and satisfying nutritional requirments of the breeding herd. The Drylot Regime corresponded to an intensive, drylot feeding program in which all nutrients for cows were supplied from harvested feed at relatively high cost. The Pasture Regime represented a grazing situation for cows in which quality (and cost) of pasture varied with season and supplementation was provided as required to optimally meet cow needs. For example, a small high-milking cow may require a higher quality (and more expensive) forage than a large cow producing the same amount of milk because of the higher capacity of the large cow for consumption. Feed and forage costs were based on industry estimates; nutrients for cows were cheaper in the Pasture Regime. All progeny destined for slaughter were handled similarly for the two regimes, receiving least-cost rations balanced for digestible protein, metabolizable energy and dry matter.

Three genotypes for mature size were examined: small (SS) cattle intermediate in size to the Angus and Jersey, medium (MM) cattle similar in size to the Hereford, and large (LL) cattle similar in size to the Charolais. Weights estimated for these cows at different ages are given in table 1. Birth weights, growth rates and slaughter weights assumed for their straightbred progeny are shown in table 2. Growth rates of bulls and replacement heifers were based on data. Bulls were slaughtered at 110% of mature weight of cows of similar breeding; i.e., at a constant degree of mature weight. Slaughter heifers were assumed to gain 81% as fast as bulls treated similarly and to be slaughtered at 71% of slaughter weight of bulls of similar breeding.

Three levels of milk production were examined based on unweighted average production over age groups of approximately 6.6, 11.0 and 15.4 lb per day for a 180-day lactation. Age of cow effects were considered and level of milk production of dam above or below 8.5 lb per day was used to adjust preweaning average daily gain of a calf up to as much as 0.55 lb/ day above or below genetic potential (table 3). Since the maximum increase in preweaning gain was reached at 11.4 lb of milk per day, additional milk was beneficial only as a source of nutrients.

Several levels of fertility and longevity, as well as crossbreeding systems, were included in the total study (Long, 1972). Results discussed here were based on 89% calves born of cows exposed and the oldest cows leaving the herd at 12 years of age. Discussion will be further limited to comparisons of three straightbreeding schemes, each with three milk levels as described above.

To facilitate comparisons among and across systems and regimes, the single constraint placed on a solution was a fixed expenditure (\$100,000) for meeting nutritional requirements. Linear programming techniques were employed to obtain solutions in terms of cow numbers and resource use when net income was maximized. Several characteristics contribute information useful in evaluation of the systems. Trends in cow numbers, allocation of nutritional expenditures, liveweight produced, gross income and net income provide a basis for quantifying effects of the factors varied.

Increasing mature size of cow and growth rate of progeny resulted in a reduction in the number of cows maintained when nutrient resources were limited (table 4). For example, increasing cow size from SS to LL in the Drylot Regime decreased cow numbers from greater than 600 to less than 450; in the Pasture Regime, from over 800 to below 600. The effect on cow numbers of increasing milk yield was not the same for the two regimes or three types of cow; level of milk production and size of cow affected the feed cost associated with a cow and her progeny and thus affected number of cows. The costs of the least-cost nutritional program which could be formulated from the feedstuffs available in a regime varied with size of cow and milk yield.

Percentage of nutritional expenditure allocated to the breeding herd (cows, calves to weaning and replacement females) decreased (shifted to feeding slaughter cattle) as cow size increased and, except for large cows in the Pasture Regime, increased as milk yield increased (table 5). However, as in the case of cow numbers, magnitude of the changes in nutrient resource allocation was dependent upon which cow sizes and milk levels were being considered, e.g., when milk yield in the Pasture Regime was increased from 6.6 to 11.0 lb, increases in nutritional allocations to SS, MM and LL cows were 6.0, 4.7 and 4.6 percentage points, respectively. For the increase from 11.0 to 15.4 lb milk yield, these values were 1.0, 0.7 and -0.8, respectively. Similar examples may be seen in the Drylot Regime as well as in comparisons between regimes. These results indicate that increases (decreases) in cow size and progeny growth rate and in milk production may have different effects on nutritional costs depending upon costs and sources of nutrients, performance levels and many other components of a beef production system. For example, the effect on herd requirements of a change in cow size from 948 to 1103 pounds and in milk level from 6.6 to 11.0 pounds per day was different from the effect of a change from 1103 to 1323 pounds and from 11.0 to 15.4 pounds per day. In both cases, cow size and milk yield were increased. However, in the first comparison, breeding herd requirements increased relative to fed slaughter cattle requirements; in the second, decreased.

These changes which were observed are due to the direct and indirect effects of different variables on compensating shifts and balances within a system operating within a limited set of resources. Productive efficiency is product output per unit of resource input; these shifts within a system must be made to increase efficiency.

Liveweight produced is one measure of the output of a system (table 6). Gross income is a measure of liveweight produced weighted by market value. Net income is calculated by subtracting nutrient costs and total fixed costs from gross income (table 7).

Trends in amount of liveweight produced were similar to trends in cow numbers; systems employing small cows produced the largest weights of saleable cattle. The largest differences between systems in total liveweight produced were of the magnitude of 16,000 lb (3%) in the Drylot Regime and 70,000 lb (11%) in the Pasture Regime (table 6). Because of smaller amounts and lower price, cull cow weight is less important than slaughter cattle weight as a source of income. Although larger numbers of cows result in more saleable product and, therefore, more gross income, fixed costs also increase with number of cows. Net income is a measure of the profitability of a system. Both of these measures of efficiency-liveweight produced and net income--are useful as indicators of the desirability of a system in a production situation.

Because of lower feed costs in the Pasture Regime, more saleable product and higher net incomes were produced than in the Drylot Regime. Within the Drylot Regime, although smaller cows produced more saleable product, systems using large cows realized higher net incomes (an average advantage of over \$6000; table 7). In the Pasture Regime, systems employing medium sized cows were most profitable, closely followed by those using small cows. The differences in net incomes between systems in the Pasture Regime were somewhat less than in the Drylot Regime.

The intermediate milk level was most profitable in the Drylot Regime. As milk production increased up to the intermediate level, growth rate of calf tended to increase proportionately (as stated in the assumptions) above the growth rate corresponding with calf genotype. Above the intermediate level, growth rates were not appreciably increased because the assumed limits were reached; milk at the high level had benefit primarily as a source of nutrients and could be replaced by creep feed which was often less expensive. An interaction between cow size and milk level was observed in the Pasture Regime for net income. The intermediate milk level was favored in herds of small cows; high milk production was most profitable in herds of medium and large cows. The effect of cow size on capacity for low quality forage and the differences in cost of low and high quality forage and creep feed in the Pasture Regime were important factors contributing to this result.

Of course, applicability of the results of simulation to a "real life" situation hinges upon the appropriateness of the basic assumptions of the model. Nevertheless, these results indicate that identical selection goals may vary in desirability depending upon the situation in which the cattle will be expected to produce. Type of management, nutrient sources, feed and forage costs and other components determine the most desirable combination of performance levels for economically important characters. Level of performance for a single trait or a small group of traits is not sufficient knowledge for determining profitability of a herd of cattle. A very heavy weaning weight has little value in a vertically integrated system if costs of obtaining the weight are excessive and a cheaper alternative (e.g., postweaning treatment) is available to attain a similar carcass in similar time. Therefore, the total production situation should be considered in detail before selection goals are set and the type of cattle should be chosen to fit a situation just as other components of management are decided upon.

This conclusion may be extended to imply that many different types of cattle are needed to fit into the various situations in this country. Use of a single set of selection criteria for all cattle in the country is not the logical course of action. Each breed of cattle and herd of cattle has strong points. These points should be emphasized by breeders so that several types are available to commercial producers for use in different resource situations.

A problem area is that of determining the specific performance characteristics of cattle and their management that best fit the different situations. Simulation techniques have been indicated as a useful aid in studying this problem. The Management Systems Program at the U.S. Meat Animal Research Center is directed at this area of determining the specific performance characteristics of cattle and management best suited to the several production situations existing in this country. Data from multidiscipline integrated experiments involving breeding, nutrition, reproductive physiology, meats and production economics are being used in modelling studies which are directed at analyzing specific problems as well as identifying production systems which match production situations.

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		Genotype	
Age	SS	MM	LL
	(1b)	(1b)	(1b)
2 years	739	822	935
3 years	820	911	1034
4 years	889	988	1122
5 years	937	1043	1186
6 years and older	948	1103	1323

TABLE 1. WEIGHTS FOR STRAIGHTBRED SS, MM AND LL COWS AT DIFFERENT AGES $^{\rm a}$

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a SS: small size mature cows (948 lb).
 MM: medium size mature cows (1103 lb).
 LL: large size mature cows (1323 lb).

TABLE 2. GROWTH RATES AND WEIGHTS OF STRAIGHTBRED SLAUGHTER BULLS, REPLACEMENT HEIFERS (RH) AND SLAUGHTER HEIFERS (SH)

						AND THE TROUBLE SHOW					
		SS			MM	- <u></u>					
Wt or ADG, 1b	Bulls	RI1	SH	Bulls	RH	SH	Bulls	RH	SII		
Birth weight	66	62	62	77	73	73	90	82	82		
Preveating gain	1.57	1.43	1.43	1.74	1.61	1.61	2.03	1.85	1.85		
Postweaning gain	2.16	0.79	1.75	2.54	0.90	2.06	3.02	1.08	2.45		
Postyearling gain	1.83	0.99	1.48	2.12	1.15	1.72	2.54	1.39	2.06		
Slaughter weight	1043		741	1213	••••	861	1455	• • • •	1033		

	6.6 1	b ADM HA	<u>11.0</u>	I DADM HA	15.4 1	15.4 16 ADM HA			
Age	ADM, <u>15</u>	ADG adj., 1b	ADM, 1b	ADG adj., 1b	ADM, 1b	ADG adj., 1b			
2 years	5.40	-0.55	9.02	0.09	12.63	0.55			
3 and 4 years	6.53	-0.37	10.87	0.46	15.21	0.55			
5 years and older	7.92	-0.11	13.19	0.55	18.46	0.55			

TABLE 3. AVERAGE DAILY MILK PRODUCTION (ADM) OF STRAIGHTBRED COWS OF DIFFERENT AGES AND HERD AVERAGES (HA) FOR ADM AND ADJUSTMENT FACTORS FOR PREWEANING ADG OF THEIR CALVES

TABLE 4. NUMBERS OF COWS MAINTAINED IN SYSTEMS BASED ON SS, MM, AND LL GENOTYPES FOR MATURE SIZE AND THREE MILK LEVELS IN TWO REGIMES WHEN NUTRITIONAL EXPENDITURES ARE HELD AT \$100,000^a

- 1.2.1.413.2.7.112.2.90			Regime and	milk level		
		Drylot			Pasture	
Genotype	6.6 lb	11.0 1b	15.4 lb	6.6 lb	11.0 1b	15.4 lb
SS	636	637	622	828	872	870
EM	543	543	533	690	725	726
LL	443	443	437	545	559	573

^a Calves born per cow exposed = 89%; live cows not previously culled leave herd at 12 years of age.

	Regime and milk level										
		Drylot		Pasture							
Genotype	6.6 lb	11.0 lb	15.4 lb	6.6 lb	11.0 lb	15.4 lb					
· ·	(%)	(%)	(%)	(%)	(%)	(%)					
SS	54.3	60.9	62.5	40.5	46.5	47.5					
MM	51.8	57.6	59.0	38.8	43.5	44.2					
LL	48.7	53.6	54.8	36.9	41.5	40.7					

TABLE 5. PERCENT OF NUTRITIONAL EXPENDITURE ALLOCATED TO THE BREEDING HERD IN SYSTEMS BASED ON SS, MM AND LL GENOTYPES AND THREE MILK LEVELS IN TWO REGIMES^a

^a Calves born per cow exposed = 89%; live cows not previously culled leave herd at 12 years of age.

	Regime and milk level										
		Drylot		Pasture							
Item	6.6 lb	11.0 lb	15.4 16	6.6 lb	11.0 lb	15.4 16					
SS											
Cull cows, lb	87331	87407	85312	113705	119658	119417					
Slaughter cattle, lb	3906 68	391193	381739	508649	535526	534334					
Total liveweight, lb	477999	478600	467051	622354	655184	653751					
MN					* .						
Cull cows, lb	85669	85769	84089	108903	114381	114513					
Slaughter cattle, lb	387562	388099	380569	492670	517561	518267					
Total liveweight, lb	473231	473868	464658	601573	631942	632780					
LL											
Cull cows, 1b	82767	82880	81622	101826	104499	1 07054					
Slaughter cattle, lb	379539	380015	374240	466931	479136	490851					
Total liveweight, lb	462306	462895	455862	568757	583635	597905					

TABLE 6. LIVE WEIGHT PRODUCED FROM SYSTEMS BASED ON SS, MM AND LL GENOTYPES AND THREE NILK LEVELS IN TWO REGIMES WHEN NUTRITIONAL EXPENDITURES ARE HELD AT \$100,000^{a,b}

^a Calves born per cow exposed = 89%; live cows not previously culled leave herd at 12 years of age.

b In order to calculate gross income using these liveweights, cull cows were priced at \$23.95/cwt and slaughter cattle at \$33.74/cwt.

	Regime and milk level									
		Drylot		Pasture						
Cenotype	6.6 15	<u>11.0 lb</u>	15.4 lb	6.6 lb	<u>11.0 16</u>	15.4 lb				
	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)				
SS	16464	16628	13805	51634	59657	59297				
MM	20347	20515	18180	52986	60717	60939				
LL	22651	22805	20938	50893	54835	58622				

TABLE 7. NET INCOME FROM SYSTEMS BASED ON SS, MM AND LL GENOTYPES AND THREE MILK LEVELS IN TWO RÉGIMES WHEN NUTRITIONAL EXPENDITURES ARE HELD AT \$100,000^a,^b

^a Calves born per cow exposed = 89%; live cows not previously culled leave herd at 12 years of age.

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^b Net Income = Gross Income - Fixed Costs - Nutritional Expenses. Nutritional Expenses = \$100,000 for all systems.

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SIMUMATE: CHOOSING BREEDS AND CROSSBREEDING SYSTEMS BY COMPUTER

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Research results have developed a sound base of information relative to the amount of heterosis obtained in breed crosses in cattle. In addition, the concepts of combining the good traits of more than one breed through crossbreeding have been established. Heterosis is expected to be most important for traits low in heritability, while we would expect to be most successful in using combinatorial properties of crossbreeding when we are working with highly heritable traits. These two items along with the well established improvement that can be achieved through individual selection of bulls on their own performance leads to the conclusion that the breeding program for commercial production should include a system of crossbreeding combined with selection of breeds and selection of individual replacements.

There are several systems of crossbreeding available to the producer at the present time. The two breed rotation as the name implies involves using bulls from two different breeds in the program. The original straightbred cow herd would be bred to a different breed of bull. The replacement heifers produced by this mating would be bred to a bull of the same breed as the original cow herd. Heifers from this mating would be bred to the other breed of bull. The only records needed in this program are to know the breed of bull that sired a heifer. This could be an ear notch or some other mark on the animal. It is expected that, after a few generations of this rotation crossbreeding, the heterosis level would stabilize at 67 percent of maximum.

Another crossbreeding system is the three breed rotation. This is very similar to the two breed just described but involves a third breed. In this system the original straightbred cows are bred to a bull of a different breed. The heifers produced by this mating are bred to a bull of a third breed. The heifers thus produced are then bred back to a bull from the same breed as the original cow herd. Where the two breed rotation requires two breeding pastures to accommodate the two breeds of bulls, this system will require three pastures to accommodate the three breeds involved. Again, all that is needed in the way of records is to know the breed of sire of the heifer and this will indicate the breed of bull to which she will be bred in the rotation. Heterosis in the three breed rotation will stabilize at 86 percent of maximum.

Another system available to producers is a specialized three breed crossing system. In that case the two breed rotation cross is used to initiate the program. Heifers selected for replacements would produce three calves in the two breed rotation system and then be moved to a third breeding pasture for the rest of their producing life where they would be bred to a terminal sire breed. All calves produced from these matings would go to market. This system was designed to allow major emphasis of selection on maternal traits for the breeds in the original two-way rotation and to allow major emphasis in selection of the terminal sire breed on growth rate and carcass traits. This system requires 40 percent of the herd in the twoway rotation to provide replacements and 60 percent in the terminal cross. In addition to breed of sire, the age of the cow will be needed to determine proper breeding pasture.

It has become increasingly apparent that there is not just one ideal type of beef animal, and we cannot expect one type to fit all the needs of our highly variable industry. Thus, there is an opportunity to combine breed strong points to build a producing unit for each specific situation. To be efficient in developing this program, one needs to be aware of the varying cost situations, of varying breed performance under different management systems, and of the effect of the varying management systems themselves in relation to costs and returns. For example, the breed's reproductive performance might vary considerably depending upon the level of nutrition during and just prior to the breeding season, or carcass grade might vary depending on how soon after weaning the calves of a certain breed are put on high concentrate feed. Some areas of our rangeland may have very rigid limits set on availability of forage during critical periods of the breeding season, whereas other areas perhaps with some irrigated acres available or corn belt areas may have an abundance of cheap roughage available for the cow herd. The costs of maintaining a cow may vary considerably among these situations. The optimum crossbreeding plan thus should be tailored to the individual situation and the level of management will be important in evaluating a breed in a particular crossbreeding plan. Because of the variation in management situation and its variable effect on different breeds, recommendations as to choice of breeds and crossbreeding systems for a specific farm or ranch have been difficult to make.

A computer program called Simumate has been developed to assist in making these decisions. The items listed in table 1 represent the information provided to the computer. General items applying to the entire ranch are fixed costs for the cow herd, variable costs for the cow herd, weaning weight base, postweaning feed costs and feed requirement, carcass selling price and grade spread. The latter is the difference between the selling price for average choice and average good carcasses. In addition, breed estimates based on knowledge of the individual ranch management are needed for eight preweaning traits and six postweaning traits as indicated.

The computer calculates the information presented in table 2 for each straightbred, all possible two breed rotations, three breed rotations and specialized cross systems as described earlier. In the latter case, all possible two breed rotation cows are mated to each breed of bull. For each of these crossbreeding systems and straightbreds, cow size and milk production are used in calculating carrying capacity. Male fertility, female fertility and calf livability are used in calculating percent calf crop weaned. The weaning weight base along with individual growth and maternal ability are used in calculating the weaning weight. Selling price at weaning along with carrying capacity, percent calf crop weaned and weaning weight are used to calculate return to labor at weaning.

The program separates the postweaning phase into a backgrounding system, taking the calves to 700 pounds, and a feedlot system in which the user has the option to grow the calves for 50 days and then use a finishing phase of 90 days. The program calculates days required to reach 700 pounds, feed and fixed costs for both the background and feedlot phases and return to labor for the background and feedlot phases.

The final phase considered by the computer is the carcass or packer phase. Slaughter weight, carcass weight and weight of retail cuts are calculated and from this the carcass value. Packer return is calculated and this in combination with return at weaning, backgrounding and feedlot form the basis for calculating the total industry return. Packer return is based only on the return from the carcass and does not include return from the offal. The output from this computer program is completely determined by the information entered. The computer and the program do not add anything but simply calculate the results from the information provided. The interpretation of these results will no doubt vary with the individual using the program. That is, a cow-calf man selling at weaning may be looking for something different than a producer that feeds out his own calves. However, even the cow-calf man will need to be aware of postweaning and carcass performance if he is to maintain a suitable market for his calves. Regardless of the method of use of the results, the use of the program will allow consideration of a number of factors not presently being considered by many producers in planning their crossbreeding program. The interrelationships of some of these factors are not easily calculated without the use of a computer and when one considers the number of calculations necessary to evaluate all possible crosses among the three crossbreeding systems a computer is almost a necessity.

This program is available for use by all producers. Several universities have already obtained the program and it is available to those that have not. Producers are encouraged to utilize the computer program in planning their crossbreeding program and, if most convenient, they can be processed at South Dakota State University. A charge of \$5 will be made to cover computer costs. Table 1. Crossbreeding Simulator Input

General

Fixed costs - cow herd Variable costs - cow herd Weaning weight base Feed costs Feed requirement Carcass price

Grade spread

Preweaning - breed estimates

Cow size	Male fertility
Milk production	Calf livability
Individual growth	Female fertility
Maternal ability	Weaning price

Postweaning - breed estimates

Daily gain Feed efficiency Selling prices Dressing percent Cutability Percent choice

Table 2. Crossbreeding Simulator Output

Preweaning

Carrying capacity Percent calf crop Weaning weight Return to labor at weaning

Postweaning

Days to 700 pounds Feed and fixed costs - background and feedlot Return to labor - background and feedlot

Packer

Slaughter weight Carcass weight Retail cuts Carcass value Packer return Total industry return

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NAME		ADDRES		ZIP	
NO COST/100 COWS		EED COST er lb of ration	FIXED COST Cents per day	BASE FEED REQUIREMENT	CARCASS GRADE PRICE SPREAD
Fixed Variable 1 2 3 45 6 7 6 9 1	Backgrnd 10 11 12 13 14 15	Growth Finish 16 17 18 19 20 21	BkgndGrowFin222324252627	Bkgnd Grow Fin 28 29 30 31 32 33	34 35 36 37 38
8750060004	400020	023025	_ / _ / _ / _ / _	908275	62030
		Breed Estima	ates		
BREED COW SIZE ANNU. L 2 3 4 5 6 7 8	JAL MILK PROD FERTI 9 10 11 12	ILITY FERTILITY	CALF LIVABILITY 16 17	GROWTH ABII	ERNAL WEANING LITY PRICE 22 23 24 25
POL 1050 3	0009	4 95	95	0 8 0	0850
SH011002	600.9	6 92	94	0100	0651
SIM 13004	0009	2 94	900	0220	1150
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Breed Estimates Continued

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26	27	28	29	30			33	11g 34	35		11Cy 37	38	39	40	41	42	43	44		46		
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2	3	0	3	4	0	3	4	0	-	0	3	4	5	3	9	6	2	6	7	4	0	СНА
2	1	0	З	0	0	3	0	0	0	0	0		8	4	_/	6	2	6	3		5	HER_
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3	2	0	3	3	0	3	_3	0	C	<u>C</u>	C		4	3	9_	6	0	6	6	4	0.	SWI

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These	- EST[44]	ES PROVI	IDED BY		VIE 11 SU													
1 M R.	ANCHER	ANYWHEF	RE, ST 9	9999					···· · _··· ·· ·		·							
	HEA FIXED 7500-		RIABLE	BASE	FEI BACI 0.020	K GRI	OW FIN	NISH B	ACK G	ST PER D ROW FI 11 0.	NISH E	ACK	GROW	FINIS	รี่ คิ่งไ	CE SHR	EAD	
BREED	CUW SIZE			FEM FERT	CALF		MATERN	WNG	D BACK	AILY GA GRUW		FEED	SELL	PRICE	DRESS		PCT CHUICE	
ANG		2400.				0.03		-0.51		2.70	2.70	0.03			0.63	0.62	0.90	
					0.90					3.40		03						
															- 0.62	0.67		
HER	1125.			0.96		0.14		0.53		3.00	3.00	0.0	.48	. 41	0.62	0.63	0.75	
								~ = ^	2 20	3.40	3,40	03	.45	.39	0.61	0.66	0.40	
CAR THESE	RESULTS	ÁPÁCITY BASED (BASE IS	4756	LBS. TO	N PER AN	IMAL PER	YEAR										
CAR THESE	RRYING C _RESULTS ANCHER	APACITY BASED (ANYWHER	UASE IS UN ESTIM RE, ST 9	4756. ATES MAG	LBS. TO	N PER AN	IMAL PER	YEAR				•						
CAR THESE	ARYING C _HESULTS ANCHER _ 	APACTTY BASED (ANYWHES AIGHTBRS	DASE IS UN ESTIM RE, ST 9 ED PERFO	4756. ATES MAG 19999	. LBS. ГО	N PER AN	IMAL PER	YEAR										
CAR IMESE I.M.BA	RRYING C _HESULTS ANCHER	APACITY BASED (ANYWHES AIGHTBRS AIGHTBRS CAP	DASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP	4756. ATES MAG 19999 IRMANCE WNG WT	LBS. TOP	N PER AN	BACK GRD	VEAR COSTS.	BACK NE	T RĘTURM	SL1	TR	= = = = E E U	1. COSTS. F1×ED	<u>– </u> <u>–</u> ЕЕЕД IND		RETURN	
CAR THESE	RRYING C _RESULTS ANCHER	APACITY BASED (ANYWHER AIGHTBRE AKRY CAP CC+0	DASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.84	4756. ATES MAG 19999 IRMANCE WNG WT	LBS. TO DE BY NET RETURN 55	DAY TO 124 -	BACK GRD	YEAR COSTS FLED 46.	BACK NE INDIV	T RĘTURM	SL1 WT 10 11	[R] 78		COSTS F1×ED 15. 15.	EEED IND	DLUT NEI DIVIDUAL 21: 41:	BETURN	
CAR IMESE 1. M. RI BREED ANG Cha hEK	ARYING C _RESULTS ANCHERSTR C 1	APACITY BASED (ANYWHER AIGHTBR(AKRY CAP CC+0 64-3 96-6	UASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.84 0.75 G.85	4756. ATES MAG 9999 IRMANCE WNG WT 452. 516. 436.	NET RETURN 30.	DAY TO 700 124. 80. 126.	BACKGRD FIXED 14- 9- 14.	YEAR COSTS FEED 46. 32. 48.	BACK NE INDIV 3	T RETURN IDUAL 22. 6.	LSL1 WT 10 11	[R 78 76. 20	EEDLOI EEU 73. 87.	COSTS FIXED 15. 15.	EEED IND	21. 29.	RETURN	
CAR IMESE 1. M. R/ 	ARYING C _RESULTS ANCHER _ STR C 1	APACTTY BASED (ANYWHE) AIGHTBR(AKRY CAP CC.0 84.3 96.6 76.7	DASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.84 0.75 G.85 0.78	4756. ATES MAG 99999 WRMANCE WNG MT 452. 516. 436. 532.	NET RETURN 30.	DAY TO 124- 80-	BACKGRD FIXED 14- 9- 14.	YEAR COSTS FED 46. 32. 48.	BACK NE INDIV 3	T RETURN TIDUAL 2. 6.	LSL1 WT 10 11	[R] 78		COSTS F1×ED 15. 15.	EEED IND	DLUT NEI DIVIDUAL 21: 41:	BETURN	
CAR IMESE 1. M. RI BREED ANG Cha hEK	ARYING C _RESULTS ANCHER _ STR C 1	APACITY BASED (ANYWHER AIGHTBR(AKRY CAP CC.0 54.3 96.6 76.7 AIGHTBR(UASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.84 0.75 G.85 0.78 ED PERFO	4756. ATES MAG 9999 WNG WNG WT 452. 516. 436. 532.	NET NET NET NET NET 30. 56. 31.	DAY TO 700 124. 80. 126. 73.	IMAL PER BACKGRD FIXED 14. 9. 14. 8.	YEAR COSTS FLED 46. 32. 48. 29.	BACK NE INDIV 3 1 4	T RETURN 1)UAL 22. 6. 4. 2.	LSL1 WT 10 11	[R 78 76. 20	EEDLOI EEU 73. 87.	COSTS FIXED 15. 15.	EEED IND	21. 29.	BETURN	
CAR IMESE 1. M. RI BREED ANG Cha hEK	ARYING C _HESULTS ANCHER _ C 1 1 1 1	APACITY BASED (ANYWHER AIGHTBRE ARRY CAP CC.0 64.3 96.6 76.7 AIGHTBRE	UASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.84 0.75 0.85 0.78 ED PERFO RET	4756. ATES MAG 9999 WNG WNG WT 452. 516. 436. 532. RMANCE	NET RETURN 55. 30. 31.	DAY TO 700 124. 80. 126. 73.	BACKGRD FIXED 14. 9. 14. 8.	YEAR COSTS FEED 46. 32. 48. 29. IND IND	BACK NE INDIV 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	T RETURN 11 DUAL 2. 6. 2. T	SL1 WT 10 11 11 11	18 78 76 76.	EEDLOI EEU 73. 87. 79. 87.	COSTS FIXED 15. 15. 15.	EEED IND	29. 41.	BETURN	
CAR IMESE I.M.R. BREED ANG BREED ANG	ARYING C _HESULTS ANCHER _ C 1 1 1 1	APACITY BASED (ANYWHER AIGHTBRE ARRY CAP CC.0 64.3 96.6 76.7 AIGHTBRE CARC WT 679.	UASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.84 0.75 C.85 0.78 ED PERFO RET CUTS 421-	4756. ATES MAG 9999 WNG WNG WT 452. 516. 436. 532. RMANCE MARKI CARC 419.	NET RETURN 55. 30. 56. 31. ET VALUE ACTUAL 418.	DAY TO 700 124. 80. 126. 73. PACKER INDIV	BACKGRO FIXED 14. 9. 14. 8. NET RET IDUAL	YEAR COSTS FEED 46. 32. 48. 29. IND 1ND	BACK NE INDIV 3 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	T RETURN TDUAL 2. 6. 4. 2. T	SL WT 10 11 11	18. 178. 16. 20. 	EEEDLOI EEEU 73. 87. 79. 87.	C COSTS F1×ED 15. 15. 15.	EEED IND	29. 41.	BETURN	
CAR IMESE 1 M. RA UREEO ANG CHA HER SIM BREED	RRYING C _RESULTS A*CHER	APACITY BASED (ANYWHER AIGHTBR(AKRY CAP CC.0 64.3 96.6 76.7 AIGHIBR CARC WT 679. 729. 64.3	UASE IS UN ESTIM RE, ST 9 ED PERFO CALF CROP 0.75 G.85 0.78 ED PERFO RET CUTS 421. 489. -	4756. ATES MAG 9999 WNG WNG WNG 516. 452. 532. Side. 532. RMANCE MARKI CARC 419. 439. 425.	NET NET RETURN 55. 30. 56. 31. ET VALUE ACTUAL 418. 485.	DAY TO 700 124. 80. 126. 73. PACKER INDIV -1 -2 -3	BACKGRD FIXED 14. 9. 14. 8. NET RET IDUAL 2. 0.	YEAR COSTS FEED 46. 32. 48. 29. IND IND	BACK NE INDIV 3 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	T RETURN IDUAL 22. 4. 2.	LSL1 WT 10 11 11 11 11	78 76 76.	EEDLOI EEU 73. 87. 79. 87.	L COSTS FIXED 15. 15. 15.	ЕЕЕО I ND	29. 41.	BETURN	

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	63389	CARY	CALF	NT	RETURN 7	700 FIX	CKGRD COSTS XED FEED	BACK NET RETU	JRN SLFR WT		COSTS	FEEDLOT NET A	RETURN
	ANOCHA				. 59.		933	16					
.	ANGHER		0.90	473.	76. 1	107.	12. 42.	30.	1112.		15.	27.	
	ANGSIM		0.86			60.	9		1141•		15		
•	CHAHER	87.6	0.85	506.		85.	9. 34,		1163.		13.	39.	
ر	EHASIM HERSIM	78.0 63.1	0.81 0.87	555. 514.	44 59.	61. 82.	7. 25. 9. 33.	<u>5.</u> 19.	1192. 1163.		<u>15</u> 15.	45 39.	
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	BREED	C4	RC RET	MARKET	VALUE F	ACKER NE	TRET IN	DUSTRY NET					
ر .			_ CUTS				AL iN						
	AGLHA	713		435.	450.	-16.		93.					
	ANGHER		435.					(110.)					•
<u> </u>	ANGSIM	708		431.	449.	-20.		87.					
	CHARER		469		462.	-24.		91• 71•					
	CHASIM	715											. •
	ti	HALE BREED	RETATION										
	r D		ALF WING		DAY 10	BACKGRD	CUSIS UAC	K NET RETURN	SLIRFE	- ULUT CUST	15 FEEU	DLUT HET RETURN	
⊂ _eke			n(12 hT	REINK	N 700	FIXLU	FEED I	NUIVIDUAL	WI FEI	ED FIXEL) 140	IVIDUAL	
								20	1143.	83. 15.		34	
ANG	CHAHER	69.9 0	.88 506			10				· · · · · · · · · · · · · · · · · · ·			
ANG ANG	CHAHER	69.9 0 82.8 0	.88 506 .86 540	. 61.	70.	8.	29.	9.	1162.	36. 15.		38.	
ANG ANG ANG	CHAHER	69.9 0 52.8 0 86.6 0	.88 506 .86 540	• 61• • 69•	70.	8.	29.	9. 18. 13.	1162 . 11431	36. 15. 33. 15.	·		
ANG ANG ANG	CHAHER CHASIM NERSIM HERSIM	69.9 0 52.8 0 86.6 0	.88 506 .86 540 .90 512 .86 534	• 61. • 69.	70.	8. 	29.	9. 18	1162 . 11431	36. 15. 33. 15.	·		
ANG ANG ANG	CHAHER CHASIM HERSIM HERSIM Th	69.9 0 82.8 0 86.6 0 82.0 0	.88 506 .86 540 .90 512 .86 534 ROTATIUN	• 61. • 69.	70. 85. 71.	8. 	29. 34. 	9. 18. 13.	1162 . 11431	36. 15. 33. 15.	·		
ANG ANU ANU ANJ CHA	CHAHER CHASIM HERSIM HERSIM Th	69.9 0 62.8 0 86.6 0 82.0 0 1REE BREED 1	.88 506 .86 540 .90 512 .86 534 ROTATIUN	61. 69. 61.	70. 85. 71. E PAČKER	8. 	29. 34. 29. 	9. 18. 13.	1162 . 11431	36. 15. 33. 15.	·		
ANG	CHAHER CHASIM HERSIM HERSIM TH ED CHAHER	69.9 0 62.8 0 86.6 0 82.0 0 1REE BREED CARC 6T (712.	.88 506 .86 540 .90 512 .86 534 ROTATIUN RET M	• 61. • 69•. • 61•	70. 85. 71. E PACKER L INDIV -2	8. 9. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	29. 34. 29. INDUSTR' INDUSTR'	9. 18. 13.	1162 . 11431	36. 15. 33. 15.	·		
ANG	CHAHER CHASIM NERSIM HERSIM TH	69.9 0 62.8 0 86.6 0 82.0 0 1REE BREED 1 CARC WT (712. 4	.88 506 .86 540 .90 512 .86 534 KOTATIUN RET M. CUTS CA .56. 43	• 61. • 69. • 61. • 69. • 61. • 61.•	70. 85. 71. E PACKER L INDIV -2 -2	8. 9. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	29. 34. 29. INDUSTR' INDUSTR'	9. 18. 13. Y NET JAL	1162 . 11431	36. 15. 33. 15.	·		
ANG ANG ANG CHA ERE ANG ANG	CHAHER CHASIM HERSIM HERSIM TH ED CHAHER	69.9 0 62.8 0 86.6 0 82.0 0 1REE BREED 1 CARC WT (712. 4	.88 506 .86 540 .90 512 .86 534 .0TATIUN 	• 61. • 69. • 61. • 61.•	70. 85. 71. E PAČKER L INDIV -2 -2 -2	8. 9. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	29. 29. INDUSTR' INDIVION	9. 18. 13. Y NÉT JAL 101.	1162 . 11431	36. 15. 33. 15.	·		

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REFD	C 4		ALF ROP	жн6 - жт	NET	DAY 10	BACKGRD FIXED	CUSTSE	ACK NET RETURN	SLTR	FEEDLOT		FEEDLOT NET RETURN	
NG CHAH	-	-	.86	493.		91.	10.						38.	
NG CHAS			.84	542.	46.	68.	8.	36.	10	1166.	86.	15	41.	
IG HERS			.98	506.		. 87.			21	1145.	84.	15.	38.	
HA ANUN			. 6 9	491.	75.	95	10.	38.	22.	1141.	83.	- 15	29.	
HA AS			. H 5	536.	62.	72.	8.	29.	9.	1161.	56.	15.	35.	
hA HERS	IM S.	3.1 0	• 85	524.	55.	76.	8.	31.	15.	1176.	88.	15.	5'1.	
ER ANGO	5 AH). 0 0	• 88	517.	68.	82.	9	33.	10.	1143.	83.	15.	34.	
FR ANDS			• 6 9	525.	67.		9.	31.	14.	1143.	83.	15.		
Et CHAS					53.	64.	7	26.		1179.	88.	_15	44 .	
IM ANGC			• 85	527.	64.	76.	8.	31.	11.	1161.	86.	12.	35.	
IN 4Num									22.	1141.	83.	15.	29	
Ім Снан	EX 8	7.6 0	• 85	515.	61.	79.	9.	33.	17.	1176.	88.	15.	.46	
KEED	•	CARC_	CPOSS-E RET CUIS		ET VALUE	PACKER INDIV	NET RET	ROTATIUN INDUS INDIV	TRY NET					
NG CHA		718.	460.	438.	457.	-7	0.		101.					
NG CHA	SIM -	729.	475.	442.	4/1.	- 1	6.		84.					
NG HER		114.	455.	436.	451.		3.		93.			•	•	
на 🗍 анб			450.	430.	446.	- 2	1.		100.					
HA 45G			464.	434.		- 2	3							
HA MER			471.	437.	467.	د –	0.		83.					
ER ANG			450.	415.	453.	-2	2						• • • • • • • • • • • • • • • • • • •	
ER ANG			451.	432.	448.	-2	4.		91.					
ER CHA			478.	442.	474	-2	· · · · · · · · · · · · · · · · · · ·		80.					
IM ANG			465.	434.		-	2.		89.					
IM ANG			443.	. 428 .			9		99.					
ІМ СНА			472.	438.	468.	-	9.		88.					
										,				
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												<u></u>	·	
			·											

HER 96.6 0.85 436. 71. 126. 14. 48. 40. 1108. 77. 15. 45. POL 07.5 0.85 468. 57. 116. 13. 43. -0. 1108. 77. 15. 45. SHO 95.0 0.83 464. 62. 118. 13. 44. 1. 1089. 75. 15. 48. STRAIGHTBRED PERFORMANCE BREED CARC RET MARKET VALUE PACKER NET RET INDUSTRY NET ANG 698. 433. 430. 429. -46. 100. 100. MER 687. 433. 430. 429. -67. 89. 100. MG 675. 405. 402. -32. 67.	N FIXED	COSTS VARIABLE	WNGF						
WEANIGL COSIS MMG PEEDL COSIL PERL D. DIFLED_COSIL PERL DAY ANSE_FEED-REQUIRE_CHOILS_2ADD 4 7500L 4000L 400C 0.020 0.023 0.02 0.023 0.02 0.03 0.02 0.02 0.03 0.03 0.04 0.04 0.02 0.09 0.03 0.04 0.04 0.02 0.03 0.03 0.04 0.04 0.02 0.03 0.03 0.04 0.02 0.09 0.03 <td< th=""><th>N FIXED</th><th>COSTS VARIABLE</th><th>WNGF</th><th></th><th></th><th></th><th></th><th></th><th></th></td<>	N FIXED	COSTS VARIABLE	WNGF						
M FIXED VARIABLE BASK DACK CARD FINISH BACK CARD CARD <thcard< th=""> CARD CA</thcard<>	N FIXED	VARIABLE							
4 7300, 6000. 400. 0.023 0.025 0.11 0.11 0.11 9.0 8.2 7.3 0.62 0.630 BREED COM MILK MALE FERT FRAT LIVA GADA ABILTY PALO BALY FALO FEED DELL PALO DELL			BASE BA						
BRED COM MILK MALE FER CALE INO MATERN MNC DAILY DAIN FEED SELL PAICE DARK GRM SELL PAICE DARK GRM SELE PAICE DARK GRM FIRISH EFED SELL PAICE BACK GRM FIRISH EFED SELL DAICE DAICE DAICE CAICE CAICE CAICE CAICE CAICE CAICE CAICE									
SIZE PROD FERT LIVA GADH ABILTY PRICE BACK GROH FINISH EFF BACK FERD PRIT ANITY CHOIL2 ANG 1050. 2400. 0.92 0.96 0.95 0.08 0.05 0.55 2.10 2.75 3.00 0.0 .50 .44 0.62 0.63 0.75 FOL 1100. 4000. 0.94 0.95 0.95 0.90 0.00 0.54 2.00 2.75 3.00 0.03 .44 .42 0.61 0.65 0.70 SHO 1100. 2600. 0.96 0.92 0.94 0.10 0.06 0.54 2.00 2.75 2.80 0.03 .44 .41 0.62 0.60 0.80 CARRYING CAPACITY BASE 10.92 0.92 0.94 0.10 0.06 0.54 2.00 2.75 2.80 0.03 .44 .41 0.62 0.60 0.65 0.60 0.66						U#14U#14			
SIZE PROD FERT LIVA GADH ABILTY PRICE BACK GROH FINISH EFF BACK FERD PRIT ANITY CHOIL2 ANG 1050. 2400. 0.92 0.96 0.95 0.08 0.05 0.55 2.10 2.75 3.00 0.0 .50 .44 0.62 0.63 0.75 FOL 1100. 4000. 0.94 0.95 0.95 0.90 0.00 0.54 2.00 2.75 3.00 0.03 .44 .42 0.61 0.65 0.70 SHO 1100. 2600. 0.96 0.92 0.94 0.10 0.06 0.54 2.00 2.75 2.80 0.03 .44 .41 0.62 0.60 0.80 CARRYING CAPACITY BASE 10.92 0.92 0.94 0.10 0.06 0.54 2.00 2.75 2.80 0.03 .44 .41 0.62 0.60 0.65 0.60 0.66							<u></u>	· · · · · · · · · · · · · · · · · · ·	
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CAARYING CAPACITY DASE IS 4756. LBS. TDN PER ANIMAL PER YEAR JHE SE. RESULTS_BASED_ON_ESTIMATES_MADE_BY PAARLBERG		00. 0.96	0.92 0.94	0.10 0.06	0.54 2.00	2.75 2.80	0.03 .4	4 . 41 0. 6	2 0.60 0.80
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SHO 95.0 0.03 464. 62. 118. 13. 44. 1. 1089. 75. 15. 48. STRAIGHTBRED PERFORMANCE BREED CARC RET MARKET VALUE PACKER NET RET INDUSTRY NET MG 698. 433. 430. 429. -67. 100. MER 687. 433. 430. 429. -67. 89. POL 676. 433. 436. -52. 67. 67. SHO 675. 405. 415. 402. -32. 79. 4. IMO BREED ROTATION INO BREED ROTATION INO BREED ROTATION INO BREED ROTATION IND BREED ROTATION IND BACKGRD COSTSBACK NET RET URMSLTRFEEDLOT, COSTSFEEDLOT NET_REJURN CARRYCALFWNGNETDAY TOBACKGRD COSTSBACK NET RETURMSLTRFEEDLOT, COSTSFEEDLOT INDIVIDUAL ANGHER95.7 0.90 473. 92. 100. 11. 42. 26. 1121. 80. </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
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	BREED CA MIG 698 HER 681 POL 676 SHO 675 THO BRE BREED CARRY ANG CARRY ANGHER 95-7	<u>CUTS</u> - 433. - 433. - 439. - 405. <u>ED ROTATION</u> <u>CALF</u> <u>CRUP</u> 0.90 4	CARC ACTUAL 430. 429. 421. 429. 413. 436. 415. 402.	<u>INDIVIDUAL</u> -46. -67. -52. -32. -32. -32. -32. -32. -32. -32. -3	<u>IND IV IDUA</u> 10 <u>B</u> 6 7 7 0_COSTSBACK FEEDND 42.	0. 7. 9. 	NT FEED 1121. 80.	DT_ COSTSFI FIXED 15	1 ND I VI DUAL 49•
HERSHD 93.2 0.90 479. B7. 104. 11, 40, 11. 11. 112. 79. 15. 50.	BREED CA ANG 692 HER 687 POL 676 SHO 675 SHO 675 BREEO CARRY BREEO CARRY ANGHER 95.7 ANGPOL 90.6	CUTS 433. 433. 439. 405. ED ROTATION CALF CRUP 0.90 4 0.90 4 0.89 4	<u>CARC ACTUAL</u> 430. 429. 413. 436. 415. 402. WNG NET WT RETURN 473. 92. 489. 85;	<u>INDIVIDUAL</u> -46. -67. -52. -32. -32. DAY_TO_BACKGR(700 FixeD 100. 11. 95. 10.	<u>IND IV IDUA</u> 10 <u>B</u> 6 7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0. 9. 7. 9. NET RETURN IVIDUAL 26 6.	NT FEED 1121. 80., 1121. 81.	DT_COSTSFI FIXED 15.	49 58.

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BREED	CARC	RET	MAUKE	TVALUE	PACKER	NET RET	1 NT	JUSTRY NET				
RLED	n T	CUTS		ACTUAL		IDUAL		DIVIDUAL			<u> </u>	
NGHER	701.	438.	431.	434.	-5	1.		(110.)				
NGPCL	695.	441 .	427.	438		0,		98		.	_ .	
NGSHO	695.	424.	428-	421.		39.		106.				
ERPÜL	690.	_441.	422.	438		50.						
CRSHO	689.	424.	423. 419.	421. 424.		3.		88.				
01.580	684	<u> </u>	<u> </u>	<u> </u>								
T(HREE BREE	D ROTAT	101									
REED	ÇARRY	_CALF	WNG	NET		_BACKGRO		BACK NET RETURN_	SLTR		COSTS_	FEEDLOT_NET_RETURN
	CAP	CROP	¥1	RETURN	700	FIXED	FEED 39.	INDIVIDUAL	WT 1176	FEED 81.	FIXED _ 15.	INDIVIDUAL
ANGHERPOL ANGHERSHO	91.0	0.92	489,	<u> </u>	<u>95</u>	10.	39.	<u>11.</u>	<u> 1125 </u>	80.	<u>15.</u>	56• 50•
ANGPOLSHO	90.4	0.91	499.	91.	92	10.	37.	-1.	1119.	. 81.	15.	50.
HERPOLSHO	89.5	0.92	494.	90.	97,	11.	38.	2.	1119.	80.	15.	56.
	HREE BLEE	D NOTAT	ION									
REED	CARC	RET	MARK	T VALUE	PACKE	R NET REI	T EN	DUSTRY NET				
MEED	WI	CUTS	CARC	ACTUAL		VIDUAL		DIVIDUAL				
NGHERPOL	698.	442.	428.	438.		56.	• • •					
	697,	430,	429.	427.		49		104.				
ANGPOLSHO	694.	432.	426.	429.		44.		102.				
IERPOLSHO	100											
\$	690 PECIALIZE CARRY	_CALE	M NG	NET	COWS	BACKGRD		BACK NET RETURN	SLIR		<u>r_cosis_</u>	FEEDLOT NEL REJURN
SREEDS	PECIALIZE 	D_CROSS CALE CROP 0.90	-BULL_BRI 	EED_FIBSI NET RETURN 82.	COWS DAY_IQ 700 99.	IWQ_BREED BACKGRO FIXED 11.	COSTS FEED 40	ON_NEXT BACK_NET_RETURN INDIVIDUAL14	WT 1125	FCED	FIXED	INDIVIDUAL 55.
SREEDS	PECIALIZE CARRY CAP BY-2 93-2	D_CROSS _CALF CROP 0.90 0.89	-BULL_BRI HNG WT 	<u>VET</u> RETURN 82. 85.	COWS DAY_IQ 700 99, 100.	IWQ_BREE(<u>COSTS</u> FEED <u>40.</u> 41.	ON_NEXTBACK_NET_RETURN INDIVIDUAL14 15.	WT 1125 1119.	FEED 81. 80.	FIXED 15. 15.	INDIVIDUAL 55 49.
SREEDS	PECIALIZE CARRY CAP BY-2 93.2 88.4	D_CROSS _CALF CROP 0.90 0.89 0.89	-BULL_BRI 	EED_F1851 	COWS DAY_IQ 700 99.	IWQ_BREED BACKGRO FIXED 11.	COSTS FEED 40	ON_NEXT BACK_NET_RETURN INDIVIDUAL14	WT 1125 11191119	FCED 81. 80. 81.	FIXED 15. 15.	INDIVIDUAL 55 49. 55.
SREED ANG HERPOL ANG HERSHO ANG POLSHO HER ANGPOL	PECIALIZE CARRY CAP 89-2 93-2 88-4 90-6	D_CROSS _CALF CROP 0.90 0.89	BULL BRI NG WT 481. 478. 498.	<u>VET</u> RETURN 82. 85.	COWS DAY_IQ 700 99, 100. 93.	IWQ_BREED BA1KGRC BA1KGRC B1KGRC 11. 10	COSTS FEED 40 41. 37	DN_NEXTBACK_NET_RETURNINDIVIDUAL14151522	WT 1125 1119.	FEED 81. 80.	FIXED 15. 15.	INDIVIDUAL 55 49.
SREED ANG HERPOL ANG HERSHO ANG POLSHO JER ANGPOL IER ANGSHO _	PECIALIZE CARRY CAP 89.2 93.2 88.4 90.6	D_CROSS _CALF CROP 0.89 0.89 0.92	BULL BRI NG WT 481. 478. 498. 500.	EED_F1851 	COWS DAY_IQ 700 99, 100. 93. 90.	IWQ_BREED BACKGRC FIXED 11. 10 10	COSISFEED 40 41. 37 37.	DN_NEXIBACK_NET_RETURN INDIVIDUAL14 156.	WT 1125, 1119. 1119. 1125.	FCED 81. 80. 81. 82.	FIXED 15. 15. 15. 15.	INDIVIDUAL 55 4955 55
SREED ANG HERPOL ANG HERSHO ANG POLSHO HER ANGPOL HER ANGSHO HER POLSHO POL ANGHER	PECIALIZE CARRY CAP 93.2 88.4 90.6 94.7 88.4 95.7	D_CROSS CROP 0.90 0.89 0.89 0.92 0.92 0.91 0.91	BULL BRI WT 481. 478. 498. 500. 498. 505. 474.	EED_F1851 RETURN 82. 85. 81. 93. 96. 87. 92.	COWS DAY_IO 700 99. 100. 93. 90. 91. 92. 101.	IWQ_BREET 	COSIS FEED 40. 37. 37. 37. 36. 41.	ON_NEXTBACK_NET_RETURNIADIVIDUAL141567677	WT <u>1125</u> 1119. 1119. 1125. <u>1119.</u> 1119. 1119.	FEED 81. 80. 81. 82. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55
SREED ANG HERPOL ANG HERSHO ANG POLSHO HER ANGSHO HER POLSHO POL ANGHER POL ANGSHO	PECIALIZE CARRY CAP 99.2 88.4 90.6 94.7 88.4 95.7 94.7	D_CROSS CALF CROP 0.90 0.89 0.89 0.92 0.92 0.91 0.90 0.90	-BULL BRI WT 481. 478. 500. 498. 505. 498. 498. 491.	EED_F1BS1 RETURN 82. 85. 81. 93. 96. 87. 92. 91.	COWS DAY_IO 700 99. 100. 93. 90. 91. 92. 101. 95.	I WQ_BREED BA:KGRC F I XED 11. 10. 10. 10. 10. 11. 10. 11. 10.	COSIS FEED 40. 37. 37. 36. 41. 39.	DN_NEXIBACK_NET_REIURNINDIVIDUAL INDIVIDUAL 15. -2. 6. 7. -4. 17. 1.	WT 1125, 1119. 1119. 1125. 1119. 1119. 1119. 1119. 1125, 1119.	FEED 81. 80. 81. 82. 80. 80. 81. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL
SREED ANG HERPOL ANG HERSHO HER ANGPOL HER ANGPOL HER ANGSHO HER POLSHO POL ANGHER POL ANGSHO POL HERSHO	PECIALIZE CARRY CAP BY-2 93.2 88.4 90.6 94.7 88.4 95.7 94.7 94.7 94.7	D_CROSS CALF CROP 0.90 0.89 0.89 0.92 0.92 0.91 0.90 0.90 0.90	-BULL BRI WT 481. 478. 498. 500. 498. 505. 474. 491. 479.	ED_F1851 RETURN 82, 85, 81, 93, 96, 87, 92, 91, 86,	COMS DAY_IO 700 99. 100. 93. 90. 31. 92. 101. 95. 104.	I WO_BREED BA:KGRC F I XED 11. 10. 10. 10. 10. 10. 10. 11. 10. 11. 10.	COSIS FEED 41. 37. 37. 37. 37. 37. 39. 41. 39.	ON_NEXI BACK_NET_RETURN INDIVIDUAL 15. -2. -6. 7. -4. 17. -4. 1. 7. -7.	WT 1125, 1119. 1119. 1125. 1119. 1119. 1119. 1125. 1119. 1119.	FEED 81. 80. 81. 82. 80. 80. 81. 81. 80.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 55. 55. 54. 54. 54
SREED ANG HERPOL ANG HERSHO HER ANGPOL HER ANGSHO HER POLSHO POL ANGHER POL ANGHER POL HERSHO SOL HERSHO SOL HERSHO	PECIALIZE CARRY CAP 93.2 93.4 90.6 94.7 94.7 95.7 93.2 94.7 95.7	D_CROSS CALF. CROP 0.89 0.89 0.89 0.92 0.91 0.91 0.90 0.90 0.90 0.92	-BULL BRI WT 481. 478. 500. 498. 505. 505. 498. 491. 479. 476.	ED_F1851 RETURN 82, 85. 81. 93. 96. 87. 92. 91. 94.	COMS DAY IO 700 99. 100. 93. 90. 91. 92. 101. 95. 104. 103.	IWQ_BREED BA1KGRC FIXED 11. 10. 10. 10. 10. 10. 11. 11.	COSIS FEED 40. 41. 37. 37. 37. 36. 41. 39. 40. 41.	ON_NEXIBACK_NET_RETURNINDIVIDUAL141566767717	WT 1125. 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1125. 1119. 1120.	FEED 81. 80. 82. 80. 81. 81. 81. 80. 81. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 47. 55. 54. 54. 54. 51.
SREED ANG HERPOL ANG HERSHO ANG POLSHO HER ANGPOL HER ANGSHO HER POLSHO FOL ANGHER POL ANGHER POL ANGHER HERSHO SHO ANGPOL	PECIALIZE CARRY CAP 93.2 93.2 88.4 90.6 94.7 95.7 94.7 95.7 95.7 95.7	D_CROSS CALF CROP 0.90 0.89 0.89 0.92 0.92 0.91 0.90 0.90 0.90	-BULL BRI WT 481. 478. 498. 500. 498. 505. 474. 491. 479.	ED_F1851 RETURN 82, 85, 81, 93, 96, 87, 92, 91, 86,	COMS DAY_IO 700 99. 100. 93. 90. 31. 92. 101. 95. 104.	I WO_BREED BA:KGRC F I XED 11. 10. 10. 10. 10. 10. 10. 11. 10. 11. 10.	COSIS FEED 41. 37. 37. 37. 37. 37. 39. 41. 39.	ON_NEXI BACK_NET_RETURN INDIVIDUAL 15. -2. -6. 7. -4. 17. -4. 1. 7. -7.	WT 1125, 1119. 1119. 1125. 1119. 1119. 1119. 1125. 1119. 1119.	FEED 81. 80. 81. 82. 80. 80. 81. 81. 80.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 55. 55. 54. 54. 54
SREED ANG HERPOL ANG HERSHO ANG POLSHO ANG POLSHO ARG POLSHO ANG POL ANGHER ANG ANGPOL SHO ANGPOL SHO HERPOL	PECIALIZE CARRY CAP 93.2 93.2 88.4 90.6 94.7 95.7 94.7 95.7 95.7 95.7	D_CROSS CALF CROP 0.90 0.89 0.92 0.92 0.91 0.90 0.91 0.90 0.90 0.90 0.92 0.93 0.92	-BULL BRI WT 481. 478. 478. 500. 498. 505. 474. 491. 474. 476. 495. 483.	ED_F1851 RETURN 82, 85, 81, 93, 96, 87, 92, 91, 86, 94, 94, 05,	CDMS DAY_IQ 700 99. 100. 93. 93. 90. 31. 92. 101. 95. 104. 103. 93. 102.	IWO_BREED BA:KGRC FIXED 11. 10. 10. 10. 10. 11. 10. 11. 10. 11. 10. 11. 10. 11. 10.	D_COSIS_ FEED 41. 37. 37. 37. 41. 39. 41. 39. 41. 39. 40. 41. 38. 40.	QN_NEXI BACK_NET_RETURN INDIVIDUAL 15. -22. 6. 7. -4. 17. -4. 17. -17. -2. -5.	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO ANG POLSHO HER ANGSHO HER ANGSHO HER POLSHO POL ANGHER POL ANGHER SHO ANGPOL SHO HERPOL S	PECIALIZE CARRY CAP BY-2 93.2 93.4 90.6 94.7 95.7 93.2 95.7 90.6 89.2 PECIALIZE	D_CROSS CALF. CROP 0.90 0.89 0.89 0.92 0.91 0.90 0.91 0.90 0.90 0.92 0.92 0.92 0.92 0.92 0.92	-BULL BRI WT 481. 478. 498. 500. 498. 505. 478. 491. 479. 475. 483. -BULL BRI	ED_FIBSI RETURN 82, 85. 91. 93. 96. 87. 92. 94. 94. 94. 95. ED_FIRSI	COMS DAY IO 700 99. 100. 91. 90. 91. 92. 101. 104. 103. 93. 102. COMS	IWQ_BREED BA1KGRC FIXED 11. 10. 10. 10. 10. 11. 10. 11. 10. 11. 11	D_COSTS FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 38. 40. 0. 0 ROTATI	ON_NEXTBACK_NET_RETURNINDIVIDUAL1415667677.	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO ANG POLSHO HER ANGPOL HER ANGSHO HER POLSHO FOL ANGHER POL ANGHER SHO ANGPOL SHO HERPOL	PECIALIZE CARRY CAP BY-2 93.2 93.4 90.6 94.7 94.7 95.7 94.7 95.7 95.7 90.6 89.2 PECIALIZE CARC	D_CROSS CALF CROP 0.90 0.89 0.92 0.92 0.91 0.90 0.91 0.90 0.90 0.90 0.90 0.90	-BULL BRI WT 481. 478. 498. 500. 498. 505. 474. 471. 472. 475. 483. -BULL BRI MARKI	ED_F1851 RETURN 82, 85. 81. 93. 96. 87. 92. 91. 94. 90. 05. ED_F1RS1	COWS DAY IO 700 99. 100. 91. 90. 91. 92. 101. 95. 104. 103. 93. 102. COWS PACKE	IWO_BREED BA:KGRC FIXED 11. 10. 10. 10. 10. 11. 10. 11. 10. 11. 11	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	ON_NEXT	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO NG POLSHO HER ANGPOL HER ANGSHO OL ANGHER OL ANGHER OL ANGHER OL ANGHER SHO ANGPOL SHO HERPOL SREED	PECIALIZE CARRY CAP BY-2 93.2 88.4 90.6 94.7 94.7 94.7 94.7 94.7 95.7 90.6 89.2 PECIALIZE CARC MT	D_CROSS CALF. CROP 0.90 0.89 0.89 0.92 0.91 0.90 0.91 0.90 0.90 0.92 0.92 0.92 0.92 0.92 0.92	-BULL BRI WT 481. 478. 498. 500. 498. 505. 474. 471. 472. 475. 483. -BULL BRI MARKI	ED_FIBSI RETURN 82, 85. 91. 93. 96. 87. 92. 94. 94. 94. 95. ED_FIRSI	COWS DAY_IQ 700 99. 100. 91. 90. 91. 95. 101. 103. 102. COWS PACKE INDI	IWQ_BREED BA1KGRC FIXED 11. 10. 10. 10. 10. 11. 10. 11. 10. 11. 11	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	ON_NEXTBACK_NET_RETURNINDIVIDUAL1415667677.	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO ANG POLSHO AER POLSHO AER POLSHO AER POLSHO OL ANGHER ANG ANGPOL ANG HERPOL SREED	PECIALIZE CARRY CAP BY-2 93.2 93.4 90.6 94.7 94.7 94.7 94.7 94.7 95.7 94.7 95.7 95.7 95.7 PECIALIZE CARC WT 696.	D_CROSS CALF. CROP 0.90 0.89 0.92 0.91 0.92 0.91 0.90 0.90 0.92 0.93 0.92 0.93 0.92 CCROSS RET CUTS	-BULL BRI WT 478. 478. 500. 478. 500. 474. 474. 471. 475. 483. -BULL BRI MARKI CARC	ED_FIRSI RETURN 82. 85. 81. 93. 96. 87. 92. 91. 86. 94. 95. ED_FIRSI ET_VALUE ACTUAL	COWS DAY_IO 700 99. 100. 93. 90. 91. 92. 101. 95. 104. 103. 95. 102. COWS PACKE INDI	I WO_BREED BA1KGRC FIXED 11. 10. 10. 10. 10. 11. 11. 11.	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	DN_NEXI	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO ANG POLSHO ANG POLSHO AR ANGPOL HER ANGSHO HER POLSHO ANG POLSHO JER ANGSHO JER ANGSHO JER ANGSHO JOL ANGHER JOL ANGHER JOL ANGHER JOL ANGPOL SHO HERPOL SBREED ANG HERPOL	PECIALIZE CARRY CAP BY-2 93.2 93.4 90.6 94.7 94.7 95.7 95.2 95.7 90.6 89.2 PECIALIZE CARC WT 695.5 691.	D_CROSS CALF. CROP 0.90 0.89 0.89 0.92 0.91 0.90 0.91 0.90 0.90 0.90 0.92 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.23 0.92 0.90 0.90	-BULL BRI 	ED_FIBSI RETURN 82, 85. 81. 93. 96. 87. 92. 94. 94. 90. 05. ED_FIRSI ED_FIRSI ET_VALUE ACTUAL 438. 425. 428.	COMS DAY_IO 700 99. 100. 91. 90. 91. 92. 101. 101. 103. 95. 104. 102. COMS PACKE INDI	I WO_ BREED BA:KGRC FIXED 11. 10. 10. 10. 10. 10. 11. 11.	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	ON_NEXI BACK_NET_RETURN INDIVIDUAL 14 15 6 7 17 17 17 17 17 17 0N_NEXT ON_NEXT OUSTRY_NET OIVIDUAL 94 90.	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO HER ANGPOL HER ANGPOL HER ANGFOL HER POLSHO POL ANGHER POL ANGHER POL ANGHER POL ANGHER DOL ANGHER SHO ANGPOL SHO HERPOL ANG HERPOL ANG HERPOL ANG POLSHO HER_ANGPOL	PECIALIZE CARRY CAP BY-2 93.2 90.6 94.7 94.7 93.2 94.7 94.7 95.7 9	D_CROSS CALF CROP 0.90 0.89 0.92 0.91 0.90 0.91 0.90 0.90 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.92 0.93 0.93 0.94	-BULL BRI WT 478. 478. 500. 478. 500. 478. 505. 474. 475. 475. 483. -BULL BRI MARKI CARC 427. 424. 427.	ED_FIRSI RETURN 82. 85. 81. 93. 96. 87. 92. 91. 86. 94. 90. 05. ED_FIRSI ED_FIRSI ET_VALUE ACTUAL 438. 428.	CDWS DAY_IQ 700 99. 90. 91. 90. 91. 92. 101. 95. 104. 102. 102. CDWS PACKE INDI	I WQ_BREED BACKGRC FIXED 11. 10. 10. 10. 10. 11. 10. 11. 11	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	DN_NEXI	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERPOL ANG HERPOL NG HERSHO JER ANGPOL JER ANGPOL JER ANGPOL JER ANGPOL JER ANGPOL JER ANGPOL JER ANGSHO JOL ANGHER JOL ANGHER JOL ANGHER JOL ANGHER JOL ANGHER JOL ANGHER SHO HERPOL SBREED ANG HERSHQ ANG HERSHQ ANG POLSHO HER ANGSHO	PECIALIZE CARRY CAP BY-2 93.2 88.4 90.6 94.7 94.7 94.7 94.7 94.7 95.7 95.7 95.7 95.7 95.6 69.2 PECIALIZE CARC MT 696. 697. 696.	D_CROSS CALF. CROP 0.90 0.89 0.92 0.91 0.92 0.91 0.90 0.91 0.90 0.90 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 D_CROSS RET CUTS 441. 429.	-BULL BRI WT 481. 478. 478. 500. 498. 505. 474. 474. 474. 475. 483. -BULL BRI MARKI CARC. 427. 428.	ED_FIRS1 VET	CDWS DAY_IQ 700 99, 100. 91. 93. 90. 91. 92. 101. 103. 95. 104. 103. 95. 102. COWS PACKE INDI	I WO_ BREED BA:KGRC FIXED 11. 10. 10. 10. 10. 10. 11. 11.	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	QN_NEXI BACK_NET_RETURN INDIVIDUAL 15. -2. 6. 7. -4. 17. -4. 17. -17. -17. -20. 5. ON NEXT DUSTRY NET DIVIDUAL 94. -99. -98. 103.	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERSHO ANG POLSHO SHO ANGPOL SHO ANGPOL SHO HERPOL SHO HERPOL SBREED ANG HERSHQ ANG HERPOL SBREED	PECIALIZE CARRY CAP BY-2 93.2 88.4 90.6 94.7 93.7 93.7 93.2 94.7 93.2 94.7 93.2 94.7 93.2 PECIALIZE CARC WT 696. 695. 696. 696. 688.	D_CROSS CALF. CROP 0.99 0.89 0.92 0.91 0.90 0.90 0.90 0.90 0.90 0.90 0.92 0.	-BULL BRI WT 481. 478. 478. 500. 478. 505. 474. 474. 475. 475. 475. 483. -BULL BRI MARKI CARC. 427. 427. 428. 421.	ED_FIBSI VET	COMS DAY_IO 700 99. 100. 93. 90. 91. 92. 101. 102. COWS PACKE INDI COWS	I WQ_ BREED BA:KGRC FIXED 11. 10. 10. 10. 10. 10. 11. 10. 11. 11	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	QN_NEXI BACK NET_RETURN INDIVIDUAL 	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
SREED ANG HERPOL ANG HERPOL ANG HERSHO HER ANGPOL HER ANGPOL HER ANGCHU HER PDLSHO POL ANGHER POL ANGHER SHO ANGPOL SHO ANGHER SHO HERPOL SOL ANG HERSHO ANG HERSHO ANG HERSHO ANG HERSHO ANG HERSHO ANG POLSHO YER ANGSHO YER ANGSHO YOL ANGHER YOL ANGHER	PECIALIZE CARRY CAP BY-2 93.2 93.2 94.7 94.7 95.7 9	D_CROSS CALF. CROP 0.90 0.89 0.92 0.91 0.90 0.90 0.90 0.90 0.90 0.92 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.92 0.93 0.92 0.92 0.94 0.92 0.93 0.92 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.92 0.93 0.93 0.92 0.93 0.93 0.93 0.93 0.93 0.92 0.93 0.	-BULL BRI WT 481. 478. 478. 500. 478. 500. 478. 505. 474. 479. 479. 479. 476. 479. 475. 483. -BULL BRI MARKI CARC 427. 427. 428. 421. 428.	ED_FIBSI RETURN 82, 85. 81. 93. 96. 87. 92. 94. 94. 94. 94. 95. ED_FIRSI ED_FIRSI ET_VALUE 438. 425. 428. 437.	CDWS DAY_IQ 700 99. 100. 93. 90. 91. 92. 101. 95. 104. 102. 73. 102. CDWS PACKE INDI	IWQ_BREED BA1KGRC FIXCD 11. 10. 10. 10. 10. 11. 10. 11. 11	D_COSTS_ FEED 40. 37. 37. 36. 41. 39. 41. 39. 41. 39. 41. 39. 41. 39. 41. 30. 10. 70. 11. 10. 11. 11. 11. 11. 11. 11. 11. 1	ON_NEXT BACK_NET_RETURN INDIVIDUAL 	WT 1125, 1119. 1125. 1119. 1125. 1119. 1119. 1125. 1119. 1120. 1120.	FEED 81. 80. 81. 82. 80. 81. 81. 81. 80. 80. 81.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	INDIVIDUAL 55. 49. 55. 55. 55. 54. 54. 54. 51. 57.
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REED_CO		MALE FERT	FEM FERT	CALF LIVA	IND GROW	MATERN ABILTY	HNG PRICE	BACK	GROW	IN FINISH	FCED EFF		PRICE FEED	DRESS PCT	CUT	PCT CHOICE
16 10	50. 2400.	0.92	0.96	0.95	0.08	0.05	0.51	2.00	2.70	2.70	0.03	.46	. 40	0.63	0.62	0.90
R 11	25. 2000.	0.96	0.96	0.92	0.14	05	0.53	2.10	3.00	3.00	0.0	. 48	.41	0.62	0.63	0.75
EX 9	00. 3600.	0,94	0.96	0.94	09	0.10	0.46	1.70	2.00	2.00	0.06	.39	. 36	0.58	0.62	0.40
ni 12	50. 4000.	0.94	0.88	0.90	0.18	0.11	0.50	2.20	3.30	3.30	0.0	.44	.39	0.60	0.66	0.40
	STRAIGHTBR					· <u> </u>							<u> </u>			
REED	CARRY CAP	CKOP	WNG WT	RETURN	<u>DAY 10</u> 700	BACKGRD FIXED	COSTS FEED		ET <u>RETURN</u> VIDUAL	SL1 w T	'R	EEDLQ ECED	L.COSTS	F.EED	LOT NET	RETURN
NG ER	100.0	0.84	452.		124,	14.	45.		32.	107	8.	.73			_21	
	104.6	0.85	404.	56. 27.	125. 174.	14.	48.		4. 12 <u>.</u>	112	20.	79. 56.	15.		29 . 9 .	
(1	79.1	0.74	516.	23.	84.	9.	33.		8.	116		87.	15.		43.	
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EED -	CARC	RET	MARKE	T VALUE		NET RET	• • • •	JSTRY N				• • • • • • •				
	679.	421.	419.	41 8.		2.	IND	IVIDUAL 95								
		437.	425.	434.		4		95								
R	694 .			450.	1	1.		37.			_	_				
ER R		352.	342.	456.	-3	3			The second se							
ER * I	694.	352. 460.			-3	<u>.</u>										
ER LR +1	694. 569. 697. TWJ BLEED 4 CARRY	352. 460. DTATION CALF	420.	456	DAY TO	BACKGRD	COSTS	BACK NE	T_RET <u>URN_</u>	\$LTF	F	EULDT	_COSTS	FECOL	DT NET	REJURN
ER R N I EED	694. 969. 697. Twj_bleed_4	352. 460. 0TAT ION CAL F CROP	420.	456.	DAY 10	BACKGRD FIXED	FEED	INDIV	IDUAL	WT	F.	260 (FIXED	INDI	VIDUAL	REJURN
	694. 569. 697. Twj_bleed 4 Carry Cap	352. 460. OTATION CALF CROP 0.90 0.90	420.	456. NET RETURN	DAY TO	BACKGRD	COSTS FEED 42. 46.	INDIV	T RET <u>URN</u> I DUAL			EEULDT EEU 19•	_COSTS	INDI	DT NEJ VIDUAL 27	REJURN

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REED	CARC			TVALUE		NET RET							
NCHER	WT	CUTS	CARC		1ND1V1		1 NO I V I C						
NGJER	695. 629.	435. 390.	427. 384.	431. 387.	-23			(110.) 80.					
NGSHI		446.		443.	-23			78.					
ERJER	637.	398.	387.	395.	-22			01.					
EKSWI	705.	455.	428.	451.	-34			76.					
ERSWI	639.	409.	385.	406.	-21			53.					
	THREE BREE		0N										
ECD	CARRY	CALF	WNG	NET	DAY TO	BACKGRD	COSTS BAC	K NET RETURN	SLTR	FEEDLO	COSTS	FEEDLOT NET KETURN	
	CAP	CYON	h1	RETURN				NDIVIDUAL	WT		FIXED	INDIVIDUAL	
GHERJER	96.6	0.97	467.		_115.	_13	_43	21.	1075.	73	15	21	
IGHERSWI	87.7	0.88	506.	66.	88.	10.	35.	17.	1138.	83.	15.	35.	
GJERSHT	89.6	0.88	495.		100.	11.	38	9	1089.		15.	26.	
RJEKSAI	88.7	0.89	489.	59.	101.	11.	39.	13.	1104.	77.	15.	28.	
T	THREE BAEE												
EED	DRAD	RET		T VALUE	PACKER		INDUSTR						
	WT	LUTS		ACTUAL	INDIVI		INDIVID	-					
GHERJER	656.	409.	400.		-19			94.					
GHERSWI	702	<u> 447. </u>		443				_91•			·		
	657.	416.	399.	413.	-19			76.					
		416.	399. 401	413.	-19			76	······				
RJERSWI		422		418	26	•	ROTATION_NE			· · · · · · · · · · · · · · · · · · ·			•
RJERSWI	662, SPECIALIZE	422.		418 ED_EIRST_	26	O_BREED_							
RJERSWI	662, SPECIALIZE CARRY	422.	401.	418 ED_EIRST _NET	26 26 	O_BREED_ BACKGRD_	COSTSBAC					EECDLOT_NET_RETURN	
RJERSWIS	662, <u> SPECIALIZE</u> _ CARRY _ CAP	422 DCRDSS CALF CRDP	401.	418 EDEIR.ST NET RETURN	26 26 	O_BREED_ BACKGRD_ FIXED	COSTSBAC		нT	FEED	FIXED	INDIVIDUAL	
RJERSWIS EEDS G HERJER	662, SPECIALIZE CARRY CAP 97.6	422., DCROSS- CALF CROP 0.90	401. BULL BRE WNG WT 459.	418 ED_EIRST 	26 20WSTH 10 120	0_BREED_ BACKGRD_ FIXED _13	COSTSBAC FEED 1		WT 1074	FEED72	FIXED	INDIVIDUAL	••
RJERSWIS EEDS G HERJER G HERSWI	662, SPECIALIZE _ CARRY CAP 97.6 84.6	422. D_CROSS CALF CROP 0.90 0.85		418 ED_EIRST RETURN 66 54	26 CQWS_IH DAY_ID 700 123 91.	O_BREED_ BACKGRD_ FIXED _13 10.	COSTSBAC FEED 11 		HT 1074. 1140.	FEED 72 83.	FIXED 15 15.	19. 38.	
RJERSWI S EED G HERJER G HERSWI G JERSWI	662, SPECIALIZE _ CARRY CAP 97.6 84.6 87.3	422., DCROSS- CALF CROP 0.90	401. BULL BRE WNG WT 459.	418 ED_EIRST 	26 20WSTH 10 120	0_BREED_ BACKGRD_ FIXED _13	COSTSBAC FEED 1		WT 1074	FEED 72. 83. 75.	FIXED 15 15 15	INDIVIDUAL	
RJERSWIS EEDS G HERJER G HERSWI G JERSWI_ R ANGJER	<u></u>	422., DCRDSS- CRUP 0.90 0.85 0.86		418 ED_EIRST RETURN 66 54 48		• D BACKGRD FIXED 10 	COSTSBAC FEED 11 45 36 38		WT 1074. 1140. 1089.	FEED 72 83.	FIXED 15 15.	I ND I VI DUAL 19	
RJERSHI G HERJER G HERSHI G JERSHI R ANGJER R ANGSHI R JERSHI	662. SPECIALIZE CARRY CAP 97.6 84.6 87.3 99.2 65.8 H7.3		401. BULL BRE WNG 459. 500. 498. 478. 520. 505.	418 ED_EIRST RETURN 66 54 77 62 55.	26 CQWSTH TO 700 22 91 99 111 82 94	0_BREED_ BACKGRD_ FIXED 13 10 12 9 10.	COSTSBAC FEED 11 5536. 38 41. 3336.		WT 1074. 1140. 1089. 1072. 1138. 1103.	FEED 72. 83. 75. 72. 83. 77.	F1xED 15 15 15	I ND I VI DUAL 	
RJERSHI S EED G HERSHI G HERSHI G JERSHI R ANGJER R ANGSHI R JERSHI R JERSHI R JERSHI	<u> 662.</u> <u> 662.</u> <u> 662.</u> <u> 642.</u> <u> 646.</u> <u> 87.3</u> <u> 99.2</u> <u> 85.8</u> <u> 87.3</u> <u> 95.7</u>		401. BULL BRE WNG 500. 498. 478. 500. 505. 452.			•BREED_ BACKGRD_ FIXED _13 10 12 12 12 13 14	COSTSBAC FEED 11 5536. 38 41. 3336. 46		HT 1074. 1140. 1089. 1072. 1138. 1103. 1079.	FEED 72. 83. 75. 72. 83. 77. 73.	FIXED 15. 15. 15. 15. 15. 15.	I ND I VI DUAL 	
RJERSHI G HERJER G HERSWI G JERSWI R ANGJER R ANGSWI R JERSWI R ANGSWI A ANGSWI	<u> 662.</u> <u> 662.</u> <u> 662.</u> <u> 64.6</u> <u> 87.3</u> <u> 99.2</u> <u> 85.8</u>		401. BULL BRE WNG 459 459 498 478. 520 505. 452 491.	418 EDE JR ST RE TURN 66 54 54 77 62 55 63 46.		0_BREED_ BACKGRD_ FIXED _13 101 12 9 13 12 12 13 11	COSTSBAC FEED 11 653638 413336. 4639.		HT 1074. 1140. 1089. 1072. 1138. 1103. 1079. 1094.	FEED 72. 83. 75. 72. 83. 77. 73. 76.	FIXED 15 15 15 15 15 15	I ND I VI DUAL 19	
RJERSHI G HERJEH G HERSHI G HERSHI R ANGJER R ANGJER R ANGSHI R ANGSHI R ANGSHI R MERSHI	662, SPECIALIZE CARRY CAP 97.6 84.6 87.3 99.2 85.8 87.3 95.7 85.8 84.6		401. BULL BRE WNG 459. 459. 478. 500. 498. 478. 520. 505. 452. 491.	418 ED_EIRST RETURN 66 54 54 77 62 55 63 46 42		BACKGRD_ FIXED 13. 10. 11. 12. 9. 10. 11. 12. 11. 12. 11. 12. 11. 12. 11. 12. 11. 12. 11. 12. 13. 14. 11. 12. 14. 14. 14. 14. 14. 14. 14. 14	COSTSBAC FEED 11 5536. 363838 41. 3336. 4639. 4139.		WT 1074. 1089. 1089. 1072. 1138. 1079. 1079. 1094. 1109.	FEED 72. 83. 75. 72. 83. 77. 73. 76. 78.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	I ND I VI DUAL 17 - 38 - 25 - 16 - 34 - 27 - 33 - 37 -	
RJERSHI	662. SPECIALIZE CARRY CAP 97.6 84.6 87.3 99.2 85.8 87.3 99.2 85.8 87.3 95.7 85.8 54.6 95.7		401. BULL BRE WNG 459. 500. 498. 478. 520. 505. 452. 491. 479. 486.	418 ED_EIRST_ RETURN 66 54 77 62 55 63 42 79.	26 270 700 270 270 79, 111. 79, 111. 74. 74. 74. 74. 74. 75. 77. _77. 7777. 77. 7777. 77. 7777. 77. 7777.	• BACKGRD_ FIXED 13• 10• 12• 9• 10• 12• 11• 11• 11• 11• 11•	COSTSBAC FEED1 5536. 3838 413336. 4639. 4139.		WT 1074. 1140. 1089. 1072. 1138. 1103. 1079. 1094. 1109. 1136.	FEED 72. 83. 75. 72. 83. 77. 73. 76. 70. 83.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	I NDI VI DUAL <u>1</u> 7 •	
RJERSHI S EED G MERJER G MERSWI G JERSWI R ANGJER R ANGSWI R JERSWI R JERSWI R JERSWI I ANGER I ANGHER I ANGHER I ANGHER	662. SPECIALIZE CARRY CAP 97.6 84.6 87.3 99.2 85.8 87.3 95.7 85.8 54.6 95.7 99.2		401. BULL BRE WNG WT 459. 500. 498. 478. 520. 520. 520. 491. 479. 479. 486. 403.	418 ED_EIRST_ RETURN 66 54 748 77. 55. 63 46 79. 70.		• BACKGRD_ FIXED 13 101 12 9 10 11 11 11 12 11	COSTSBAC FEED 11 5536. 3838 413336. 4639. 4139. 4039.		WT 1074 1140. 1089. 1072. 1103. 1079. 1094. 1109. 1136. 1085.	FEED 72. 83. 75. 72. 83. 77. 73. 76. 76. 83. 75.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	I ND I VI DUAL 	
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THESE ESTIMATES PROVIDED BY

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BREEC	COm M SIZE P	RDU	MALE	FEM Fert	CALF	IND GROW	MATERN ABILTY	WNG PRICE	BACK	AILY GA	FINISH	F ECD EFF	SELL BACK	PRICE FEED	DRE SS PCT	CUT ABLTY	PCT CHOICE
ANG	975. 2	2750.	0.92	0.94	0.95	C.10	0.06	0.52	2.00	2.70	2.50	0.03	.46	.40	0.62	0.62	0.90
HER	1025. 2	2000.	C.92	C.94	C • 92	C.12	03	0.53	2.10	3.00	2.10	0.0	.48	. 41	0.62	0.63	0.75
LIM	1125. 2	400.	C.90	0.92	0.90	0.14	0.02	0.50	2.10	3.00	3.00	02	.45	.40	0.62	0.66	0.50
SIM	1200. 4	coo.	0.93	0.93	0.90	0.18	0.10	0.50	2.30	3.40	3.40	03	.45	. 39	0.61	0.64	0.50
THESE	BESULTS B	ASED C	ESTIN	ATES MAD	E BY	N PER AN	IMAL PER	YEAR									
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ANG	C ARI C AF 100	Q 8 7	CALF CAOP 0.82	WNG hT 464.	RETURN 59.	700	FIXED 13. 14. 12.	FEED 44. 48. 42.	INDIV 2 2	4.	- WT 	F 93. 20.	EE QLO1 EE D 70. 74. 71.	FIXED 15. 15. 15.		1VIDUAL 17. 23. 40.	<u>RETURN</u>
ANG	CAR CAF 100- 100- 90- 78-	.0 .8 .7	CALF CROP 0.82 0.30 0.75	WNS hT 464, 436, 464, 512,	RETURN 59. 50. 24.	7C0 118. 126. 112.	FIXED 	FEEC 44. 48.	INDIV 2 2	100AL	10 10	F 93. 20.	<u>EEQLOT</u> EED 70. 74.	FIXED <u>15.</u> 15.		1VIDUAL _17 23.	RETURN
ANG HER EIM SIM PREEC	CARI CAP LQQ ICC. 90. 78. STRAIG C	0 8 7 6 111 BRE AKC	CALF CADP 0.82 0.80 0.75 C.78 C.78 C.78 RC 1	HN5 hT 464. 436. 464. 512. RMANCE NARKE	RETURN 59. 50. 24. 28. T VALUE	7C0 118. 126. 112. 82. PACKER	FIXED 13. 14. 12. 9. NET RET	FEEC <u>44.</u> 48. <u>42.</u> 33. IND	INDIV 2 4 2 1 1 USTRY NE	10UAL 4. 9. 7.	- WT 	F 93. 20.	EE QLO1 EE D 70. 74. 71.	FIXED 15. 15. 15.		1VIDUAL 17. 23. 40.	RETURN
ANG HER LIM SIM PREEC ANG	CARI CAF 100- 100- 90- 78- 5TRAIC 5TRAIC 05	20 8 7 6 HT BR E AKC 7.	CALF CAOP 0.82 0.90 0.75 C.78 C.78 C.78	HN5 hT 464. 436. 464. 512. RMANCE NARKE	RETURN 59. 50. 24. 28.	7C0 118. 126. 112. 82. PACKER JNDIV	FIXED 13. 14. 12. 9. NET RET IDUAL	FEEC <u>44.</u> 48. <u>42.</u> 33. IND	INDIV 24 2 1 USTRY NE JVIGUAL	100AL 4. 9. 7. 1	- WT 	F 93. 20.	EE QLO1 EE D 70. 74. 71.	FIXED 15. 15. 15.		1VIDUAL 17. 23. 40.	RETURN
ANG HER LIM SIM BREEC ANG HER	CARN CAP 100- 100- 100- 78- 78- 5TRAIC C 5TRAIC 65- 65- 65-	2.0 .0 .7 .0 .111 B.4 E A.6 C 7.	CALF CAOP 0.82 0.50 0.75 C.78 C.78 C.78 C.78 C.78 C.78 C.78 C.78	MN5 hT 464. 436. 446. 512. RMANCE MARKE 405. 415.	RETURN 59. 24. 28. T VALUE ACTUAL 404. 424.	7C0 118. 126. 112. 82. PACKER JNQIV -1'-3	FIXED 13. 14. 12. 9. NET RET IDUAL 9. 3.	FEEC <u>44.</u> 48. <u>42.</u> 33. IND	INDIV 2 4 2 1 1 USTRY NE	1 DUAL 4. 9. 7. 1	- WT 	F 93. 20.	EE QLO1 EE D 70. 74. 71.	FIXED 15. 15. 15.		1VIDUAL 17. 23. 40.	RETURN
ANG HER EIM SIM PREEC	CARI CAF 100- 100- 90- 78- 5TRAIC 5TRAIC 05	29 .0 .8 .7 .0 .111 BAE ALC 7. d.	CALF CAOP 0.82 0.90 0.75 C.78 C.78 C.78 C.PERFO RC1 CUTS 407.	WN5 hT 464. 436. 4264. 512. RMANCE MARKE CARC 405.	RETURN 59. 50. 24. 28. T VALUE ACTUAL 404.	7C0 118. 126. 112. 82. PACKER NDIV 1	FIXED 13. 14. 12. 9. NET RET 1DUAL 9. 3. 8.	FEEC <u>44.</u> 48. <u>42.</u> 33. IND	INDIV 2 4 2 1 1 USTRY NE JVICUAL 82.	TIDUAL 4. 9. 7. T	- WT 	F 93. 20.	EE QLO1 EE D 70. 74. 71.	FIXED 15. 15. 15.		1VIDUAL 17. 23. 40.	RETURN
ANG HER LIM SIM BREEC ANG HER LIM	C ARI C AF C AF I C Q. 1 C C. 9 Q. 7 C. 7 C. 7 C. 5 TR A I C C 	24 20 20 20 20 20 20 20 20 20 20	CALF CAOP 0.82 0.80 0.75 C.78 C.78 C.78 C.PERFO RE1 CUTS 407. 427. 458.	HN5 464. 436. 464. 512. RMANCE NARKE CARC 405. 415. 420. 434.	RETURN 59. 24. 28. T VALUE ACTUAL 404. 424. 455.	7C0 118. 126. 112. 82. PACKER NDIV 	FIXED 13. 14. 12. 9. NET RET 1DUAL 9. 3. 8.	FEEC <u>44.</u> 48. <u>42.</u> 33. IND	INDIV 2 4 1 1 USTRY NE JVICUAL 82. 83. 66.	TIDUAL 4. 9. 7. T	- WT 	F 93. 20.	EE QLO1 EE D 70. 74. 71.	FIXED 15. 15. 15.		1VIDUAL 17. 23. 40.	RETURN
ANG HER LIM SIM BREEC ANG HER LIM	C ARI C AF C AF I C Q. 1 C C. 9 Q. 7 C. 7 C. 7 C. 5 TR A I C C 	24 20 27 20 27 20 24 24 25 25 25 25 25 25 25 25 25 25	CALF CAOP 0.82 0.90 0.75 C.78 C.78 C.PERFO RC1 CUIS 407. 427. 458. 559.	HN5 464. 436. 464. 512. RMANCE NARKE CARC 405. 415. 420. 534.	RETURN 59. 50. 28. 28. T VALUE ACTUAL 404. 424. 455. 455.	7C0 118. 126. 112. 82. PACKER JNDIV -1 -3 -2. -2	FIXED 13. 14. 12. 9. NET RET 1DUAL 9. 3. 8. 5.	FEEC <u>44.</u> 48. <u>42.</u> 33. INC INC	INDIV 2 4 2 1 1 USTRY NE JVICUAL 82. 83. 66. 62.	1 DUAL 4. 9. 7. 1		60. 73. 76.	EE OL OI 70. 74. 71. 07.	FIXED 15. 15. 15. 15.		1VIDUAL 17. 23. 40.	RETURN
ANG. HER LIM SIM PREEC ANG HER LIM SIM BRECC.	<u>СА</u> САР 100- 100- 100- 78- 78- 78- 78- 78- 78- 78- 78- 78- 78	2 Y	CALF CAOP O.82 U.30 O.75 C.78 C.78 C.PERFO RC1 CUIS 407. 407. 458. 559. UIATION	MNS hT 464. 436. 446. 512. RMANCE MARKE CARC 405. 420. 434. 512. MARKE MARKE MARKE MARKE 405. 420. 434. MG hT	RETURN 59. 24. 28. 28. T VALUE ACTUAL 404. 424. 455. 455. 455. MET RETURN	7C0 118. 126. 112. 82. PACKER PACKER -3 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2	FIXED 13. 14. 12. 9. NET RET IDUAL 9. 3. 8. 5. HACKGRU	FEEC <u>44.</u> 48. <u>42.</u> 33. INC INC	INDIV 2 4 2 1 USTRY NE IV ICUAL 82. 83. 66. 62. BACK_NE	1 DUAL 4. 9. 7. T T	UT 100 111 11 11	н	EE OL OI 70. 74. 71. 07.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	FEEDL	IVIDUAL 17. 23. 40. 41. CI NET	RETURN
ANG. HER LIM SIP PREEC ANG HER SIP PREEC ANGHER	<u>СА</u> САР ССАР 100- 100 78- 78- 51R A IG С 51R A IG С 578- 69 	2 Y .0 .8 7 .6 .6 .7 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6	CALF CAOP O.82 U.30 O.75 C.78 C.78 C.PERFO RC1 CUTS 407. 458. 458. 458. 459.	HNG HT 464. 436. 464. 512. RMANCE NARKE CARC 405. 415. 420. 434. MNG HT 479.	RETURN 59. 74. 28. T VALUE ACTUAL 404. 424. 424. 455. 455. HET RETURN 75.	7C0 118. 126. 112. 82. PACKER JNDIV -1: -2: -2: UAY TO 700 104.	FIXED 13. 14. 12. 9. NET RET IDUAL 9. 3. 8. 5. HACKGRU FIXED 11.	FEEC <u>44.</u> <u>42.</u> <u>33.</u> INC INC CCSTS FEED <u>40.</u>	IND IV 2 4 4 2 1 USTRY NE JV ICUAL 82. 83. 62. 0 0 0 0 0 0 0 0 0 0 0 0 0	T DUAL		К F	EE OL OI 70. 74. 71. 07.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	FEEDL IND	IVIDUAL 1723. 23. 40. 41. <u>41.</u> <u>41.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>71.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u> <u>73.</u>	
ANG. HER LIM SIM BREEC ANG BREEC ANGHER ANGHER ANGEN	<u>СА</u> САР 100- 100- 100- 78- 78- 78- 78- 78- 78- 78- 78- 78- 78	2 2 2 3 4 4 7 5 4 4 4 4 4 7 7 6 7 7 7 7 7 7 7 7 7 7	CALF CAOP O.82 U.30 O.75 C.78 C.78 C.PERFO RC1 CUIS 407. 407. 458. 559. UIATION	HNS hT 464. 436. 464. 512. RMANCE NARKE CARC 405. 415. 420. 534. NG hT 479. 453.	RETURN 59. 50. 28. 28. T VALUE ACTUAL 404. 424. 455. 455. NET RETURN 75. CC.	7C0 118. 126. 112. 82. PACKER 	FIXED 13. 14. 12. 9. NET RET IDUAL 9. 3. 8. 5. HACKGRU FIXED 11.	FEEC <u>44.</u> <u>48.</u> <u>42.</u> <u>33.</u> INC INC <u>CCSTS</u> <u>FEED</u> <u>40.</u> <u>40.</u>	INDIV 2 4 4 1 USTRY NE JVICUAL 82. 83. 66. 62. BACK_NE INDIV 102 124 124 124 124 124 124 124 12	1 DUAL 4. 9. 7. T T <u>T</u> <u>T</u> <u>T</u> <u>T</u> <u>T</u> <u>T</u> <u>T</u>	SL I WT 100 111 111 111 111 111 111 11	R F 9. 9. 9.	EE OL OT EE D 70. 74. 71. 07. 07.	FIXED 15. 15. 15. 15. COSTS FIXED 15. 15.	FEEDL	Ividual 17	
ANG. HER LIM SIM PREEC ANG HER LIM SIM BREEC ANGENER ANGENER ANGENER ANGENER	САЯН САР 100- 100- 100- 78- 78- 78- 78- 78- 78- 78- 78- 78- 78	.0 .0 .8 .7 .6 AKC 7. 4. 7. 4. 7. 6 7. 4. 7. 4. 7. 4. 7. 4. 7. 4. 7. 4. 7. 4. 7. 4. 7. 4. 7. 4. 7. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.	CALF CAOP O.82 U.30 O.75 C.78 C.78 C.PERFO RC1 CUTS 407. 407. 458. 459. UIATION ALF RCP J.84 O.H4 L86 .C2	MNG hT 464. 436. 446. 512. RMANCE MARKE 405. 415. 420. 434. MG hT 479. 479.	RETURN 59. 74. 28. T VALUE ACTUAL 404. 424. 424. 455. 455. HET RETURN 75.	7C0 118. 126. 112. 82. PACKER JNDIV -1: -2: -2: UAY TO 700 104.	FIXED 13. 14. 12. 9. NET RET IDUAL 9. 3. 8. 5. HACKGRU FIXED 11.	FEEC <u>44.</u> <u>42.</u> <u>33.</u> INC INC CCSTS FEED <u>40.</u>	INDIV 2 4 4 1 USTRY NE IVICUAL 82. 83. 66. 62. BACK_NET INDIV 2 1 1 1 1 1 1 1 1 1 1 1 1 1	T DUAL 4. 9. 7. T T T I I I U AL 9. 2.	SLI UT 10 11 11 11 11 11 11 11 11 11	Б <u>о</u> . 23. 20. 76. К. <u></u>	EE OL OI EE D 74. 71. 07. 6 6 6 6 7 6. 12	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	FEEDL	<u>CI NET</u> VIDUAL 23. 40. 41. <u>VIDUAL</u> 23. 41. 31. 32.	
ANG. HER LIM SIM BREEC ANG BREEC ANGHER ANGHER ANGEN	САЯН САР ССАР 100. 100. 90. 78. 51КА IG С 51КА IG С 55 67 69 71. 1m0_8к САВН САВН САВН САВН САВН 22. 92. 92.	EED RI Y C C C C C C C C C C C C C C	CALF CAOP O.82 U.30 O.75 C.78 C.78 C.78 C.PERFO RC1 CUIS 407. 407. 427. 458. 458. 458. 459. UIALIUN ALF CACP D.86 D.84 D.86	HNG hT 464. 436. 446. 512. RMANCE MARKE CARC 405. 415. 420. 534. MNG hT 479. 453. 514.	RETURN 59. 50. 24. 28. T VALUE ACTUAL 404. 424. 455. 455. NET RETURN -55. 59.	7C0 118. 126. 112. 82. PACKER JNDIV -1 -3 -2. -2 -2 -2 -2 -2 -2 -2 -2 -2 -2	FIXED 13. 14. 12. 9. NET RET IDUAL 9. 3. 8. 5. HACKGRU FIXED 11. 9.	FEEC <u>44.</u> <u>48.</u> <u>42.</u> <u>33.</u> INC INC <u>CCSTS</u> FEEO <u>37.</u> <u>34.</u>	INDIV 2 4 4 1 USTRY NE JVICUAL 82. 83. 66. 62. BACK_NE INDIV 102 124 124 124 124 124 124 124 12	T DUAL 4	SL I WT 100 111 111 111 111 111 111 11	R F 9. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	EE OL OT EE D 70. 74. 71. 07. 07.	FIXED 15. 15. 15. 15. COSTS FIXED 15. 15.	FEEDL	Ividual 17	

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	THO BREED	ROTATIO	nu				•						•
BREED	CAKC	RET		ET VALUE		R NET RET VIDUAL		DUSTRY NET					
ANGHER	675.	422.	415.	419.		26.		(97)					
ANGL IM	684.	438.	418.	434.		23		87.					
ANGSIM	690.	439.	425.	435.		22.		82.					
HERLIM FERSIM	<u> </u>	<u> 448 </u>	<u></u>	444		31		86.					
LINSIM	715.	444.	430.	445.		29.		82.					
				401.		27							
	THREE BAE											• • • • • • • • • • • • • • • • • • •	
ERECC	CARRY	CALF	n'NG	<u>NE I</u>		BACKGRD		BACK NET RETURN	<u>SL [R</u>		I COSTS	FEEDLOT NET RETURN	
A3.01.001.00	C 4P	CROP	hT (C)	RETURN	700	FIXED	FELD	INCIVIDUAL	WT	FEED	FIXED	INDIVIDUAL	
ANGHERLIM	- 93.5	0.86	497.	69.	96.	<u> </u>	38.	22	1108.	<u></u>	<u> </u>		
ANGHERS IM ANGLIMSIM	85.6	0.87 C.85	509. 519.	67. 58.	86. Al.	9. 9.	34. 32.	10.	1127.	8.C. 82.	15.	31.	
FERLINSIM	65.9	0.84	509.	<u> </u>	<u></u>	9.	34.	19.	1148.	83.	15.	39.	
						7.	J+•			• • • •		274 	
	THREE BREI												
BREEC	CARC WT	RET	MARKE CARC	ACTUAL		R NET RET VIDUAL		DUSTRY NET					
ANGHERLIM	687.	437.	420.	434.		27.	• •••	94.					
ANGHERSIN	695.	438.	425.	434.		26.		89.					
ANGL IMSIM	701.	449.	477.	445.	the second s	24.		83.					
FERLINSIN	708.	455.	430.	452.		29.		83.					
	SPECIALIZI						RETATI						
						BACKGRU		BACK NET RETURN	SLTR	EEEDIO	T COSTS	FEEDLOT NET RETURN	
BRCED	CARRY CAP	CALF CROP	WNG WT	<u>NET</u> RETURN	700	FIXED	FEED	INDIVIDUAL	WT	FEED	FIXED	INDIVIDUAL	
ANG PERLIM		0.85	479.	58.	102.	11.	40.	26.	1102.	77.	15.	32.	_
ANG PERSIN		0.86	502.	56.	89.	10.	36.	20 .	1130.	81.	15.	35.	
ANG LIMSIM		0.84	515.	46.	83.	9.	33.	15.	1140.	82.	15.	. 41.	
HER ANGLIM	92.5	C.85	498.	64.	94.	10.	37.	20.	1108.	77.	15.	30.	
FER ANGSIM	85.4	0.69	520.	63.	81.	9.	32.	14.	1128.	80.	15.	32.	
HER LINSIM	81.8	0.83	518.	47.	81.	2.	32.	17.	1150.	83.	15.	42.	
LIM ANCHER		0.85	487.	73.	<u></u>	<u> </u>	39.	22.	<u>1107.</u>	<u></u>	15	27•	
LIM ANGSIM		6.84	523.	59.	50.	2.	32.	12-	1137.	82.	15.	.6٤	1
LIN FERSIM	85.8	C.83	501.	52.	85.	9.	34.	20.	1149.	83.	15.	39.	<u></u>
SIM A GHER		C.87	492.	75.	94.	10.	38.	21.	1124.	80.	15.	25.	
SIM ANGLIM		0.85	505.	63.	88.	10.	35.	15.	1134.	81.	15.	31.	
SIM HERLIM		0.84	490.	59.	94.	10.	37.	24.	1146.	82.	15.	35.	
	SPECIAL IZ					TWO BREED							
BREED	DAAD	RET		ET VALUE		R NET RET		CUSTRY NET					
• ·	ьт	CUTS	CARC	ACTUAL		VIDUAL	IN	CIVIDUAL				·····	
ANG HERLI		440.	422.	437.		26.		91.					
ANG HERSI		447.	429.	439		23.							
ANG LIMSIN		454.	431.	450.		21.		81.			•		
HER ANGL IN		437.	419.	433.		27.		86.		- •			
FER ANGST		439.	426.	435.		25.		83. 78.					
		459.	432.	<u>455.</u> 43C.		27.		93.					
HER LIMSI		447.	426.	443.		25.		81.					
HER LIMST	v /////			451.		29.		81.					
HER LIMSTI LIM ANGEER LIM ANGED		455-											
HER LIMST	r 708.	455.	430.		-	31.		89.					
HEA LIMSIN LIM ANGEN LIM ANGSIN LIM HERSIN SIM ANGHER	r 708. 4 685.	431.	419.	428.		<u>31.</u> 29.	· · · · · · · · · · · · · · · · · · ·	<u>89.</u> Bl.	. .			•	
HER LIMST	M 708. 4 685. M 692.				~	31. 29. 33.	· · ·	89. 81. 84.	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	X	······································	

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THESE ESTIMATES PRUVILED BY

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BILL CURFEY ET AL COLUMBIA MO

	7500.	VARIAN 6CUC.	400	SE BAC . 0.020					GROW	FIN1SH 0.11	BACK 9.0	GRUW 8.2	F1N1 7.5		CE SPH 2 0.0	
BREEC				CALF	IND	<u>MA TE RN</u>			DAILY	GAIN		SELL		DRESS		PC T CHOICE
	SIZE PR	OC FE	RT FERI	LIVÅ	GROW	ABILIY	PRICE	BACK	GROW			BACK	FEED	PG T		
ANG	1050. 25	CO. C.	90 0.96	0.95	0.15	0.07	0.50	2.00	2.60	2-50	0.03	. 46	•42	0.64	0.60	0.97
CHA	1300. 28	00. 0.	90 0.85	0.85	0.25	0.10	0.49	2.30	3. 50	3.50	~.05	.45	.40	C.61	0.68	0.65
HER	1100. 20	00. 0.	94 0.95	0.92	C.17	0.0	0.50	2.10	2.70	2.65	0.01	.46	• 42	0.63	0.62	0.94
412	1250. 40	00. 0.	96 C.96	0.90	C.25	0.15	0.49	2.30	3.50	3.50	05	.45	.42	0.62	0.67	0.80
BREED	SIRA IGH CARRY CAP	CALE	HORMANCE	NET RETURN	DAY TO 700	BACKGRD FIXED	COSTS FEED	BACK NE		RN SL	<u>tr</u>	FECULOT FEED			OT NET	RETURN
4*1G	100.0	0.82	488.	61.	106.	12.	39.	2	.7.	10	55.	69.	15.	110	37.	
CHA HER	82.0 79.2	0.65	540. 468.	11.	70.	R. 12.	27.		.5.		90. 73.	87. 71.	15. 15.		58. 43.	
SIM	14.6	0.83	560.	47.	61.	7.	24.		0.		90.	87.	15.		82.	
	STRAIGH	BRED PE	FORMANCE							<u>`</u>						
BREED	CA) hT	C RE		ACTUAL		NET RET		CUSTRY NE	T							
ANG	675			402.		/IDUAL	1.11	IVIDUAL	· · · · · · · · · · · · · · · · · · ·							······································
CHA FER	726.			490.		34.		<u> </u>								
51M	676. 738.			416. 490.		13. 7.		96. 92.								
	TWO EREI	D RUTAT	<u>UN</u>													
BREED	CARRY	CAL F	WNG	NET		BACKGRD		BACK NE				EECLOT				RETURN
ANGCHA	CAP 81.7	0.78	hT 545.	RETURN 50.	700	FIXED 8.	FEED 28.		IUU AL 3.	WT 11	۴ ۲۰	EED 01.	FIXED		VIDUAL	
ANGHER	96.9	0.66	568.	74.	91.	10.	35.		3.	10	76.	72.	15.		43.	
		0.48	555.	70.	65.	7.	26.	1	1.	11	37.	81.	15.		62.	
ANGS IM CHAHER	86.1	0.78	535.	46.	73.	8.	29.		1. 7.		46.	82.	15.		54.	· · · · ·

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BREFC	CARC	RET CUTS	MARK	ET VALUE ACTUAL	PACKER	NET RET DUAL	INDUSTRY N INCIVIDUAL						
ANGCHA	710.	455.	437.	451.	-29		8 (1)	-					
ANGHER	716.	417.	442.	451.	-36		10						
CHAHER	711.	462.	436.	458.	-34	•	8	-					
CHAS IN	74 2 .	501.	454.	497.	-41		8						
PERSIM			441.			•							
T	HREE BAEE	D ROTATI	01										
23389	CARRY	CALF	WNG	NET	DAY TO B	ACKGRD C	CSTS BACK N	ET RETURN	SLTR			FEEDLOT NET	RETURN
	CAP	CANP	hl	RETURN				IDUAL	KT .	FEED		INDIVIOUAL	
ANGCHAHLR		0.93	538.		73.		29. 1		1124.		15.	50.	
ANCCEASIN	ີ ຢ ± • 2	0.43	570.	58.	57.			1.	1164.	85.	15.	63.	
ANGHERS IN	88.6	0.90	545.	19.	70.			3	1124.	79.	15	58.	
CHAPERSIM	83.0	C.83	563.	56.	59.	6. 6	24.	9.	1171.	86.	15.	65.	
	INREE BREE	C ROTATI	ICN				•		<u> </u>		· ·		
ENELC	CARC	RET	HAKKE	T VALUE	PALKER N	NET RET	INDUSTRY N	ET					
	hT	CUTS	CARC	ACTUAL	INDIVID		INCIVICUAL						
ANGCHAHER	/64.	446.	434.	442.	-31.		97	•					
ANGCHASIM	726.	472.	446.	468.	-35.								
ANGHERSIM	708.	446.	437.	442.	-35.		(115						
CHAHERSIM	726.	477.	446.	473.	-38.		92						
							CTATION NEXT					** ==	
S	SPECIAL IZE	U CROSS-	BULL BR	ED FIRST	CONS THO	D BREED RI BACKGHD CI	CTATION NEXT	ET_RETURN	<u>SL TR</u>		T_COSTS	FEEDLOT NET	
S PRCEC	CARRY CAR	D CROSS- CALF CROP	BULL BRE	ED FIRST NET RETURN	CONS THO DAY TO B 7C0 F	D BREED RI BACKGKD CO FIXED FI	CTATION NEXT OSTS BACK N EED INCI	VIDUAL	h T	FEED	FIXED	INDIVIDUAL	
BREED	<u>SPECIALIZE</u> Санку Сан 87.4	D CROSS- CALF CROP C.RC	- DULL BRE WNG NT 537-	ED FIRST NET RETURN 48.	<u>CONS THO</u> <u>DAY TO B</u> 7CO F 75.	D BREED RI BACKGKD CO FIXED FI 8.	CTATION NEXT DSTS BACK N EFD INCI 30. 1	VIDUAL B.	ыТ 1126.	FEED 80.	FIXED 15.	INDIVIDUAL	
BRCEC ANG CHAHER ANG CHAS IM	5PECIALIZE CAHRY CAP 87.4 78.5	U CROSS- CALF CROP C.8C 0.80	- BULL BRE WNG NT 537 - 574 -	ED FIRST NET RETURN 48. 44.	<u>CChS THO</u> <u>DAY TO B</u> 7C0 F 75 55.	D PREED RI BACKGKD CI FIXFD FI 8.	CTATION NEXT OSTS BACK N EFD INCI 30. 1 22.	V IDUAL 8	wT <u>1126.</u> 1169.	FEED 80. 86.	FIXED 15. 15.	INDIVIDUAL 54. 71.	
BRCEC ANG CHAHER ANG CHASIM ANG HERSIM	<u>SPECIALIZE</u> Car Car 87.4 76.5 E5.8	D_CRCSS- CALF CRCP C.PC U.80 0.87	-DULL BRI WNG NT 537. 574. 542.	ED FIRST NET RETURN <u>48-</u> 44- 68-	CChS THC UAY TO B 7C0 F 75. 55. 71.	D RREED RI BACKGKD CI FIXED FI 8.	CTATION NEXT DS <u>TS BACK N</u> EFD INCI 30. <u>1</u> 22. 28. <u>1</u>	V IDUAL 8	wT <u>1126.</u> 1169. <u>1126.</u>	FEED 80. 86. 8C.	FIXED 15. 15.	INDIVIDUAL 54. 71. 62.	
BRCEC ANG CHAHER ANG CHASIM ANG HERSIM CHA ANGHER	5PEC14L12E CAP 87.4 76.5 E5.8 96.9	D CRCSS- CALF CRCP C.RCP U.80 0.87 C.85	-DULL BRI WNG NT 537. 574. 542. 524.	ED FIRST NET RETURN 48. 44. 68. 75.	CChS THO DAY TO B 7C0 F 75. 55. 71. 80.	D BREED RI BACKGKD CI FIXFO FI 8. 6. 2. 7.	CTATION NEXT DS <u>TS BACK N</u> EFD INCI 30. 1 22. 28. 1 32. 1	VIDUAL 8	wT <u>1126</u> 1169. <u>1126</u> 1120.	FEED 80. 86. 8C. 75.	FIXED 15. 15. 15. 15. 15.	INDIVIDUAL 54. 71. 62. 42.	
S BRCEC ANG CHAHEH ANG CHASIM ANG HERSIM CHA ANGHER CHA ANGSIM	5PEC14L12E CAPRY CAP 87.4 76.5 E5.8 96.9 86.1	D CROSS- CRCP CRCP C.RC 0.80 0.80 0.87 G.85 C.85	BULL BRE NG 537. 574. 542. 524. 566.	<u>NET</u> <u>RETURN</u> <u>48.</u> 44. <u>68.</u> 75. <u>69.</u>	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58.	BACKGKD CI BACKGKD CI B. B. C. C. 9.	CIATION NEXT DSTS BACK 05 TS INCI 30. 1 22. 1 32. 1 32. 1	VIDUAL 8. 7. 5. 7. 7.	wT <u>1126.</u> 1169. <u>1126.</u> 1120. <u>1162.</u>	FEED 80. 86. 8C. 75. 85.	FIXED 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 42. 59.	
S BRCEC ANG CHAHEH ANG CHASIM ANG HERSIM CHA ANGSIM CHA HURSIM	5PECIALIZE CAP 07.4 76.5 65.8 96.9 85.6	D CROSS- CALF CROP CROP C.80 0.80 0.87 0.85 C.85	DULL PRI MNG 537. 542. 542. 524. 524. 566. 555.	ED FIRST <u>RETURN</u> <u>48.</u> <u>44.</u> <u>68.</u> <u>75.</u> <u>69.</u> <u>65.</u>	<u>CChS ThC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63.	BACKGKD CI BACKGKD CI FIXFO FI 8. C 6. C 9. C 6. C 7. C	CIATION NEXT DSTS BACK REFD INCI 30. 1 22. 2 28. 1 32. 1 24. 25.	V IDUAL 8. 7. 5. 7. 7. 7.	wT <u>1126</u> 1169. <u>1126</u> <u>1120</u> . <u>1162</u> . <u>1169</u> .	FEED 80. 86. 86. 75. 85. 86.	F1XED 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 42. 59. 62.	
BRCED ANG CHAHEH ANG CHASIM ANG HERSIM CHA ANGHER CHA ANGHEN CHA HURSIM HER ANGCHA	5PECIALIZE CAP CAP 87.4 76.5 E5.8 96.9 86.1 85.6 87.7	D CROSS- CALF CROP CROP C.80 0.80 O.87 C.85 C.85 C.85 O.82	BULL BR NG NT 537. 574. 542. 524. 566. 555. 546.	ED FIRST RETURN 48. 44. 68. 75. 69. 65. 56.	<u>CChS ThC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63. 69.	D BREED RI BACKGKD CI FIXFO FI 8. 6. 2. 9. 7. 2. 7. 2.	CIATION NEXT DSTS BACK EFD INCI 30. 1 22. 2 28. 1 32. 1 24. 25. 26. 1	V IDUAL 8 • 7	<pre>wT 1126_ 1169. 1126, 1120. 1162. 1169. 1125.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C.	F1XED 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 52.	
S BRCEC ANG CHABEM ANG CHASIM ANG HARSIM CHA ANGHER CHA ANGSIM HER ANGSIM HER ANGSIM	SPECIAL IZE CAP 87.4 76.5 E3.8 96.9 -86.1 85.6 87.7 66.1	D CRG\$5- CALF CRCP C.PC U.80 0.87 C.85 C.85 O.85 O.82 C.95	BULL BR	ED FIRST NET RETURN 44. 68. 75. 69. 65. 56. 72.	<u>CChS THC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63. 69. 65.	D BREED RI BACKGKD CI FIXFO FI 8. 6. 2. 9. 6. 7. 2. 7. 2. 7.	CIATION NEXT DSTS BACK EFD INCI 30. 1 22. 2 28. 1 32. 1 24. 2 25. 1 26. 1	V IDUAL 8. 7. 5. 7. 7. 0. 3. 0.	<pre>b T 1126. 1169. 1124. 1120. 1162. 1169. 1169. 1125.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VIDUAL 54. 71. 62. 59. 62. 52. 50.	
S BREED ANG CHAHEM ANG CHAJIM ANG HERSIM CHA ANGREA CHA ANGREA CHA HURSIM HER ANGSIM HER ANGSIM HER CHASIM	SPECIAL IZE CAP 87.4 76.5 E5.8 96.9 86.1 85.6 87.7 66.1 76.5	D CRC \$ \$ CRC # C.RC # C.RC # 0.80 0.80 0.85 C.85 0.85 C.85 0.82 C.9C 0.82 C.9C 0.81	BULL ER NG NT 537. 574. 542. 524. 566. 555. 546. 555. 556. 577.	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46.	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 55. 53.	BREED RI BACKGKD CI F1XFD F1 8. 6. 6. 2 9. 6. 7. 6. 7. 6. 7. 6. 7. 6.	CIATION NEXT DSTS BACK 05 IS INCI 30. 1 22. 28. 32. 1 32. 1 25. 1 26. 1 26. 1	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 0. 0.	<pre>b T 1126. 1169. 1120. 1162. 1162. 1169. 1125. 1125. 1175.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 50. 72.	
S BREED ANG CHAHEM ANG CHASIM ANG HERSIM CHA ANGHER CHA ANGHER CHA HURSIM HER ANGEIM HER ANGEIM HER CHASIM SIM ANGCHA	SPECIAL IZE CAP 67-4 76-5 63-8 96-9 86-1 85-6 87-7 66-1 76-5 87-7	D CRO\$5- CRCP C.RC C.RC 0.80 0.80 0.87 C.85 C.85 C.85 0.82 C.9C C.9C C.9C C.9C C.9C C.9C	BULL ER NG NT 537. 574. 542. 524. 566. 555. 546. 556. 577. 556.	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 56. 56.	<u>CChS ThC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	BACKGKD CI BackgkD CI </td <td>CIATION NEXT DSTS BACK 05 TS BACK 30. 1 22. 2 28. 1 32. 1 24. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 25. 1</td> <td>V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.</td> <td><pre>wT 1126. 1169. 1120. 1162. 1169. 1169. 1125. 1125. 1175. 1162.</pre></td> <td>FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 85.</td> <td>F1XED 15. 15. 15. 15. 15. 15. 15. 15.</td> <td>IND I VI DUAL 54. 71. 62. 42. 59. 62. 59. 62. 52. 52. 52. 55.</td> <td></td>	CIATION NEXT DSTS BACK 05 TS BACK 30. 1 22. 2 28. 1 32. 1 24. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 26. 1 25. 1	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>wT 1126. 1169. 1120. 1162. 1169. 1169. 1125. 1125. 1175. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 85.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 42. 59. 62. 59. 62. 52. 52. 52. 55.	
S BRCED ANG CHAHEH ANG CHASIM CHA ANGHER CHA ANGHER CHA HURSIM HER ANGSIM HER ANGSIM HER GHASIM SIM ANGHER	SPECIAL 12E CAP CAP 87.4 76.5 65.8 96.9 85.6 87.7 66.1 76.5 87.7 96.9	D CROSS CROP CROP C.RO 80 0.80 83 C.85 C.85 O.82 C.90 C.90 C.90 O.82 C.90 O.90 0.90	BULL PR NT 537. 574. 542. 524. 564. 555. 546. 577. 556. 574. 524.	ED FIRST RETURA 44. 44. 68. 44. 69. 65. 56. 72. 46. 56. 83.	<u>CChS ThC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 80.	D BREED RI BACKGKD CI FIXFO FI 8. - 6. - 6. - 6. - 6. - 6. - 6. - 6. - 6. - 7. - 6. - 7. - 7. - 9. -	CIATION NEXT DSTS BACK EFD INCI 30. 1 22. 2 28. 1 32. 1 24. 2 25. 1 26. 1 25. 1 25. 1 32. 1	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 0. 0. 7. 0. 7. 7. 0. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCED ANG CHAHEH ANG CHASIM CHA ANGHER CHA ANGHER CHA HURSIM HER ANGSIM HER ANGSIM HER GHASIM SIM ANGHER	SPECIAL 12E CAP CAP 87.4 76.5 65.8 96.9 85.6 87.7 66.1 76.5 87.7 96.9	D CRO\$5- CRCP C.RC C.RC 0.80 0.80 0.87 C.85 C.85 C.85 0.82 C.9C C.9C C.9C C.9C C.9C C.9C	BULL ER NG NT 537. 574. 542. 524. 566. 555. 546. 556. 577. 556.	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 56. 56.	<u>CChS ThC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED RI BACKGKD CI FIXFO FI 8. - 6. - 6. - 6. - 6. - 6. - 6. - 6. - 6. - 7. - 6. - 7. - 7. - 9. -	CIATION NEXT DSTS BACK REFD INCI 30. 1 22. 2 28. 1 32. 1 24. 2 25. 1 25. 1 25. 1 32. 1	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>wT 1126. 1169. 1120. 1162. 1169. 1169. 1125. 1125. 1175. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 85.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 42. 59. 62. 59. 62. 52. 52. 52. 55.	
S BREED ANG CHAHEM ANG CHAJIM ANG HERSIM CHA ANGREA CHA ANGREA CHA HURSIM HER ANGCHA HER ANGCHA SIM ANGCHA SIM ANGCHA SIM CHAHEK	SPECIAL 12E CAP CAP 87.4 76.5 65.8 96.9 85.6 87.7 66.1 76.5 87.7 96.9	D CRC \$5- CRC # CRC # CRC # CRC # C.80 G.87 G.85 C.85 G.85 G.85 G.85 G.85 G.85 G.85 G.95 G.92 G.92 G.92 G.92 G.92	BULL ER NG NT 537. 574. 542. 524. 566. 555. 546. 556. 577. 556. 524. 544.	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46. 56. 83. 51.	<u>CChS ThC</u> <u>DAY TO B</u> 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 80. 63. 63. 80. 63.	BREED RI BACKGKD CI BackgkD CI F1xFD F1 BackgkD CI	CIATION NEXT DSTS BACK EFD INCI 30. 1 22. 2 28. 1 32. 1 24. 2 25. 1 26. 1 25. 1 25. 1 32. 1	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 0. 0. 7. 0. 7. 7. 0. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCEC ANG CHAHEM ANG CHASIM CHA ANGHER CHA ANGHER CHA ANGER HER ANGCHA HER ANGCHA SIM ANGHER SIM ANGHER SIM CHAHEK SIM CHAHEK	SPECIAL IZE CAP 87.4 76.5 E3.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 56.9 87.4 SPECIAL IZE CARC	D CRCSS- CALF CRCP C.RC 0.80 0.87 C.85 C.85 C.85 C.85 C.85 C.85 C.92 C.92 C.92 C.92 C.92 D.F2 D CRUSS- RE1 CUTS	BULL ER MNG hT 532- 574- 542- 524- 555- 555- 577- 556- 524- 544- BULL UR MARKE CAKC	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46. 56. 83. 51. ED FIRST 1 VALUE ACTUAL	CONS THO DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED RI BACKGKD CI FIXED FI Backgroup FIXED FIXED FI Backgroup FIXED Fixed FIXED Backgroup FIXED<	CIATION NEXT DSTS BACK DEFD INCI 30- 1 22- 28- 28- 1 32- 1 24- 2 25- 1 26- 1 21- 1 25- 1 26- 1 27- 1 UTATION NEXT 1 INDUSTRY N INDIVIDUAL	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCEC ANG CHAHEM ANG CHASIM CHA ANGREM CHA ANGREM CHA ANGREM CHA HURSIM HER ANGCHA HER ANGCHA SIM ANGCHA SIM ANGCHA SIM CHAHEM S BREED ANG CHAHEM	SPECIAL IZE CAP 87.4 76.5 65.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 96.9 87.4 SPECIAL IZE CARC ATC.	D CRCSS- CALF CRCP C.RC 0.80 0.80 0.87 C.85 C.85 C.85 C.85 C.85 C.85 C.92 C.92 C.92 D.62 O.F2 D CRUSS- RE1 CUTS_ 451.	BULL BR NG NT 537. 574. 524. 566. 555. 546. 556. 577. 556. 524. 544. BULL DR PARKE CARC. 437.	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46. 56. 83. 51. ED FIRST 1 VALUE ACTUAL 44.	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	BACKGKD CI BACKGKD CI F1XFO F1 8. 6. 6. 2. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 7. 9. 7. C BREEU RI NET RET 20 AL	CIATION NEXT DSTS BACK N CED INCI 30. 1 22. 28. 28. 1 32. 1 24. 22. 25. 1 26. 1 21. 22. 12. 1 25. 1 32. 1 26. 1 21. 22. 12. 1 27. 1 DTATION NEXT 1 INDUSTRY N 1 INDUSTRY N 91	V IDUAL 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BREED ANG CHAHEM ANG CHADIM ANG HERSIM CHA ANGRER CHA ANGRER CHA HERSIM HER ANGCHA HER ANGCHA SIM ANGCHA SIM ANGCHA SIM CHAHEM SBREED ANG CHANEM	SPECIAL IZE CAP 87.4 76.5 63.8 96.9 85.6 87.7 66.1 76.5 87.7 96.9 87.4 SPECIAL IZE CARC 4710.4 710.4	D CROSS- CRCP C.RC O.80 O.80 C.85 C.85 C.85 O.82 C.95 C.95 C.92 O.F2 D CRUSS- RE1 - CUTS - 491.	BULL BR WNG NT 537. 574. 524. 566. 555. 546. 556. 577. 556. 524. 544. BULL UKI MARKE CARC 437. 452.	ED FIRST RETURN 44. 44. 44. 44. 44. 44. 44. 49. 49	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AN BACKGKD CL FIXFO FI 8. 6. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSTS BACK DEFD INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 22. 25. 1 32. 1 21. 1 22. 1 23. 1 12. 1 UTATION NEXT 1 INDUSTRY N 1 NUTYIDUAL 91 91 91	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BREED ANG CHAHEH ANG CHASIM ANG HERSIM CHA ANGHEA CHA ANGHEA CHA HURSIM HER ANGETA HER ANGETA SIM ANGHER SIM CHAHEK SIM CHAHEK SIM CHAHEK SIM CHAHEK SIM CHAHEK	SPECIAL 12E CAP CAP 87.4 76.5 E3.8 96.9 85.8 87.7 66.1 76.5 87.7 66.1 76.5 87.7 54.9 87.4 SPECIAL 12E CARC 710.0 737.4	D CROSS- CRCP C.RC O.80 O.87 O.85 C.85 O.82 C.95 C.95 C.95 C.95 C.92 D.62 O.F2 D CRUSS- RE1 CUTS 4F1. 451.	BULL PR MNG NT 537. 574. 524. 524. 524. 555. 546. 577. 556. 524. 544. BULL URI MARKE CAKC 437. 452. 441.	ED FIRST RETURA 44. 44. 44. 44. 44. 44. 44. 44	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AN BACKGKD CI FIXFO FI 8. 6. 6. 7. 7. 7. 9. 7. 7. 9. 7. 7. 8. 7. 6. 7. 7. 9. 7. 7. 8. 7. 7. 9. 7. 7. 7. 9. 7. 7. 8. 7. 7. 9. 7. 7. 7. 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSTS BACK DEFD INCI 30. 1 22. 2 28. 1 32. 1 24. 2 25. 1 26. 1 21. 2 27. 1 UTATION NEXT 1 INDUSTRY N 1 INDUSTRY N 91 	V IDUAL 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BREEC ANG CHAHEM ANG CHASIM CHA ANGHER CHA ANGHER CHA ANGER HER ANGER SIM ANGCHA SIM ANGHER SIM CHAHEK SIM CHAHEK	SPECIAL 12E CAPR 87.4 76.5 E5.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 66.1 76.5 87.7 87.4 SPECIAL 12E CARC 7110. 7137. 714. 592.	D CRCSS- CALF CRCP C.RC O.80 O.87 C.85 C.85 O.82 C.96 C.92 C.92 C.92 D CRUSS- RE1 CUTS 451. 451. 436.	BULL ER MNG NT 532. 574. 542. 524. 555. 575. 556. 577. 556. 524. 544. BULL UR MARKE CAKC 437. 441. 426.	ED FIRST RETURN 48. 44. 68. 75. 69. 65. 56. 72. 46. 56. 83. 51. ED FIRST 1 VALUE 447. 447. 447. 443.	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AN BACKGKD CL FIXED FI 8. 6. C. 9. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 7. 6. 7. 7. 7. 6. 7. 7. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSIS BACK 0515 BACK 060 INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 26. 1 26. 1 27. 1 UTATION NEXT 1 INDUSTRY N 1 INDIVIDUAL 91 98 98	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BREEC ANG CHAHEM ANG CHADIM ANG CHADIM CHA ANGREM CHA ANGREM CHA ANGREM HER ANGCHA HER ANGCHA HER ANGCHA SIM CHAHEM SIM CHAHEM SIM CHAHEM NG CHAHEM ANG CHAHEM ANG HENSIM CHA ANGREM	SPECIAL IZE CAP 87.4 76.5 E5.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 66.1 76.5 87.7 94.9 87.4 SPECIAL IZE CARC ATC 710. 714. 992. 719.	D CRCSS- CALF CRCP C.RC O.80 O.80 C.85 C.85 C.85 C.85 C.85 C.85 C.85 C.85	BULL ER MNG NT 537. 574. 524. 566. 555. 577. 556. 577. 556. 524. 544. BULL DR MARKE CAKC. 437. 452. 442.	ED FIRST RET RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46. 56. 83. 51. EU FIRST 1 VALUE ACTUAL 447. 447. 433. 462.	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AN BACKGKD CI F1XFD F1 8. 6. 2. 9. 9. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSIS BACK N CED INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 22. 25. 1 26. 1 21. 22. 25. 1 26. 1 21. 22. 25. 1 26. 1 27. 1 UTATION NEXT 1 INDUSTRY N 91	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCEC ANG CHAHEA ANG CHADIM ANG HERSIM CHA ANGREA CHA ANGREA CHA ANGREA HER ANGCHA HER ANGCHA SIM ANGCHA SIM ANGCHA SIM CHAHEA SIM CHAHEA SIM CHAHEA ANG CHAHEA ANG CHAHEA ANG CHAHEA CHA ANGSIM CHA ANGSIM	SPECIAL IZE CAP 87.4 76.5 65.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 96.9 87.7 96.9 87.4 SPECIAL IZE CARC 710. 714. 692. 719. 719.	D CROSS- CALF CROP C.RC 0.80 0.80 C.85 C.85 C.85 C.85 C.85 C.85 C.95 C.92 C.92 D.F2 D CRUSS- RE1 C.95 C.95 D.F2 D CRUSS- RE1 451. 451. 451. 451. 451. 451. 451.	BULL BR WNG NT 537. 574. 524. 566. 555. 546. 556. 577. 556. 524. 544. BULL DR MAKE CAKE CAKE 437. 452. 441. 426. 442. 442.	ED FIRST NET RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46. 56. 83. 51. EU FIRST 1 VALUE 447. 457. 457. 457. 457. 457. 457. 457. 457. 457. 457. 457. 457.	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AI BACKGKD CI FIXFO FI 8. 6. 2. 9. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSTS BACK DEFD INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 26. 1 26. 1 27. 1 DTATION NEXT 1 UNDIVIDUAL 91 91 91 98 95 95 95	V IDUAL 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BREED ANG CHAHEM ANG CHADIM ANG CHADIM CHA ANGEA CHA ANGEA CHA ANGEA HER ANGEA HER ANGEA SIM ANGEA SIM ANGEA SIM CHAHEM ANG CHAHEM ANG CHAHEM ANG CHAHEM ANG CHASIM CHA ANGEA CHA A CHACA CHA	SPECIAL IZE CAP 87.4 76.5 E3.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 96.9 87.4 SPECIAL IZE CARC 710. 714. SPECIAL IZE 710. 714. SPECIAL IZE 714. SPECIAL IZE	D CROSS- CRCP C.RC O.80 O.87 C.85 C.85 C.85 C.85 C.85 C.95 C.95 C.95 C.95 C.92 D.52 D.52 D.52 D.52 D.52 D.52 D.52 D.5	BULL BR WNG NT 537. 574. 524. 524. 555. 546. 555. 546. 577. 556. 524. 544. BULL URM MARKE CARC 437. 452. 441. 426. 442. 442. 436.	ED FIRST RETURN 44. 68. 44. 68. 44. 68. 75. 49. 65. 56. 56. 83. 51. ED FIRST 1 VALUE 47. 47. 447. 447. 447. 445.	CChS THC DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 80. 63. 80. 63. 80. 67. CChS THC PACKER N INDIVIC -28. -30. -32. -37. -39. -29.	D BREED AN BACKGKD CI FIXFO FI 8. 6. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSTS BACK DEFD INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 22. 25. 1 32. 1 21. 22. 25. 1 32. 1 21. 21. 27. 1 UTATION NEXT 1 INDUSTRY N 1 INDUSTRY N 91 98 95 995 95	V IDUAL 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BREEC ANG CHAMEH ANG CHASIM ANG CHASIM CHA ANGHER CHA ANGHER CHA ANGSIM HER ANGCHA SIM ANGCHA SIM ANGCHA SIM CHAMER SIM CHAMER SIM CHAMER ANG CHAM	SPECIAL 12E CAP 87.4 76.5 63.8 96.9 85.8 87.7 66.1 76.5 87.7 66.1 76.5 87.7 96.9 87.4 SPECIAL 12E CARC 710. 717. 714. SPECIAL 12E CARC 717. 714. SPECIAL 12E	D CROSS- CRCP C.RCP C.RC O.80 O.87 C.85 C.85 C.85 C.85 O.82 C.9C C.31 O.62 O.62 O.62 O.62 O.62 D CRUSS- RE1 CUTS 461. 472. 449. 449.	BULL BR MNG NT 537. 574. 524. 524. 524. 555. 546. 577. 556. 524. 544. BULL URI MARKE CAKC 437. 452. 441. 426. 442. 436. 439.	ED FIRST RETUKA 44. 44. 44. 44. 44. 44. 44. 45. 44. 56. 56. 56. 83. 51. ED FIRST 1 VALUE ACTUAL 447. 447. 447. 447. 447. 447. 445. 445.	CChS THO DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AN BACKGKD CU FIXFO FI 8. 6. 6. 7. 7. 7. 7. 7. 9. 7. 7. 8. 7. 7. 9. 7. 7. 8. 7. 7. 9. 7. 7. 9. 7. 7. 9. 7. 7. 9. 7. 7. 9. 7. 7. 9. 7. 7. 9. 7. 7. 9. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSTS BACK DEFD INCI 30. 1 22. 1 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 22. 23. 1 24. 1 25. 1 26. 1 21. 22. 23. 1 24. 1 25. 1 32. 1 21. 22. 22. 1 23. 1 24. 1 25. 1 32. 1 100 NEXT 91 91 91 92 92 92 92 92 109	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCEC ANG CHAHEM ANG CHASIM CHA ANGEA CHA ANGEA CHA ANGEA CHA ANGEA CHA ANGEA HER ANGCHA HER ANGCHA SIM ANGHER SIM CHAHEK SIM CHAHEK SIM CHAHEK ANG CHASIM ANG HEASIM CHA ANGEA CHA CHA CHA ANGEA CHA CHA CHA ANGEA CHA CHA CHA CHA CHA CHA CHA CHA CHA CHA CHA CHA	SPECIAL 12E CAPRY CAP 87.4 76.5 F5.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 56.1 76.5 87.7 57.4 SPECIAL 12E CARC 714 714 SPECIAL 12E CARC 714 714 SPECIAL 12E 714 SPECIAL 12E	D CRCSS- CALF CRCP C.RC O.80 O.87 C.85 C.85 C.85 C.85 C.85 C.85 C.85 C.85	BULL ER NG NT 537. 574. 524. 566. 555. 577. 556. 577. 556. 524. 544. BULL UR MARKE CAKC 437. 452. 441. 426. 437. 452. 441. 436. 437. 451.	ED FIRST RETURN 48. 44. 68. 75. 69. 65. 56. 72. 46. 56. 83. 51. ED FIRST 1 VALUE ACTUAL 447. 447. 447. 445. 462. 465. 460.	CChS THO DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AN BACKGKD CU FIXED FI 8. 6. 2. 9. 9. 6. 7. 7. 6. 7. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSIS BACK DEFD INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 22. 23. 1 24. 1 25. 1 26. 1 21. 2 25. 1 26. 1 27. 1 UTATION NEXT 1 INDUSTRY N 1.12 98 95 98 95 92 92 109 90	V IDUAL 8. 7. 5. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCED ANG CHAHEA ANG CHASIM CHA ANGEA CHA ANGEA CHA ANGEA CHA ANGEA CHA ANGEA HER ANGCHA SIM ANGCHA SIM CHAHEK SIM CHAHEK SIM CHAHEK SIM CHAHEK CHA ANGCHA CHA CHASIM CHA ANGCHA CHA CHASIM CHA ANGCHA CHA CHASIM CHA CHASIM C	SPECIAL IZE CAP 87.4 76.5 E3.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 96.9 87.4 SPECIAL IZE CARC 710. 717. 692. 719.	D CRCSS- CALF CRCP C.RC O.80 O.80 C.85 C.85 C.85 C.85 C.85 C.85 C.85 C.95 C.92 C.92 D.F2 D.F2 D.CRUSS- RE1 C.95 C.92 D.F2 D.CRUSS- RE1 C.95 C.92 C.92 C.92 C.92 C.92 C.92 C.92 C.92	BULL BR WNG NT 537. 574. 524. 524. 555. 546. 555. 556. 524. 544. BULL DR PARKE CAKC 437. 452. 441. 451. 451. 451.	ED FIRST RETURN 48. 44. 68. 75. 49. 65. 56. 72. 46. 56. 72. 46. 56. 72. 46. 56. 72. 46. 56. 72. 46. 56. 72. 46. 56. 63. 63. 64. 46. 46. 46. 46. 46. 46. 46	CChS THO DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AI BACKGKD CI FIXFO FI 8. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSIS BACK 05 IS BACK 20. INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 25. 25. 1 32. 1 26. 1 21. 22. 25. 1 32. 1 26. 1 21. 22. 127. 1 UTATION NEXT 91 91 91 92 95 95 95 92 92 109 90 90 90	V IDUAL 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	
S BRCEC ANG CHAHEM ANG CHASIM CHA ANGEA CHA ANGEA CHA ANGEA CHA ANGEA CHA ANGEA HER ANGCHA HER ANGCHA SIM ANGHER SIM CHAHER NG CHAHER ANG CHANEN ANG HEASIM CHA ANGEA CHA CHA CHA ANGEA CHA CHA CHA CHA CHA ANGEA CHA CHA CHA CHA CHA ANGEA CHA CHA CHA CHA CHA CHA CHA CH	SPECIAL IZE CAP 87.4 76.5 65.8 96.9 86.1 85.6 87.7 66.1 76.5 87.7 66.1 76.5 87.7 96.9 87.4 SPECIAL IZE CARC 710. 714. 692. 714. 719. 719. 719. 719. 719. 719. 719. 719. 715.	D CRCSS- CALF CRCP C.RC O.80 O.87 C.85 C.85 C.85 C.85 C.85 C.85 C.85 C.85	BULL ER NG NT 537. 574. 524. 566. 555. 577. 556. 577. 556. 524. 544. BULL UR MARKE CAKC 437. 452. 441. 426. 437. 452. 441. 436. 437. 451.	ED FIRST RETURN 48. 44. 68. 75. 69. 65. 56. 72. 46. 56. 83. 51. ED FIRST 1 VALUE ACTUAL 447. 447. 447. 445. 462. 465. 460.	CChS THO DAY TO B 7C0 F 75. 55. 71. 80. 58. 63. 63. 63. 63. 63. 63. 63. 63	D BREED AI BACKGKD CI FIXFO FI 8. 6. 2. 7. 6. 7. 6. 7. 6. 7. 6. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	CIATION NEXT DSIS BACK DEFD INCI 30. 1 22. 28. 28. 1 32. 1 24. 25. 25. 1 26. 1 21. 22. 23. 1 24. 1 25. 1 26. 1 21. 2 25. 1 26. 1 27. 1 UTATION NEXT 1 INDUSTRY N 1.12 98 95 98 95 92 92 109 90	V IDUAL 8. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7.	<pre>bT 1126. 1169. 1120. 1120. 1162. 1169. 1125. 1125. 1125. 1162. 1162.</pre>	FEED 80. 86. 8C. 75. 85. 86. 8C. 8C. 8C. 8C. 8C. 8C. 79.	F1XED 15. 15. 15. 15. 15. 15. 15. 15.	IND I VI DUAL 54. 71. 62. 59. 62. 59. 62. 52. 52. 52. 50. 72. 56. 49.	

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SIMUMATE II SOUTH DAKOTA STATE UNIVERSITY

THESE ESTIMATES PROVIDED BY

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WARWICK_BRIT_DAIRY_EXQUE RETAIL CUTS

	WEAN FIXED	UNG COS	RIABLE	WNG BASE	BAC		. <u>PER_LB.</u> ROW FI		<u>FIXED_COST</u> BACK GRO			BACK	GROW			CEGRA CE SPR		
	7500		00	400		0_02			120-12	0.	12	9.•0	8.2_		0.•7.	.00.0	30	
REED_	COW S 1 Z E	MJLK PROD	MALE FERT	FEM FER T	LIVA	IND GROW	<u>MATERN</u> ABILTY			LY GA GROW	IN FINISH		SELL BACK	PRICE	DRESS PCT	CUT ABLTY	PCT	
IER	1125.	2000.	0.96	0.95	0.92	0.14	05	0.63	1.90	3.00	3.00	0.0	.54	.45	0.62	0.63	0.75	
HOL	1300.	4500.	0.94	0.88	0.90	0.20	0.12	0.59	2.10	3.30	3.30	03	•47	.43	0.59	0.66	0.50	
JER	850.	• 3600.	0.96	0.96	0.92	09	0.10	0.56	1.50	2.00	2.00	0.06	. 41	.38	0.58	0.62	0.40	
LIM	1160.	2200.	0.92	0.94	0.90	0.14	0.0	0.60	1.90	3.10	3.10	03	.51	.43	0.63	0.68	0.30	
	····					<u></u>		<u> </u>										
HESE	RESULTS	BASED (N ESTIM	ATES MAD	E 8Y						- <u></u>							-
HARW 1 (CK BRIT C	AIRY E	OTIC RE	TAIL CUT	\$													
	SSES SOLD	ON HE	GHT OF	RETAIL C	UTS							_				_		
ANCA																		
											-							
		IGHTBRE	D PERFO	RMANCE														
	STRA	RRY	CALF	WNG	NET				BACK NET								KETURN_	
BREED_ HER	STRA CA CA 1C	ARY AP	CALF CKDP 0.85	WNG WT 436.	RETURN 98.	700 139-	F I XED 17.	FEED 57.	IND IV 10 30 •	UAL	WT 11	20	FEED 95•	F1XED		IVIDUAL		
BREED_ HER	STRA C	ARY AP 10.0 17.5	CALF CRDP 0.85 0.74	WNG WT 436. 528.	RETURN 98. 52.	700 139. 82.	FIXED 17. 10.	FEED 57. 36.	IND IV IC 30 - 28 -	UAL	WT 11 11	20	FEED 95 102.	F1XED 17. 17.		14. 52.		
BREED_ HER HOL JER	STRA CA 10 11	ARY AP	CALF CKDP 0.85	WNG WT 436.	RETURN 98.	700 139-	F I XED 17.	FEED 57.	IND IV 10 30 •	UAL	WT 11 11 9	20	FEED 95•	F1XED		IVIDUAL		
BREED HER HOL JER LIM	STR A CA C 10 1 11 9	ARY AP 0.0 7.5 3.0 6.2	CALF CRDP 0.85 0.74 0.85 0.78	WNG WT 436. 528. 404.	RETURN 98. 52. 74.	700 139. 82. 197.	FIXED 17. 10. 24.	FEED 57. 36. 68.	IND IV IO 30 -28 -31	UAL	WT 11 11 9	20. 62. 80.	FEED 95 102. _67	F1XED 17. 17. 17.		1VIDUAL 14. 52.		
BREED HER HOL JER LIM	STRA CA CC CC 10 7 11 9 STRA	ARY AP 0.0 7.5 3.0 6.2 IGHTBRE	CALF CKDP 0.85 0.74 0.85 0.78 D PERFO RET	WNG WT 436. 528. 404. 456. RMANCE MARKE	RETURN 98. 52. 74. 69.	700 139. 82. 197. 129.	FIXED 17. 10. 24. 15. R NET RET	FEED 57. 36. 68. 51.	IND IV IC 30. -28. -31. 17. DUSTRY NET	UAL	WT 11 11 9	20. 62. 80.	FEED 95 102. _67	F1XED 17. 17. 17.		1VIDUAL 14. 52.		
BREED HER HOL JER LIM BREED HER	STRA CA CC IC IC IC I I I I I I I I I I I I	ARY AP 0 - 0 7 - 5 3 . 0 6 - 2 IGHTBRE CARC WT 694 -	CALF CKDP 0.85 0.74 0.85 0.78 D PERFO RET CUTS 437.	WNG 436. 528. 404. 456. RMANCE MARKE CARC 485.	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490.	700 139. 82. 197. 129. PACKEI INDI	FIXED 17. 10. 24. 15.	FEED 57. 36. 68. 51.	INDIVIO 30. -28. -31. 17.	UAL	WT 11 11 9	20. 62. 80.	FEED 95 102. _67	F1XED 17. 17. 17.		1VIDUAL 14. 52.		
BREED HER HOL JER LIM BREED HER HOL	<u>STRA</u> CA CC 10 10 11 9 STRA	ARY AP 7.5 3.0 6.2 IGHTBRE CARC HT 694. 686.	CALF CKOP 0.85 0.74 0.85 0.78 D PERFO RET CUTS 437. 452.	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 496.	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490. 507.	700 139- 82. 197. 129. PACKEI INDI	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4.	FEED 57. 36. 68. 51.	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72.	UAL	WT 11 11 9	20. 62. 80.	FEED 95 102. _67	F1XED 17. 17. 17.		1VIDUAL 14. 52.		
BREED HER HOL JER LIM BREED HER HOL JER	STRA CA CC CC T 11 9 STRA	ARY AP 0 - 0 7 - 5 3 . 0 6 - 2 IGHTBRE CARC WT 694 -	CALF CKDP 0.85 0.74 0.85 0.78 D PERFO RET CUTS 437.	WNG 436. 528. 404. 456. RMANCE MARKE CARC 485.	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490.	700 139- 82- 197- 129- PACKEI INDI	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19.	FEED 57. 36. 68. 51.	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122.	UAL	WT 11 11 9	20. 62. 80.	FEED 95 102. _67	F1XED 17. 17. 17.		1VIDUAL 14. 52.		
BREED HER HOL JER LIM BREED HER HOL JER	STRA CA CC C C C C C C C C C C C C C C C C	ARR Y AP 0.0 7.5 3.0 6.2 1GHTBRE CARC HT 694. 686. 568. 714.	CALF CKOP 0.85 0.74 0.85 0.78 D PERFO RET CUTS 437. 452. 352.	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 496. 385. 528.	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490. 507. 395.	700 139- 82- 197- 129- PACKEI INDI	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4. 12.	FEED 57. 36. 68. 51.	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72. 57.	UAL	WT 11 11 9	20. 62. 80.	FEED 95 102. _67	F1XED 17. 17. 17.		1VIDUAL 14. 52.		
BREED HER HOL JER LIM BREED HER HOL JER LIM BREED	STRA CA CC TC T STRA STRA TWD CA	RRY AP 00.0 7.5 3.0 6.2 11GHTBRE CARC MT 694. 686. 568. 714. BREED R	CALF CKOP 0.85 0.74 0.85 0.78 D PERFO QET CUTS 437. 452. 352. 486. DTATION CALF	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 496. 385. 528. WNG	RE TURN 98. 52. 74. 69. T VALUE <u>ACTUAL</u> 490. 507. 395. 544. NE T	700 139- 82- 197- 129- PACKEI INUI 	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4. 12. 60. BACKGRD	FEED 57. 36. 68. 51. INI INI INI COSTS	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72. 57. 144.) BACK NET	RETURN		20. 62. 80. 34.	FEED 95. 102. 67. 95. FEEDLO	F 1 XED 17. 17. 17. 17. 17. 17. 17. 17.	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	LOT_NET	RETURN	
BREED HER HOL JER LIM BREED HER HOL JER LIM BREED	STRA CA CC C C T STRA STRA STRA CA CA CA	RRY AP 0.0 7.5 3.0 6.2 IGHTBRE CARC MT 694. 694. 694. 694. 694. 846. 568. 714. BREED R RRY AP	CALF CKOP 0.85 0.74 0.85 0.78 D PERFO RET CUTS 437. 452. 352. 486. DTATION CALF CROP	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 496. 385. 528. WNG WT	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490. 507. 395. 544. NET RETURN	700 139- 82- 197- 129- PACKEI INDI 	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4. 12. 40. BACKGRD FIXED	FEED 57. 36. 68. 51. INI INI INI COSTS FEED	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72. 57. 144.) BACK NET IND IV ID	RETURN UAL	WT 11 11 9 11	20. 62. 60. 34.	FEED 95 102. 95. 95. FEEDLO FEED	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	LOT_NET	RETURN	
BREED HER HOL JER LIM BREED HER BREED HERHOL	<u>STRA</u> CA CC CA CC TRA STRA STRA THD CA CA CA CA CA CA CA CA CA CA CA CA CA	RRY AP 00.0 7.5 3.0 6.2 11GHTBRE CARC MT 694. 686. 568. 714. BREED R	CALF CKOP 0.85 0.74 0.85 0.78 D PERFO QET CUTS 437. 452. 352. 486. DTATION CALF	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 496. 385. 528. WNG	RE TURN 98. 52. 74. 69. T VALUE <u>ACTUAL</u> 490. 507. 395. 544. NE T	700 139- 82- 197- 129- PACKEI INUI 	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4. 12. 60. BACKGRD	FEED 57. 36. 68. 51. INI INI INI COSTS	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72. 57. 144.) BACK NET	RETURN	WT 11 11 11 11 11 11 11 SL WT 11 11	20. 62. 60. 34.	FEED 95. 102. 67. 95. FEEDLO	F 1 XED 17. 17. 17. 17. 17. 17. 17. 17.	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	LOT_NET	RETURN	
BREED HER HOL JER LIM BREED HER LIM BREED HERHOL HERJER HERLIM	STRA CA CC C C C C C STRA STRA STRA STRA CA CA CA CA CA CA CA CA CA CA CA CA CA	RRY AP 00.0 7.5 3.0 6.2 11GHTBRE CARC WT 694. 686. 568. 714. 83.6 83.0 5.5	CALF CKDP 0.85 0.74 0.85 0.78 D PERFO 9ET CUTS 437. 452. 352. 486. 9TATION CALF CROP 0.85 0.91 0.87	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 496. 385. 528. 528. WNG WT 512. 448. 475.	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490. 507. 395. 544. NET RETURN 92. 112. 106.	700 139- 82- 197- 129- PACKEI INDI 	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4. 12. 40. BACKGRD FIXED 11. 17. 14.	FEED 57. 36. 68. 51. INI INI INI INI ECOSTS FEED 40. 56. 48.	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72. 57. 144.) BACK NET IND IV IC -10. -7. 14.	RETURN	WT 11 11 9 11 11 11 11 11 11 11	20. 62. 80. 34. 7 7 R 56. 62. 41.	FEED 95. 102. 67. 95. 95. FEED 102. FEED 102. 84. 99.	F 1 XED 17- 17- 17- 17- 17- 17- 17- 17-	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	LOT NET 19. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	RETURN	
BREED HER HOL JER LIM BREED HER LIM BREED HERHOL HERJEA	STRA CA CC TC TC TT STRA STRA CA CA CA CA CA CA CA CA CA CA CA CA CA	RRY AP 0.0 7.5 3.0 6.2 IGHTBRE CARC WT 694. 686. 568. 714. BREED R RRY AP 4.8 3.0	CALF CKOP 0.85 0.74 0.85 0.78 D PERFO QET CUTS 437. 437. 4352. 352. 486. DIATION CALF CROP 0.85 0.91	WNG WT 436. 528. 404. 456. RMANCE MARKE CARC 485. 528. WNG WT 512. 448.	RETURN 98. 52. 74. 69. T VALUE ACTUAL 490. 507. 395. 544. NET RETURN 92. 112.	700 139- 82- 197- 129- PACKEI INDI 	FIXED 17. 10. 24. 15. R NET RET VIDUAL 19. -4. 12. 40. BACKGRD FIXED 11. 17.	FEED 57. 36. 68. 51. INI INI INI INI EED 40. 56.	IND IV IC 30. -28. -31. 17. DUSTRY NET DIVIDUAL 122. 72. 57. 144.) BACK NET INDIVID -10. -7.	RETURN	V SL V SL V SL V 11 V 11 V 11 V 11 V 11 V 11 V 10	20. 62. 80. 34. 7R 5 <u>6.</u> 62.	FEED 95. 102. 67. 95. <u>FEEDLO</u> FEED 102. 84.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	<u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	LOT NET IVIDUAL 32. 10. 18. 18. 18. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10	RETURN	

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MOCHE BUSINESS FORMES, INC.

THO BREED ROTATION

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	Ti	WO BREED											
BREED	•	CARC	RET	MARK	ET VALUE	PACKER NET	RET	NOUSTRY NET					
		hТ	CUTS		ACTUAL	INDIVIDUAL							
HERHOL	τ	699.	451.	497.	505.	-12.		107.					۰
HERJER	R	637.	398.	438.	446.	-3.		109.					C
HERLIM	Μ	713.	467.	513.	523.	10.		150.					
HOLJER		634.	406.	444.	454.	5.		19.					N.,
HULLIM		709.	475.	519.	532.	19.		121.					
JERLIM		647.	420.	458.	471.	25.							
	TH	REE BRE	ED ROTAT	ION									
BREED					NET			BACK NET RETURN	SLTQ	EFEDI DI	T COSTS	FEEDLOT NET RETURN	
DALLO	••••	CAP	CHON	wT	RETURN	700 FIXE	D FEED	INDTVIDUAL	. 11 4	FEED		INDIVIDUAL	
HERHOL.	168	90.8			102.	108. 13.		-20.	1104.			23	
HERHOL		86.8	0.86	512.	97.	92. 11.		-7.	1158.	102.	17.	32.	
HERJERI		98.9	0.90	469.	110.	126. 15.		-4	1094.	90.	17.	12.	
HOLJER		89.7	0.86		89.	104. 13.		-23.	1109.	93 .	17.	25.	
									• • • • • • • • • • • • • • • • • • • •				
	TF	HREE BRE	ED ROTAT	ION						•			
BREED		CARC	RET CUTS		T VALUE	PACKER NET		NDUSTRY NET NDIVIDUAL					
HERHOL		659.	419.	461.	470.			103.					
HERHCLI		710.	466.	511.	522.	6.		129.					
HERJER		667.	429.	470.	481.	11.		128.	•				O
		665.	435.	474.									
HOLJER	LI <u>M</u>	002.	977.	7./.¥.e	487	16.							
	SF	PECIALIZ	ED_CROSS	-BULL BRE	ED FIRST	<u>COWS TWO BR</u>		ION NEXT	SLTR	FEEDLO	C. COSTS	FEEDLOT_NET_RETURN	
_BREED	SF	PECIALIZ CAP	ED_CROSS	-BULL_BRE	ED FIRST	<u>COWS TWO BR</u> DAY TO BACK 700 FIXE	GRO COSTS	ION_NEXTBACK_NET_RETURN IND1v IDUAL	-WT	FEEU	FIXED	INDIVIDUAL	
BREED.	SF	PECIALIZ CARRY CAP 89.0	ED_CROSS CALE CRDP 0.87	-BULL_BRE 	ED_EIRST NET RETURN97	<u>COWS TWO BR</u> <u>DAY TO B</u> ACK 700 FIXE 100. 12.	GRD COSTS	ION_NEXTBACK_NET_RETURNIND1v IDUAL28	-WT 1103	FEEU 92.	F1 XED	INDIVIDUAL 20	
BREED.	SP	PECIALIZ 	ED_CROSS CALE CRDP 0.87 0.84	-BULL_BRE 	ED_EIRST 	<u>COWS TWO BR</u> <u>DAY TO B</u> ACK 700 FIXE 10012. 86. 10.	GRO COSTS D FEED 	ION NEXT BACK_NET_RETURN INDIVIDUAL -28 -11.	-WT 1103 1159.	FEEU 92 102.	F1 XED	I NDI VI DUAL 20 34 .	
BREED HER HO HER HO HER JE	DLJER DLJER DLLIM ERLIM	PECIALIZ 	ED_CROSS CALE CRDP 0.87 0.84 0.89	-BULL_BRE 	ED_FIRST 	<u>COWS TWO BR</u> DAY TO BACK 700 Fixe 100. 12. 86. 10. 122. 15.	GRD COSTS D FEED 	ION_NEXT BACK_NET_RETURN IND1v IOUAL - 28 - - 11 - - 11 -	WT 103 1159. 1092.	FEEU 92. 102. 90.	F1 XED 17. 17.	INDIVIDUAL 20 34. 8	
BREED HER HOL HER HOL HER JE HOL HE	DLJER DLJER DLLIM RLIM ERJER	PECIALIZ CAP 89.0 83.3 100.9 103.0	ED_CROSS CALE CRDP 0.87 0.84 0.89 0.90	-BULL_BRE 	ED_FIRST 	COWS INO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14.	GRD COSTS D FEED 	ION_NEXTBACK_NET_RETURN INDIVIDUAL28 -11111117.	WT 103 1159. 1092 1100.	FEEU 92. 102. 90. 92.	F1 XED 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15.	
BREED	DLJER DLJER DLLIM RLIM ERJER ENLIM	PECIALIZ CARRY CAP 83.3 100.9 103.0 	ED_CROSS CALE CRDP 0.87 0.84 0.89 0.90 0.90	-BULL_BRE WNG	ED_EIRST RETURN 97. 87. 113. 121.	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13.	GRD COSTS D FEED 	ION_NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. I.	.wT 103 1159 1092 100 1157	FEEU 92- 102- 90- 92- 101-	F1XED 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20 - 34 - 8 - 15 - 29 -	
BREED. HER HO HER HO HER JE HOL HE HOL HE HOL JE	DLJER DLJER DLLIM ERLIM ERJER ENLIM	PECIALIZ CARRY CA ³ - 29.0 - 83.3 -100.9 - 103.0 - 95.5 - 100.9	ED_CROSS CRDP 0.87 0.84 0.89 0.90 0.87 0.87	-BULL BRE WT 510. 523. 477. 474. 484.	ED_EIRST 	COWS TWO BR DAY_TO_BACK 700 FIXE 10012. 86. 10. 12215. 12014. 10513. 115. 14.	GRD COSTS D FEED 	ION_NEXT BACK_NET_RETURN INDIVIDUAL -28- -11. -11. -17. 1- -22.	WT 1103. 1159. 1092. 1100. 1157. 1106.	FEEU 92. 102. 90. 92. 101. 92.	FIXED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20	
BREED. HER HO HER HO HER JE HOL HE HOL ME HOL JE JER HE	DLJER DLJER DLLIM RJER ENLIM ENLIM ENLIM	PECIALIZ CARRY CAP 29.0 83.3 100.9 103.0 95.5 100.9 84.8	ED_CROSS CALE CRDP 0.87 0.84 0.89 0.90 0.90 0.87 0.87 0.87	-BULL BRE WNG 510- 523- 477- 487- 484- 484-	ED_EIRSI 	<u>COWS THO</u> BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 14. 115. 14.	GRD COSTS D FEED 	ION NEXT BACK_NET_RETURN INDIVIOUAL -28 -11. -11. -17. 18 -22. -11.	WT 1103. 1159. 1092. 1100. 1137. 1106. 1109.	FEEU 92. 90. 92. 101. 92. 93.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20	· · · · · · · · · · · · · · · · ·
BREED HER HOI HER HO HER JE HOL HEI HOL JER JER HEI JER HEI	DLJER DLJER RJER RJER HLIM RHOL RLIM	PECIALIZ CARRY CAP 29.0 83.3 100.9 103.0 - 95.5 100.9 84.8 95.5	ED_CROSS CALE CRDP 0.87 0.84 0.90 0.90 0.97 0.87 0.87 0.87 0.87	-BULL BRE WNG 510. 523. 477. 474. 484. 484. 484. 484.	ED_FIRST NET	COWS INO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 15.	GRD COSTS D FEED 41- 37. 49. 49. 49. 47. 54.	ION NEXT BACK_NET_RETURN INDIVIOUAL -28 -11. -11. -11. -17. 12. -22. -11. -22. -11. 7.	WT 1103. 1159. 1092. 1100. 1106. 1106. 1099.	FEEU 92. 90. 92. 101. 92. 93. 91.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20	
BREED. HER HO HER JE HOL HE HOL JER JER HE JER HO	DLJER DLJER DLLIM EALIM EALIM EALIM EALIM DLLIM	PECIALIZ CARRY CA> 89.0 100.9 103.0 95.5 100.9 84.8 95.5 83.3	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.90 0.87 0.87 0.87 0.87 0.89 0.89	-BULL BRE WN 510. 523. 477. 474. 484. 484. 484. 484. 450. 494.	ED_EIRSI RETURN 97 87 13 121 106 79 93 70	COWS INO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 49. 47. 55. 47. 54. 44.	ION NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. -17. -22. -11. -22. -11. -22. -11. -22.	WT 1103. 1159. 1092. 100. 1106. 1106. 1099. 1099. 1115.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 5. 29. 17. 33. 20. 34.	· · · · · · · · · · · · · · · · ·
BREED. HER HO HEA HO HEA HO HOL HER HOL HEI JER HEI JER HEI JER HEI LIM HEI	DLJER DLJER DLLIM ALIM RJER EALIM EALIM IN IN IN IN IN IN IN IN IN	PECIALIZ CARRY CAP 89.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 63.3 84.8	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.87 0.89 0.84	-BULL BRE WNG 510. 523. 474. 474. 484. 484. 484. 484. 450. 494. 513.	ED_EIRSI RETURN 97. 87. 121. 110. 106. 79. 93. 70. 89.	COWS TWO BR DAY_TO_BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 16. 109. 13. 91. 11.	GRD COSTS D FEED 	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28 -11. -17. -17. -22. -11. -22. -11. -22. -15. -7.	WT 1103. 1159. 1092. 100. 1357. 1106. 1099. 1109. 1156.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33. 20. 34. 33.	
BREED. HER HO HEA HO HEA HO HEL HE HOL HE JER HE JER HE JER HE LIM HE	SF DLJER DLJER LLIM RAJER RAJER RAJER RADL RADL RAJER	PECIALIZ CARRY CA2 29.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 83.3 84.8 103.0	ED_CROSS CALE CRDP 0.87 0.89 0.89 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.84 0.84	-BULL BRE WNG 510. 523. 474. 484. 484. 484. 484. 484. 450. 494. 513. 466.	ED_EIRSI RETURN 97	COWS TWO BR DAY_TO_BACK 700 FIXE 10012. 86. 10. 12215. 12014. 10513. 11514. 11315. 13516. 10813. 9111. 12815.	GRO COSTS D FEED 41. 37. 49. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 40. 51.	IGN_NEXT BACK_NET_RETURN INDIVIDUAL 28- -11. -11. -17. -12. -13. -22. -11. -22. -14. -7. -8.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33. 20. 34. 33. 7.	
BREED. HER HO HEA HO HEA HO HOL HER HOL HEI HOL JE JER HE JER HE JER HO LIM HO	DLJER DLJER ALIM AJEA ENJER ENJER ENIM DLIM RJER DLJER	PECIALIZ CARRY CA> 89.0 100.9 103.0 95.5 100.9 84.8 95.5 63.3 64.8 103.0 84.8 103.0 84.8 103.0 84.8	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.90 0.87 0.87 0.87 0.87 0.89 0.84 0.84 0.84	-BULL BRE WNG 510. 523. 474. 484. 484. 484. 484. 510. 510.	ED_FIRST RETURN 97	COWS TWO BR DAY TO BACK 700 F1XE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 109. 13. 91. 11. 128. 15. 100. 12.	GRD COSTS D FEED 41- 37. 49. 49. 49. 49. 47. 54. 47. 54. 40. 51. 41.	ION NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 18. -22. -11. -22. -11. -22. -15. -7. -8. -30.	WT 1103. 1159. 1092. 100. 1357. 1106. 1099. 1109. 1156.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HEA HO HEA HO HOL HER HOL HEI JER HE JER HEI JER HO LIM HO	SF	PECIALIZ CARRY CAP 89.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 83.3 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 100.9 100.9 10	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.87 0.84 0.84 0.84 0.84 0.84 0.84	-BULL BRE	ED_EIRSI NEI	СОЖХ ТИО ВR DAY_TO ВАСК 700 FIXE 12. 86. 10. 122. 15. 120. 14. 13. 115. 14. 13. 16. 109. 13. 91. 11. 128. 128. 12. COWS ТИО ВК	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 49. 49. 49. 49. 49. 49	ION NEXT BACK_NET_RETURN INDIVIDUAL -28 -11. -17. -17. -22. -11. -22. -11. -22. -14. -23. -15. -7. -8. -30. ION NEXT	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33. 20. 34. 33. 7.	
BREED HER HO HEA HO HEA HO HOL HER HOL HEI JER HEI JER HEI LIM HOI LIM HO	SF	PECIALIZ CARRY CAP 29.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 83.3 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 20.0 20	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.84 0.84 0.84 0.84 ED_CROSS	-BULL BRE WNG 510. 523. 474. 484. 484. 484. 484. 494. 513. 466. 510. -BULL BRE MANKE	ED_EIRSI RETURN 97. 87. 13. 121. 106. 79. 93. 70. 89. 117. 89. ED_FIRST T_VALUE	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 109. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. -17. -22. -11. -22. -14. 7. -5. -7. -8. -30. ION_NEXT NDUSTRY_NET	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HOI HER HOL HER JE HOL HEI JER HEI JER HEI LIM HEI LIM HEI BREED	DLJER DLLIM AJER MULIM AJER MULIM ALIM DLLIM DLLIM DLLIM DLLIM SF	PECIALIZ CARRY CAP 89.0 100.9 103.0 95.5 83.3 44.8 100.9 84.8 100.8 10	ED_CROSS CALE CRDP 0.87 0.84 0.89 0.90 0.87 0.87 0.87 0.89 0.89 0.89 0.84 0.84 0.84 0.84 ED_CROSS RET CUIS	-BULL BRE WNG WT 510. 523. 477. 474. 484. 484. 484. 484. 513. 466. 510. -BULL BRE MARKE CARC.	ED_FIRST RETURN 97. 87. 113. 121. 110. 106. 79. 93. 70. 89. 117. 89. ED_FIRST T_VALUE ACTUAL	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 113. 14. 135. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIOUAL	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	ION NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 1. -17. 1. -22. -11. -17. -30. ION NEXT NDUSTRY NET NDUSTRY NET NDLVIDUAL	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HER HO HER JE HOL HE HOL JE JER HE JER HO LIM HO LIM HO BREED HER H	DLJER DLJER ALIM RJER EALIM RJER MOL RJER DLJER HOLJER	PECIALIZ CARRY CAP 89.0 100.9 100.9 100.9 84.8 95.5 83.3 64.8 103.0 95.5 83.3 64.8 103.0 95.5 83.3 04.8 103.0 95.5 CARC 04.8 103.0 04.8 100.9 84.8 100.9 100	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.84 0.84 ED_CROSS RET CUIS_ 415.	-BULL BRE WNG WT 510. 523. 474. 484. 484. 484. 484. 513. 510. -BULL BRE MANKE CARC 456.	ED_FIRST RETURN 97. 87. 113. 121. 110. 106. 79. 93. 70. 89. 117. 89. ED_FIRST T_VALUE ACTUAL 465.	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIDUAL -6.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	ION NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 18. -22. -11. -7. -15. -7. -8. -30. ION NEXT NDUSTRY NET NDLYIDUAL 83.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HER HO HER JE HOL HE HOL JE JER HO JER HO LIM HO LIM HO LIM HO BREED HER. HI	DLJER DLJER ALIM ALIM ALIM ALIM ALIM ALIM CLIM AHOL BJER DLJER AOLJER AOLJER	PECIALIZ CARRY CAP 89.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 83.3 84.8 103.0 PECIALIZ CARC CARC 	ED_CROSS CALF CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.85 CROSS RET CUIS 415. 468 -	-BULL BRE WNG WT 510. 523. 474. 484. 484. 484. 484. 450. 494. 513. 466. 510. -BULL BRE MARKE GARC 456. 513.	ED_EIRSI NEI	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIDUAL -6. 8.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28 -11. -11. -17. 1. -22. -11. -22. -14. -7. -5. -7. -8. -30. ION NEXT NDUSTRY NET NDUSTRY NET NDUSTRY NET NDLYIDUAL 83. 118.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HEA HO HEA HO HOL HER HOL HEI HOL JER JER HEI JER HEI LIM HEI LIM HO BREED HER HI HER J	DUJER DUJER CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM CALIM	PECIALIZ CARRY CAP 89.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 84.8 103.0 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 95.5 84.8 103.0 89.0 PECIALIZ CARC MI CARC 711. 660.	ED_CROSS CALE CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.84 0.84 0.84 0.84 0.84 0.84 0.84 ED_CROSS RET CUIS 415. 425.	-BULL BRE WNG WT 510. 523. 474. 484. 484. 484. 484. 513. 466. 510. -BULL BRE MARKE CARC. 456. 513. 465.	ED_EIRSI NEI	COWS TWO BR DAY_TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 15. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIOUAL -6. 8. 8.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. -17. -22. -11. -22. -14. 7. -15. -7. -8. -30. ION NEXT NDUSTRY NET NDUSTRY NET NDLYIOUAL 83. 118.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HER HOL HER JE HOL HE JER HEL JER HEL JER HEL LIM HEL LIM HEL BREED HER HI HER HI HER HI	DLJER DLJER AJER AJER AJER AJER ALIM DLIM ALIM DLIM ANDL SF HOLJER HOLJER HOLJER HOLJER HOLJER HOLJER	PECIALIZ CARRY CAP 89.0 100.9 103.0 95.5 83.3 84.8 100.9 100.9 84.8 100.9 100	ED_CROSS CALE CRDP 0.87 0.84 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.84 0.84 0.84 0.84 0.84 ED_CROSS RET CUIS 415 425 412.	-BULL BRE WNG WT 510. 523. 474. 484. 484. 484. 484. 484. 510. 510. -BULL BRE MARKE CARC 456. 513. 465. 452.	ED_FIRST RETURN 97. 87. 113. 121. 110. 106. 79. 93. 70. 89. 117. 89. ED_FIRST T_VALUE ACTUAL 465. 524. 476. 461.	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIDUAL -6. 8. -10.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28 -11. -17. -17. -12. -13. -7. -8. -30. ION NEXT NDUSTRY NET NDLYIDUAL 83. 118. 110.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HER HO HER JE HOL ME JER HE JER HE JER HO LIM HE LIM HO BREED HER HI HER HI HER HI HER HI HOL H	DLJER DLJER ALIM AJEA AJEA AJEA AJEA AJEA AJEA AHOL AJER IOLJER IOLJER IOLJER IOLJER IOLJER IOLJER IOLJER IOLJER	PECIALIZ CARRY CA> 89.0 100.9 103.0 95.5 100.9 84.8 95.5 B3.3 84.8 103.0 95.5 B3.3 84.8 103.0 95.5 CARC 04.8 103.0 05.5 CARC 052. 711. 652. 711. 648. 707.	ED_CROSS CALF CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.89 0.84 0.89 0.84 0.84 0.84 ED_CROSS RET 	-BULL 888 WNG WT 510. 523. 474. 484. 484. 484. 484. 513. 466. 510. -BULL BRE MARKE CARC. 456. 513. 465. 452. 509.	ED_FIRST RETURN 97. 87. 113. 121. 106. 79. 93. 70. 89. 117. 89. ED_FIRST FT_VALUE ACTUAL 465. 525. 461. 520.	COWS INO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 109. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIDUAL -6. 8. 8. -10. 4.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 1. -22. -11. -17. -22. -11. -7. -8. -30. ION NEXT NDUSTRY NET NDLYIOUAL 83. 118. 110. 10. (143.)	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HOL HER HOL HER JE HOL HE HOL JE JER HOL LIM HOL LIM HOL BREED HER HI HER HI HER J HOL HI HOL JI	DLJER DLJER DLJER ALIM RJEA ENLIM RJEA ENLIM CLIM RJER CLJER OLJER SF OLJER SF CLJER ICLLIM JERLIM JERLIM	PECIALIZ CARRY CAP 89.0 83.3 100.9 103.0 95.5 103.0 95.5 64.8 103.0 89.0 PECIALIZ CARC CARC CARC 652. 711. 660. 648. 707. 655.	ED_CROSS CALF CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.89 0.84 0.84 0.84 0.84 0.84 0.84 0.85 CUIS 415- 468 425- 464- 420-	-BULL 888 WNG 510. 523. 477. 474. 484. 484. 484. 484. 510. 510. -BULL BRE MARKE CARG. 556. 513. 465. 509. 467.	ED_EIRSI NEI	COWS TWO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIDUAL -6. 8. 8. -10. 4. 10.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. -22. -1. -7. -5. -7. -8. -30. ION NEXT NDUSTRY NET NDUSTRY NET NDUSTRY NET NDUSTRY NET NDLYIDUAL 83. 118. 118. 119. 143. 145.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HER HO HER JE HOL HER HOL JE JER HOL JER HOL LIM HOL LIM HOL LIM HOL BREED HER HI HOL H HOL J HOL H HOL J HOL H HOL J HOL H	DLJER DLJER DLJER ALIM ALIM ALIM ALIM ALIM ALIM ALIM ALIM	PECIALIZ CARRY CAP 89.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 83.3 84.8 103.0 89.0 PECIALIZ CARC MI 652. 711. 660. 648. 707. 655. 674.	ED_CROSS CALF CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.89 0.84 0.89 0.84 0.89 0.84 0.89 0.84 0.89 0.84 0.89 0.84 0.89 0.84 0.89 0.87 0.86 0.84 0.	-BULL BRE WNG WT 510. 523. 474. 484. 484. 484. 484. 484. 513. 465. 510. -BULL BRE MARKE GARC. 456. 513. 465. 452. 509. 467. 472.	ED_EIRSI NEI	COWS TWO BR DAY_TO_BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIOUAL -6. 8. -10. 4. 10. 3.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	IGN_NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. -17. -22. -11. -22. -11. -22. -14. 7. -5. -7. -8. -30. ION NEXT NDUSTRY NET NDUSTRY NET NDUSTRY NET NDLYIDUAL 83. 118. 118. 118. 110. 143. 141. 104.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
BREED HER HO HER HO HER JE HOL HE JER HE JER HE JER HO LIM HO LIM HO LIM HO LIM HO HER HI HER HI HOL H HOL H HOL J JER H	DLJER DLJER DLLIM AJER ALIM AJER AMOL ALIM DLIM AMOL RJER IM LJER IM ICLIM JERLIM JERLIM JERLIM HERJER	PECIALIZ CARRY CAP 29.0 83.3 100.9 103.0 95.5 100.9 84.8 95.5 83.3 84.8 103.0 89.0 PECIALIZ CARC WI CARC 052. 711. 660. 674. 653.	ED_CROSS CALF CRDP 0.87 0.89 0.90 0.87 0.87 0.87 0.87 0.87 0.87 0.84 0.84 0.84 0.84 0.84 0.84 ED_CROSS RET CUIS 415. 425. 412. 430. 440.	-BULL BRE WNG WT 510. 523. 477. 474. 484. 484. 484. 484. 513. 466. 510. -BULL BRE CARC 456. 513. 465. 452. 509. 472. 482.	ED_FIRST RETURN 97. 87. 113. 121. 110. 106. 79. 93. 70. 89. 117. 89. ED_FIRST FT VALUE ACTUAL 465. 524. 476. 479. 481. 493.	COWS INO BR DAY TO BACK 700 FIXE 100. 12. 86. 10. 122. 15. 120. 14. 105. 13. 115. 14. 113. 14. 135. 16. 108. 13. 91. 11. 128. 15. 100. 12. COWS TWO BR PACKER NET INDIVIDUAL -6. 8. -10. 4. 10. 18.	GRD COSTS D FEED 41. 37. 49. 49. 49. 49. 47. 54. 47. 54. 47. 54. 41. EED ROTAT RET I	ION NEXT BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 1. -17. -22. -11. -17. -22. -11. -7. -8. -30. ION NEXT NDUSTRY NET NDLVIDUAL 83. 118. 118. 118. 110. (143.) 111. 104. 137.	WT 1103. 1159. 1092. 1100. 1457. 1106. 1106. 1099. 1115. 1156. 1092.	FEEU 92. 102. 90. 92. 101. 92. 93. 91. 93. 102. 90.	F1 XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 	
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HCL	1300.	4500.	0.94	C.68	0.90	0.20	0.12	0.59	2.10	3.30	3.30	03	.47	. 43	0.59	0.66	0.50
JER	850.	3600.	0.96	C.96	0.92	09	0.10	0.56	1.50	2.00	2.00	0.06	.41	.38	0.58	0.62	0.40
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BREEC HER HCL JER LIM UKEEC HER HCL JER LIM	K EN IT C STRA CA CA CA TAO CA	BASED_E AIRY EX AIGHTBRE AIGHTBRE AP 0.0 7.5 3.0 6.2 IGHTBRE CAKC NT 294. 686. 714. BREED BRRY	N ESTIM UTIC SOI C PERFOR CALF CAUP 0.85 0.74 0.85 0.74 0.85 0.74 CALF CUTS 437. 452. 352. 486. UTATION CALF	ATES MAD D ON CA WANCE WNG HI 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 436. 436. 528. 436. 528. 436. 528. 436. 528. 436. 528. 436. 528. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 528. 426. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 436. 446. 436. 407. 405. 4	E BY RCASS ME NET RETURN 78. 52. 74. 69. T VALUE ACJUAL 490. 507. 395. 544. NET	DAY TO 7C0 139. 82. 197. 128. PACKER INDIV -2 -3 1 -	BACKGRD FIXED 17. 10. 24. 15. 15. 15. 15. 15. 3. 5. 3. BACKGRD	CCSTS FEED 57. 36. 68. 51. IND INC	INDIV 3 -2 -3 1 USTRY NE IVIDUAL (118. 46. 60. 101. BACK NE	1004L 0. 8. 11. 7. 11. 1.	ЧТ 112 116 <u>98</u> 113	8 F	EED 95- 02- 67- 95-	F (X E U 17. 17. 17. 17. 17. CUSTS		VIOUAL 14. 52. 10. 18. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	REIVRN
BREEC MER HCL HCL JER LIM BREEC HER HOL JER LIM BREEC HER HOL JER LIM	K EN IT C STRA CA CA T STRA STRA CA CA CA	BASED_C AIRY_EX AIRY_EX AIRY_EX AIRY_AP AP 0.0 7.5 3.0 2.4.2 IGHTBRE CAKC NT SOB SOB SOB <t< td=""><td>N ESTIM. UTIC SOL C PEREOF CALF GANP 0.85 0.75 0.75 CALF CUTS 437. 452. 352. 486. UTATION CALF CKCP</td><td>ATES MAD ATES M</td><td>E BY RCASS ME NET RETURN 98. 52. 74. 69. T VALUE ACJUAL 490. 507. 895. 544. NET RETURN</td><td>DAY 10 7C0 139. 82. 197. 128. PACKER INDIV -2 -3 1 </td><td>0ACKGRD FIXED 17. 10. 24. 15. NET RET VIDUAL 3. 5. 3. BACKGRD FIXED</td><td>CCSTS FEED 57. 36. 68. 51. IND INC INC CCSTS FEED</td><td>INDIV 3 -2 -3 1 USTRY NE IVIDUAL (118- 46- 60- 101- PACK NE INDIV</td><td>1004L 0. 8. 11. 7. 11. 7. 11. 11. 10. 10. 10. 10. 10. 10. 10. 10</td><td>WT 112 116 <u>98</u> 113 </td><td>R F</td><td>EED 1 95. 02. 67. 95. 95.</td><td>F I XEU 17. 17. 17. 17. 17. CUSTS F I XED</td><td></td><td>UT DUAL 14. 52. 10. 10. 01. 01. 01. 01. 01. 01</td><td>REIVRN</td></t<>	N ESTIM. UTIC SOL C PEREOF CALF GANP 0.85 0.75 0.75 CALF CUTS 437. 452. 352. 486. UTATION CALF CKCP	ATES MAD ATES M	E BY RCASS ME NET RETURN 98. 52. 74. 69. T VALUE ACJUAL 490. 507. 895. 544. NET RETURN	DAY 10 7C0 139. 82. 197. 128. PACKER INDIV -2 -3 1 	0ACKGRD FIXED 17. 10. 24. 15. NET RET VIDUAL 3. 5. 3. BACKGRD FIXED	CCSTS FEED 57. 36. 68. 51. IND INC INC CCSTS FEED	INDIV 3 -2 -3 1 USTRY NE IVIDUAL (118- 46- 60- 101- PACK NE INDIV	1004L 0. 8. 11. 7. 11. 7. 11. 11. 10. 10. 10. 10. 10. 10. 10. 10	WT 112 116 <u>98</u> 113 	R F	EED 1 95. 02. 67. 95. 95.	F I XEU 17. 17. 17. 17. 17. CUSTS F I XED		UT DUAL 14. 52. 10. 10. 01. 01. 01. 01. 01. 01	REIVRN
NARWIC BREEC HER JER LIM BREEC HER JER LIM BREEC HER MOL JER LIM	K EN IT C STRA CA CA CA C TC STRA STRA STRA STRA CA CA CA CA CA CA CA CA CA CA STRA	BASED_C AIRY_EX AIRY_EX AIRY_EX AIRY_AP AP C.O. J.C. AP C.O. J.C. AP C.O. J.C. C.O. J.C. C.O. J.C. C.O. J.C. C.O. J.C. C.O. J.C. C.O. C.O. J.C. C.A.KC K.F. K.F. K.F. K.F. K.F. K.F. K.F.	N ESTIM UTIC SOU C PERFOR CALF CAMP 0.85 0.74 0.85 0.76 C PERFOR RET CUTS 437. 437. 437. 437. 437. 437. 437. 437.	ATES MAD ATES M	E BY RCASS ME NET RETURN 78. 52. 74. 69. T VALUE ACJUAL 490. 507. 395. 544. NET RETURN 92.	DAY TO 7C0 139. 197. 128. PACKER 1NDIV -2 -3 	0ACKGRD FIXED 17. 10. 24. 15. NET RET IDUAL 3. 0. 5. 3. BACKGRD FIXED 11.	CCSTS FEED 57. 36. 68. 51. IND INC INC INC ECSTS FEED 40.	INDIV 3 -2 -3 1 UUSTRY NE (118. 46. 60. 101. -101. -11. -101. -11	1004L 0. 8. 1. 7. 7. 1. 7. 1.	WT 112 116 9 113 113 113 5LT NT 115	R F	EED 02.	F 1 x E U 17. 17. 17. 17. 17. 17. 17. 17.		VIOUAL 14. 52. 1. 10. 01. NET VIOUAL 36.	REIVRN
BREEC HER HCL JER LIM UKEEC HER HOL JER LIM EREEC HERHOL MERJER MERJER	K EN IT C STRA CA CA CA CA STRA STRA STRA CA CA CA CA CA CA CA CA CA C	BASED_C AIRY_EX AIGHTBRE ARY AP 0.0 7.5 3.0 6.2 IGHTBRE CARC F 6.2 IGHTBRE CARC 568. 714. BREED_R RRY AP 3.0	N ESTIM. UTIC SOL C PEREOF CALF GANP 0.85 0.75 0.75 CALF CUTS 437. 452. 352. 486. UTATION CALF CKCP	ATES MAD ATES M	E BY RCASS ME NET RETURN 98. 52. 74. 69. T VALUE ACJUAL 490. 507. 895. 544. NET RETURN	DAY TO 7C0 139. 82. 197. 128. PACKER INDIV -2 -3 1 - 	0ACKGRD FIXED 17. 10. 24. 15. NET RET VIDUAL 3. 5. 3. BACKGRD FIXED	CCSTS FEED 57. 36. 68. 51. IND INC INC CCSTS FEED	INDIV 3 -2 -3 1 USTRY NE IVIDUAL (118- 46. 60. 101. <u>PACK NE</u> INDIV -1	1004L 0. 8. 11. 7. 11. 7. 11. 11. 10. 10. 10. 10. 10. 10. 10. 10	WT 112 116 <u>98</u> 113 113 <u>517</u> NI 115 106 114	R F 6 - 1 - 1 	EED 1 95. 02. 67. 95. 95.	F I XEU 17. 17. 17. 17. 17. CUSTS F I XED		UT DUAL 14. 52. 10. 10. 01. 01. 01. 01. 01. 01	REIVRN
NARWIC BREEC HER HCL HCL UIM BREEC HER JER LIM BREEC HER JER LIM BREEC HER JER LIM BREEC HER JER LIM	K EN IT C STRA CA CA CA Tri STRA STRA CA CA CA CA CA CA CA CA CA C	BASED_C AIRY_EX AIRY_EX AIRY_RP AP 0.0 7.5 3.0 2.4.2 IGHTBRE CAKC NT 294. 650. 714. BRECD_R RRY AP 4.8 3.0 5.5 9.0	N ESTIM UTIC SOU C PERFOR CALF CAUP 0.85 0.74 0.85 0.74 0.76 C PERFOR RET CUTS 437. 452. 496. 01ATION CALF CKCP 0.85 0.91	ATES MAD ATES MAD CON CA AMANCE MNG AT 436. 528. 436. 528. 446. 456. WARKE CARC 461. 470. 388. 405. WNG hT 512. 448.	E BY RCASS ME RCASS ME RETURN 78. 52. 74. 69. T VALUE ACJUAL 490. 507. 395. 544. NET RETURN RETURN 22. 112.	DAY TO 7C0 139. 82. 197. 128. PACKER INDIV -2 -3 1 	0ACKGRD FIXED 17. 10. 24. 15. 15. 15. 15. 15. 15. 15. 15	CCSTS FEED 57. 36. 68. 51. IND INC CCSTS FEED 40. 56.	INDIV 3 -2 -3 -2 -3 -2 -3 -2 -3 -2 -3 -2 -3 -2 -3 -2 -2 -3 -2 -2 -3 -2 -2 -3 -2 -2 -3 -2 -2 -3 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2	1004L 0. 8. 1. 7. 7. 11. 7. 12. 7. 13. 14. 14. 14. 14. 14. 14. 14. 14. 14. 14	WT 112 116 <u>98</u> 113 	R F 6 - 1 - 1 	EED 95. 02. 67. 95. 95. 95. 95. 95. 95. 95. 95. 95. 95	F I XED 17. 17. 17. 17. 17. 17. 17. 17.		01 NE T VI DUAL 30. 01 NE T VI DUAL 36. 7.	REIVRN

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ROCKE BUSINESS PLANES

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IWO BREED ROTATION

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	САн (+ Т	CUTS		KET VALUE ACTUAL		R NET RE		NOUSTRY NET NOIVIDUAL					
"HCRHCL""	699.	451.	482.	505.	-	-27.	·	92.					
FERJER	637.			446.		-3		109.					
HERLIN	713. 634.	467.	480. 433.			-13. -6.		126.					
FCLJER	709.					-16.		86.				<u></u>	
JERLIM		420.		471.		7.		97.			_		
	THREE BREE					·····	••••••••••••••••••••••••••••••••••••••	· · · · · · · · ·	·			··· · · · ·	•
RCFC	CARRY	CALF	WNG	NET		BACKGRD		BACK NET RETURN	ŞL TK	FEEULUI	CUSTS	FEEDLCT NET RETURN	
	C Vb	CROP	h Î	REILRN		FIXED	FEEC	INDIVIDUAL	WT	FEED		INDIVIDUAL	
ERPOLICR	SC.8	0.69	494.	1 02 .	108.	13.		- 20 .	1104.	92.	17.	23.	
EKHGLLIM	86.0	0.00	512.	97.	92.	11.	40.	-7.	1158.	102.	17.	32.	
IER JER LIM	96.7	0.90	469.	110.		15.		-4	1094.	9C	<u> </u>	12.	
VCLUERL (M	29.7	0.86	501.	89.	104.	13.	43.	-23.	1109.	. 93.	17.	25.	
	THREE BREE	D ROTATI	ON					····					
REED	CARC	RE1		T VALUE		NET RET		CUSTRY NET					
ERHCLJER	۸T د59.	CUTS 419.	CARC 452.	ACTLAL 47C.		IDUAL	INC						
ERHOLLIER	710.	414.	452.	522.	-1 -1			94. 104.					
EKJERLIM	<u> </u>	429.	487.	481.		3.		115.					
CLJERLIM	667.	435.	454.	487.		5.							
	SPECIAL IZE		BULL BRE	CD FIRST	CONS T	WO BREED	ROTATIO	<u>DN NEXT</u>				·	
	SPECIAL IZE	C CRUSS-	WNG	NE T	DAY TO	UACKGRD	COSTS	BACK_NET_RETURN	SLTH	FEECLOI		EEEDLQT_NET_RETURN	
REEC	SPECIALIZE CARRY CAP	C CRUSS-	WNG hT	NET RETURN	<u>DAY TO</u> 700	INCKGRD FIXED	CCSTS FEED	BACK_NET_RETURN INDIVIDUAL	WT	FEED	FIXED	INDIVIDUAL	
REEC	<u>SPECIALIZE</u> CARRY CAP 8 89.0	C CRUSS- CALF CRUP 0.87	WNG NT 510.	NET RETURN 97.	DAY TO 700 100.	NACKGRD FIXED 12.	CCSTS FEED 41.	BACK_NET <u>RETURN</u> INDIVIDUAL -28 -	WT 1103.	FEEU 92.	FIXED 17-	INDIVIDUAL 20+	
REEC ER HOLJER	SPECIALIZE CARRY CAP 8 89.0 8 83.3	C CRUSS- CALF CRUP 0.87 0.84	WNG hT 510. · 523.	<u>NET</u> RETURN 97. 87.	DAY TO 700 100. 86.	(IACKGRD FIXED 12. 10.	<u>CCSTS</u> FEED <u>41.</u> 37.	BACK_NET_ <u>RETURN</u> INDIVIDUAL -28. -11.	WT 1103. 1159.	FEED 92. 102.	FIXED 17- 17.	1ND1V1DUAL 20. 34.	
REEC ER FOLJER ER FOLLER	SPECIALIZE CARRY CAP 8 89.0 8 82.3 4 100.9	C CRUSS- CALF CRUP 0.87 0.84 0.89	w <u>NG</u> hT 51C. · 523. 477.	NE T RETURN 97. 87. 113.	DAY TO 700 1C0. 86. 122.	UACKGRD FIXED 12. 10. 15.	CCSTS FEED 41. 37. 49.	<u>BACK_NET_RETURN</u> INDIVIDUAL <u>-28.</u> -11. -11.	WT 1103. 1159. 1092,	FEEU 92. 102. 9C.	FIXED 17- 17. 17.	INDIVIDUAL 20. 34. 8.	
REEC ER FOLJER ER FOLJER ER FOLLIM ER JORLIM	SPECIAL 12E CAPRY 89.0 82.3 102.9 103.0	C CRUSS- CALF CRUP 0.87 0.84 0.89 C.90	WNG hT 510. · 523. 477. 474.	<u>NET</u> RETURN 97. 87. 113. 121.	DAY 10 700 1C0. 86. 122. 120.	(ACKGRD FIXED 12. 10. 15. 14.	<u>CCSTS</u> FEED 41. 37. 49. 49.	<u>BACK_NET_RETURN</u> INDIVIDUAL <u>-28.</u> -11. _11. _12. _17.	WT 1103. 1159. 1092. 1100.	FEEU 92. 102. 9C. 92.	FIXED <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u>	INDIVIDUAL 20. 34. 8. 15.	
REEC ER FOLJER ER FOLJER ER JORLIM ER JORLIM OL HERJER ICL FERLIM	SPECIAL 12E CAP CAP 8 99.0 8 23.3 1 1CC.9 8 1C3.0 9 3.5	C CRUSS- CRUP CRUP 0.87 U.84 0.89 C.90 C.90 C.90	HNG hT 510. · 523. 477. 474. 487.	<u>NE T</u> RETURN <u>97.</u> 87. <u>113.</u> 121. <u>11 C.</u>	DAY TO 700 1C0. 86. 122. 120. 105.	(IACKGRD FIXED 12. 10. 15. 14. 13.	<u>CCSTS</u> FEED <u>41.</u> 37. 49. 49. 49.	BACK_NET_ <u>RETURN</u> INDIVIDUAL -20. -11. -11. -17. 1.	WT 1103. 1159. 1092. 1100. 1157.	FEED 92. 102. 9C. 92. 101.	FIXED 17- 17- 17- 17- 17- 17-	INDIVIDUAL 20. 34. 8. 15. 29.	
REEC ER FCLIER ER FCLIM ER JERLIM OL HERJER CL FERLIM OL JERLIM	SPECIAL 12E CAP CAP 89.0 62.3 1CC.9 1CC.9 1C3.0 95.5 100.9	CRUSS- CALF CKUP 0.87 0.87 0.89 C.90 C.90 C.87 U.87	HNG hT 510. 523. 477. 474. 487. 484.	NE T RETURN 97. 87. 113. 121. 11C. 1C6.	DAY TO 700 1C0. 86. 122. 120. 105. 115.	(IACKGRD FIXED 12. 10. 15. 14. 13. 14.	<u>CCSTS</u> FEED <u>41.</u> 37. <u>49.</u> 49. 49. 45. 47.	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22.	WT <u>1103.</u> 1159. <u>1092.</u> 1100. <u>1157.</u> 1106.	FEEU 92. 102. 9C. 92. 101. 92.	FIXED 17- 17- 17- 17- 17- 17- 17- 17-	INDIVIDUAL 20. 34. 8. 15. 29. 17.	
REEC ER FOLJER ER FOLLIM ER JERLIM OL HERJER OL HERJER OL JERLIM ER FERPOL	SPECIAL 12E CAP CAP 89.0 82.3 1CC.9 1CC.9 1C3.0 95.5 100.9 14.3	C CRUSS- CALF CKUP 0.87 0.84 0.89 C.90 C.87 C.87 U.87 U.67	WNG hT 510. · 523. 474. 474. 484. 484. 484.	NE T RETURN 97. 87. 113. 121. 11C. 1C. 1C6. 79.	<u>DAY TO</u> 700 1C0. 86. 122. 120. 105. 115. 113.	UACKGRD FIXED 12. 10. 15. 14. 13. 14. 14. 14.	CCSTS FEED 41. 37. 49. 49. 49. 49. 45. 47. 47.	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11.	WT <u>1103</u> <u>1159</u> <u>1092</u> <u>1100</u> <u>1157</u> <u>1106</u> <u>1109</u>	FEEU 92. 102. 9C. 92. 101. 92. 93.	F1XED <u>17-</u> 17. <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u>	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33.	
REEC ER HOLJER ER HOLLIM ER JORLIM OL HERJER OL JERLIM ER HERTIM	SPECIAL 12E CAP CAP 8 9.0 8 2.3 1 CC.9 1 C3.0 9 5.5 1 UU.9 2 4.3 9 5.5	C CRUSS- CALF CKUP 0.87 0.84 0.89 C.90 C.90 C.97 U.87 U.87 0.89	HNG hT 510. · 523. 477. 474. 487. 484. 484. 484. 450.	<u>NET</u> RETURN 97. 87. 113. 121. 116. 106. 79. 93.	DAY TO 700 1C0. 86. 122. 120. 105. 115. 113. 135.	(IACKGRD FIXED 12. 10. 15. 14. 13. 14. 14. 14. 14.	CCSTS FEED 41. 37. 49. 49. 45. 47. 47. 47. 54.	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7.	WT 1103. 1159. 1092. 1100. 1157. 1106. 1109. 1099.	FEEU 92. 102. 9C. 92. 101. 92. 93. 91.	F1XED <u>17-</u> 17. <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u>	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33. 20.	
REEC ER HOLJER ER HOLLIM ER JORLIM OL HERJER CL HERLIM ER HERCIM ER HERLIM ER HERLIM	SPECIAL 12E CAP CAP 8 99.0 8 23.3 CC.9 1 C3.0 95.5 1 DU.9 24.3 95.5 95.5	C CRUSS- CALF CKUP 0.87 0.84 0.89 C.90 C.87 C.87 U.87 U.67	WNG hT 510. · 523. 474. 474. 484. 484. 484.	NE T RETURN 97. 87. 113. 121. 11C. 1C. 1C6. 79.	<u>DAY TO</u> 700 1C0. 86. 122. 120. 105. 115. 113.	UACKGRD FIXED 12. 10. 15. 14. 13. 14. 14. 14.	CCSTS FEED 41. 37. 49. 49. 49. 49. 45. 47. 47.	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11.	WT <u>1103</u> <u>1159</u> <u>1092</u> <u>1100</u> <u>1157</u> <u>1106</u> <u>1109</u>	FEEU 92. 102. 9C. 92. 101. 92. 93.	F1XED <u>17-</u> 17. <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u> <u>17.</u>	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33.	
REEC EK FOLLER EK FOLLER EK JOLIE OL FERLER OL JERLER EK FOR EK FOLLER IN FORHOL	SPECIAL 12E CAP CAP 8 99.0 8 23.3 1 1CC.9 8 1C3.0 9 95.5 1 100.9 24.3 9 55.5 8 55.5 8 55.5 8 4.8	C CRUSS- CALF CKUP 0.87 0.87 0.87 0.89 C.96 C.97 U.47 0.77 0.89 0.94 0.94	WNG bT 510. 523. 477. 474. 487. 484. 484. 450. 474.	NET RETURN 97. 97. 13. 121. 121. 126. 79. 93. 70.	<u>DAY TO</u> 700 <u>100</u> 86. 122. 120. 105. 115. 113. 135. 108.	<u>(IACKGRD</u> FIXED 12. 10. 15. 14. 14. 14. 14. 16. 13. 11.	<u>CCSTS</u> FEED 41. 37. 49. 49. 49. 49. 49. 45. 47. 47. 54. 44. 40.	<u>BACK_NET_RETURN</u> INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7.	WT 1103- 1159- 1092, 1100- 1157. 1106- 1109- 1099- 1115-	FEEU 92. 102. 9C. 92. 101. 92. 93. 91. 93.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34.	
REEC ER FOLJER ER FOLJER ER FOLIM CL FORJER ER FOLIM ER FOLIM ER FOLIM IM FORJER	SPECIAL 12E CAP CAP 8 9.0 8 2.3 1 CC.9 1 CCC	C CRUSS- CALF CKUP 0.87 0.87 C.90 C.90 C.90 C.90 C.91 C.92 C.97 C.97 O.87 O.90 C.90 C.91 O.92 O.93	WNG bT 510. 523. 477. 474. 484. 484. 450. 474. 513.	NET RETURN 97. 87. 113. 121. 11C. 11C. 126. 79. 93. 70. 89.	DAY TO 700 100. 86. 122. 120. 105. 115. 113. 135. 108. 91.	UACKGRD FIXED 12. 10. 15. 14. 13. 14. 14. 16. 13.	<u>CCSTS</u> FED 41. 37. 49. 49. 49. 45. 47. 47. 54. 44.	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 1115. 1158.	FEEU 92. 102. 9C. 92. 101. 92. 93. 91. 93. 102.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 29. 17. 33. 20. 34. 33.	
REEC ER FOLJER ER FOLJER DL HERJER DL HERJER CL FERLIM ER HERLIM ER HERLIM ER HOLJER IM FOLJER	SPECIAL 12E CAP CAP 8 9.0 8 2.3 1 CC.9 1 CCC	C CRUSS- CALF CRUP 0.87 0.87 0.89 C.90 C.87 G.87 G.87 G.87 G.87 G.87 G.87 G.87 G.89 G.90 C.90 G.87 G.89 G.90 G.89 G.90 G.90 G.90 G.89 G.90 G.94 G.94 G.95 G.95 G.94 G.94 G.95 G.95 G.95 G.95 G.94 G.95 G.95 G.95 G.95 <td>WNG bT 510. 523. 477. 474. 484. 484. 484. 484. 484. 513. 466. 510.</td> <td>NET RETURN 97. 87. 113. 121. 11C. 1C6. 79. 93. 70. R9. 117. 89.</td> <td>DAY TO 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100.</td> <td><u>(IACKGRD</u> FIXED 12. 10. 15. 14. 14. 14. 14. 14. 16. 13. 11. 15.</td> <td>CCSTS FEED 41. 37. 49. 45. 47. 47. 54. 40. 51. 41.</td> <td>BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30.</td> <td>WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.</td> <td>FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.</td> <td>F1XED 17. 17. 17. 17. 17. 17. 17. 17.</td> <td>INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.</td> <td></td>	WNG bT 510. 523. 477. 474. 484. 484. 484. 484. 484. 513. 466. 510.	NET RETURN 97. 87. 113. 121. 11C. 1C6. 79. 93. 70. R9. 117. 89.	DAY TO 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100.	<u>(IACKGRD</u> FIXED 12. 10. 15. 14. 14. 14. 14. 14. 16. 13. 11. 15.	CCSTS FEED 41. 37. 49. 45. 47. 47. 54. 40. 51. 41.	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER FOLJER ER FOLJER ER FOLJER DL HERJER DL HERJER DL JERLIM ER FOLJER IM FOLJER IM FOLJER	SPECIAL 12E CAP CAP 89.0 82.3 1CC.9 1C3.0 95.5 100.9 24.8 95.5 83.3 84.8 1C3.0 59.5 5 83.3 84.8 1C3.0 59.5 5 83.3 84.8 1C3.0 5 83.3 84.8 1C3.0 5 83.3 84.8 1C3.0 5 83.3 84.8 8 1C3.0 5 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.3 8 83.5 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	C CRUSS- CALF CKUP 0.87 U.84 0.89 C.90 C.97 U.87 U.89 C.90 C.91 C.92 U.87 U.87 U.87 U.87 U.89 U.89 U.89 U.89 U.89 U.89 U.84 C.89 U.84 C.6055- RL1	WNG hT 510. 523. 477. 474. 484. 484. 484. 494. 450. 494. 513. 466. 51C. BULL DRE	NET RETURN 97. 87. 113. 121. 126. 79. 93. 70. 89. 117. 89. EED FIRST	<u>рлу то</u> 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100. СОКБ Т РАСКЕВ	(IACKGRD FIXED 12. 10. 15. 14. 14. 14. 14. 14. 14. 15. 11. 15. 12. W() BREED NET RET	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28- -11. -11. -17. 1. -22. -11. 7. -16. -7. -30. CN NEXT CUSTRY NET	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER FCLJER ER FCLJER ER JCALIM ER JCALIM CL FCALIM ER FCALIM ER FCALIM ER FCALIM IM FCALIM IM FCALIER IM FCLJER RELC	SPECIAL 12E CAPRY CAP 89.0 83.3 102.9 123.0 95.5 100.9 24.9 95.5 43.3 84.8 123.0 59.0 SPECIAL 12C CARC MT	C CRUSS- CALF CRUP 0.87 0.84 0.89 C.90 C.90 C.90 C.97 0.87 0.87 0.89 0.94 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.8	WNG hT 51C. 523. 477. 474. 484. 484. 484. 484. 494. 450. 494. 450. 513. 466. 51C. BULL DRE MARKE CARC	NET RETURN 97. 87. 113. 121. 116. 106. 79. 93. 70. 89. ED FIRST FIRST	DAY TO 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100. CONS T PACKER INDIY	(IACKGRD FIXED 12. 10. 15. 14. 13. 14. 14. 14. 14. 16. 13. 11. 15. 12. WI BREED NET RET	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30. CN NEXT DUSTRY NET DIVIDUAL	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER FOLJER ER FOLJER ER JOLIM ER JOLIM CL HERLIM ER FOLJER R FOLJER R ELC ER FOLJE	SPECIAL 12E CAPRY CAP 8 99.0 8 23.3 1 CC.9 1 C3.0 9 5.5 1 UU.9 L4.8 9 5.5 4 83.3 8 42.8 1 C3.0 5 9 5.5 5 83.3 8 4.8 1 C3.0 5 9 5.5 5 5 5 8 9.0 SPECIAL 12C CARC M. 1 C4.2 5 7 1 C3.0 5 9 5 5 7 1 C3.0 5 7 5 7 5 7 5 7 5 7 5 7 5 7 5 7	C CRUSS- CALF CRUP O.87 0.87 O.89 C.90 C.87 0.87 U.87 0.89 O.87 0.87 U.87 0.89 O.84 0.92 C.90 C.90 C.90 C.90 C.87 C.87 U.87 0.84 O.84 C.89 U.84 C.89 U.84 C.85 RL1 CUIS 415 C.90	WNG hT 510. 523. 477. 474. 484. 484. 484. 484. 450. 474. 513. 466. 510. BULL BRE MARKE CARC 447.	NET RETURN 97. 87. 113. 121. 11C. 1C6. 79. 93. 70. P9. 93. 70. P9. 93. 70. P9. 50. FIRST 17. U.LUE A.LTUAL 465.	DAY TO 700 100. 86. 122. 120. 105. 105. 113. 135. 108. 91. 128. 100. CONS T PACKER INDIY -1	(IACKGRD FIXED 12. 10. 15. 14. 14. 14. 14. 14. 16. 13. 11. 15. 12. W(I BREED NET RET IUUAL 4.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. -17. -22. -11. 7. -16. -7. -8. -30. CN NEXT CUSTRY NET 21VIDUAL 75.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER HOLJER ER HOLLIM ER JOLIM OL HERLIM OL JERLIM ER HORLIM ER HORLIM IM HOLJER IM HOLJER MELO ER MOLJE ER HOLJER	SPECIAL 12E C APRY C AP 8 9.0 8 2.3 1 1CC.9 1 1C3.0 9 5.5 1 100.9 24.9 4.3 9 5.5 8 3.3 8 4.8 1 120 SPECIAL 120 CARC MI 	C CRUSS- CALF CRUP CRUP 0.87 0.87 0.87 C.90 C.90 C.97 0.87 U.67 0.89 U.77 0.89 U.87 0.89 U.74 0.84 C.89 U.74 C.80SS- RL1 CUIS 415.4 408. 10.10	MNG 51C. 523. 477. 474. 487. 484. 484. 494. 513. 466. 51C. BULL DRE MARKE CARC 447. 487.	NET RETURN 97. 87. 113. 121. 116. 106. 79. 93. 70. 89. 117. 89. ED FIRST T VALUE AUTUAL 465. 524.	DAY TO 700 100. 86. 122. 105. 115. 113. 135. 108. 91. 128. 100. COWS T PACKER INDIY -1 -1	UACKGRD FIXED 12. 10. 15. 14. 14. 14. 15. 12. 0. 15. 14. 16. 13. 11. 15. 12. WO BREED NET RET 10.4. 4. 8.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30. CN NEXT DUSTRY NET DIVIDUAL 75. 93.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER HOLJER ER HOLLIR ER JOLIN OL NEAJER OL FEALIN EK HEALIN EK HEALIN IM HOLJER IM HOLJER RELC ER HOLJER RELC ER HOLJER RELC ER HOLJER	SPECIAL 12E CAPRY CAP 89.0 82.3 10C.9 100.9 100.9 24.3 95.5 44.8 24	C CRUSS- CALF CKUP 0.87 0.87 0.87 0.89 C.90 C.97 0.87 0.89 0.87 0.87 0.89 0.89 0.84 C.89 0.84 C.80SS- RL1 CUIS 415. 425.	WNG NT 510. 523. 477. 474. 484. 484. 484. 484. 494. 513. 466. 51C. BULL DRE MARKE CARC 487. 487. 452.	NET RETURN 97. 87. 113. 121. 116. 116. 106. 79. 93. 70. 89. 117. 89. EED FIRST T VALUE AUTUAL 465. 524. 476.	DAY TO 700 100. 86. 122. 120. 105. 115. 113. 135. 108. 91. 128. 100. CONS T PACKER INDIY -1 -1	UACKGRD FIXED 12. 10. 15. 14. 13. 14. 16. 13. 11. 15. 12. W() BREED NET RET 1UUAL 4. 6.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28 - -11 - -17 - 1 - -22 - -11 - -22 - -11 - -22 - -11 - -22 - -11 - -22 - -11 - -22 - -11 - -7 - -8 - -30 - CN NEXT CUSTRY NET 21 VIDUAL 75 - 93 - 104 -	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER ER FCLJER ER FCLJER MELLIM ER FCLJER ER FCLJER ER FCLJER ER FCLJER ER FCLJER ER FCLJER REEC ER FCLJER ER FCLJER REEC ER FCLJER FCLJER	SPECIAL 12E C APRY C AP 8 9.0 8 3.3 1 CC.9 1 C3.0 9 5.5 1 00.9 2 4.8 9 5.5 8 3.3 8 4.8 1 C3.0 5 9.0 SPECIAL 12C CARC M _ 111. M _ 60C. R _ 648.	C CRUSS- CALF CKUP 0.87 U.84 0.89 C.90 C.97 U.87 U.87 U.87 U.87 U.87 U.87 U.87 U.87 U.87 U.89 U.89 U.89 U.89 U.89 U.84 C.89 U.84 C.89 U.84 C.89 U.84 C.80SS- RL1 CU1S 415. 425. 417.	WNG hT 51C. 523. 477. 474. 474. 474. 484. 494. 450. 494. 513. 466. 51C. BULL DRE MARKE CARC. 447. 452. 455.	NET RETURN 97. 87. 113. 121. 126. 79. 93. 70. 89. 117. 89. EED FIRST T VALUE AUTUAL 465. 524. 476. 461.	DAY TO 700 100. 86. 122. 120. 105. 115. 113. 135. 108. 91. 128. 100. CONS T PACKER INDIY -1 -1	IIACKGRD FIXED 12. 10. 15. 14. 14. 14. 15. 14. 15. 14. 15. 12. WO BREED NET RET 10UAL 4. 6. 7.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28- -11. -17. 1. -22. -11. -22. -11. 7. -16. -7. -7. -30. CN NEXT CUSTRY NET CUSTRY NET CUSTR	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC REEC REEC REA FOLJEA REA JEALIM REA JEALIM REA FORJEA REA REA REA REA REA REA REA R	SPECIAL 12E CARRY CAP 89.0 82.3 1CC.9 1C3.0 95.5 100.9 L4.9 44.8 2.1C3.0 95.5 	C CRUSS- CALF CKUP 0.87 0.87 0.87 C.90 C.87 G.87 G.87 G.87 G.87 G.87 G.87 G.87 G.89 O.84 C.89 U.84 C CKUSS- RL1 CUIS 415. 408. 425. 417. 464.	WNG hT 51C. 523. 477. 474. 484. 484. 484. 484. 494. 494. 494. 494. 494. 494. 494. 494. 494. 450. 51C. BULL BRE MARKE CARC 447. 487. 484. 465. 485.	NET RETURN 97. 87. 113. 121. 110. 106. 79. 93. 70. 89. ED FIRST 17. 89. ED FIRST 17. 465. 524. 476. 461. 52C.	DAY TO 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100. COWS T PACKER INDIY -1 -1 -2	IACKGRD FIXED 12. 10. 15. 14. 13. 14. 16. 12. WO BREED NET RET 10UAL 4. 6. 7. 1.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 1. -22. -11. 7. -16. -7. -7. -8. -30. CN NEXT DUSTRY NET DIVIDUAL 75. -93. 104. 102. 119.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER ER FLLIM ER FLLIM ER OL INERSER ER FLLIM ER FLLIM ER FLLIM ER FLLIM ER FLLIM FRALE RELC ER FRALE RELC ER FRALE RELC ER FRALE RELC ER FRALE	SPECIAL 12E C APRY C AP 8 99.0 8 23.3 1 1CC.9 1 1C3.0 9 5.5 1 00.9 24.8 9 5.5 4 83.3 8 4.8 1 C3.0 5 PECIAL 12C CARC M 111. M 602. M 655.	C CRUSS- CALF CRUP CRUP 0.87 0.84 0.89 C.9C 0.87 C.9C 0.84 C.9C 0.84 C.89 0.84 C.6055- RLT RLT 415. 425. 417. 425. 417. 424. 528.	MNG bT 51C. 523. 477. 474. 487. 484. 484. 484. 484. 494. 513. 406. 51C. BULL BRE MARKE CARC 447. 452. 485. 485. 447.	NET RETURN 97. 87. 113. 121. 116. 116. 116. 79. 93. 70. P9. 93. 70. P9. 117. 89. ED FIRST 1 VALUE AUTUAL 465. 524. 476. 461. 520. 479.	DAY IO 700 100. 86. 122. 105. 115. 135. 108. 91. 128. 100. CONS T PACKER INDIY -1 -1 -1 -2 -1	UACKGRD FIXED 12. 10. 15. 14. 14. 14. 15. 12. 13. 14. 15. 12. W0 BREED NET RET 10. 4. 6. 7. 1. 0.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30. CN NEXT DUSTRY NET DIVIDUAL 75. 93. 104. 102. 119. 91.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC ER FOLJER ER FOLJER ER FOLJER ER FOLJER ER FOLJER ER FOLJER IM FERJER IM FERJER IM FOLJER ER FOLJE ER FOLJE ER FOLJE ER FORJE ER FORFO	SPECIAL 12E C ARRY C AP 8 9.0 8 2.3 1 1CC.9 1 1C3.0 9 5.5 1 100.9 2 4.9 9 5.5 8 3.3 8 4.8 1 C3.0 8 9.0 SPECIAL 12C CARC MT. M 652. M 707. R 648. M 707. C 4.4	C CRUSS- CALF CKUP 0.87 0.87 0.87 0.89 C.90 C.97 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.89 0.84 0.89 0.84 C.89 0.84 CKOSS- RLT CUIS 415. 425. 412. 428. 430.	MNG NT 510. 523. 477. 474. 484. 484. 484. 484. 484. 484. 513. 513. 466. 51C. BULL DRE MARKE CARC. 447. 452. 445. 465. 447. 463.	NET RETURN 97. 87. 113. 121. 11C. 11C. 126. 79. 93. 70. 89. 117. 89. ED FIRST VALUE AUTUAL 465. 524. 476. 461. 52C. 479. 481.	DAY IO 700 100. 86. 122. 105. 115. 113. 135. 108. 91. 128. 100. CONS T PACKER INDIY -1 -1 -2 -1	UACKGRD FIXED 12. 10. 15. 14. 14. 14. 15. 14. 15. 14. 15. 14. 15. 12. W() BREED NET RET 10. 4. 6. 7. 10. 0. 6.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30. CN NEXT CUSTRY NET DIVIDUAL 75. -93. 104. 102. 119. -95.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC REEC REEC REELIM REEL	SPECIAL 12E CAPRY CAP 89.0 82.3 10C.9 100.9 100.9 24.3 95.5 95.5 95.5 83.3 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 25.5 3.3 24.8 24.8 25.5 3.3 24.8 24.8 24.8 25.5 3.3 24.8 24.8 25.5 3.3 24.8 25.5	C CRUSS- CALF CKUP 0.87 0.87 0.89 C.90 C.97 0.89 0.89 0.89 0.84 0.89 0.84 0.89 0.84 C.89 0.84 C.89 0.84 C.89 0.84 C.89 0.84 C.85 RL1 CUIS 417. 464. 425. 417. 464. 40.	WNG NT 510. 523. 477. 474. 484. 484. 484. 494. 513. 466. 510. BULL DRE MARKE CARC 447. 487. 487. 487. 466. 510. BULL DRE	NET RETURN 97. 87. 113. 121. 116. 126. 79. 93. 70. 89. ED FIRST FIRST FIRST FIRST FIRST S24. 476. 461. 52C. 479. 481. 493.	<u>рлу то</u> 700 100. 86. 122. 120. 105. 115. 113. 135. 108. 91. 128. 100. СОКБ Т РАСКЕВ 1ND1У -1 -1 -2 -1	UACKGRD FIXED 12. 10. 15. 14. 14. 14. 14. 14. 15. 14. 16. 13. 11. 15. 12. W() BREED NET RET 10. 6. 7. 1. 0. 6. 3.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 1. -22. -11. -22. -11. -22. -11. -22. -11. -22. -11. -22. -30. -7. -7. -8. -30. -7. -7. -8. -30. -7. -7. -8. -30. -7. -7. -7. -8. -30. -7. -7. -7. -7. -7. -7. -7. -7. -7. -7	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
IREEC IREEC IREALING	SPECIAL 12E CARRY CAP 8 99.0 8 2.3 1 CC.9 1 C3.0 9 5.5 2 4.8 2 4.8 2 5.5 4 63.3 8 4.8 1 C3.0 5 95.5 2 83.3 8 4.8 1 C3.0 5 95.5 1 C4.6 5 9.5 1 C4.6 1 C4.	C CRUSS- CALF CRUP 0.87 0.87 0.89 C.90 C.87 G.87 G.87 G.87 G.87 G.87 G.87 G.87 G.87 G.89 O.84 G.89 G.84 G.89 G.84 G.89 G.84 G.85 RL1 GU15 415. 425. 417. 464. 428. 400. 446.	WNG hT 51C. 523. 477. 474. 484. 484. 484. 494. 450. 474. 513. 466. 51C. BULL DRE MARKE CARC 447. 452. 455. 467. 465.	NET RETURN 97. 87. 113. 121. 11C. 11C. 126. 79. 93. 70. 89. 117. 89. ED FIRST VALUE AUTUAL 465. 524. 476. 461. 52C. 479. 481.	DAY TO 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100. CONS T PACKER INDIY -1 -1 -2 -1	UACKGRD FIXED 12. 10. 15. 14. 14. 14. 15. 14. 15. 14. 15. 14. 15. 12. W() BREED NET RET 10. 4. 6. 7. 10. 0. 6.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -11. -17. 1. -22. -11. 7. -16. -7. -8. -30. CN NEXT CUSTRY NET DIVIDUAL 75. -93. 104. 102. 119. -95.	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	
REEC 100	SPECIAL 12E CARRY CAP 89.0 83.3 1CC.9 1C3.0 95.5 100.9 L4.3 95.5 4.8 1C3.0 95.5 4.8 1C3.0 59.0 SPECIAL 12C CARC M 111. M 652. M 663. M 682. 1709.	C CRUSS- CALF CKUP 0.87 0.87 0.89 C.90 C.97 0.89 0.89 0.89 0.84 0.89 0.84 C.90 C.89 0.84 C.89 0.84 C.89 0.84 C.89 0.84 C.89 0.84 C.85 RL1 CUIS 417. 464. 425. 417. 464. 430. 440.	WNG NT 510. 523. 477. 474. 484. 484. 484. 494. 513. 466. 510. BULL DRE MARKE CARC 447. 487. 487. 487. 466. 510. BULL DRE	NET RETURN 97. 87. 113. 121. 126. 79. 93. 70. 89. 89. 89. 89. 89. 89. 89. 89. 89. 89	DAY TO 700 100. 86. 122. 120. 105. 113. 135. 108. 91. 128. 100. COWS T PACKER INDIY -1 -2 -2	IIACKGRD FIXED 12. 10. 15. 14. 14. 14. 14. 15. 14. 15. 14. 15. 12. W() BREED NET RET 10. 6. 7. 10. 6. 3. 2.	CCSTS FED 41. 37. 49. 49. 49. 47. 47. 54. 47. 54. 47. 54. 40. 51. 41. RCTATIO	BACK_NET_RETURN INDIVIDUAL -28. -11. -17. 1. -22. -11. -22. -11. 7. -16. -7. -7. -8. -30. CN NEXT DUSTRY NET DUSTRY NET	WT 1103. 1092. 100. 1157. 1106. 1109. 1099. 115. 1158. 1092.	FEEU 92. 102. 92. 92. 101. 92. 93. 91. 93. 102. 9C.	F1XED 17- 17. 17. 17. 17. 17. 17. 17. 17.	INDIVIDUAL 20. 34. 8. 15. 79. 17. 33. 20. 34. 33. 7.	

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AMMOND	CATTLE	_ÇO																<u></u>
	WEAN	ING COS	T\$	WNG			PER LB.			ST_PER_C		BASE_ DACK	FEED_R	EQULRE. FINIS	<u>CHOIC</u> HPRIC	EGRAI	EAD	
N	FIXED		RIABLE	BA SE 400 •		GRI 0_02			-			.0	8.2		0.62			
	7500.	QV	00.			X 1.5 %					-							
													<u> </u>					
			MALE	FEM	CALE	IND	MATERN	WNG	0	DAILYG	AIN	_FEED_	SELL		_DRESS		PC T	<u> </u>
REED	SILE	PRUD	FERT	FERT	LIVA	GROW	ABILTY		BACK	GROW	FINISH	EFF	BACK	FEED	PC T	ABLTY		
RA	1050.	2900.	0.92	0.85	0.90	0.15	0.08	0.49	1.75	2.20	2.50	03	• 45	•40	0.65	0.66	0.35	
НА	1250.	2800.	0.90	0.92	0.85	0.22	0.07	0.50	2.30	3.40	3.40	03	.45	.39	0.62	0.67	0.40	
ER	1100.	2000.	0.96	0.96	0.92	0.10	05	0.53	2.10	2.75	3.00	0.0	.48	.41	0.62	0.63	0.70	
	1300.	4000.	0.92	0.94	0.90	0-22	0.11	0.51	2.30	3.40	3.40	03	•45	.39	0.51	0.65	0.50	
CAR	RYING CA	PACITY	BASE IS	4908.	LBS. TO!	PER AN	IMAL PER	YEAR										
HESE	RESULTS	BASED							•••••		· · · ·					·····		
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	RESULTS D CATTLE								• • • •		· · · ·			· · · · · · · · · · · · · · · · · · ·				
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HAPMON	D CATTLE	<u>co</u>		ATES_MAD														
	D CATTLE	CO NIGHIBR	DN ESTIM	RMANCE_	νε <u>βγ</u>		· · · · · · · · · · · · · · · · · · ·							COSTS	FEED		RETURN	
	<u>D CATTLE</u> STR/ C/	CO AIGHIBR ARRY	DN ESTIM	<u>RMANCE</u>	NE T RETURN	<u>DAY 10</u> 700	BACKGRD FIXED	COSTS FEED		ET RETUR VIDUAL	<u>ч</u> ŞL ит	<u>13</u>	FEEDL <u>O</u>] FEED	FIXED		IVIDUAL		
HAMMON BREED BRA	D CATTLE STR/ C/ 10	CO A I G H I BR A R R Y CAP DO - O	DN ESTIM	<u>RMANCE</u> WNG 492.	NET RETURN 31.	DAY TO 700 119.	BACKGRD FIXED 13.	COSTS FEED 36 •	_8ACK N INDI	ET RETUR VIDUAL 25	<u>ЧSL</u> мт 10	13 35,	FEEDL <u>01</u> FEED _61	FIXED		Z3.		
14 M MON	D CATTLE STR/ C/ C/ C/ C/ C/ C/ C/ C/	CO AIGHIBR ARRY CAP DO.0 37.0	DN ESTIM	ATES_MAD BMANCE	NE T RE TURN 31 - 24 -	DAY TO 700 119. 80.	BACKGRD F1XED 13. 9.	COSTS FEED 36 32 -	&ACK N JNDI	ET RETUR VIDUAL 25. 16.	YSL WT 10 Łi	13 35 76.	FEEDL01 FEED 61. 87.	FIXED 15 15.		1VIDUAL 23 41.		
14 M MON	D CATTLE STR/ C/ C C C C	CO A I G H I BR A R R Y CAP DO - O	DN ESTIM	<u>RMANCE</u> WNG 492.	NET RETURN 31.	DAY TO 700 119.	BACKGRD FIXED 13.	COSTS FEED 36 •	&ACK N JNDI	ET RETUR VIDUAL 25	<u>ЧSL</u> мт 10 Еі ЦІ	13 35,	FEEDL <u>01</u> FEED _61	FIXED		Z3.		
14 M MON	D CATTLE STR/ C/ C/ C/ C/ C/ C/ C/ C/ C/ C/ C/ C/ C/	CO AIGHIBR ARRY CAP DO-0 D1-7 79-1	DN_ESTIM ED_PERFO CALF CADP 0.70 0.70 0.85	ATES_MAD RMANCE	NE T NE T RE TURN 31. 24. 56.	DAY TO 700 119. 80. 133.	BACKGRD Fixed 13. 9. 15.	COSTS FEED 36. 32. 50.	&ACK N JNDI	ET RETUR VIDUAL 25 16. 48.	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. _26		
142 MON		CO MIGH <u>IBR</u> MRGY CAP 00.0 01.7 79.1 MIGHIBRI CARC	DN ESTIM ED PERFO CALF CADP 0.70 0.85 0.78 ED PERFO RET	ATES_MAD RMANCE	NET RETURN 31. 24. 38. 7 VALUE	0AY TO 700 119. 80. 133. 73. PACKER	BACKGRD FIXED 13. 9. 15. 8. NET RET	 FEED 	_8ACK N INDI	ET RETUR VIDUAL 25 16. 48 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. _26		
142 MON		CO A IGH <u>I BR</u> A IGH <u>I BR</u> A IGHI BR A IGHI BR	DN ESTIM ED PERFO CALF CHOP 0.70 0.70 0.85 0.78 ED PERFO	ATES_MAD BMANCE	NE T RE TURN 31. 24. 56. 38.	DAY TO 700 119. 80. 133. 73. PACKER INDIV	BACKGRD FIXED 13. 9. 15. 8.	 FEED 	_8ACK N INDI	ET RETUR VIDUAL 25. 16. 48. 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. _26		
14 M ON 3 R E E D 3 R A H A H A H A J R E E D J R E E D J R A H A		CO AIGHIBR ARRY CAP DO.0 37.0 DI.7 79.1 IGHIBRI CARC bT 673.7 729.	DN ESTIM ED PERFO CALF CHOP 0.70 0.70 0.85 0.78 ED PERFO RET CUTS 444. 489.	ATES_MAD RMANCE	NET RETURN 31. 24. 56. 38. T VALUE ACTUAL 440. 485.	DAY TO 700 119. 80. 133. 73. PACKEH INDIV -1 -2	BACKGRD FIXED 13. 9. 15. 8. NET RET VIDUAL 0. 0.	 FEED 		ET RETUR VIDUAL 25 16. 48 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. 26		
14 M ON		CO MIGHIBR MRRY CAP 00.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 0 0 0 0 0 0 0 0 0 0 0 0 0	DN ESTIM ED PERFO CALF CNOP 0.70 0.85 0.78 ED PERFO RET CUTS 444 489. 433.	ATES_MAD RMANCE	NE T RE TURN 31. 24. 56. 38. T VALUE ACTUAL 440. 440. 440. 429.	DAY TO 700 119. 80. 133. 73. PACKEH INDIV -2 -3	BACKGRD FIXED 13. 9. 15. 8. NET RET VIDUAL 0. 5.	 FEED 		ET RETUR VIDUAL 25 16. 48 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. 26		
142 MON		CO AIGHIBR ARRY CAP DO.0 37.0 DI.7 79.1 IGHIBRI CARC bT 673.7 729.	DN ESTIM ED PERFO CALF CHOP 0.70 0.70 0.85 0.78 ED PERFO RET CUTS 444. 489.	ATES_MAD RMANCE	NET RETURN 31. 24. 56. 38. T VALUE ACTUAL 440. 485.	DAY TO 700 119. 80. 133. 73. PACKER INDIV -1 -2 -3 -2	BACKGRD FIXED 13. 9. 15. 8. NET RET VIDUAL 0. 0.	 FEED 		ET RETUR VIDUAL 25 16. 48 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. 26		
HAPMON BREED BRA HER SIM BREED BRA HA HER		CO MIGHIBR MRRY CAP 00.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 0 0 0 0 0 0 0 0 0 0 0 0 0	DN ESTIM ED PERFO CALF CNOP 0.70 0.85 0.78 ED PERFO RET CUTS 444 489. 433.	ATES_MAD RMANCE	NE T RE TURN 31. 24. 56. 38. T VALUE ACTUAL 440. 440. 440. 429.	DAY TO 700 119. 80. 133. 73. PACKER INDIV -1 -2 -3 -2	BACKGRO FIXED 13. 9. 15. 8. NET RET VIDUAL 0. 0. 5. 5.	 FEED 		ET RETUR VIDUAL 25 16. 48 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. 26		
HAPMON BREED BRA CHA HER BREED BRA CHA HER		CO MIGHIBR MRRY CAP 00.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 037.0 0 0 0 0 0 0 0 0 0 0 0 0 0	DN ESTIM ED PERFO CALF CNOP 0.70 0.85 0.78 ED PERFO RET CUTS 444 489. 433.	RMANCE WNG WT 492. 516. 420. 532. RMANCE MARKE CARC 404. 439. 420. 434.	NE T RE TURN 31. 24. 56. 38. T VALUE ACTUAL 440. 440. 440. 429.	DAY TO 700 119. 80. 133. 73. PACKER INDIV -1 -2 -3 -2	BACKGRO FIXED 13. 9. 15. 8. NET RET VIDUAL 0. 0. 5. 5.	 FEED 		ET RETUR VIDUAL 25 16. 48 6. ET	<u>ЧSL</u> мт 10 Еі ЦІ	T3 35 76. 08.	FEEDL01 FEED 61. 87. 77.	FIXED 15. 15.		IVIDUAL 23 41. 26		
HAP MON BR EED BRA HER SIM BREED BRA CHA HER SIM		CO AIGHIBR ARKY CAP 00.0 01.7 9.1 IGHIBRI CARC WT 673.7 729. 687.7 117. DRELD 1	DN ESTIM ED PERFO CALF CNOP 0.70 0.85 0.78 ED PERFO RET CUTS 444. 489. 433. 466.	ATES_MAD RMANCE	NET RETURN 31. 24. 56. 38. T VALUE ACTUAL 440. 485. 429. 463.	DAY TO 700 119. 80. 133. 73. 73. PACKEH INDIV -1 -2 -3 -2	BACKGRD FIXED 13. 9. 15. 8. NET RET NDUAL 0. 0. 5. 5.	COSTS FEED 36. 32. 50. 29. IND IND	8ACK N INDI USTRY N IVIDUAL 68 62 96 61	ET RETUR VIDUAL 25. 16. 48. 6. ET	YSL WT 10 £1 11	T3 35 76. 76.	FEEDLOI 61. 87. 77. 87.	FIXED 15. 15. 15. 15.	IND	I VIDUAL 23 41. _26 41.		
HAPMON BREED BRA HER SIM BREED BRA BREED	D CATTLE STR/ C/ C C C T TKO CA	CO AIGHIBR ARRY AP 00.0 037.0 037.0 037.0 037.0 11.7 79.1 CARC bT 673.7 72.9 687.7 717. DRELD I ARRY AP	ED_PERFO CALF CNDP 0.70 0.70 0.85 0.78 ED_PERFO RET CUTS 444. 489. 433. 466. ROTATION CALF CHUP	ATES_MAD RMANCE	NET RETURN 31. 24. 38. 38. 7 VALUE ACTUAL 440. 485. 429. 463. NET RETURN	DAY TO 700 119. 80. 133. 73. 73. PACKEH INDIV -1 -2 -3 -2 -2 DAY TO 7C0	BACKGRD FIXED 13. 9. 15. 8. NET RET NDUAL 0. 5. 5. 5.	 FEED 36 29. IND IND 		ET RETUR VIDUAL 25 16. 48. 6. ET	<u>ЧSL</u> мт 10 11 11 11 11 11 11 11 11 11	T3 35 76. 76. 74.	FEEDLOI FEED 61. 87. 77. 87. 87.	FIXED 15. 15. 15. 15. 15. 15. 15. 15.	FEED	I VIDUAL 23. 41. 26. 41. 41.	AETURN	
HAPMON BREED BRA CHA HER SIM BREED BRA EA BREED BRACHA		CO AIGHIBR ARCY CAP 00.0 01.7 79.1 CARC bT 673.7 729. 687.7 717. DREED 1 ARRY CARC	ED_PERFO CALF CNOP 0.70 0.85 0.78 ED_PERFO RET CUTS 444. 433. 466. ROTATION CALF CHOP 0.75	ATES_MAD RMANCE	NET RETURN 31, 24, 38, 38, T VALUE ACTUAL 440, 429, 463, 463, NET RETURN 44,	DAY TO 700 119. 80. 133. 73. 73. PACKEH INDIV -1 -2 -2 -2 -2 DAY TO 7CO 79.	BACKGRD FIXED 13. 9. 15. 8. NET RET NDUAL 0. 0. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.	COSTS FEED 36. 32. 50. 29. IND IND IND COSTS_ FEED 29.		ET RETUR VIDUAL 25. 16. 48. 6. ET	YSL WT 10 11 11 11 11 11	T3 35 76. 76. 74. T4 19.	FEEDLOI FEED 87. 77. 87. 87. FEEDLOI FEED 76.	FIXED 15. 15. 15. 15. Costs FIXED 15.	FEED	I VIDUAL 23. 41. 26. 41. 41. 41. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	AETURN	
HAP MON BR EED BRA HER SIM BREED BRA HA HER SIM BREED BRA BREED BRACHA BRACHA BRACHA		CO MIGHIBR MRKY AP 00.0 01.7 9.1 MIGHIBRI CARC LT 673. 729. 687. 717. DREED I MRRY AP 00.4 18.1	DN ESTIM ED PERFO CALF CNOP 0.70 0.70 0.85 0.78 ED PERFO RET CUTS 444. 489. 433. 466. ROTATION CALF CHOP 0.75 0.83	ATES_MAD RMANCE	NET RETURN 31. 24. 56. 38. T VALUE ACTUAL 440. 485. 429. 463. NET RETURN 44. 63.	DAY TO 700 119. 80. 133. 73. 73. PACKEH INDIV -1 -2 -3 -2 DAY TO 7C0 79. 108.	BACKGRD FIXED 13. 9. 15. 8. NET RET NDUAL 0. 0. 5. 5. 5. BACKGRD FIXED 9. 12.	COSTS FEED 36. 32. 50. 29. IND IND COSTS FLED 29. 38.		ET RETUR VIDUAL 25. 16. 48. 6. ET	N SL WT 10 L1 11 U 10	τ3 35 76. 76. τ4. 19. 84.	FEEDLOI 61. 87. 77. 87. 87. 87. 87. 87. 87. 87. 87	FIXED 15. 15. 15. 15. 15. 15. FIXED 15. 15.	FEED	I VIDUAL 23. 41. 26. 41. 41. 41. 41. 41. 41. 41. 41	AETURN	
HAPMON	D CATTLE STR/ C/ C 10 8 10 10 10 10 10 10 10 10 10 10 10 10 10	CO AIGHIBR ARCY CAP 00.0 01.7 79.1 CARC bT 673.7 729. 687.7 717. DREED 1 ARRY CARC	ED_PERFO CALF CNOP 0.70 0.85 0.78 ED_PERFO RET CUTS 444. 433. 466. ROTATION CALF CHOP 0.75	ATES_MAD RMANCE	NET RETURN 31. 24. 38. 38. T VALUE ACTUAL 440. 429. 463. NET RETURN 44.	DAY TO 700 119. 80. 133. 73. 73. PACKEH INDIV -1 -2 -2 -2 -2 DAY TO 7CO 79.	BACKGRD FIXED 13. 9. 15. 8. NET RET NDUAL 0. 0. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.	COSTS FEED 36. 32. 50. 29. IND IND IND COSTS_ FEED 29.		ET RETUR VIDUAL 25. 16. 48. 6. ET	NSL NSL WSL WSL NSL W	T3 35 76. 76. 74. T4 19.	FEEDLOI FEED 87. 77. 87. 87. FEEDLOI FEED 76.	FIXED 15. 15. 15. 15. Costs FIXED 15.	FEED	I VIDUAL 23. 41. 26. 41. 41. 41. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	AETURN	

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		TWO BREED	ROTATIO	N										
		110 0.000		•										
·	BREED	CARC	KET	MARK	ET VALUE	PACKE	R NET RET	IN	DUSTRY NET					
		wt	CUTS	CARC	ACTUAL		VIDUAL '		DIVIDUAL					
•	BRACHA	711.	473.	427.	469.		15.		77.					
	BRAHER	688.		417.			22.		96.					
·	BRASIM	705.	462.	425.	458.		17.							
0		71.7	462.	435.	462.		28.		93.					
	CHAHER	······································	484.	442.	480.		22.		70.					
	CHASTM	733.							89.					
	HERSTM			<u> </u>	452.		,9 V +		0.4-					
	• •	• • • •					4.4.4					•	•	
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		THREE BRE	ED ROTAT	ION										
	•			·							•			
\sim	BREED	CARRY	CALF	WNG	NET		BACKCRD		BACK NET RETURY	SLTR	EECOLO	TEASTS		
		CAP	CKUP	WT	RETURN	700	FIXED	FEED	INDIVIDUAL			FIXED	INDI VI DUAL	
	PRACHAHER		0.82		59.	87.	10.	33.	19.	1124.	78.		34.	
-														
	BRACHASIN		0.79	554.	49.	66.	7.	26.	5.	1147.	82.	15-	39.	
	BRAHERSTY		0.85	520	63		9.				7.8•_	15•		
~	CHAHERSIM	85.1	0.84	528.	61.	74.	8.	30.	12.	1173.	87.	15.	41.	
		THREE BRE	ED ROTAT	ION										
Ł														- <u></u>
••	BREED	CARC	RET		ET VALUE	PACKE	R NET RET	IN	DUSTRY NET				-	 ₩
		WT	CUTS	CARC	ACTUAL	INDI	VIDUAL	1 N	CIVIDUAL					2.2
	BRACHAHER	705.	462.	428.	459.		22.		90.					
	BRACHASIM	719.	475.	433.	471.	-	18.		76.					200
	BRAHERSIN	704.	455.	426.	452.		23.		90.					•••
	CHAHERSIN	723-	470.	438.	466.		27.		88.					
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\cdot $\mathbf{\nabla}$		SPECIALIZ	in renss	-8001 89	EEN ETDET	COWS								0
•		<u> </u>			CPK-11031		THO COLER							
	BREED	CARRY	CALF	WNG	NET	0 A Y T O	BACKGRD	COSTS	BACK NET BETHOM	SLTR	eccord	TCOSTC	FEFRIOT NET DETUNN	
•	_0/// 0//	CAP	CROP	WT	RETURN	700	FIXED	FEED	BACK_NET_RETURN INDIVIDUAL			I_COSTS_	EEEDLOT_NET_RETURN	······
:										WT	FEED	FIXED	INDIVIDUAL	
	BRA CHAHER		_0.83_	501	5.7	93	10	35	23	1127	<u>79</u>	15	39	
	BRA CHASII		0.81	551.	47.	67.	7.	26.	6.	1152.	82.	15.	46.	
	BRA HERSI		86	5.09	60			34	19		79	15		
•	CHA BRAHEI		0.80	501.	62.	94 .	10.	35.	21.	1120.	77.	15.	28.	
	_CHA BRASI	4 85•8	078	552		68	7	26		1145		15	35	
•	CHA HERS I	4 86.5	0.84	518.	61.	78.	9.	32.	14.	1172.	87.	15.	38.	
	HER BRACH	90.4	0.80	529,		80.	9.		16.	1124	7.8.	15.	3.4	
	HER BRASI		0.83	537.	56.	76.	8.	29.	12.	1124.	78.	15.	34.	
	HER CHASIN		0.84				7.	27		1175		15.		
	SIM BRACH		0.77	544.	51.	71.	8.	27.	7.	1145.		15.	35.	
	SIM BRAHER		U_82		66	94	10	35	19		77.	15.	28.	
	SIM CHAHEI		0.83	510.	62.	82.	9.	· 34.	17.			<u> </u>	38.	
	JIN CEARES	71.3	0.03	510+	02.	02.	7.	34.	1/-	1172.	87.	12+	30.	
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		SPECIALIZ		-BULL BR	EED FIRST	COWS	TWO BREED	RUTATI	UN NEXT					
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	BREED	CARC			ET VALUE		R NET RET		DUSTRY NET					
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	DKA CHAS						19.		98.					
	BRA CHAS		460.	431.	456.	-	17.		70.					
	BRA HERS	IM 712.	460.	431.	456.		27.							
	BRA HERS	1M 712. ER697		421			27			<u></u>				§
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<u>_</u>	BRA HERS _CHA_ BRAH CHA BRAS _CHA_ HERS	IM 712. ER697 IM 711. IM719	455	421 429_ 436	451. 465. 463.	-	27.							
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0	BRA HERS _CHA_ BRAH CHA BRAS _CHA_ HERS HER BRAC HER_BRAS	IM 712. ER697 IM 711. IM719 HA 707. IM703	455 469. 465. 463. 455.	421 429. 436 427. 426.	451. 465. <u>- 663.</u> 459. - 452.		27 <u>.</u> 22. 30 <u>.</u> 22. 23.		83 67. 84 79. 78	·				
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	BRA HERS CHA BRAS CHA BRAS CHA HERS HER BRAC HER BRAC HER CHAS	IM 712. ER 697 IM 711. IM 719 HA 707 IM 703 IM 729 HA 712 ER 694	455 469. 463. 453. 455 474. 470. 448.	421 429. 436. 427. 426. 441.	451. 465. 463. 459. 459. 471.		27. 22. 30. 22. 23. 24.	·	83 67. 84. 79. 78. 81.					MODEL BUJ-M 131 TOTAL INC

PREDICTION OF FEEDLOT PERFORMANCE AND CARCASS MERIT BY VISUAL APPRAISAL OF LIVE-ANIMAL TRAITS¹

John D. Crouse²

Accurate, reliable methods for predicting feedlot performance and carcass merit would be valuable for beef improvement programs. Visual evaluation is easily obtained, rapid, inexpensive and lends itself to widespread application. Consequently, for many years the beef cattle industry has been searching for new techniques, as well as trying to improve old techniques, of predicting feeder calf performance or carcass merit by live-animal traits.

An appraiser can, generally, find himself in one of four situations evaluating steers. The population being evaluated will either be feeder calves or slaughter steers and will be homogeneous or heterogeneous in body type and management. A homogeneous population would be typical of a single breed or breed cross produced by a seedstock producer who has minimized environmental variation, such as feeding and management practices, in order to accurately appraise genetic differences between animals. A heterogeneous population would be typical of a market population of feeders or slaughter animals consisting of animals of a wide range in breed type or maturity and produced under a broad range of environmental conditions.

The study reported here was conducted to determine the value of certain subjective and objective live-animal traits for predicting future performance and carcass merit of steers representing various breed types and management conditions.

Source of Data Studied

The data for this study were derived from the Germ Plasm Evaluation program being conducted at the U.S. Meat Animal Research Center to evaluate and characterize various genetic resources for beef production.

A total of 452 calves sired by Hereford, Angus, Jersey, South Devon, Limousin, Simmental and Charolais bulls out of Hereford and Angus cows were used.

The steers were weaned, evaluated, fed in a feedlot, weighed every 28 days and re-evaluated before slaughter in three groups after 215, 243 and 271 days on feed. Visual observations were made by three experienced appraisers from the Agricultural Marketing Service, Kansas State University and the U.S. Meat Animal Research Center. The three appraisers independently evaluated the steers at weaning for 13 live-animal traits and U.S.D.A. (1965a) feeder grades (coded Good = 7, 8, 9; Choice = 10, 11, 12; Prime = 13, 14, 15). Disposition was scored on a 3-point scale with Gentle = 1, Active = 2, and

¹Presented at the Beef Improvement Symposium on Animal Evaluation of Beef Cattle, Fourth Annual Beef Improvement Federation Program, April 11, 1973, Omaha, Nebraska.

 $^{^2}$ U.S. Meat Animal Research Center, ARS, USDA.

Wild = 3. Hair coat was scored with Long = 1, Medium = 2, and Short = 3. The remaining 11 traits were scored on a 10-point scale with one and 10 representing extremes. Overall muscling and muscling of round was scored in relation to skeletal size with extremely thick = 1. Depth of body was skeletal depth at the heart girth in relation to length with extremely deep = 1. Width between hind legs was scored extremely wide = 1 to extremely narrow = 10. Extremely heavy bone was scored one. Growth potential scores of one correspond to extrmely good. Height reflected height at maturity, extremely tall = 1. Length of rump was an evaluation of length from hooks to pins in relation to body length with extremely long = 1. Length of body was length from first rib to aitch bone with extremely long bodied calves scored one. Trimness was evaluated as the degree of fat deposition in the throat dewlap, brisket, belly, flank and twist and scored extremely thin = 1. Condition was evaluated from extremely thin = 1 to extremely fat = 10 (with extremely fat > 0.4 inches of fat).

Evaluation at slaughter included the above traits with estimations of U.S.D.A. (1965b) carcass quality grade (QG), cutability grade (CG), 12th rib fat thickness (FT), ribeye area (REA) at the 12th rib, conformation and percentage of kidney, pelvic and heart fat (% K,P&H) replacing estimates of hair coat, disposition, feeder grade and growth potential.

U.S.D.A. yield grades, quality grades (coded Good = 7, 8, 9; Choice = 10, 11, 12; Prime = 13, 14, 15) and factors affecting grades were obtained 24 hours postmortem. The right side of each carcass was transported to Kansas State University and cut into semi-boneless retail cuts leaving no more than 0.3 inch fat cover.

Results

Feeder Calf Observations:

Average estimates of feeder calf traits and intraclass correlations are presented in table 1. The intraclass correlations (t) have possible values ranging to a correlation of 1.0. This would indicate perfect agreement among appraisers in their evaluation of traits. The intraclass correlation of 0.71 for feeder grade estimates indicate a high degree of agreement among appraisers estimating this trait. Similar high correlations among appraisers were found for all traits except evaluations of hair coat (t = 0.36) and length of rump (t = 0.18).

The population of feeder calves considered by the appraisers had a feeder grade of high choice with an overall condition score of 6.6, slightly to moderately fat and an average weight of 476 pounds.

<u>Correlations of a heterogeneous group of feeder calves with carcass</u> and growth traits - Correlations between traits of a heterogeneous group of feeder calves and selected carcass and growth characteristics are presented in table 2. These results are appropriate when drawing inference to a population of cattle consisting of a wide range in biological type and maturity, typical of offspring derived from germ plasm of domestic and new "exotic" breeds and fed for 215 to 271 days.

Correlations have a possible range of -1.0 to +1.0 with 1.0, ignoring the sign, being perfect and 0.0 being the lowest. The sign of the correlation merely reflects the direction of the scale used in scoring and the correlation coefficient is a measure of mutual association between live-animal traits with growth and carcass traits. The correlation between feeder grade and carcass overall conformation of 0.74 indicates a high association between the variation of these two traits. As feeder grade increased carcass conformation increased. This would indicate that feeder grades of cattle, varying widely in breed type and management, would be good predictors of carcass conformation. The correlation of -.04 between feeder grade and carcass quality indicates that feeder grades would be of little value in predicting carcass quality grades.

The correlation of 0.36 between feeder grade and percentage of actual cutability indicates a moderate degree of association between variation in these two traits. Other live-animal traits which would be considered moderate indicators of cutability are trimness, muscling of round and depth. Calves that were trimmer in the dewlap, brisket, belly, flank and twist, muscular in the round, and shallower bodied, tended to have higher cutability when slaughtered after 215 to 271 days on feed.

The best live-animal indicator of feedlot gains would be growth potential scores. The association between growth potential score and feedlot gain (r = -.47) was higher than that between preweaning daily gain and feedlot gain (r = 0.24). Other low to moderate predictors of feedlot gains would be size of bone, width between legs, height and length.

Prediction of a heterogeneous group of feeder calves growth and subsequent carcass characteristics by live-animal traits - In order to determine the value of single and multiple live-animal traits as predictors of feedlot gains and subsequent carcass merit, prediction equations, presented in table 3, were developed. Like the correlation analysis, these equations are applicable to a population of a broad range in breed-type and management. The percentage of variation of carcass or growth traits accounted for by live-animal traits in the equations is given by $R^2 \times 100$.

Feeder grades accounted for 13% of the variation in percentage of actual cutability. The best predictor of carcass cutability accounted for 41% of the variation and included seven live-animal traits. Each trait in the equation improved the accuracy of the entire equation and is entered in order of its individual importance. No meaningful additional accuracy would be gained by incorporating an additional trait into the equation.

No trait nor combination of traits produced a meaningful estimator of carcass quality. This indicates that the appraisers were not able to rank feeder calves for expected carcass quality grades by traits observed.

The best predictor of feedlot gains included two traits, size of bone and growth potential, and accounted for 24% of the variation. This degree of association would be considered a low value resulting in poor estimates of animal to animal differences.

<u>Correlations of a homogeneous group of feeder calves with carcass and</u> <u>growth traits</u> - Results of the correlation analysis within breed types and management systems are presented in table 4. Results from this analysis are applicable to animals within a breed or breed cross which have been fed and managed alike. This population would be typical of that of a seedstock producer where animal differences that are due to environment have been minimized in order to more accurately measure genetic differences. Correlations between feeder calf live-animal traits and percentage of actual cutability are generally very low to low with the exception of condition scores (r = 0.30) and average daily gain from birth to weaning (r = -.31). Within breeds, trimmer calves with slower preweaning average daily gains tend to have the highest cutability. These two traits should produce the best estimate of subsequent carcass cutability.

Again, no individual feeder calf trait appears to be associated with carcass quality grades. Feeder calf grades appear to be more highly associated with carcass conformation than other growth and carcass traits.

Prediction of a homogeneous group of feeder calves growth and subsequent carcass characteristics by live-animal traits - (table 5) On a within breed type, management system basis, a prediction equation with feeder calf grades only accounted for 1% of the variation in percentage of actual carcass cutability. The best predictor of carcass cutability applying negative emphasis to preweaning ADG, condition score and overall muscling score only accounted for 16% of the total variation. No single trait nor combination of traits produced a meaningful estimator of carcass quality grades.

The best predictor of feedlot gains accounted for 13% of the variation in feedlot gains and included four live-animal traits, growth potential, overall muscling, height and condition.

<u>Comparison of correlations between feeder calf traits with carcass and</u> <u>growth characteristics of the two populations - Correlations of live-animal</u> traits with carcass traits are presented in table 6. Generally, correlations within breed type populations are much lower than correlations with populations including all breed types studied. This is due to the fact that the "built in" correlation found in going from one breed to another is removed in the within breed type, treatment correlations. In other words, as appraisers move from Jersey crosses to Limousin crosses in estimating conformation or feeder grade, a difference that is due to breed type is detected and recorded. However, within a breed type, these differences in conformation are relatively small and not readily detected.

An example of this is the high correlation between feeder grade and carcass conformation in the overall population. This associated response of variables was reduced to less than half within a given breed type and management system. A more dramatic example of population differences affecting an appraiser's ability is the reduction in the correlation coefficient between feeder grade with cutability. On an overall basis the correlation was 0.36; however, on a within breed basis, it was reduced to -.09. This change in association would indicate that not only was feeder grade a poor predictor of cutability within breed types, but also that increases in feeder grade were associated with decreased carcass cutability within breed types.

An example of a live-animal trait which may be of more value in detecting differences within a given breed type and management system than in an overall heterogeneous population, is that of average daily gain from birth to weaning. This correlation increased from -.02 overall breed types to -.31 within breed types indicating it is more useful for predicting cutability on a within breed type basis. Apparently, within breeds, preweaning growth reflected maternal performance and calves with more rapid growth were fatter, reducing cutability.

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Slaughter steer live-animal traits:

Means and intraclass correlations of scores by the three appraisers are presented in table 7. The agreement among appraisers again appears high on most linear animal measurements. Length of rump once again appeared to be the most difficult to determine. The steers were estimated to have a carcass quality grade of 10.6 (low to average choice) and a yield grade of 3.1. Feedlot gains were 2.44 lb/day and an average slaughter weight of 1059 lb. was obtained.

<u>Correlations of live-animal slaughter steer traits of a heterogeneous</u> <u>population with carcass characteristics</u> - The three appraisers had more success as determined by the correlation analysis, table 8, estimating carcass quantitative characteristics such as cutability than qualitative characteristics such as quality grade. Other investigations have indicated that trained personnel could account for more variation estimating carcass yield grade and fat thickness than estimating quality grade. It has been suggested that the difficulty in estimating quality grade was due to the appraisers inability to estimate marbling.

Live-animal estimates of yield grades were correlated highly with percentage of actual cutability (r = -.81). Similar high correlations were found between live-animal estimates of linear carcass measurements, fat thickness and ribeye area. This correlation indicates that appraisers should be able to reasonably estimate carcass cutability of a heterogeneous group of cattle based on live-animal evaluations.

Prediction of carcass characteristics by slaughter steer traits of a heterogeneous population - Table 9 presents prediction equations written to determine the value of slaughter steer traits in predicting carcass characteristics.

Slaughter steer grades accounted for 13% of the variation in carcass quality grades. The only live-animal trait which would make any contribution to an equation including slaughter steer grades was estimates of fat thickness; however, this improvement was small and the practical importance questionable.

Live-animal estimates of yield grade accounted for 65% of the variation in carcass cutability. This degree of success would be considered high. Live-animal estimates of yield grades should be useful in market slaughter steer populations consisting of diverse breeds or crosses and fed for different lengths of time.

Live-animal traits were used to develop an equation for predicting carcass cutability. Each trait entered was found to be important to the accuracy of the equation. However, the 4% improvement in the accuracy of the equation over estimates of yield grade alone is relatively small for field purposes.

Correlations between live-animal slaughter steer traits of a homogeneous population with carcass traits - Correlations between live-animal traits and carcass characteristics within a breed type and management system were generally low to moderate. Estimates of fat thickness and slaughter steer grades appear to be most highly correlated with quality grades (table 10). This is also true of marbling scores.

Linear estimates of fat thickness and ribeye area were moderately associated with carcass measurements. Live-animal estimates of percentage of heart, kidney and pelvic fat were not highly correlated with carcass estimates (r = 0.26). The live-animal trait most highly associated with carcass cutability was yield grade (r = -.61).

Prediction equations of carcass characteristics by slaughter steer traits of a homogeneous population - Slaughter steer live-animal estimates of quality grades only accounted for 5% of the variation in carcass quality grades (table 11). The addition of fat thickness increased the accountable variation to 7%. This percentage of variation accounted for would be considered very low and of little value in predicting carcass quality.

Live-animal estimates of yield grade accounted for 37% of the variation in carcass cutability. Development of an equation using multiple liveanimal traits increased the variation accounted for in carcass cutability to 44%. The use of yield grades in a homogeneous population, consisting of animals of the same breed, fed and managed alike, would be of low to moderate value in predicting carcass composition.

Genetic correlations and heritability were not estimated in this study. If genetic correlations are of the same magnitude as phenotypic correlations it does appear that improvement from selection based on live-animal appraisal would be as rapid as improvement from selection based on progeny testing and direct measure of carcass traits. Although progeny testing is more accurate, improvement is slow because of reduced intensity or the small proportion of bulls progeny tested and a long generation interval.

<u>Comparisons of correlations between slaughter steer traits with carcass</u> <u>characteristics of the two populations</u> - Table 12 combines the two correlation tables of the two populations for slaughter steer and carcass traits. Similar to the feeder correlations, overall correlations are greater than within breed type correlations.

The degree of association between slaughter steer traits and carcass traits on a within basis is not reduced as much as it was with feeder calf traits. This indicates that within breed type animal to animal differences are greater at slaughter and the appraisers able to detect these differences more accurately.

It is interesting to note that within subclass correlations of live weight with quantitative carcass characteristic, percentage of actual cutability, increased. This increased association would indicate that live weight or carcass weight would be more valuable as a predictor of cutability within breed types than over all breed types.

Conclusions

- 1. Feeder calf performance or subsequent carcass merit cannot be predicted by visual appraisal.
- 2. Slaughter steer quality grades cannot be determined by visual appraisal.
- 3. Slaughter steer cutability can be determined with useful accuracy by visual appraisal in a heterogeneous group of cattle which vary widely in breed type.
- 4. Appraisers have more difficulty detecting animal differences at slaughter within a breed type managed under similar conditions.
- 5. It appears that genetic improvement based on visually appraised selection criteria will be slow.
- 6. Live-animal evaluation or appraisal of carcass composition, especially yield grade, should be useful in screening prospects for more accurate evaluation with progeny test.

- U.S.D.A. 1965a. Official United States standards for grades of feeder cattle. Title 7, Ch. I, Pt. 53, Sections 53.201, 53.207 and 53.208. March U.S.C. & M.S.
- U.S.D.A. 1965b. Official United States standards for grades of carcass beef. Title 7, Ch. 1, Pt. 53, Sections 53.102 - 53.106. June. U.S.C. & M.S.

TABLE 1. MEANS AND INTRACLASS CORRELATIONS FORESTIMATES OF FEEDER CALF TRAITS BY APPRAISER MEANS

Trait	Meana		Intraclass correlation
Feeder grade ^b	11.7	(Good ⁻ =7 to Prime ⁺ =15)	0.71
Disposition	1.9	(Gentle=1 to Wild=3)	0.55
Condition	6.6	(Thin=1 to Wasty=10)	0.51
Overall muscling	3.5	(Thick=l to Thin=:0)	0.74
Length of rump	5.0	(Long=1 to Short=10)	0.18
Size of bone	5.1	(Heavy=1 to Fine=10)	0.71
Width between legs	5.7	(Wide=1 to Narrow=10)	0.79
Growth potential	4.7	(Good=1 to Poor=10)	0.70
Hair coat	2.4	(Long=1 to Short=3)	0.36
Muscling of round	3.4	(Thick=1 to Thin=10)	0.76
Length of body	4.9	(Long=1 to Short=10)	0.59
Depth of body	4.9	(Deep=1 to Shallow=10)	0.63
Height	5.1	(Tall=1 to Short=10)	0.62
Trimness	5.0	(Trim=1 to Wasty=10)	0.62
Avg. daily gain birth to weaning, lb.	1.86		
Weaning weight, lb.	476.3		

^aThe mean of 3 judges evaluating 449 animals.

^bGood = 7, 8, 9; Choice = 10, 11, 12; Prime = 13, 14, 15.

TABLE 2. CORRELATIONS OF A HETEROGENEOUS GROUP OF FEEDER CALF

TRAITS WITH SELECTED GROWTH AND CARCASS CHARACTERISTICS

	Feeder Calf Traits													
Carcass characteristics	Feeder grade	Condition	Trim- ness	Muscle	Muscle round	Size bone	Daily gain	Growth	Length rump	Length	Depth	Height	Width legs	
Cutability actual, %	0.36	30	45	29	35	22	02	31	34	33	0.50	24	19	
Quality grade, U.S.D.A.	04	0.15	0.22	0.03	0.02	0.08	0.05	0.16	0.18	0.20	23	0.16	0.13	
Carcass overall conformation	0.74	0.24	13	70	75	41	0.23	18	30	13	0.27	04	06	
Feedlot gain	0.27	07	19	16	21	38	0.24	47	16	33	0.21	35	38	

^aAverage daily gain from birth to weaning.

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TABLE 3. PREDICTION EQUATIONS OF A HETEROGENEOUS GROUP OF FEEDER CALVES GROWTH

Dependent variable	R ²	Inter- cept	Regression coefficients ^a and trait										
Cutability actual, %	0.13 0.41	44.43 71.91	+0.65 (Feeder grade) -0.88 (Rump length) -0.86 (Finish) -0.86 (Round muscling) -2.44 (Avg., B-W) ^b -0.70 (Growth potential) +0.76 (Height) -0.58 (Trimness)										
Quality grade	0.00 0.08	10.64 9.08	-0.03 (Feeder grade) -0.30 (Depth) +0.33 (Rump length) +0.09 (Feeder grade)										
Feedlot gain	0.24	3.13	-0.08 (Size of bone) -0.08 (Growth potential)										

AND CARCASS CHARACTERISTICS BY FEEDER CALF TRAITS

^aCoefficients entered in order of importance to equation.

^bAverage daily gain from birth to weaning.

TABLE 4. CORRELATIONS OF A HOMOGENEOUS GROUP OF FEEDER CALF

TRAITS WITH SELECTED GROWTH AND CARCASS CHARACTERISTICS^a

						Feeder	Calf T	raits					
Carcass characteristics	Feeder grade	Condition	Trim- ness	Muscle	Muscle round			Growth	Length rump		Depth	Height	Width legs
Cutability actual, %	09	30	10	0.00	0.04	0.12	31	0.14	09	0.04	0.16	0.14	0.19
Quality grade, U.S.D.A.	0.03	0.11	0.11	0.00	05	0.03	0.10	0.04	0.07	0.06	09	0.04	0.02
Carcass overall conformation	0.36	0.26	0.08	43	42	03	0.10	0.07	08	0.05	08	0.14	0.08
Feedlot gain	0.04	04	05	0.04	0.02	09	0.19	30	0.00	24	0.02	28	29

^aWithin analysis is applicable in a population of cattle similar in management and biological type.

^bAverage daily gain from birth to weaning.

TABLE 5. PREDICTION EQUATIONS OF A HOMOGENEOUS GROUP OF FEEDER CALF

Dependent variable	R ²	Inter- cept	Regression coefficients ^a and trait
Cutability	0.01	54.25	-0.19 (Feeder grade)
actual, %	0.16	62.77	-2.11 (Avg., B-W) ^D -0.74 (Condition) -0.54 (Overall muscling)
Quality	0.00	9.87	-0.04 (Feeder grade)
grade	0.01	9.27	+0.16 (Condition)
Feedlot gain	0.13	3.70	-0.04 (Growth potential) -0.09 (Overall muscling) -0.06 (Height) -0.04 (Condition)

GROWTH AND CARCASS CHARACTERISTICS BY FEEDER CALF TRAITS

^aCoefficients entered in order of importance to equation.

^bAverage daily gain from birth to weaning.

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		Feeder Calf Traits													
Carcass characteristics	Sub- class	Feeder grade	Finish	Trim- ness	Muscle	Muscle round	Size bone	Daily ^a gain	Growth potent.			Depth	Height	Width legs	
Cutability	Overall ^b	0.36	30	45	29	35	22	02	31	34	33		24	19	
actual, %	Within ^C	09	30	10	0.00	0.04	0.12	31	0.14	09	0.04		0.14	0.19	
Quality grade,	Overall	04	0.15	0.22	0.03	0.02	0.08	0.05	0.16	0.18	0.20	23	0.16	0.13	
U.S.D.A.	Within	0.03	0.11	0.11	0.00	05	0.03	0.10	0.04	0.07	0.06	09	0.04	0.02	
Carcass overall conformation	Overall	0.74	0.24	13	70	75	41	0.23	18	30	13	0.27	04	06	
	Within	0.36	0.26	0.08	43	42	03	0.10	0.07	08	0.05	08	0.14	0.08	
Feedlot gain	Overall Within	0.27 0.04	07 04	19 05	16 0.04	21 0.02	38 09	0.24 0.19	47 30	16 0.00	33 24	0.21 0.02		38 29	

^aAverage daily gain from birth to weaning.

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^bOverall analysis is applicable in a population of cattle varying greatly in management and biological type.

^CWithin analysis is applicable in a population of cattle similar in management and biological type.

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TABLE 7. MEANS AND INTRACLASS CORRELATIONS FOR

ESTIMATES OF SLAUGHTER STEER TRAITS BY APPRAISER MEANS

Trait	Mean ^a		Intraclass correlation
Steer grade ^b	10.6	(Good ⁻ =7 to Prime ⁺ =15)	0.45
Yield grade	3.1		0.69
Fat thickness, in	0.5		0.70
REA, in ²	11.8		0.82
K, H & P fat, %	3.5		0.46
Conformation	12.2	(Good ⁻ =7 to Prime ⁺ =15)	0.66
Muscling score	3.3	(Thick=l to Thin=l0)	0.73
Size of bone	5.4	(Heavy=1 to Fine=10)	0.75
Length of rump	5.1	(Long=1 to Short=10)	0.03
Length of body	4.7	(Long=1 to Short=10)	0.57
Depth of body	4.6	(Deep=1 to Shallow=10)	0.47
Height	4.7	(Tall=1 to Short=10)	0.66
Width between legs	3.7	(Wide=1 to Narrow=10)	0.41
Trimness	4.6	(Trim=l to Wasty=l0)	0.54
Feedlot gain, lb/day	2.44		
Live weight, 1b	1059.5		

^aThe mean of three judges evaluating 452 animals.

^bGood = 7, 8, 9; Choice = 10, 11, 12; Prime = 13, 14, 15.

TABLE 8. CORRELATIONS OF A HETEROGENEOUS GROUP OF SLAUGHTER STEER

TRAITS WITH SELECTED GROWTH AND CARCASS CHARACTERISTICS^a

Carcass characteristics	Steer grade	Yield grade	Fat thick	% REA	K,H&P fat	Confor- mation				Body length	Body depth	Height	Width	Trim- ness	Live weight	Feedlot gain
Quality grade U.S.D.A.	0.35	0.32	0.32	08	0.25	02	0.06	0.02	0.11	0.24	28	0.19	11	0.30	0.06	03
Marbling	0.27	0.35	0.25	21	0.37	22	0.26	0.20	0.11	0.29	32	0.23	0.09	0.31	01	08
Cutability actual, %	57	81	69	0.40	70	0.40	51	29	17	48	0.61	39	16	74	06	0.13
Fat thickness, adj.	0.60	0.70	0.76	19	0.47	08	0.18	0.12	0.11	0.40	49	0.34	11	0.67	0.15	04
REA	0.00	33	12	0.67	27	0.42	44	36	12	43	03	44	44	22	0.57	0.34
K, H & P fat, %	0.15	0.35	0.13	19	0.58	48	0.52	0.39	0.08	0.09	41	0.01	0.30	0.30	0.12	18

^aOverall analysis is applicable in a population of cattle varying greatly in management and biological type.

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TABLE 9. PREDICTION EQUATIONS OF CARCASS CHARACTERISTICS BY SLAUGHTER

Dependent variable	R ²	Inter- cept	Regression coefficients ^a and traits
Quality grade	0.13 0.14	5.50 6.16	+0.46 (Slaughter steer grade) +0.33 (Slaughter steer grade) +0.14 (Fat thickness)
% Actual cutability	0.65 0.69	65.56 63.77	-4.42 (Yield grade) -0.50 (Trimness) -1.24 (% K,H&P) -0.76 (Muscling score) -0.79 (Fat thickness) +0.22 (Size of bone)

STEER TRAITS OF A HETEROGENEOUS GROUP

^aCoefficients entered in order of importance to equation.

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TABLE 10. CORRELATIONS OF A HOMOGENEOUS GROUP OF SLAUGHTER STEER

TRAITS WITH SELECTED GROWTH AND CARCASS CHARACTERISTICS^a

Carcass characteristics	Steer grade	Yield grade	Fat thick	% REA	K,H&P fat	Confor- mation				Body length	Body depth	Height	Width	Trim- ness		Feedlot gain
Quality grade U.S.D.A.	0.23	0.22	0.25	0.01	0.18	0.09	01	0.01	0.06	0.12	14	0.09	13	0.22	0.07	0.02
Marbling	0.18	0.17	0.18	03	0.14	0.04	0.02	0.03	0.04	0.15	12	0.10	04	0.14	0.04	0.05
Cutability actual, %	42	61	58	04	56	0.00	24	05	13	07	0.47	0.02	0.04	53	33	21
Fat thickness, adj.	0.41	0.57	0.59	0.10	0.51	0.12	0.08	0.02	0.00	0.06	35	03	14	0.51	0.33	0.24
REA	0.20	02	0.11	0.51	0,.08	0.32	31	18	06	22	22	21	31	0.05	0.47	0.29
K, H & P fat, %	0.15	0.28	0.19	0.11	0.26	07	0.15	0.02	0.15	12	25	12	0.02	0.21	0.29	0.07

^aWithin analysis is applicable in a population of cattle similar in management and biological type.

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TABLE 11. PREDICTION EQUATIONS OF CARCASS CHARACTERISTICS BY SLAUGHTER

STEER TRAITS OF A HOMOGENEOUS GROUP

Dependent variable	R ²	Inter- cept	Regression coefficients ^a and traits									
Quality grade	0.05 0.07	6.31 7.03	+0.38 (Slaughter steer grade) +0.21 (Fat thickness) +0.21 (Slaughter steer grade)									
% Actual cu ta bility	0.37 0.44	62.67 65.92	-3.48 (Yield grade) -0.56 (Fat thickness) -0.81 (Muscling score) -0.44 (Trimness) -0.0024 (Live weight) -1.15 (% K,H&P)									

^aCoefficients entered in order of importance to equation.

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TABLE 12.	CORRELATIONS	0F	SLAUGHTER	STEER	TRAITS	WITH	SELECTED	GROWTH	AND	CARCASS	CHARACTERISTICS	

Carcass characteristics	Sub- class		Fat thick			Confor- mation				Body depth	Height	Width	Trim- ness	Live weight	Fdlt gain
Quality grade U.S.D.A.	Overall ^a Within ^b		0.32 0.25	08 0.01		02 0.09	0.06 01		0.24 0.12		0.19 0.09			0.06	03 0.02
Marbling	Overall Within	0.27 0.18	0.25 0.18			22 0.04	0.26 0.02		0.29 0.15	32 12	0.23 0.10			01 0.04	08 0.05
Cutability actual, %	Overall Within		69 58			0.40 0.00			48 07		39 0.02			06 33	
Fat thickness, adj.	Overall Within	0.60 0.41	0.76 0.59			08 0.12	0.18 0.08	0.11 0.00	0.40 0.06		0.34 03			0.15 0.33	
REA	Overall Within		12 0.11			0.42 0.32		12 06	43 22		44 21			0.57 0.47	
K, H & P fat, %	Overall Within	0.15 0.15		19 0.11	0.58 0.26	48 07	0.52 0.15		0.09 12		0.01 12	0.30 0.02		0.12 0.29	18 0.07

^aOverall analysis is applicable in a population of cattle varying greatly in management and biological type.

^bWithin analysis is applicable in a population of cattle similar in management and biological type.

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THE VIRGINIA MODIFIED GRADING SYSTEM

A. L. Eller, Jr. Extension Livestock Specialist Virginia Polytechnic Institute & State University Blacksburg, Virginia

It is indeed a pleasure and honor for me to be asked to appear on this panel dealing with the subject of Visual Evaluation of Cattle in Performance Programs. This has, perhaps, been the most cussed and discussed subject over the years since performance testing became accepted as a tool to beef cattle improvement. The subject of visual appraisal and performance records has a long and fiery history and we might say it has a real historical background and at times, people have become more than historical, they have become hysterical over the subject.

It does appear that visual appraisal has a very definite role to play in performance programs and I believe we are closer than we ever have been to coming up with a workable system that will be meaningful and useful to cattle breeders.

Any system that we work toward should meet the following criteria:

- (1) Be descriptive and not comparative.
- (2) Be tied closely to the commercial industry in the classifying of breeding cattle in such a way that it will tie into a meaningful classification system for feeder cattle, which should be based on categorizing cattle into homogenous outcome groups. The commercial industry right now is in need of leadership in arriving at a system for sorting and trading feeder cattle.

It appears to me that there are three measurable traits in beef cattle which have a basic relationship and all three may be used to describe the kind and potential breed value of the animal. These are:

Weight
 Fatness
 Skeletal size

In analyses of data in which all three of these measures are available, it would appear that if we know two of these, we could quite accurately predict the third. In any event, two of these measures can be and must be in many instances assessed visually. They are fatness and skeletal size. We could actually assess muscling or fatness and in essence do the same jobbecause they are basically inversed to one another if we hold weight constant.

The system of grading or scoring that we are presently using with our Virginia Beef Cattle Improvement Association Performance Testing Program, and have used for the past year, is as follows:

- 54 I. Conformation Score (type score or grade) This is the conformation score that has been recommended by BIF and used widely throughout the industry, but it should be called a preference score rather than a conformation score because as our ideas change, cattle fitting the various scores are not the same. For instance, the cattle that were scored 15, 16, and 17 ten and fifteen years ago are quite different than those scored 15, 16, and 17 today. They will probably be different in the future. Thus, this system does not meet the criteria of being descriptive. It is a comparative system, but we still use it. We apply these scores as follows:
 - 17, 16, and 15 In general the cattle scoring in this range are the larger framed, thicker muscled, very correct cattle that have ideal composition of weight.
 - 14, 13, and 12 The cattle that fit this description as we apply it are the larger framed and/or thicker muscled cattle that are basically correct but are not quite as outstanding as the top group.
 - 11, 10, and 9 This category as we apply it are the average or below average framed cattle and/or the average or below average muscled cattle that may not be as correct but are basically sound. Cattle in this category generally do not have as desirable a composition of weight.
 - 8, 7, and 6 In this category we fit the smaller framed and/or thinner muscled cattle that are not generally as correct and may not be sound. Cattle in this category may have poor composition of weight.
 - 5 This score is reserved for very non-descript, common kinds of cattle.
 - 4 This score is reserved for double-muscled cattle.
 - 3 This score is for dwarfs.

This system is truly a preference score and tends to evaluate the whole animal and again it shifts with preference and industry demands as they change.

II. Condition Scores:

We are using a 17 high system to score condition as follows:

17, 16, and 15 - Extremely fat
14, 13, and 12 - Above average
11, 10, and 9 - Average
8, 7, and 6 - Below average
5, 4, and 3 - Extremely thin

Visually appraising condition score helps evaluate weight and size (composition). This is an eyeball measure and does not measure fatness per se, but is confounded with general conformation. It does help evaluate size and composition. On yearlings we prefer ultrasonically measured fat thickness which tends to evaluate fatness more accurately. We think that some form of visual appraisal as to condition or fatness is highly desirable in a set of performance records.

III. Frame Scores (body type):

We have found that we can be quite repeatable in visually appraising frame size or body type. The alternate to doing this by eye would be to measure height and/or length. The scoring system we are using is as follows:

- 1 small, short in every dimension, and extremely early maturing.
- 2 below average size and above average in maturity rate for the breed compared to the average of the breed.
- 3 average for the breed
- 4 above average in frame size and later maturing than average
- 5 Very large and long in every dimension and the latest maturing category compared to the breed average.

This measure seems to be quite useful in characterizing kind and size and helps considerably in the description of the animal. The only question I have is regarding whether or not the 1 to 5 scale is sufficient. The real question is whether these scores should be based on the breed average or whether they should categorize cattle regardless of breed.

IV. Muscle Scores:

We have found muscle scores to be confounded with general conformation and fatness and we have not been as repeatable in scoring muscle thickness as we would like to be. We are scoring it as follows based on the breed average:

- 1 Extremely thin muscled
- 2 Below average of the breed
- 3 Average for the breed
- 4 Above average
- 5 Extremely thick muscled but not double muscled

I think the usefulness in scoring muscling is simply to pick out the extremes.

V. Soundness Score:

We feel that this can be done and should be done in a simple manner and we are using a 1 to 3 scale where 1 is complete unsound for any reason; 2 is sound but has some fault or faults insofar as correctness is concerned which might be crooked leggedness, humpbacked or many other deviations from ideal; 3 is sound. We think soundness score on a simple basis such as what we are using is all that is necessary and is helpful in a set of records as far as determining the value of animals.

Again I would stress that we need to use visual evaluation to describe animals not to compare them. The system we use should tend to evaluate or classify animals insofar as kind and not compare kinds of animals.

The same kind of animal is not right for all segments of the industry as has been brought up many times in this meeting already. High producing animals come in several different kinds of packages, so we want to be careful not to stereotype one particular kind and call it ideal at the expense of all others. We have made this mistake many times before in the beef cattle industry. We really need to be able to, through our testing procedures and visual and other evaluations, predict weight at a common physiological or fatness end point. This would be particularly useful in testing bulls. We need also to pick out differences in composition by properly scoring fatness and/or muscling.

Again I stress that whatever system we elect to use should be quite simple and should be correlated to the needs and usefulness in the commercial industry.

We need to measure as many traits objectively as we possibly can. We should learn from these objective measurements how to more accurately score cattle visually since visual evaluation will be used to a large extent.

The system that BIF recommends ultimately should be one that can be easily taught to the cattle breeder and will need to be very simple and tied to traits which are measurable and which we can score with a high degree of repeatability.

I am not making the claim that our Virginia system is ideal at all. I will say this, however, that our breeders for the first time since we started with performance testing have found these descriptive scores quite useful and we find that we can communicate together very readily about these scores whereas the old conformation score was extremely difficult to communicate about because it was not at all descriptive but simply reflected someone's preference.

Thank you very much.

BEEF CATTLE EVALUATION SYSTEMS - A CALIFORNIA STUDY

Kenneth W. Ellis, Extension Animal Scientist University of California

Evaluating beef cattle for conformation and for certain physical traits has occupied and continues to require considerable time and effort as well as generate much discussion. Many have come to question the desirability of attempting to evaluate live animals by using a composite score. Some feel that utilization of an evaluation system based on certain physical traits would be more beneficial and useful.

In California three types of scoring systems are used. Many people still use the old University of California scores based on the broad 1-, 2+, 2 and 2- categories. Others rely on the more recent numerical ranking based on 100 as perfect--many cattle fall into the 85-95 range. The BIF system is practically the same but substitutes a different number range, 12, 13, 14, etc.

The third system we are beginning to use is the physical traits method of evaluation. Many feel this is a more meaningful way to look at beef cattle.

We are faced with a number of questions about the real value of what we are doing in using any of the above evaluation systems in providing real and useful analyses of how a beef animal will develop and what relationship such grading has on the traits that are economically important.

The first question is whether two or more people can use the physical traits system with any degree of correlation between individuals.

The second question concerns correlation of physical traits score between weaning and yearling.

The third question is - when is the best time to score for physical traits--weaning or yearling age.

For this study a livestock specialist and three farm advisors evaluated more than 100 bulls at weaning and again at yearling age. Data collected with this group of "graders" indicate fairly good correlations between the individuals when using the UC number grades or the BIF scores. A different picture emerged when using the physical traits system. This indicated that the system is useable but training of the graders and probably experience is needed.

All correlations between physical traits were positive and significant. The correlations between the same physical traits at weaning and yearling age were positive but low. This indicates that scoring for physical traits at weaning time may not be justified and the system could best be used at yearling age.

The data in this study show also that the 205-day weight is the most useful weaning statistic in predicting what the animal will be like at yearling age. It was more highly correlated to the BIF yearling score than was the weaning BIF score.

Postweaning average daily gain was not significantly correlated with any weaning trait in this study except the weaning size of frame (.33).

The physical trait most useful at weaning appeared to be the size of frame score. This trait was more closely correlated to all yearling growth traits than any other subjective measure. The Physical Traits System can be used. Training of graders and probably experience will be necessary.

- 1. Correlations between different physical traits were positive and significant but they were low.
- 2. Coefficients of determination ranged from .03 to .49.
- 3. We conclude that there is fairly good independence of traits.
- 4. Correlations between the same physical traits at weaning and yearling are too low to justify physical traits grading at weaning.
- 5. The system can be used at yearling age.
- 6. 205-day weight is the most useful weaning statistic to tell us what the animal will be like at yearling age. It is more highly correlated with yearling BIF score than is the weaning BIF score.
- 7. Postweaning ADG is not significantly correlated with any weaning trait.
- 8. Necessary to see both 205-day weight and postweaning ADG data in records.

Table 1.

CORRELATIONS BETWEEN GRADERS FOR:

CONFORMATION SCORES - WEANING Grader van Riet Helphinstine Moore Consensus Elings .84 .87 .90 .97 van Riet .85 .82 .92 Helphinstine .95 .88 Moore .96 CONFORMATION SCORES - YEARLING Grader van Riet Helphinstine. Consensus Elings .93 .88 .93 van Riet .91 .87 Helphinstine .97

Table 2.	PHYSIC	AL TRAIT	CORRELA	TIONS -	WEANING	
TRAIT	C.S.	Waste	Muscle	Size	Soundness	Sex Ch.
205-day weight	.42*	06	.33*	. 34*	.23*	.32*
Conf. scores		.29*	.74*	. 58*	.62*	.74*
Waste scores			.19*	. 37*	.23*	.29*
Muscling scores				.42*	.56*	.70*
Size scores					.49*	. 57*
Soundness scores						.59*
*P<.05	165 ob	servatio	ons; cons	ensus s	cores	

Table 3.	PHYSIC	AL TRAIT	CORRELA	TIONS -	YEARLING	
TRAIT	C.S.	Waste	Muscle	Size	Soundness	Sex Ch.
550-day weight	.59*	.11	.44*	. 57*	.26*	. 44*
Conf. scores		.47*	.70*	.74*	.58*	.65*
Waste scores			.26*	. 49*	. 44*	.29*
Muscling scores				.44*	.51*	.62*
Size scores					.29*	. 45*
Soundness scores						.52*

*P<.05

111 observations; consensus scores

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Table 4. CORRELATIONS BETWEEN GRADERS	
TRAIT	RANGE
Conformation - Weaning	.8297
Conformation - Yearling	.8797
Waste - Weaning	.3883
Waste - Yearling	.2987
Muscling - Weaning	.6092
Muscling - Yearling	.5686
Size of Frame - Weaning	.7393
Size of Frame - Year ing	.6292
Structural Soundness - Weaning	.4591
<u> Structural Soundness - Yearling</u>	.3385
Breed & Sex Character - Weaning	.5989
Breed & Sex Character - Yearling	.3485

Table 5. CORRELATIONS BETWEEN WEANING	YEARLING	
TRAIT	γ	γ ²
Waste	.44*	.19
Muscling	.23*	.05
Size of Frame	.45*	.20
Structural Soundness	.21	.04
Sex Character	.35*	.12
Conformation (BIF)	.32*	.10
Weaning weight & Yearling weight	.68*	.46
Weaning WDA & Yearling WDA	.71*	.50
205-day WDA & 550 WDA	.80*	.64
205-day weight & 550-day weight	.72*	.52
205-day weight & 550-day WDA	.82*	.67
205-day weight & Yearling Conf. score	2.35*	.12

* P<.05

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PROPOSED LIVE ANIMAL SCORING SYSTEM

by

A. C. Linton, Chairman BIF Subcommittee on Live Animal Evaluation

One of the principle objectives of BIF has been to investigate and to encourage implementation of those techniques of beef cattle evaluation which when correctly applied will result in maximum progress for those traits of direct importance to profitable beef production.

Progress in beef cattle breeding can only result from a logical, scientifically sound selection program. In designing such a selection program three important facts must be taken into consideration.

- 1. Selection must be accurate.
- 2. Selection must be for heritable traits.
- 3. Selection must be for traits that are of economic value.

Let's consider each of these facts in relation to the current system of live animal evaluation recommended by BIF.

1. Selection must be accurate.

This can be interpreted to mean that selection must be based upon traits that can be objectively evaluated. Obviously, weight is a perfect example of an objective measure, but this can also be applied to live visual evaluation if, indeed, the appraisal is based upon some distinct anatomical features of the beast. When evaluation is performed with this basis we find that we are dealing with a reasonably repeatable trait within and between observers, so the accuracy of selection is considerably enhanced.

In that light I would like to read to you a section from the current <u>Guidelines for Uniform Beef Improvement Programs</u>. This is the description of breeding cattle in the conformation scores of 12, 13 and 14. "Cattle eligible to receive these scores have no more than moderate faults in their muscular and skeletal structure. Their muscular development is usually less than outstanding but is average to superior. Skeletal structure is basically sound. Cattle in this category should include a relatively high percentage of the animals in the better purebred herds.

The top end of this series represents the lowest end of herd bull prospects and the top end of commercial bulls from a conformation standpoint. The top end of this series describes superior female replacements for purebred herds, the middle of this series describes good female replacements, while the bottom end describes the females that are no more than satisfactory as replacements in purebred herds. The score of 14 describes superior commercial bulls; 13 describes good commercial bulls; and 12 describes satisfactory commercial bulls from a conformation standpoint. The top end of this series represents the practical top of commercial cattle. The lower end of this series includes a reasonably high percentage of the better commercial replacements."

I think you will agree that this description is very general and rather vague. It is certainly no surprise that a subjective method such as this suffers from the problem of low repeatabilities. Another problem facing this type of a system is that what is defined as "beef character" or 'basically ideal conformation" has been altered rather dramatically over the past ten or fifteen years. Who is to say how these terms will be defined in another decade as the demands of our industry continue to evolve?

2. Selection must be for heritable traits.

As we have already heard on this afternoon's program, the heritability value for the traditional conformation score is considered moderate at best. Most estimates of the heritability of conformation score will run in the neighborhood of twenty-five percent.

Again this problem can be attributed to the subjectivity of the conformation score. When one considers the variability of the cattle within a specific conformation score, it is hardly surprising that this heritability is low. 3. The selection must be for traits that are of economic value.

The importance, economically, of the conformation score is quite different for registered and commercial cattle. For commercial cattle the correlation between conformation score and net return is very low. While it is slightly higher for purebred cattle, it is only moderately related to net profit.

The problem with the conventional scoring system is that each overall grade assigned to a calf must be a combination of all traits considered and therefore, no real description or evaluation of the calf is possible. One calf may score 15 because of excellence in one trait while another receives a 15 because he excells in another area. Obviously, if these two calves are grouped together, they are not alike, so our conventional composite grading system has failed in it's task of evaluation.

A COMPONENT SYSTEM

An alternative system which eliminates many of the afore mentioned problems is a component system based upon the major tissues of the animals body. This system is designed to describe individuals rather than to score them for total merit. This gives it a distinct advantage in communication either from one individual to another or from the human to a computer memory and back.

Specifically, this committee recommends that the component scoring system include evaluation for the following four traits:

- 1. Trimness or freedom from waste
- 2. Muscling
- 3. Size of frame
- 4. Structural soundness

Because specific reference points are used in evaluating cattle for these four traits, the evaluation is much more objective. Consequently the repeatability and heritability estimates are considerably more favorable.

This system requires a basic understanding of bovine anatomy. Cattle are composed of essentially three major tissures - bone, muscle and fat. The shape of the skeleton and the percent of the carcass comprised by bone varies little (12 to 14%). While the proportion of fat and muscle in the carcass do vary considerably, the location of each tissue in the animal is very systematic and predictable. Muscles are

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attached to the skeleton at the same points and in the same relation to each other in all cattle. Similarly, fat is deposited on the skeleton and muscularture in certain definite areas.

With this in mind and before discussing the advantages of the system in general, let's describe each of the traits in the component system.

1. Trimness or freedom from waste

Freedom from waste, particularly in weanling age cattle, does not necessarily measure how fat the cattle are at the time of scoring but rather how fat they will be after a normal feeding period or if fed to normal slaughter weights.

Handling cattle over the point of the shoulder, over the ribs and along the top of the backbone gives a good measure of fatness as the animals have no muscle in these areas. Obviously it is not often possible to handle cattle, so scoring must be done by visually appraising those areas where only fat is deposited.

Scoring this trait visually can be done by viewing the area of the brisket and dewlap, the fore and rear flanks and the twist. Cattle with loose hide in these areas and in the navel and sheath are predisposed to waste and should be scored lower for this trait.

2. Muscling

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Scoring of cattle for muscle is based upon the same principle as that used for waste. Simply look at a place on the skeleton where there is only muscle on the skeleton. This is possible because the correlation between the weight of a single muscle or group of muscles with the total muscle in a carcass is on the order of .95 to .98.

Scoring for muscle can be done by looking over the arm, forarm, gaskin and stifle from a side view. From the rear, muscle is evidenced by a wide stance and by thickness through the stifle region. Watch the animal walk - muscles work as the animal moves, fat doesn't.

3. Size of frame

This trait simply involves a visual appraisal of the length of the long bones. In cattle, length and heighth vary proportionately, so one should examine the readily visual skeletal parts such as the cannon bones. Another location which can be observed for this purpose is the length of the neck. 4. Structural Soundness

Longevity is important in commercial production as it affects the number of replacements which must be kept to maintain herd size. Correct structure is a must if cows and bulls are to have a long, productive life.

Structural soundness generally refers to the structure of the feet and legs. Size and shape of the hoof should be evaluated as should the joints in the limbs. Set to the leg and angle of the hock are also important in evaluating soundness.

How does such a scoring system measure up on the three previously mentioned criteria of accuracy of measurement, high heritability and economic importance? First, because the component system is based upon skeletal reference points, it is a more objective means of evaluation leading to a greater agreement among scores and greater accuracy.

The heritability estimates of weaning scores based upon a half sib analysis of nearly 1,000 records are as follows:

Freedom from waste	.85
Muscling	.48
Frame	。69
Soundness	. 14

In general, these are twice as high as the heritability of composite scores.

While a detailed correlation study has yet to be completed between these scores and those traits of economic importance to production, there appears to be a relationship between the trimness and muscle scores and the cutability of the carcass produced. Likewise, frame is associated with subsequent growth.

It is the recommendation of this subcommittee that a composit scoring system be adapted as the approved method of live animal evaluation by Beef Improvement Federation. We further recommend that the four traits evaluated in this system be:

- 1. trimness or freedom from waste
- 2. muscle
- 3. frame
- 4. structural soundness

and that they be recorded in that order. Each trait is to be recorded on a numerical score of at least 1-5 and not to exceed 1-9, with the high number representing greater desirability or a greater degree of expression for the trait. This nine point range provides flexibility in scoring, yet still requires only one digit for reporting and computer storage.

WHY WORK TOGETHER?

Bernard Jones Curtiss Breeding Service

The Beef Improvement Federation has made tremendous progress in establishing uniform procedures for measuring and recording performance data on beef cattle. New programs have been developed for use by member organizations such as the National Sire Evaluation Program and the USDA's Carcass Evaluation Service. The BIF leadership has helped develop cooperation among all segments of the beef industry in standardizing performance records. During the past two years, BIF's educational programs have been very effective and have helped develop increased confidence in performance testing programs.

The utilization of uniform programs as recommended by BIF has been very good in most areas, but definitely needs more cooperation from member organizations in a few areas. The Farm and Ranch Pre-weaning and Postweaning Testing Programs, Beef Carcass Evaluation Programs and National Sire Evaluation Programs have been well accepted by practically all member organizations. These programs are being utilized by individual organizations with amazing uniformity. A breeder in one state can now evaluate performance records from almost any other state. The use of standard terminology such as 205 day adjusted weaning weight, weaning weight ratio, 365 day adjusted weight, yearling weight ratio and most probable producing ability (MPPA) has made this possible. Breed associations have helped make these terms known to all breeders by adopting and implementing BIF programs. Most breed associations have adopted BIF's National Sire Evaluation Program and many beef breeders are already familiar with such terms as reference sires and expected progeny differences. This is very encouraging since the National Sire Evaluation Program was only adopted in April, 1971.

One of the BIF programs which has not been widely accepted is the measurements recommended by BIF for all Central Test Stations. There are approximately 80 Central Test Stations in the U.S. with only 10% of these stations measuring the traits recommended by BIF. One of the traits most frequently omitted is the 365 day adjusted weight and the 365 day adjusted weight ratio. This information is very important to breeders purchasing beef bulls as future herd sires and Central Test Stations is one of the best sources for selecting a herd sire. (Of the bulls Curtiss has purchased at Central Test Stations during the past four years, 86% were purchased from Central Test Stations reporting 365 day adjusted weight and ratio. The purchase price on these bulls was three times as much as the price paid for bulls purchased at Central Test Stations not reporting this information.)

Another BIF program which needs more support is advertising performance and progeny data. One of the keys to the success in the Dairy Industry has been uniformity in Dairy records. The Beef Improvement Federation needs to improve their format for advertising performance and progeny data. This format should be simple and concise. Performance programs mus: be utilized by beef breeders before the beef industry can make the desired genetic change. Organizations within BIF must adopt the BIF programs and encourage their breeders to utilize the benefits of these programs. Uniformity in our current programs has been largely responsible for the progress made to date. Working together as member organizations, the current programs can be utilized more effectively and new programs adopted. Only through cooperation can we achieve maximum utilization of performance programs which will result in genetic improvement for individual beef breeders and the beef industry.

A BANKER LOOKS AT PERFORMANCE PROGRAMS

Frank J. Sibert, Vice President Northwestern National Bank, Omaha

I want to thank you for inviting me to appear on your program and develop the assigned topic "A Banker Takes a Look at Performance Programs."

As you can imagine, we in the banking business are extremely interested in the success and prosperity of our customers.

The ability of a borrower to take capital, put it to use in his business and reap a higher percentage of return on the capital than he is paying is the way that we in the lending business build customer relationships, deposits and those many other things that go for the making of a successful bank and a successful banker.

How goes our customer's business - so goes the bank, is pretty much true in all aspects of banking.

This is the reason that we in the banking business are so interested in what is happening in all fields of endeavor.

Those of us who are involved in financing agriculture, and particularly the livestock industry, are especially interested in what's happening in all phases of the livestock business.

As I am sure you are all aware, there are many changes taking place in all segments of the livestock industry from the retailer right down to the rancher.

Today I'm going to limit most of my remarks to the cattle breeder.

I'm sure that you are all aware of the many unanswered questions in the field of cattle breeding.

We do not have all the answers and we do not have the answers to some very important questions which may have long lasting affects on the total industry. The affects on the total industry, of course, will filter down to individual ranchers, some of them of which are my customers.

This is why I think it might be of interest to you to have an outsider such as myself stand back and take a look at performance programs from the overall view point rather than look at it piece meal as I am afraid so many people in the industry are doing today.

We at our bank have an opportunity to visit with customers who are supermarket operators, wholesalers, packers, feeders and ranchers. This is why I think that we can take an objective look at the total picture. In my way of thinking, those of you who are involved in beef improvement have to keep in mind the ultimate goal of the industry. The ultimate goal of the beef cattle industry, of course, is providing a product for the consumers of this country and other countries throughout the world. How to get the job done and how effectively we get the job done in my estimation is what beef improvement is all about. Well, let's take a look at some specific things that everyone is talking about in the beef improvement field.

To some people beef improvement means weaning heavier calves. This is being done through the use of production testing, through the use of superior sires, through the use of crossbreeding, through the use of creep feeding, through the use of scale juggling and other ways.

Heavier calves are important and, particularly, they are important to the rancher who is in the business of producing and selling calves.

What about the rancher though that thinks that weaning heavier calves is the only thing that there is to beef improvement. He then goes out and buys a big bull who throws large calves, too big for his heifers and he loses half of the calves plus a number of the heifers. From the banker's viewpoint, he has entered into the wrong performance program. This type of performance is not the type of performance that will pay off the loan.

Total pounds of calves weaned out of a given cow herd is what a rancher should be looking for in my estimation and not just looking at one thing heavier calves. Heavier calves at weaning are desirable, no doubt about it, but it certainly isn't the only thing that a rancher can look at as far as improved performance in his total breeding program is concerned.

Let's take a look at crossbreeding. To some cattlemen crossbreeding is his thing. He feels that if he is crossing this is the only performance program he needs. I'll have to admit that I am a strong advocate of crossbreeding and in most instances, crossbreds in the feedlot do an extremely good job.

I have known, however, some crosses under certain management conditions that do not get the job done in the feedlot and apparently do not get the job done over the block. These are the things that we have to be aware of in our breeding programs if we are to succeed.

We must keep in mind that the rancher's customer is the cattle feeder, we must keep in mind that the cattle feeder's customer is the packer and that ultimately the customer for the product is the consumer.

If the animals we're producing do not measure up, some place along the line we are going to be in trouble.

<u>Case In Point</u> - I had a customer who bought some exotic cross, rough, heavy yearling steers. He put them on feed in his feed and when they were finished they didn't yield and they didn't grade.

The result was that he had to take a considerable discount and the sale price and the overall profit picture was not good. The profitability of some straightbred cattle that he had in the same lot handled the same way was much better than the crossbreds.

This bears out to me at least that the producer of those steers was using the wrong performance program.

Another thing that I think we should think about in regard to crossbreeding is that I'm not sure that anyone fully understands the exact program and procedure that we need to follow in a crossbreeding program to get the maximum production. We need additional information and better guidelines on how to get the job done.

A rancher who has spent his lifetime developing a quality outstanding reputation herd should move cautiously.

One wrong move could set his life's work back many years. This could be disasterous for him and for his banker.

We need more information as to the direction to take in getting the ultimate production and performance in our crossbreeding programs.

It is my opinion that crossing a small elephant on a jersey cow is not the proper performance program to follow.

You'd be surprised, however, the number of people, many of whom who have not had a great deal of experience in the cow business, think that this is the way to go.

From the standpoint of a banker, if you are using a crossbreeding program you've got to handle it in a way that you are producing cattle that will gain, will sell and will return the maximum in dollars and profits for your efforts.

You need these profits to pay off your loan at the bank, to pay for the day-to-day operation of the ranch, to pay off the mortgage on the land, to buy mom some new curtains and keep shoes on the kids.

Let's take a look for a minute at artificial insemination - to some ranchers this is the ultimate in introducing a performance program into the herd.

Through AI you have access to the best bulls money can buy and I'll have to agree that it is an extremely useful practice in herd improvement.

However, if I have a customer in the cattle business who is not a good cow man, who I know will have difficulty in detecting cows when they come into heat that has not or cannot develop his techniques to the point where he can get the cows settled and I know he's going to wind up with a short calf crop, then I know that artificial insemination is not going to get the job done for him.

I guess what I'm trying to say is that some things will work for some people, some things will not work for them, and it is very important that a cattleman who is a little skinny financially, one who is not knowledgeable in all facets of performance production, one that just cannot afford to make a big mistake, it is very important that he move with caution and that he does things within the scope of his ability and knowledge.

He should not get involved in practices that he cannot handle and that will be detrimental to the profit picture of his ranching operation.

Some ranchers have the idea that a good performance program is the production testing of their cows.

I'm not opposed to production testing and I do think it will improve the performance of a given cow herd if it's handled properly.

The problem is if this particular rancher isn't willing to go out and find top production tested bulls and pay for them, bulls that will work improvements as the years go by, then he is just spinning his wheels.

I kinda feel that a commercial cow man might do better to put his emphasis on the selection of performance tested bulls and work improvement in his cow herd through the sires rather than spending the time, the money, the energy and the expense in carrying on a complete production testing program on his females.

When you weigh calves at birth, weigh them again at weaning and keep a complete set of records on a cow herd and their offspring, it takes considerable time and effort.

Some ranches are not cut out to put forth this time and effort and do the book work involved.

For these individuals that are not willing or not able for some reason to do a top notch job in their production testing program, it would be my suggestion that their performance program be through the selection of their bull batteries and that they place their emphasis in this direction.

The big problem, of course, is to find breeding stock with an adequate set of records in order that the commercial cattleman can in fact select bulls that will work an improvement his herd.

This is the area where we need more cooperation and a lot harder work on the part of registered cattle breeders.

I really think that before we can get large scale improvement in the total cow herd in the United States, it will be necessary for this improvement to come from the bulls that are produced by the breeders.

If they can't or won't do the things that it takes to improve the performance of the cattle that they are breeding and selling to commercial cattlemen, then I don't think we will see the performance improvements that we're going to need to keep pace with the competitive foods.

There are many things that are important in the performance of beef cattle other than their ability to gain so many pounds a day, their birth weight, their weaning weight, their color, etc.

We should keep in mind as I stated at the beginning of my presentation, that ultimately we are producing a product for the consumer.

Before this product gets to the consumer it has to go through numerous channels.

All of the things that we talk about in performance in cattle are important but no one single thing is the most important or is there any single one thing that a cattle breeder can think about in his performance program to get the total job done and still pay the debts. It's necessary that we be profit oriented in our ranching enterprises and that we devote our time and energy to getting the maximum profits out of what we are doing.

Let's concentrate a few moments on some things that are extremely important to the banker when he is financing a cattle operation.

If a man is in the cow business it is important that the cows have calves.

To me the percentage calf crop weaned is of significant importance and may be of more importance than the weaning weight of the calves.

The total pounds of calves produced in a given herd times the price received is the thing that most bankers are interested in.

This is the thing that pays the mortgage, pays the interest, pays the bills and keeps the enterprise on a solid financial footing year after year.

If you are operating a feedlot the efficiency of gain is important, the pounds per day that the cattle gain is important, the feed conversion is important, but really the most important thing is this -

If you buy a pen of cattle, put them on feed in your feedlot and sell them to the packer-buyer the most important thing is the last figure that you see in a closeout sheet on a pen of cattle and that is the dollars in profit that the cattle have made.

This is what you buy new equipment with -Take vacations on -Build new houses with -Buy colored TV sets with -

And all those other things that even people in the cattle business are interested in doing.

When the packer buys a pen of cattle from a feedlot operator he is interested in how the cattle yield and how the cattle grade. He is interested in buying a steer that will hang up a carcass that is not too wasty. He is interested in that steer producing a carcass that he can sell to the wholesaler or retailer at the highest possible price.

The retailer is interested in buying a carcass that will cut out a high percentage of red meat that he can sell to the consumer at the highest possible price.

The consumer is interested in buying beef that is tender, juicy, beef that has a good flavor, beef that she can feed to her hungry family with a minimum amount of work and expense.

A total performance program should take into consideration all facets of the cattle business.

One segment of the industry is directly dependent on the other segment in reaching the optimum goal of providing good nutritious beef for a growing beef hungry nation. We in the banking business look at performance programs as they affect the total picture and as they affect the profitability of each of the various segments of the industry.

Loans are paid from profits -Interest is paid from profits -Bank deposits are built from profits -

And long-time satisfied loyal bank customers are made over the years by enterprises that are profitable.

The profit motive has long been the backbone of the free enterprise system.

We in America have been and still are and will always, I hope, be profit motivated.

Whether you're breeding exotics, whether you're production testing, whether you're crossing, producing straightbreds, whether you use high priced bulls, performance tested bulls or no bulls, if in the final analysis you're making a satisfactory return on your investment and are running a profitable business, then the performance program that you are using is working for you. If your business is making money and you are keeping in mind all segments of the industry then the performance program that you are using in your herd is working.

The result will be a happy wife -

A happy banker -

And the realization that you are doing a good job in your chosen field. After all, what more is there?

Thank you for your attention. You have been a very attentive audience. I have enjoyed being here and I want to thank you for being such a fine group to talk to.

1972 BIF COMMITTEES

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Record Utilization	SUBCOMMITTEE Commercial Performance Testing Pgms	Farm & Ranch Post and Preweaning Testing Pgms	Performance Pedigree	Merchandising Performance Testing	Carcass Evaluation	SUBCOMMITTEE Carcass Data Service	• Central Test Stations	Repro- duction	Sire Evaluation
Willham Chmn Gosey Secy Anderson Ascherman W. Butts Cook Ellis Gibbs H. Gregory Haugse Herman Maddox Maples Nelson Nolan B. Pope Reese Richey Todd AICA Rep. (Northcutt)	Maddox Chmn Cook Secy W. Butts Herman Maples Richey	Meyer Chmn Cundiff Secy R. Arthaud T. Burch G. Butts Crandall Durfey Fitzhugh W. Forbes Harmon Heeney Jorgensen Kirkeide Lindblom Linton Massey McReynolds Messersmith Mitteness Rhodes Stuart Ricketts	C. Burch Chmn Zoellner Secy Acord Farham Francis Gray Ludwig Matthiessen D. Nichols Patterson Severin Vaniman Vantrease APHA Rep. (Allen)	Patton Chmn deBaca Secy Bassford Cooper Flint Graham Hammond Iverson C. Koch Lamont Lilley Nixon Noller Ricklefs Ross Spader Vanderkolk Westmeyer Wolf	Chesnut Chmn Schoonover Secy V. Arthaud F. Baker Bradford B. Eller Epley Forrest French Frisch- knecht Johnson Keating Kimble Leverete Maddux Mohler Orts Sutton Swaffar Tuma VanStavern Wharton	B. Eller Chmn Frischknecht Secy F. Baker French Keating Leverete Maddux Swaffar Wharton Cross	Rankin Chmn Christians Secy Chapman Corbin Delaney Gillooly Glenn Hatch Hemming- sen Morgan C.Nichols Nordhouse Schmidt Sierks Sumption Wallace Yarbro	Bennett Chmn A. Eller Secy Barten- slager Brinks R. Koch Dickerson Felts Laster Riu Singleton Sullivan Woodward	Warwick Chmn G. Butts F. Francis B. Jones Miller Tom Willham Vaniman Ludwig
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REPORT OF RECORD UTILIZATION COMMITTEE

R. L. Willham, Chairman

The charge is to develop utilization of performance records in the beef industry. Records must be used to return value. The steps chosen to accomplish the charge are as follows:

- 1. Develop guidelines for performance programs offered to the beef industry by BIF member organizations.
- 2. Develop means to promote the enrollment and participation of cattlemen in performance programs.
- 3. Develop pamphlets and brochures on performance record use for all segments of the beef industry.
- 4. Promote record utilization throughout the beef industry using educational material and the news media.

All steps have been worked on by the Committee. This report, the third for the Committee, will deal first with development to date and then consider new development.

Development to Date

Guidelines for a complete breeding stock performance program are now a part of the second edition of GUIDELINES FOR UNIFORM BEEF IMPROVEMENT PRO-GRAMS. Numerous national performance programs have undergone extensive revision in the last year. The general trend has been to introduce breeding reports into the programs. This includes provisions to accumulate data on cow weights and calving scores. The AHIR, AHA, and APHA programs now include such reports. CHIP and ASA initially had these as does PRI. Several national programs have incorporated the estimation of breeding values into their programs. The AHIR program is operational while the AHA, RA, APHA, and several others are developing the procedure.

Several pieces of literature have been developed over the past year. The guidelines for commercial beef cattle producers have been written by L. A. Maddox, Jr. These will be discussed for inclusion in the next BIF guidelines edition. After completing the guidelines, a simple program for production and quality controls for large ranches was written by L. A. Maddox, Jr. Plans are to develop this program in Texas. This program was written up in the Proceedings of the Beef Improvement Federation Eastern Regional Conference.

In the same proceedings, the topic of estimated breeding values is discussed. The paper includes in appendix A the necessary formulations for a BIF member organization to include breeding value analysis in their performance program. Thus, the technical knowledge is available to make performance programs more valuable to the participant. Also included in the mid-year proceedings is a paper titled, The Bull Selection Problem. This paper deals with the genetic aspects of sire selection and it is available for BIF members to use any or all of it in their promotional material. A paper on the same topic appears in the current beef sire directory.

A condensed version of the Bull Selection Problem is slated to appear as a BIF brochure. As such it will be available to BIF member organizations for their promotion.

New 'Developments

The following is a listing of new ventures for the record utilization committee to consider and to develop if the need and value can be established.

1. Guidelines for Commercial Beef Cattle Producers: Copies of the guidelines were sent to members asking for comments. Final revisions have been made and the guidelines are ready for inclusion in the next revision of the BIF guidelines as a part of the record utilization report. A copy is attached.

2. Guidelines for feeder calf sampling programs: Such guidelines, especially concerning the sampling and reporting procedures, need to be developed for eventual inclusion in the BIF guidelines. A subcommittee is to be appointed composed of men where ongoing programs exist (Montana, Kansas, Nebraska, Oklahoma and Missouri).

3. The Place of Records of Performance in the Beef Industry: A brochure giving the possible extent that records can be used in the entire beef industry needs to be written and a start of such was discussed. Wide distribution of such a brochure could develop the use of records in normal buying and selling of beef cattle from the purchase of breeding stock to the retail merchandising of beef. It could aid in the sound development of a specification industry. A committee is to be appointed to study how best to get the information to the industry. After discussion question 4 was included in the operation of this committee, the general consensus was to get the help of the press to help publicize this, rather than BIF to publish documents.

4. Performance Program For You: Using the guidelines, a brochure comparing the different kinds of performance programs could be written. Cattlemen just starting would have a basis for selecting the program that can do the most for their particular operation.

5. Guidelines for Reporting Sire Evaluation Data: The NAAB is in the process of developing such guidelines for reporting sire data in catalogs. To make reporting of sire evaluation uniform over the beef industry would be of real significance. This is being done in the sire evaluation committee.

6. A Banker's Guide to Beef Performance Records: A brochure of this type needs to be written. Banker organizations would help in distribution. This could produce real impetus to keep basic performance records in the industry. A committee is to be appointed.

7. Performance and the Show Ring: A lot of the established performance herds are being skyrocketed into popularity by their stock winning at the major shows of the nation. This was discussed and no action was taken.

8. Aids in Planning and Cataloging of Performance Information: Simple herd record calendars need to be developed. Means of keeping the most meaningful records on a herd, cataloged need defining. This aspect is the responsibility of the member organizations. The following is a list of topics that were discussed by the record utilization committee:

1. Inability of too many computer facilities to produce an "on-time" performance program as promised. This was discussed and a committee needs to be established to consider more centralized processing.

2. One of the most important decisions of the commercial producer is that of breed or breed combinations. Breed evaluation cannot be done by each producer so this decision must be based on available data. Is it possible to set up the mechanism to supplement the work at USMARC and the stations with breed comparisons from field data? This would be record utilization helping to answer the question of breed choice. South Dakota is doing this. Probably the Regional Beef Cattle Breeding Research groups should be doing this rather than BIF.

3. Mention has been made of possibly requiring performance data on all animals registered with a breed. This would increase the number of cattle enrolled in performance programs. Should such a practice be recommended by BIF. Can adequate sire evaluations be made with the data? This was discussed and no action taken.

Guidelines for Record Programs for Large Commercial Beef Cattle Producers

Large commercial beef producers do not use performance record programs because people that normally develop suggested programs have not been able to come up with meaningful programs that can be conducted within the costs they can afford. Generally, all that has been offered to him is a slight revision of programs for registered breeders which with today's costs will not make him a reasonable return on his added expense.

By combining records on performance, quality of product and cost into a management control system, a more modern and scientific approach can be developed for these ranches. The controlled program-production, quality and cost-should measure in some degree the biological processes that are typical in todays beef production. To direct those biological processes, management must have measurements taken periodically which indicate if the processes are operating in normal manner or deviating sufficiently to justify corrective action. Then a study should be made to determine the cost of correcting the situation.

What follows is a listing of the specific points in the BIF Commercial Guidelines:

1. THE RANCH-PRESENT AND FUTURE. Before any rancher embarks upon a continuing record of production and quality characteristics, his first step should document his present production and quality level and set goals for periods of 5 or 10 years in the future. These goals should include record of production characteristics such as number of (and percentage when applicable) cows bred, calves born, calves weaned, average weaning weight, and average cow weight. To document the quality level of young cattle produced on the ranch, there is a need to record such traits as age and weight in the feedlot. Also, the weight, quality and yield grade of the finished cattle.

Goals should reflect what appears to the rancher to be the necessary changes in production and quality to establish the most profitable ranch operation within his own personal preferences.

2. HERD BULLS. Information on young bulls such as an average 205day weaning weight and an average weaning weight ratio of all bulls purchased within a given year. A registered breeder on a reasonable production testing program would also be able to furnish yearling weights and ratios if young bulls are purchased at 12 or more months of age. A few of the most progressive registered breeders will be able to furnish you with feedlot and carcass data on half sibs (calves sired by the same bull). Performance information on the individual bulls plus feedlot and carcass data on half brothers would be ideal. A 205-day weaning weight and a yearling weight should be considered a minimum. When feedlot and carcass data is available on half brother bulls may be purchased at a younger age based on 205-day weights and ratios plus the information on half brothers. This would reduce the extra cost of feeding the young bull and reduce the possible injury of breeding ability because of over feeding.

3. COW HERD. A calf cannot be weighed that has not been born and a 600 pound calf weaned from a cow that failed to calve the year before, it is not very profitable. With present cow prices there is no doubt that the most important record for the cow and calf man has is on the reproductive performance of the breeding herd.

Average percent calf crop should be calculated every year and should be based on number of cows exposed to bulls divided by the number of calves born. Percent calf crop calculated in this manner furnishes information that relates directly to reproduction and leaves out calf losses which may be a problem but would require entirely different actions for solutions.

Records should establish calving intervals and if large numbers of cows exceed an average of 12 months then corrective action should be taken in management or breeding to give the best chance possible of one calf each 12 months.

4. WEANING CALVES. Calf and cow weights can indicate many things related to production efficiency. These are not individual weights, but group weights taken at the time calves are weaned. If calves are weaned and sold at one time, calf weights are available. The weight of the cows annually culled from the breeding herd or a random sample of cows is excellent information. This information will have some meaning as annual weight records. The trend of the calf weight and cow weight over a period of years will reflect some changes in nutrition level and possibly some genetic change. These two weights can be expressed as a weight ratio using weaning weight as a percentage of mature cow's weight. Both calf and cow weights become the basis for many comparisons in subsequent records that help answer questions about overall efficiency and profitability of the ranch operation.

5. FEEDER CALVES. A record program for a cow and calf operation should record the kind of product that is being marketed. This product can be measured by its performance through a feedlot and the carcass characteristics after the feeding period. A rancher's goals, as they relate to a product's quality may vary considerably. In all ranching operations, production efficiency, while producing the calf, should be of primary consideration. What the feeder and packer want should be secondary. Many times we are more concerned with what the feeder and packer want and fail to make the cow and calf industry profitable first. Rate of gain and feed required per 100 pounds gain should be a better figure than cost of gain on long term records because of changing feed prices. This information is not hard to obtain on large ranches since weaning calves are sold in large groups to one buyer, and many groups retain their identity through the feedlot. Some large ranchers maintain ownership of their cattle through a commercial feedlot.

Rate and efficiency of gain can be measured every 3 or 4 years on most large ranches where breeding programs require at least this much time to change one-third of the genetic make up on the breeding herd. Large ranches may wish to use a random sample of the steer calves instead of feeding the entire calf crop.

6. SLAUGHTER CATTLE. Even though cattle are efficient at weaning time and grow efficiently through the feedlot, characteristics have an important effect on total income and profit. To add this last dimension to ranch beef production, two measuring devices, yield grades and quality grades, are used to indicate the product's quality. Grading carcasses on yield and quality can be done by USDA graders. Their record will serve as documentary evidence of these data. If the cattle are sold to a small packing plant, it may be necessary for you or the feeder to make arrangements to have a government grader available at slaughter time.

A large percentage of cattle on long feeding periods are expected to produce cattle with yield grades between one and two in the low choice grade. A rancher must set his own goals which may be for a market with different carcass characteristics. Design the overall ranching operation to be as efficient as possible. The most efficient ranching operation in your locality may or may not require cattle capable of grading choice when slaughtered.

Product quality does not have to be measured on the entire calf crop, but can be measured on a reasonable sample of feeder calves. This information does not have to be measured annually unless there are radical changes in a breeding program.

7. UNIT COST AND INCOME. To be useable in making decisions on ranch management, records should be more detailed than generally shown in total ranch costs and total ranch income. Costs and income per cow along with costs and selling price per 100 pounds of calf weaned give the rancher an opportunity for a different kind of study of total ranch operation. Ranchers can study production efficiency of the present breeding herd, may want to rule out the use of income from culled cows and bulls since their relationship is indirect.

A section should deal with only cost and income per cow showing two meaningful figures that can be compared on the same form. The comparison of these figures should serve as an excellent indicator of production efficiency.

A section on cost and selling price per 100 pounds of weaned calf would be used to make direct comparisons with costs of production and selling price of each 100 pounds of weaned calf. Differences in these figures is probably the best measure of overall efficiency, other than percent return to total capital investment. 8. INDIVIDUAL COW RECORD. Records can be maintained on large ranches without considerable labor provided details associated with good record programs for registered breeders are omitted.

Any individual cow record on large ranches require some kind of number identification on each cow in the breeding herd. This should not be considered an unusual task since other industries individually identify production machinery. This number can be a fire brand, an ear tag, neck chain or neck band.

An individual cow record for large ranches does not require each calf to be identified with its mother. A record showing only the identification number of each cow that did not calve and of each cow that produced a "reject" calf is all that is necessary to establish a useful individual cow record. Cows that calve regularly and produce acceptable calves would be considered normal, and records would be so marked. If it is possible to palpate the cow, you can have a record of non-pregnant cows before the calves are weaned.

REPORT OF CARCASS EVALUATION AND CARCASS DATA SERVICE COMMITTEE

Lou Chesnut, Chairman C. O. Schoonover, Secretary

USDA grades were first discussed by the group. Mr. Russell Cross of the USDA standardization branch presented a review of factors affecting maturity and also discussed the cutability formula.

The Committee recognizes that the beef cattle population has changed since the last quality grade change and since the inception of yield grades. It was also suggested that the meat consuming public has also changed and that preference in beef tastes may have also changed.

The Committee strongly urges the USDA to re-examine cutability formula standards and make sure that present standards are applicable to present day cattle.

The growth factor was discussed and it was pointed out that BIF has already recommended that retail cuts per day of age be included in carcass evaluation. The Committee felt that this factor has not been used to its fullest extent. The Committee re-emphasized the need to include this factor when possible in carcass contests and demonstrations.

Dixon Hubbard discussed the carcass data service. 52,000 tags have been issued to 22 sponsoring organizations. 1200 tags have been recovered; 150 tags have been lost.

At this time it appears that the program is working, but more time will be needed before meaningful conclusions can be drawn.

Other subjects discussed were the Canadian grading system, maturity and palatability and double muscling.

REPORT OF CENTRAL TEST COMMITTEE

B. J. Rankin, Chairman

A revised list of central test stations was published in the annual report.

A letter explaining the BIF central test guidelines and encouraging the stations to follow them will be sent to each station.

The committee met for one session, April 12, and discussed at length some variations in methods which seem to be needed at different stations. No changes in the guidelines were recommended by the committee. All stations are encouraged to explain more fully their variations in procedures or measurements in their reports.

REPORT OF REPRODUCTION COMMITTEE

Committee members attending: Doug Bennett, Ch; A. L. Eller Jr., Secretary, Robert Koch, Gordon Dickerson, Jack Rutledge (for Vern Felts), Wayne Singleton, John Sullivan, Jim Brinks.

In addition some 25 others sat in and entered in the discussion.

Dr. Dickerson and Dr. Koch were asked to give research background relative to reproduction records in beef cattle. Dickerson stressed the apparently low heritability of these traits and that because of this progeny testing and family selection, pedigree selection must be used rather than man's selection based on individual records.

Koch says he doesn't worry that h^2 of reproductive traits may be low since this indicates that nature is pretty well taking care of this. He says in research work conception rate per estrous cycle exposed looks promising. He suggested we need to decide what traits to work with and record and not necessarily just how to use them.

There was considerable discussion (Jorgensen, Nemick, Marion, Singleton, et al.) as to a system of reporting calving interval.

Researchers said we do not know about the correlation or association between female and male fertility. Decided to look at them separately.

Question of low h^2 was brought up. Koch explained that h^2 was calculated from the sire differences we can measure and these are small. He said that though h^2 is low the variability is high and the chance to make significant dollar improvement is great. We should not give up on genetics.

Feamle traits agreed upon for recordation (Dickerson):

1. Calving intervals can be calculated from existing information.

2. Birth date on all females.

3. All cows exposed to breeding be included.

- 4. Dates of beginning and ending breeding season.
- 5. Whether or not calf produced and why cow disposed of.
- 6. Birth weight of calf.
- 7. Whether or not calf weaned.
- 8. Calving difficulty scores.
- 9. AI or natural service.

Male traits to collect data on were discussed:

Brinks raised the question as to what should be done on central test station bulls. Committee agreed to recommend that all bulls be given examination (physical exam and semen evaluation). It was agreed that we need recommendations on procedures and methods on minimum standards of semen quality and physical scores.

Recommended sire (bull) input data to record:

- 1. Breeding data used.
- 2. Conception rates (return ratio).
- 3. Service per conception.
- 4. Cause for removal from service.

Use of the dam information was discussed. Advantages and disadvantages of using calving interval versus a calving date ratio (similar to South Dakota system) were pointed out. Another method suggested for evaluating the cow herds fertility was a figure based on number of calves weaned per cow year or cow month.

It was suggested and agreed upon that the reproduction committee make specific recommendations for recording and utilizing reproductive performance information. This committee will look into the various PT programs already using such records and seek information from other sources. The committee will attempt to have its recommendations completed for presentation at the fall 1973 BIF Board meeting.

Additional members appointed to the reproduction committee are: Bill Durfey, Martin Jorgenson, Lytle Tom, George Nemic.

It was suggested that a fact sheet (similar to the sire selection mimeo publication) containing recommendations for a sound herd management program for optimizing reproductive efficiency be prepared.

REPORT OF NATIONAL SIRE EVALUATION COORDINATING COMMITTEE

E. J. Warwick, Chairman

The committee sponsored an informal meeting on the evening of April 10 for the purpose of reviewing the current status of sire evaluation programs. Organizations with programs in operation or with a potential interest in developing programs were invited and asked to briefly discuss status of programs or plans for programs, problems encountered, suggestions for revision of current BIF guidelines or other items of interest. Approximately 75 persons attended. Five organizations reported programs in operation and a number of others indicated consideration was being given to program development.

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Subject to approval of the BIF Board, the committee plans the following activities for the next year:

- 1. Publication in lay language of a pamphlet tentatively titled "Sire Evaluation Principles and Procedures."
- 2. Extension and/or revision of current BIF National Sire Evaluation Guidelines in the following areas:
 - A. Randomization procedures for cow herds used in progeny testing.
 - B. Accuracy of progeny test information and magnitude of random variation.
 - C. Recommended procedures for analysis of progeny test information.
 - D. Recommended procedures for publication of progeny test results.

REPORT OF PERFORMANCE PEDIGREE COMMITTEE

Clarence Burch, Chairman

The Committee makes the following recommendations:

- 1. A performance pedigree should include the following:
 - A. Recordation of ownership.
 - B. Pertinent, permanent information.
 - C. No more than two generations of parentage.
 - D. Periodic updating as additional facts are accumulated.
- 2. Each breed should adopt whatever kind of performance pedigree is best for their breed and use in promotional merchandising.

REPORT OF COMMITTEE ON MERCHANDISING PERFORMANCE TESTING

Mack Patton, Chairman

It is proposed to the Board that this Committee formulate a program of a half-day duration to be presented to the BIF Symposium in 1974, the subject to be merchandising of performance tested bulls.

REPORT OF ON THE FARM AND RANCH PERFORMANCE TESTING COMMITTEE

Larry Cundiff, Secretary

The first item of business was consideration of the live animal scoring system proposed by a study committee (A.C. Linton, Chairman; Gary Ricketts; Bill McReynolds; Stan Anderson.) A scoring system including evaluation of four components including (1) trimness; (2) muscling; (3) size of frame and (4) structural soundness with each trait recorded on a numerical score of at least 1-5 and not to exceed 1-9; with the high number representing a greater degree of expression of the trait, was recommended. After considerable discussion, Art Linton moved that the Committee accept the report (attached) and that the proposal be recommended by the Committee. Motion was seconded by Bill McReynolds. Motion passed.

The second item of business was a discussion of a procedure to measuring cow efficiency. Glenn Butts presented and discussed the procedure used by Performance Registry International:

205 day wt (bull equivalent)

3/4 $\sqrt{\text{cow weight x 2.67}}$

365 (366 leap year)

calving interval

Larry Cundiff presented a memo to the Farm and Ranch Committee from H. A. Fitzhugh, Jr. concerning four methods of computing cow efficiency (attached). After considerable discussion, Spike Forbes moved that the Committee adopt method (4) of Fitzhugh's memo:

Calf weight ratio

Cow wt .75 ratio

where cow weight .75 ratios are computed within age management groups. It was further moved that further research be done in this area. Motion seconded and passed.

The final item of business was a discussion of currently recommended age of dam adjustments as opposed to adjustments indicated by recent analysis of Virginia and Illinois data suggesting that 10% adjustments would be more appropriate than 15% for two-year olds. No final action was taken, but consensus was that further study for various breeds in different environments was needed.

Practical Measures of Cow Efficiency

H. A. Fitzhugh, Jr. Associate Professor Texas A&M University

Selection methods directed toward increased gain and weight will increase the amount of product sold by cattlemen. But if costs of production increase at the same rate (or worse, at a faster rate) profitability will decrease since the costs of performance testing and selection must be counted against income.

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One of the major costs of beef production is the growth, development and maintenance of the beef cow. Thus, the effect of selection for early growth of slaughter cattle on the size of the brood cow must be considered.

A cow is said to be efficient if the weight of her progeny (i.e. her productivity) is great relative to her own weight (i.e. the costs of production). Any practical measure of cow efficiency must be suitable for use in statistically unsophisticated computer programs. At present this criterion eliminates some methods, such as regression and canonical analysis, which have been used in research analyses (e.g. Fitzhugh et al. 1973. Relationships Between Cow Weight and Productivity). Four methods of measuring cow efficiency have been suggested and/or utilized.

- 1. Ratio of calf weight to cow weight, where calf weight is adjusted to constant sex and age (e.g. 205-days) but not for cow age.
- 2. Ratio of calf weight to cow weight to the 3/4 power (often called metabolic body weight). Calf weight is adjusted to constant age and sex. PRI uses a variation of this method in which the ratios are expressed relative to an expected constant value (set at 2.67 for PRI).
- 3. Ratio of calf weight ratio to cow weight ratio. Calf weight is adjusted to a constant age and sex basis prior to calculating calf weight ratio to the mean of his contemporaries (the ratio itself may remove sex effects); cow weight ratio are calculated relative to the mean weight of her contemporaries of the same age, genotype, etc.
- 4. Ratio of calf weight ratio to ratio for cow weight to 3/4 power. Basically similar to method 3 except that the ratio for (cow weight) 0.75 is substituted for the ratio of cow weight.

<u>Comparison of methods</u>. From a computer operation standpoint methods 1 and 2 appear to be the simplest since both can be calculated as the original data are entered for each individual cow-calf pair. Methods 3 and 4 require that means for contemporaries first be calculated; this can be done on the initial reading of data. Then calf and cow weight ratios can be computed. Thus, at first glance methods 3 and 4 would appear more difficult; however, calculation of means for groups of contemporaries and then ratios must be done anyway so there is, in fact, no real extra effort involved for methods 3 and 4.

Since degree of computational difficulty is similar for all methods, the choice of the best method can be limited to the most important criteria-accuracy and unbiasedness. Both theoretical consideration of growth curves and experience with real data indicate that methods 1 and 2 are strongly biased in favor of young cows who have not yet grown to their mature weight. Method 2, utilizing weight 0.75, is slightly less biased than method 1 by virtue of the effect of the 0.75 power transformation on cow weight. A major problem is that young, growing cows will generally require more feed than older cows, even though the older cows are maintaining more weight. If comparisons are made on a strict economic basis in which depreciation is considered along with probability and profitability of future productivity (the future discount accounting method), the capital cost of producing a calf from an old, previously parous, value depreciated cow is much less than the cost of producing a calf from a young cow. Thus, any measure of cow efficiency which is biased in favor of young cows should be avoided if the measure will be used to influence culling and selection decisions.

Methods 3 and 4 may be criticized because the number of cows per age group may be small, particularly in small herds. The "accuracy" of comparisons and selections will increase with the number of observations per group effort. Yet while methods 3 and 4 may be subject to sampling errors they are at least not subject to the apparent bias of methods 1 and 2.

Example. The example illustrates the bias favoring young cows in methods 1 and $\overline{2}$ very clearly. So clearly that the question will be raised if the example was constructed specifically to make this point. It was not! Cow weights were chosen to be typical of weights of genotypically similar beef females at 2 and 6 years of age. Calf weights were similarly chosen.

The phenotypic correlation assumed between calf weight and cow weight for this example is essentially zero, following research results of many studies in Texas and elsewhere. As figure 1 depicts, there are several sources of correlation between calf weight and cow weight. The genetic portion is positive and has an expectation of 1/2 the genetic correlation between weight at birth and maturity. However, the other components of the phenotypic correlation which involve environmental effects and maternal ability may be either positive or negative. For example, good milking ability in the cow will increase progeny weight but will probably decrease the cow's weight. The net effect of cumulating the positive and negative components is usually to yield a near zero correlation.

Metabolic Weight. Methods utilizing metabolic weight ($W^{0.75}$) have been suggested under the assumption that cow maintenance is proportional to $W^{0.75}$ rather than $W^{1.00}$. Careful interpretation of research purported to substantiate use of $W^{0.75}$ reveals several key points.

- 1. The California research (Garrett et al., 1959), on which the NRC formula for energy requirements is based, utilized rapidly growing, immature cattle not mature cows.
- 2. Missouri research (Brody, 1945) did indicate that differences among species for maintenance requirement at maturity was proportional to $W^{0.73}$. Guilbert and Loosli (1951) similarly related TDN requirements of domestic species to $W^{0.73}$. The key point is that $W^{0.73}$ (or $W^{0.75}$) is appropriate to the genetic differences between species. It does not necessarily follow that $W^{0.75}$ is appropriate to phenotypic differences in maintenance requirements within species. Indeed, Taylor and Young (1968) clearly showed in their experiments with cattle that energy requirements for maintenance were proportional to $W^{1.00}$.

3. Energy requirements for activity and other productive functions, such as lactation, are generally assumed proportional to $W^{1.00}$. In addition, fixed per head costs (service sires, taxes, grazing fees, veterinarian expenses, etc.) should be counted in addition to cow maintenance costs.

Combination measures of cow efficiency. PRI (Better Beef Business, April, 1973) has suggested combining calving interval with relative cow productivity as a joint measure of cow efficiency. This is risky since cows may rank high or low for two different traits--relative productivity and fertility. These traits vary in expected heritability and little is known about the genetic and phenotypic correlations between them.

Conclusions and Recommendations

- 1. Measures of cow efficiency should be provided to cattlemen as they make selections. The goals of their individual breeding program will vary with the potential commercial usage of the breeding cattle they produce. Knowledge of cow efficiency will provide more flexibility in their selection and culling programs.
- 2. Measures which are biased should not be used. When applied in comparisons of cows of the same age, the four methods illustrated in the example rank cows similarly. However, when used to compare cows of different ages, methods 1 & 2 are biased in favor of young cows and their use will likely lead to incorrect selection decisions. Methods 3 & 4 appear appropriate to use in herd-wide comparisons.
- 3. The choice between methods 3 § 4 can be argued at length. Conclusive research evidence has not been presented to favor either $W^{1.00}$ or $W^{0.75}$ as the best indicator of total production costs. My approach is when in doubt choose the simpler, more straightforward method; in this case, method 3.
- 4. Provide ranchers with separate, not combination, measures of relative cow productivity (i.e. cow efficiency) and of fertility (probably, calving interval) so that they can clearly distinguish which traits they are emphasizing in their breeding programs. It would be possible, of course, to construct individual selection indexes to meet the specific needs of each individual's program.

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- Guilbert, H. R. and J. K. Loosli. 1951. Comparative nutrition of farm animals. J. Animal Sci. 10:22.
- Taylor, St. C. S. and G. B. Young. 1968. Equilibrium weight in relation to food intake and genotype in twin cattle. Animal Prod. 10:393.

Сож						· · · Ca.	1f	
Age	Wt	Wt Ratio	w ^{0.75}	W ^{0.75} Ratio	Wt	Wt Ratio	Calf Wt Cow Wt	Rank ¹
2	700	0.8235	136.09	0.8657	300	0.80	0.429	(5,5)
2	750	0.8824	143.32	0.9116	400	1.07	0.533	(1,1)
2	800	0.9412	150.42	0.9568	425	1.13	0.531	(2,2)
2	850	1.0000	157.42	1.0013	375	1.00	0.441	(4,4)
2	900	1.0588	164.32	1.0452	400	1.07	0.444	(3,3)
2	950	1.1176	171.12	1.0884	350	0.93	0.368	(7,9)
2	1000	1.1765	177.83	1.1312	375	1.00	0.375	(6,8)
Total	5950	7.0000	1100.52	7.0000	2625	7.00	3.121	
Avg	850	1.0000	157.21	1.0000	375	1.00	0.446	
			τ.					
6+	1100	0.8800	191.00	0.9091	345	0.80	0.314	(5,12)
6+	1150	0.9200	197.48	0.9399	460	1.07	0.400	(2,7)
6+	1200	0.9600	203.89	0.9705	489	1.13	0.408	(1,6)
6+	1250	1.0000	210.22	1.0006	431	1.00	0.345	(4,11)
6+	1300	1.0400	216.50	1.0305	460	1.07	0.354	(3,10)
6+	1350	1.0800	222.72	1.0600	403	0.93	0.299	(7,14)
6+	1400	1.1200	228.87	1.0893	431	1.00	0.308	(6,13)
Total	8750	7.0000	1470.68	7.0000	3019	7,00	2,428	
Avg	1250	1.00	210.10	1,0000	431	1.00	0,347	

TABLE 1. A COMPARISON OF COMPUTATIONALLY PRACTICAL MEASURES OF COW EFFICIENCY.

¹ First number is rank within age group; second is rank across age group.

² Actual PRI method involves dividing ratios by a constant (2.67) which has no effect on ranking.

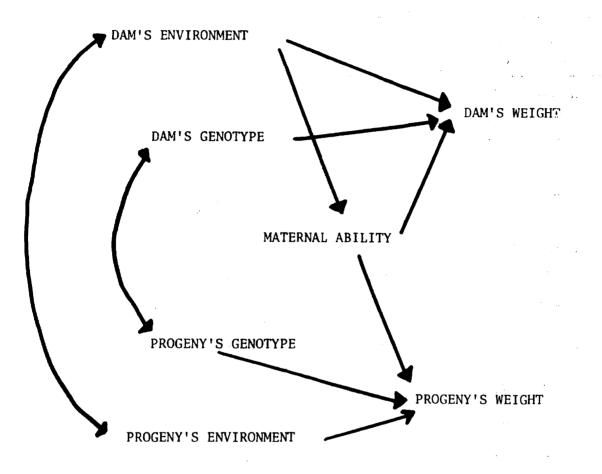
	·		ficiency		
PRI ²	Rank	Calf Ratio Cow Ratio	Rank	Calf Ratio Cow0.75	Rank
2.204	(5,7)	0.971	(5,7)	0.924	(5,9)
2.791	(2,2)	1.213	(1,1)	1.173	(2,2)
2.825	(1,1)	1.201	(2,2)	1.181	(1,1)
2.382	(4,5)	1.000	(4,78)	1.000	(4,7)
2.434	(3,3)	1.011	(3,6)	1.024	(3,6)
2.045	(7,11)	0.832	(7,14)	0.854	(7,14)
2.109	(6,9)	0.850	(6,13)	0.884	(6,11)
.6.790		7.078		7.040	
2.399		1.011		1.006	
1.806	(7,14)	0.909	(5,10)	0.880	(6,12)
2.329	(2,5)	1.163	(2,4)	1.138	(2,4)
2.398	(1,4)	1.177	(1,3)	1.164	(1,3)
2.050	(4,10)	1.000	(4,78)	0.999	(4,8)
2.125	(3,8)	1.029	(3,5)	1.039	(3,5)
1.809	(6,13)	0.861	(7,12)	0.877	(7,13)
1.883	(5,12)	0.893	(6,11)	0.913	(5,10)
4.400		7.032		6.852	
2.057		1.005		0.979	

TABLE 1. Continued

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Figure 1. Diagramatic representation of interrelationships among factors influencing weights of dam and her progeny.

PRESIDENT'S ADDRESS

J. David Nichols

Shakespeare observed, "the past is prologue." Performance testing has attracted people that look forward to the future, rather than dwelling in the past. I'm not suggesting that the performance movement does not have a heritage that has been characterized by great individuals, who despite personal ridicule and suggestions that some how these paper shuffling weigh and prayer's were unworthy of the title "cowboy." Performance organizations spawned the same kind of reaction. Many college professors and extension people put their positions on the line for evaluating on a basis that represented economic traits. While breed associations were late in getting started, the programs they are offering are sound forward thinking ones. I think we must recognize the breed associations are taking the lead in developing and utilizing National Sire Evaluation. BIF can take special pride in the role it played in setting up the guidelines for National Sire Evaluation. History will have several gold pages for the breed association that gives leadership, guidance and effort in promoting these programs in their breeds.

If any of you here think we are toiling in vain or simply talking to each other, you are wrong. This morning I received a call from a farmer about some bulls for his commercial herd. After answering his questions regarding our performance program--prices, etc.... I started explaining for the overall low levels of performance this year because of mud, snow and the terrible winter. He interrupted me and said, "Quit wasting my telephone charges telling me about the winter weather; I'm an expert on that too. Give me the ratios, dammit, ratios!!!"

My five-year-old son, Fletcher, attends nursery school. The other day I took him to school. He was met by his classmate, Scott Lund, at the car. They started looking and pointing at a set of vapor trails going across the sky. Fletcher indicated that the trails were left by a Boeing 747. "No," Scott corrected, "that definitely is a Douglas DC 10 powered by Lockheed's newest jet engine that develops ten thousand pounds thrust each, without the after the after burner." Fletcher said, "No! It was definitely the British built Rolls Royce with the General Dynamics design that developed 16 thousand pounds thrust and is capable of producing 30% less pollution at takeoff." Just then the bell rang and Fletcher scoffed. "Well, I guess we had better go in and string those darn beads." We are stringing too many beads in the beef breeding industry. We have proven the value of performance testing, central bull tests, applying knowledge of population genetics to estimated breeding values and identifying superior sires through national sire evaluation. But we still don't make selections on performance unless they "are the right kind." We realize our sons and daughters must be equipped when they graduate from college to compete in an industry that is comprised of giants that use every available scientific technique to succeed. But what do we have these students doing? They are looking at feet and heads of live animals on judging teams. Stringing Beads!

We still fill an arena with people to see a man visually evaluate 200 different animals of all ages from 200 different environments. All of us know the folly of comparing animals of different ages from different ages for <u>anything</u>. Yet we heap words of praise for the <u>one</u> animal selected as the <u>champion</u>. Stringing beads!

Finally performance breeders engage in petty arguments that somehow the performance of one line or breed is superior to the performance of their fellow breeders cattle. The character assassination of breeders and their cattle is "stringing beads."

Let us start gathering the resources of our people and organization and start breeding cattle for the 80's. They may be quite different from the 60's and 70's. The time lag from seedstock to the meat counter is at least four years so time is short. It appears the fabrication of carcasses and merchandising techniques are changing fast. Capital and people outside the industry are trying to intergrate the various phases of the beef industry. This could mean that commercial cattle will be priced according to their value as they relate to the whole industry. Certainly this will have ramifications as far as the value of specific genetic inputs are concerned. These changes and others should push us forward into new programs and concepts in our breeding programs. In our own herd some of the projects we have underway include the following. While not all new they represent opportunities for us.

- 1. Lines comprised of different breeds bred for specific purposes.
- 2. Calves birth recorded from date of conception rather than actual birth.
- 3. Calves unadjusted for age.
- 4. Multiple sires used only once as yearlings.

These are just a few ideas that we are trying. Of course many other people are trying other things.

In closing I'd like to read a poem that seems to characterize the performance breeder and organization.

God gave us two ends to use. With one end we sit. The other we muse. Heads we win, Tails we lose.

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The annual meeting of BIF was called to order by President J. David Nichols. The Secretary's report was requested.

Secretary's Report by Frank H. Baker

The primary activities of 1973 were:

2. Eastern Regional Conference - Montgomery, Alabama.

3. Bull Selection Problem Brochure.

1973-74 plans are:

Establishment of regional secretaries:

A. L. Eller - Eastern Region Robert deBaca - Midwest Region Bobby Rankin - Western Region

These secretaries will concentrate on maintaining internal communications with state affiliates of their region and developing regional projects. External communication with regional and national news media on stories from the region will be another important role of these men.

The national secretary will concentrate on communications with the national organizations and coordination in the national interest. The national secretary will work with board and national officers.

We anticipate monthly or bimonthly communication with the member and associate members. This may take the form of a national newsletter.

We anticipate the publication and distribution of materials committees recommend.

Coordination of committee activities will continue to rest on the Program Coordinator, Dixon Hubbard.

I recommend review of by-laws in relation to five years' experience. I recommend review of program format in relation to needs of organization. I recommend that committees be active during the year.

I recommend that consideration be given to dividing the "Guidelines publication" into sections for the next revision in order that sections may be revised as new committee action is forthcoming.

The 1973 BIF registration summary is:

More than 170 participants represented 31 states, Australia and Uruguay They were a mixture of cattlemen, national association representatives, AI firm representatives, bankers, university personnel, USDA personnel and press representatives. Eleven breed associations had representatives present in the meeting. Nine AI firms participated in the meeting. As we look ahead to the next five years of BIF, our challenges are greater because of our past successes. It has been a pleasure to serve as your secretary during these years. I am looking forward to a great future for BIF.

The Secretary's report was approved.

The financial report was called for and presented by the Executive Secretary. The financial report was approved.

The report of the directors' election was requested.

Directors elected were:

Midwest BCIA	- Robert Miller	- Mabel, Mn.
Southern BCIA	- James Bennett	- Red House, Va.
BCIA-at-Large	- J. David Nichols	- Anita, Ia.
Breed Assns.	- Raymond Meyer	- Red Angus Assn. of America
		Sorum, S. D.
	- Robert Vantrease	- North American Limousin Foundation
		Denver, Co.
Other Organizations	- John Airy	- American National Cattlemen's Assn.
		Johnston, Ia.
	- William Durfey	- National Assn. of Animal Breeders
		Columbia, Mo.

Committee reports were called for and presented (published elsewhere in the proceedings).

The proposed by-law change regarding defining associate members recommended by the Board of Directors was approved. The change reads as follows:

"Associate (non-voting) members of this Federation will consist of organizations, firms, public agencies or individuals interested in beef cattle performance programs."

The meeting adjourned at 4:30 p.m.

ELECTION OF BOARD OF DIRECTORS

Vacancies of the Board of Directors were filled by election in accordance with the by-laws i.e. representatives of breed associations caucus and elect members to represent them; state BCIA representatives elect regional directors in regional caucuses and at-large directors in a caucus of all BCIA's.

			Term
Director	Address	Representing	Expiration
Breed Associations			
Fred Francis	3201 Frederick Blvd.		
	St. Joseph, Mo. 64506	Am. Angus Assn.	1974
Craig Ludwig	Hereford Drive		
	Kansas City, Mo. 64105	Am. Heref. Assn.	1975
Raymond Meyer	Sorum, S. D. 57654	Red Angus Assn. of Am.	1976
C. D. Swaffar	8288 Hascall St.		1075
	Omaha, Ne. 68124	Am. Shorthorn Assn.	1975
Don Vaniman	Box 24 Box crop Mt 50715	Am. Simmental Assn.	1975
Robert Vantrease	Bozeman, Mt. 59715 309 Livestock Ex. Bldg.	Am. Simmental Assn.	1975
Robert Vantrease	Denver, Colo. 80216	No. Am. Limousin Foundation	1976
	Denver, 2010. 30210	No. Am. Ermousin Foundación	1570
State BCIA's & PRI			
	Dec. 752		
D. D. Bennett	Box 352 Hermiston, Or. 97838	BCIA Western Region	1975
Robert Miller	Viewlawn Angus Farm	beir western Region	1575
Robert Miller	Mabel, Minn. 55954	BCIA North Central Region	1976
James Bennett	Red House, Va. 23963	BCIA Southern Region	1976
William Gray	Falkland Farms	6	
-	Schellsburg, Pa. 15559	BCIA Northeast Region	1975
Louis C. Chesnut	4314 Scott		
	Spokane, Wash. 99200	BCIA-at-Large	1974
J. David Nichols	Anita, Ia. 50020	BCIA-at-Large	1976
Martin Jorgenson	Ideal, S.D. 57541	BCIA-at-Large	1974
Max Hammond	Bartow, Fla. 33830	BCIA-at-Large	1974 Continuing
Clarence Burch	Mill Creek, Ok. 74856	PRI	continuing
Other Organizations			
John Ai ry	Pioneer Beef	Am Natl Cattlemone Acon	Continuing
William Durfey	Johnston, Ia. 50131 512 Cherry St.	Am. Natl. Cattlemens Assn.	Continuing
WIIIIam Dulley	Columbia, Mo. 65201	Natl. Assn. of An. Brdrs.	Continuing
	6010m01a, Mo. 05201	Mati. Assn. of Mr. Didis.	Gontinuing
Ex Officio			
Discours II, bh an I		Weekington D.C. 20250	
Dixon Hubb ard Everett Warwick		, Washington, D.C. 20250 ervice, Beltsville, Md. 20705	
Don Nicholson		f Ag. of Canada, Ottawa, Cana	
Robert deBaca	· · ·	State Univ., Ames, Ia. 50010	
A. L. Eller	Animal Sci. Dept., VPI,		
Frank H. Baker		. of Nebr., Lincoln, Ne. 6850	3
Bobby J. Rankin		Mexico State Univ., Las Cruce	

MINUTES OF THE BOARD OF DIRECTORS MEETING

April 11 and 12, 1973

The meeting was called to order at 7:15 a.m., April 11, by Vice President Ray Meyer in the absence of President Nichols.

Secretary Frank Baker reviewed minutes of the mid-year meeting as published in the proceedings of the mid-year conference. The minutes were approved.

The Secretary reviewed the membership applications of:

- The International Brangus Inc. Association to advance from associate member to full membership. (Burch moved approval. Second by Chesnut. Motion passed.)
- (2) Galloway Performance International's application for full membership. (Jorgenson moved approval. Second by Bennett. Motion passed.)
- (3) American Chianina Association. (Vaniman moved approval. Second by Durfey. Motion passed.)
- (4) Tentative request for membership by American Red Brangus Association. (Vaniman moved approval subject to a satisfactory review of their performance program by Secretary Baker. Second by Durfey. Motion passed.)

To facilitate action on future membership applications. Swaffar moved that the Secretary be authorized to act for the Board in reviewing and approving membership applications in accordance with the by-laws. Second by Chesnut. Motion passed.

Secretary Baker reviewed the regional organization plan with:

Α.	L.	E11	er	-	Virginia	-	Eastern	Regional	Secretary	
R.	C.	deE	Baca	-	Iowa	-	Midwest	Regional	Secretary	
Bob	by	J.	Rankin	-	New Mexico	-	Western	Regional	Secretary	

These regional secretaries will concentrate on communicating with state affiliates and news media of the region in achieving more effective BIF programs. Regional secretaries will be responsible for annual surveys, award nominations and membership reports from the region.

The executive secretary will work with the national member affiliates and with the Board of Directors.

This regional operational plan had been approved by mail ballot. This approval was formally endorsed by the Board.

The financial report was reviewed and approved. (Motion by Burch. Second by Jorgenson).

The Board discussed the proposed change in by-laws to clarify the definition of associate membership which was mailed to the members on October 6, 1972. The new definition proposed is "Associate (non-voting) members of this federation will consist of organizations, firms, public agencies or individuals who are interested in beef cattle performance programs." Durfey made a motion that the Board recommend approval of this definition by the membership. Swaffar seconded. Motion passed.

Meeting was recessed until 5:00 p.m., April 12.

The Board returned to session with President Nichols in charge.

The election was conducted in accordance with the by-laws by secret nominating ballots.

J. David Nichols was reelected PresidentRaymond Meyer was reelected Vice PresidentFrank Baker was reelected Executive SecretaryC. D. Swaffar was reelected Treasurer

The Board discussed the annual meeting. A Program Evaluation Committee of Warwick, Meyer and Vaniman was appointed.

The committee reports were reviewed and the following action taken in addition to approval of all reports for publication in the proceedings of the conference:

- (1) <u>Merchandising Committee</u> Report was referred to the newlyappointed Program Evaluation Committee.
- (2) Performance Pedigree Report No action needed.
- (3) Sire Evaluation Authorized publication of a leaflet.
- (4) <u>Reproduction Committee</u> Asked to draft outline of proposed <u>leaflet</u>. Directed that the committee concentrate on recordkeeping needs of reproduction rather than herd management.
- (5) <u>Carcass Evaluation Committee</u> The Secretary was asked to write a letter to the Assistant Secretary of Agriculture requesting attention to analyses of data relevant to precision of the USDA cutability formula on today's cattle population.
- (6) Farm and Ranch Testing Committee Report on live animal evaluation and scoring was reviewed and discussed. Chesnut offered a motion that "In the next printing of BIF Guidelines for Uniform Beef Improvement Programs, the section on conformation scores be dropped. (In past printing USDA program 1020 on pages 10, 11 and 12 or in the April 1972 preliminary printing on pages 12, 13, 14 and 15)." Second by Vantrease. Motion passed.

The cow efficiency criteria were returned to the committee for further study.

Burch moved and Hammond seconded that active Board members of past and future be given certificates of appreciation.

The Board requested review by the Secretary and Regional Secretaries of the regional boundaries of areas for election of BCIA directors in relation to achieving active directors in all positions. A report will be given at the mid-year meeting.

A motion by Vaniman seconded by Jorgenson to authorize the Secretary to purchase and present appropriate gift certificates to Miss Vicky Kobes and Mrs. Virginia Marcussen for past assistance to the BIF Secretary and Board.

The Board discussed all possible locations for the 1974 annual meeting. At the conclusion of the discussion the President called for a vote on locations. Denver, Colorado was selected as the location.

The date for the 1974 meeting was set for approximately April 15.

Meeting adjourned at 8:30 p.m.

Beef Improvement Federation Financial Statement April 1, 1972-March 31, 1973

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	Date	Description	Expenditures	Deposit	Balance
4-6-72 Postage & Mailing Expense for Press Releases 194.35 4-7-72 Mailing Expense for Press Releases 194.36 4-7-72 Preparation of Press Release & 100.00 4-17-72 Secretarial Assistance 108.00 4-20-72 Stamps 30.00 4-25-72 Cash for Convention Expenses 100.00 5-1-72 Memberships 525.00 5-1-72 Memberships 525.00 5-1-72 Memberships 525.00 5-2-72 Bank Statement Balance 3,520.71 4-25-72 Convention Supplies 11.00 5-3-72 Printing & Convention Material 281.90 5-3-72 Photography 47.09 5-3-72 Photography 47.09 5-3-72 Trophies 82.94 5-10-72 Check for Insufficient Funds 10.00 5-11-72 Convention Expenses 284.61 5-23-72 Photography 150.38 6-1-72 Bank Statement Balance 2,262.73 5-17-72 Printing Annual Meeting Proceedings 312.20 6-1-972 Misc. C	4-1-72				2.932.82
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7-12-72 Office Supplies 25.50 7-13-72 Office Supplies 14.25 7-14-72 Membership Dues 400.00 7-21-72 Membership Dues 850.00 7-27-72 Membership Dues 300.00 8-2-72 Bank Balance 2,969.78 8-17-72 Stamps & Postage 20.00 8-28-72 Office Supplies 85.00 8-8-72 Membership Dues 600.00 8-22-72 Membership Dues 4,064.78 9-6-72 Office Supplies 368.59	6-29-72	Printing of Member Dues Notice	28.80		
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7-21-72 Membership Dues 850.00 7-27-72 Membership Dues 300.00 8-2-72 Bank Balance 2,969.78 8-17-72 Stamps & Postage 20.00 8-28-72 Office Supplies 85.00 8-8-72 Membership Dues 600.00 8-22-72 Membership Dues 600.00 8-22-72 Membership Dues 600.00 9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59	7-13-72	Office Supplies	14.25		
7-27-72 Membership Dues 300.00 8-2-72 Bank Balance 2,969.78 8-17-72 Stamps & Postage 20.00 8-28-72 Office Supplies 85.00 8-8-72 Membership Dues 600.00 8-22-72 Membership Dues 600.00 9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59		Membership Dues		400.00	
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8-17-72 Stamps & Postage 20.00 8-28-72 Office Supplies 85.00 8-8-72 Membership Dues 600.00 8-22-72 Membership Dues 600.00 9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59	7-27-72			300.00	
8-28-72 Office Supplies 85.00 8-8-72 Membership Dues 600.00 8-22-72 Membership Dues 600.00 9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59	8-2-72	Bank Balance			2,969.78
8-8-72 Membership Dues 600.00 8-22-72 Membership Dues 600.00 9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59	8-17-72		20.00		
8-22-72 Membership Dues 600.00 9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59	8-28-72	Office Supplies	85.00		
9-1-72 Bank Statement Balance 4,064.78 9-6-72 Office Supplies 368.59		Membership Dues			
9-6-72 Office Supplies 368.59	8-22-72	Membership Dues		600.00	
		Bank Statement Balance			4,064.78
9-8-72 Postage 22.40					
	9-8-72	Postage	22.40		

Date	Description	Expenditures	Deposit	Balance
9-8-72	Office Supplies	81.27	- ··	
9-20-72	Erroneous Deposit		1,600.00	
9-25-72	Correction of Erroneous Deposit	1,600.00	•	
9-8-72	Membership Dues		350.00	
9-28-72	Membership Dues		250.00	
10-2-72	Bank Statement Balance		· ·	4,192.52
9-29-72	Printing of BCDS Letter	53.20	•	
10-20-72	Membership Dues		200.00	
10-20-72	Eartag Sales & BCDS		91.50	
11-1-72	Bank Statement Balance			4,430.82
10-20-72	Printing of Meeting Letter	120.16		
11-15-72	Stamps	30.00	• •	
11-16-72	Printing	14.15		
11-20-72	Regional Meeting Expense	49.09		
11-2-72	Membership Dues		200.00	
12-1-72	Bank Statement Balance			4,417.48
12-11-72	BCDS Eartag Expense	100.00		
12-13-72	Publication Development Expenses	100.00		
12-17-72	Secretarial Assistance	24.00		
12-22-72	Membership Dues		550.00	
12-22-72	BCDS Sales		300.00	
1-2-73	Bank Statement Balance			5,043.48
12-21-72	Refund on BCDS	40.00		
12-21-72	BCDS Tags & Expenses	1,314.50		
1-17-73	Secretarial Assistance	39.00		
1-17-73	Mailing Permit	30.00		
2-1-73	Bank Statement Balance			3,619.98
1-20-73	BCDS Expense	2.60		
2-13-73	Printing Eastern Reg. Conf. Proc.	249.40		
2-28-73	Stamps	50.00		
2-28-73	Postage (Mailing Permit)	50.00		
2-22-73	Memberships		450.00	
2-22-73	BCDS Sales		750.32	
3-1-73	Bank Statement Balance			4,468.30
3-5-73	Secretarial Assistance	66.00		
2-22-73	Printing Press Releases	4.80		
2-10-73	Colorado Corporation Fee	5.00		
3-30-73	Stamps & Office Supplies	32.00		
3-28-73	Printing Leaflet & Meeting Program	326.68		
4-2-73	Bank Statement Balance			4,033.82

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1972 BIF AWARDS' PROGRAM

1972 BIF Continuing Service Award

Clarence Burch, Mill Creek, Oklahoma, Angus breeder, is past president of Performance Registry International. He served as the first president of BIF from 1968 to 1970. He continues as a member of the Board of Directors and Chairman of the Performance Pedigree Committee.

1972 BIF Organization of the Year

Beef Improvement Committee of Oregon Cattlemen's Association

D. D. Bennett serves as the Chairman and Dean Frischknecht serves as the Secretary of the Beef Improvement Committee. They collected a total of 61,600 weaning records, 22,800 yearling records for 390 members. Sevenhundred eighty-six bulls were tested in two central stations and 5,250 bulls were tested on farms. The Committee conducted 29 carcass contests and demonstrations. They collected carcass data on 3,310 steers. Three field days were sponsored.

1972 BIF Beef Performance Seedstock Breeder

John Crowe, Whitemore, California, has been keeping production data on his herd since 1942. The Crowe Hereford cattle have been used as foundation seedstock in many of the leading U.S. purebred herds, namely, Ferry Carpenter, Hayden, Colorado; San Isabel Ranch, Westcliffe, Colorado; E. S. Gardner, St. George, Utah; California breeders include: J. D. Kuck and Frank Day, Montague; Les Fearrien, Hydesville; Tejon Ranch Co., Bakersfield. In addition to supplying seedstock for these breeders, the Crowe bulls have been used extensively in numerous large commercial herds; for example, Cockrell, Inc., Cedarville, California, purchased 55 bulls in 1970. The Crocker-Huffman Co. of Merced, California, for many years were heavy buyers from the Crowe ranch. Other commercial breeders include: Yamsi Cattle Co., Chiloquin, Oregon; Abner McKenzie, Red Bluff; Rehse Bros., Orland; Hart Cattle Co., Montague, California, and many others.

John Crowe has sponsored many educational events on the ranch to demonstrate principles of cattle improvements through effective use of records. Data from the herd has been used as a basis for magazine articles, textbook examples, and university bulletins. John Crowe has improved his cattle and the beef industry through use of his records.

1972 BIF Commercial Producer

Chan Cooper's ranch in Willow Creek, Montana consists of 7,500 acres of which 450 acres are irrigated. Hay is the main crop, but around 100 acres of grain are raised each year in rotation with hay. Chan has worked close with the soil conservation, and has put in cross fences on his range for pasture rotation, and has reseeded some to more productive grasses. Each year so many acres are deferred under the soil conservation plan, and has also developed several springs. Under the irrigated land about 120 acres have been leveled and ditches reorganized and several windbreaks have been planted. The ranch runs around 350 head of cattle, 290 are brood cows. Individual records are kept on all cows, who are number branded with the year and an individual number. As each calf is born it is ear tagged. The date, sex, and cow number and calf number is recorded. At weaning time each calf is weighed individually and this information is sent to the Montana Beef Performance Association and run through a computer. He picks his replacements from his records and computer information. He has increased his weaning weights by 85 pounds since 1963.

1972 BIF Certificates of Excellence

As a beef performance breeder of 1972.

John Crowe, California.

Dale H. Davis, Montana.

Elliot Humphrey, Arizona.

Jerry Moore, Ohio.

James D. Bennett, Virginia.

Harold A. Demorest, Ohio

Marshall A. Mohler, Indiana

Billy L. Easley, Kentucky

As a commercial producer of 1972.

Chan Cooper, Montana.

Alfred B. Cobb, Jr., Montana.

Lyle Eivins, Iowa.

Broadbent Brothers, Kentucky.

Jess Kilgore, Montana.

Nominated by Ca. BCIA.

Nominated by Mt. BPA.

Nominated by Ariz. Cattlemen's Assn.

Nominated by Am. Simmental Assn.

Nominated by Va. BCIA.

Nominated by Am. Int. Charolais Association.

Nominated by Red Poll Cattle Club.

Nominated by Kentucky BCIA.

Nominated by Mt. BPA.

Nominated by Am. Int. Charolais Association.

Nominated by Ia. BCIA.

Moninated by Ky. BCIA.

Nominated by Am. Simmental Assn.

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1973 BIF AWARDS' PROGRAM

1973 BIF Continuing Service Awards

F. R. Carpenter - Hereford Breeder - Hayden, Colo.

Ferry Carpenter is a giant in performance testing circles for the work in improving his own Hereford herd and for early leadership in Performance Registry International. He is a member of the Colorado Beef Improvement Association. Ferry arranged the first meeting of organizations wherein the BIF concept was discussed. He helped develop the plans for BIF and helped select its name.

E. J. Warwick - USDA Researcher - Beltsville, Md.

Everett Warwick represented the Agricultural Research Service in the planning meetings for BIF. He has served as the ARS ex officio member of the BIF Board of Directors since the beginning. Everett served as chairman of the BIF Sire Evaluation Committee throughout the development of the National Sire Evaluation Program and he continues to serve as the Chairman of the committee guiding that program. Prior to the formation of BIF, Dr. Warwick had a long history of service in research and public assistance on performance testing.

Robert deBaca - Extension Beef Specialist - Iowa State University

Robert deBaca has been a key figure in performance testing circles for the past 15 years. His greatest work has been through developing and advising the Iowa Beef Improvement Association since its beginning. Today, the Iowa association has one of the largest and most active programs in the country. Bob was active in the planning meetings for BIF and has served effectively as assistant secretary and director of publicity. Bob also chaired the BIF committee on Promotion and Sales which developed a widely used report.

1973 BIF Pioneer Research Awards

JAY L. LUSH, Professor emeritus, Iowa State University, was a leader in research of the principles upon which BIF is based. His book, Animal Breeding Plans, has promoted the use of population genetics principles for the improvement of beef animals. He has made important contributions to the U. S. Range Station data analysis and to current reports on crossbreeding, germ plasm evaluation and selection.

A member of the National Academy of Science, Dr. Lush's picture is displayed among those of other recognized livestock leaders in the Saddle and Sirloin Club in Chicago. He received the American Society of Animal Science Breeding and Genetics Award in 1965, and the first Morrison Award the society presented in 1946. JOHN H. KNOX, Professor emeritus, New Mexico State University, was a leader of early New Mexico research which served as the basis for the pre-weaning "on the ranch" performance testing programs throughout the country which led to the founding of BIF.

Knox has served in various capacities in the American Society of Animal Production (now American Society of Animal Science), and received their Distinguished Teacher Award in 1959.

Professor Knox organized annual feeders' day and ranch day programs at New Mexico State as early as 1936 to present research findings to livestock people. He also conducted an annual cattle breeders' school for the New Mexico Cattle Grower's Association, and was selected as Cattleman of the Year in 1954 by that group.

1973 BIF Organization of the Year

The South Dakota Livestock Production Records Association, under Fresident Bob Healy, collected a total of 56,500 weaning records and 10,000 yearling records from 480 beef herds. The 800-member organization provides a complete data processing service for weaning and yearling records and cow summaries, and coordinates bull testing stations and individual and herd certifications.

1973 BIF Beef Performance Seedstock Breeder

Mrs. R. W. Jones, Leslie, Georgia, operates Polled Hereford herd that has representatives in herds in 28 states, nine universities and experiment stations, and five artificial inseminating services. Her RWJ ranch received the Georgia Beef Cattle Improvement Association "Outstanding Herd Award" each year from 1969-72. Mrs. Jones and her late husband, who was elevated to the American Polled Hereford Hall of Fame in 1971, set out to increase weaning and yearling weights from their original 500 and 1,000 pound averages. Today, RWJ cattle are reaching weights of over 700 pounds at 205 days and 1,300 pounds at 365 days.

1973 BIF Commercial Producer

Pat Wilson, Frostproof, Florida, the commercial producer of the year, is president of a corporation whose reaching operations consist of approximately 150,000 acres and as many commercial cattle. He also runs purebred herds of Polled Hereford, Charolais and Brahman cattle, and is upgrading a Simmental herd. Wilson is not only one of the founders of the American Simmental Association, but also the first president of the Florida Simmental Association. Three years ago he received the Florida Banker Award for the greatest herd improvement in a year.

1973 BIF Certificates of Excellence

As a beef performance breeder of 1973.

Messersmith Herefords, Alliance, Ne. 69301 (Robert, Frank & Ken).
Robert Miller, Viewlawn Angus Farms, Mabel, Mn.
N
James D. Hemmingsen, Newell, Ia.
Clyde Barks, Egeland, N.D.
C. Scott Holden, Cascade, Mt. 59421.
William F. Borror, Gerber, Ca. 96035.
Raymond Meyer, Sorum, S.D. 57654.
Heathman Herefords, Hartline, Wa. (Earl & John)
Albert West III, Rt. 9, San Antonio, Tx. 78211.
Mrs. R. W. Jones, Jr., Leslie, Ga.
Carlton Corbin, Fittstown, Ok.

As a commercial producer of 1973.

Clifford Ouse, Rothsay, Mn. Pat Wilson, Frostproof, Fla. John Glaus, Chamberlin, S.D. 57325. Sig Peterson, Almont, N.D. Max Kiner, KII Ranch, Almira, Wa. Donald Schott, Box 14, Stockett, Mt. Stephen Garst, Coon Rapids, Ia. J. K. Sexton, Willows, Ca. Elmer Maddox, Freedom, Ok. Nominated by Nebr. BCIA. Nominated by Minn. BCIA. Nominated by Ia. BCIA. Nominated by N.D. BCIA. Nominated by Mt. BP Assn. Nominated by CBCIA. Nominated by S.D. PRA. Nominated by Wa. BCIA.

Nominated by Ga. BCIA. Nominated by PRI.

Nominated by Mn. BCIA. Nominated by Am. Simmental Assn. Nominated by S.D. BPRA. Nominated by N.D. BCIA. Nominated by Wa. BCIA. Nominated by Mt. BPA. Nominated by Ia. BIA. Nominated by Ca. BCIA. Nominated by PRI.

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Cyril Bish County Ext. Agent 5608 So 48 Lincoln, Ne. 68506

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Martin Jorgensen, Jr. Jorgensen Bros. Ideal, S. D. 57541

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Bob Vantrease N. A. Limousin Found. 309 Livestock Ex. Bldg. Denver, Colo. 80216

Judd Wagner P. O. Box 246 Columbus, Ne. 68601

Roy A. Wallace Select Sires Inc. Rt. 3, Box 126 Plain City, Oh. 43064

Everett J. Warwick USDA, Rm. 306 No. Bldg. ARC-West Natl. Prog. Staff, ARS Beltsville, Md. 20705

110 Douglas Washburn

Dale Washburn & Son Harnick RR 1 Harnick, Ia. 51026 Henry W. Webster 109 Polk Hall N.C. State U. Raleigh, N.C. 27607 Burt Weichenthal U. of Ill. Dept. of An. Sci. Urbana, Ill. 61801 Ray Weilage, Jr. Natl. Bank of Commerce Lincoln, Ne. 68508 Bob Wekesser Lost Creek Ranch 5301 A Street Lincoln, Ne. 68510 Dan Weppler Mt. BPA Mt. State U. An. Sci. Dept. Bozeman, Mt. 59715 John R. Whaley, III Wye Plantation Queenstown, Md. 21658 W. W. Wharton Oh. State U. An. Sci. Dept. Columbus, Oh. 43210 Richard L. Willham Ia. State U. An. Sci. Dept. Ames, Ia. 50010 Doyle Wolverton Ia. State U. 2 Northerest Drive Council Bluffs, Ia. 51501 W. H. Yaw The Farm Clinic 207 Hill Arcade Bldg. Galesburg, Ill. 61401 Don Young Carnation Genetics Rt. 2, Box 2244 Sunnyside, Wa. 98944

William Zmolek Ia. State U. An. Sci. Dept. Ames, Ia. 50010 Keith O. Zoellner Ks. State U. An. Sci. Dept. Manhattan, Ks. 66502 W. A. Zollinger U. of Ne. Soeast Hdqtrs. Lincoln, Ne. 68503

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BEEF IMPROVEMENT FEDERATION

MEMBER REPORTS & YEARBOOK



APRIL, 1973



BEEF IMPROVEMENT FEDERATION

Member Reports & Yearbook

April, 1973

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This report is for the program year of 1972. It was prepared and edited by Frank H. Baker, BIF Secretary, Animal Science Department, University of Nebraska, Lincoln, Nebraska 68503 with special assistance from Miss Vicky Kobes. Information contained in the report was submitted by representatives of the organizations or by state extension specialists. Identification of the associate members is (*) and states not affiliated with BIF is (**). It is hoped that all state improvement programs will ultimately affiliate with BIF. No attempt was made to present a grand total of data included in state and national organization reports because of possible duplication of the same data. Apologies are offered for unintentional omissions of key data and undetected errors in the report.

			Centr	al Stat:	ions		Farms &	Ranches		Carcass	Eval.	Sire H	Eval.
No. Reporting	Weaning Records	Yrlg. Records	No. Herds	No. Bulls	No. Brdrs.	No. Sta.	No. Bulls	No. Brdrs.	Total Brdrs. Testing Bulls	No. Brdrs.	No. Sires	No. Brdrs.	No. Sires
					STA	TE TOT	TALS						
46 States	475,741	89,324	7,787	12,593	2,609	203	57,833	3,149	4,495	983	1,460	3,175	8,120
			• •	RI	DEED ASS		ON TOTAL	<u> </u>			· · · ·		
						OCIAII	IOIN TOTAL						
8 Assns.	226,659	64,799	5,262	824	126	15	1,891	258		138	225	2,413	393
			PE	RFORMANC	CE REGIS	TRY IN	TERNATIO	NAL TOTAL	<u>S</u>				
	24,945	8,010		109							109_		109

Summary of Participation in Beef Improvement Programs

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		· · · · · · · · · · · · · · · · · · ·		Centra	1 Test St	ations	Farms	& Ranches		Carcass	Eval.	Sire E	val.
State	Weaning Records	Yrlg. Records	No. Herds	No. Bulls	No. Brdrs.	No. Sta.	No. Bulls	No. Brdrs.	Total Brdrs. Testing Bulls	No. Brdrs.	No. Sires	No. Brdrs.	No. Sires
Ala.	7,225	420	117	145	48	1	425	25	48	2	15		
Ariz.				81	24	1			24				
Ark. ¹ **	5,000	150	82	160	48	3	600	20	60	3	10		
Ca.	2,053	492	130	438	47	3	1,500	100	147	2	25		
Colo.	4,061		32	330	59	2			59	97		5	26
Conn.**	350	30	15				12	1	1	1	2		
<u>F1a.</u>	7,495	269	78	.			242	10	10	12	12		
Ga.	8,786	490	125	222	89	3	450	14	96				
Ha.	695	437	13			_	193	7	7			10	56
Idaho	23,000		235	250	60	3	5,000	100	115	20	30	20	30
<u>III.</u>	14,197	2,506	500	25	10	3	900						
Ind.**	7,830	1,174	627	71	37	2	387	77	88	145	92	202	149
Iowa	12,584	1,066	211	608	185	2	1,500	150	150 ⁻	30	60	50	200
Kan.	40,650	6,650	485	620	124	5	5,150	185	190	22	46		
La.*	6,100	300	75	160	34	1	230	8	36			2	8
Maine**	315	232	14										
Ky.	5,976	1,914	263	107	43	1	1,829	206	210				
Mass.	252	78	19				2	1	1				
Mich.**	3,411	1,227	136	53	36	2							
Minn.	6,004	1,398	108	56	18	1	1,070	56	63	14	36	108	400
Miss.	5,982	272	85				600	42	42			85	242

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¹ 1971 Data.

• •				Centra	l Test St	ations	Farms	& Ranches		Carcass	Eval.	Sire Ev	al
State	Weaning Records	Yrlg. Records	No. Herds	No. Bulls	No. Brdrs.	No. Sta.	No. Bulls	No. Brdrs.	Total Brdrs. Testing Bulls	No. Brdrs.	No. Sires	No. Brdrs.	No. Sires
Mo.	13,809	1,478	488	450	87	6	5,000	240	275	200	300	250	500
Mont.	26,354	7,586	338	1,181	237	4	4,919	186	423				
Nebr.	19,000	2,072	171	516	99	3	1,600	120	140	40	70	99	174
Nev.**				95	13	1	510	8	18	1	2		
<u>N.H.</u>	107	36	12				4	3	3			3	4
<u>N.J.**</u>	50	20	3	5	3	2	50	3	4	4	4	4	4
<u>N.M.</u>	327	122	25	122	25	1	200	4	26	10	20	27	65
<u>N.Y.</u>	839	73	44	37	18	1	50	5	20	5	8	5	. 8
<u>N.C.</u>	12,344	370	223	135	56	1	223	36	70	3	3	223	832
<u>N.D.</u>	10,958	300	117	80	20	1	3,393	150	150	10	10	10	10
Ohio	13,350	2,500	350	92	44	1	200	2	46	22	34	100	194
<u>Okla.**</u>	1,472	109	24	1,342	200	7	2,500	250	300	40	80	300	750
Ore.	64,550	23,300	440	795	65	2	5,650	290	330	110	240	330	475
Pa.	1,521	44	47	15	5	3	35	2	6	11	14	6	9
<u>s.c.</u>	4,466		102	90	26	1			30				
<u>S.D.</u>	56,500	10,000	480	350	65	5	3,300	160	200	35	75	480	1,700
<u>Tn.</u>	6,550	550	194	69	30	1	240	65	81				
Tx.	43,849	10,532	596	2,892	488	123	5,549	355	783	102	218	799	2,190
Utah	5,327	4,886	117	77	30	1	1,643	79	79	2	2	3	1
Va.	10,447	1,666	165	124	42	1	664	30	52	3	6	3	5
Ver.**	512	150	53										
Wash.	12,000	4,000	105	158	37	1 ·	1,250	16	50	20	25	30	50
<i>N</i> .V.	7,627	225	243	112	42	1	113	4	4			4	15
Nisc.	1,816	200	100	270	92	2	110	92					
∛yo.				260	23	1	540	47	58	17	21	17	23

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		· · · · · · · · · · · · · · · · · · ·		Centra	l Test St	ations	Farms	& Ranches		Carcass	Eval.	Sire	Eval.
Assn.	Weaning Records	Yrlg. Records	No. Herds	No. Bulls	No. Brdrs.	No. Sta.	No. Bulls	No. Brdrs.	Total Brdrs. Testing Bulls	No. Brdrs.	No. Sires	No. Brdrs.	No. Sires
Angus	56,303	20,138	924					·				30	120
AHA	102,000	40,800	1,400				. 			109	204	71	151
АРНА	13,303	1,418	300										
R.Ang.	6,625	877	975	374	86	15	870	178					
Shtn. ¹	290	35	12	450	40					20	12	12	29
Sim.	44,923	1,021	1,421				1,021	80		9	9	2,300	93
Char.	3,015	510	155										
Gelb.	200		75	_`									
PRI ¹	24,945	8,010		109							109		109

¹ 1971 Data.

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REPORT OF BCIA ACTIVITIES

ALABAMA BEEF CATTLE IMPROVEMENT ASSOCIATION, INC.

201 Extension Hall	John Besh, President
Auburn University	Jimmy Collins, Vice Pres.
Auburn, Alabama 36830	W. W. Harris, Treasurer
	Richard E. Deese, Secretary

The ABCIA offers its members data processing of weaning records, on-the-farm bull testing and central bull testing.

The Association co-sponsored and hosted the Eastern Regional BIF Conference at Montgomery in 1972. The ABCIA sponsors its annual meeting and one annual sale of on-the-farm tested bulls in conjunction with a beef conference at Auburn.

BEEF CATTLE IMPROVEMENT COMMITTEE, ARIZONA CATTLE GROWERS ASSOCIATION

Adams Hotel	Vince Butler, President
Room 274	Milton Sechrist
Phoenix, Arizona 85004	Chairman, BCIC
	2425 E Thomas Rd., Suite 4
	Phoenix, Arizona 85016

24 Members

114 Members

ABIC sponsors bull testing and provided an award for Arizona's carcass show winner at the Arizona National Show. They plan an inventory of performance testing for 1973 and a series of publications on testing.

ARKANSAS** (1971 Report)

Carl E. Lueker Extension Animal Husbandman P. O. Box 391 Little Rock, Arkansas 72203

Arkansas offers bull testing (station and farm), cow herd test and data processing.

Educational activities include field days at the bull test stations, short courses on beef improvement, beef cattle clinics and feeder calf sales.

CALIFORNIA BEEF CATTLE IMPROVEMENT ASSOCIATION

150 Animal Science Bldg.	Vincent S. Meyer, President	
University of California	L. H. McDaniel, Vice Pres.	
Davis, California 95616	Charles C. Wagner, Secy-Treas.	123 Members

The CBCIA offers a limited data processing service--calf weaning and postweaning reports (includes listings by sire, index, tattoo number and breed, within sex); carcass merit program. CBCIA also provides two Central Bull Tests and Sales (one in Northern Calif. and the other in Central Calif.). CBCIA emphasizes the demonstration of performance procedures to breeders. The CBCIA sponsored a field day and the annual meeting. CBCIA's programs are presented at numerous meetings by members and extension specialists.

CBCIA has sponsored research projects such as (1) the short scrotum method of castration, (2) carcass bone, muscle and fat content correlation by the Butterfield method, (3) multiple births, (4) predicting performance and carcass merit by a rib probe technique and (5) semen testing.

COLORADO BEEF CATTLE IMPROVEMENT ASSOCIATION

Animal Science Department	Ben Kettle, President	
Colorado State Univ.	Laurence Huntington, Vice Pres.	
Ft. Collins, Colo. 80521	Ray Blackford, Secy-Treas.	
	Jim Carpenter, Ed. Advisor	98 Members

CBCIA offers its members a central bull testing station, data processing on record of performance weaning and yearling records and on feedlot gain and carcass evaluation programs. Colorado's feedlot gain and carcass evaluation programs for 1971 were conducted at two locations in the state. One had 1,239 cattle from 109 ranches and the other had 127 cattle from 17 ranches.

CBCIA sponsored a field day at Miller Feedlot, LaSalle, Colo. on July 17. About 250 people made up of ranchers, feeders, packers, bankers, scientists and extension personnel attended this function.

CBCIA conducted a preconditioning trial involving 414 head of calves from 20 ranches in Colo. This trial was conducted in cooperation with the School of Veterinary Medicine and Animal Science Department of Colorado State University.

The CBCIA sponsored its annual meeting held in conjuction with the midwinter meeting of the Colorado Cattlemen's Assn. in Colorado Springs.

CONNECTICUT BEEF CATTLE IMPROVEMENT PROGRAM**

Dept. of Animal Industries University of Connecticut Storrs, Connecticut 06268

15 Members

The CBCIP offers data processing and educational activities through the Extension Specialist

FLORIDA BEEF CATTLE IMPROVEMENT ASSOCIATION

313 Rolfs HallRalph Sexton, PresidentUniv. of FloridaMike Milicevic, Vice Pres.Gainesville, Florida 32601Orie Lee, Treas.R. G. Sand, Secy.

78 Members

FBCIA offers its members data processing and assistance in grading for on-the-farm testing programs.

Research is now in progress on adjustment factors and genetic principles on all data collected during the last 14 years. GEORGIA BEEF CATTLE IMPROVEMENT ASSOCIATION, INC.

Coop. Extension Service	Marion Barnett, Jr., President
University of Georgia	Fairfax Mullen, Vice Pres.
Athens, Georgia 30602	Julius Lazenby, Mansfield, Secy-Treas.

392 Members

The GBCIA offers data processing for weaning and yearling cattle. The Association sponsors one of our three bull testing stations in the state. The Association sponsors educational displays and meetings for improvement of beef production.

The GBCIA makes all their data available to the Animal Science Dept. for any analysis that they want to do for research activity.

The GBCIA helps sponsor the state FFA and 4-H judging teams that travel out-of-state.

HAWAII BEEF CATTLE IMPROVEMENT ASSOCIATION

James Nolan, Jr.	Jack Greenwell, President	
Animal Sciences Dept.	George Schattauer, Vice Pres.	
Univ. of Hawaii	Allen Wall, Secy-Treas.	
1825 Edmondson Rd.		
Honolulu, Hawaii 96822		13 Members

HBCIA offers its members data processing of weaning and postweaning records, grading service and breeding plans based on accumulated records.

The organization sponsored one educational meeting this year emphasizing growth and carcass evaluation.

Research of an applied nature is being conducted to demonstrate to members and interested commercial cattlemen sire differences under feedlot conditions. It is hoped that this may lead to support of a bull testing station and a carcass evaluation program for the members of HBCIA.

The HBCIA sponsored the Mealani Beef Cattle Field Day, a one-day program designed to keep the beef cattle producers up-to-date on advances made in the industry and at the University of Hawaii.

IDAHO CATTLEMEN'S ASSOCIATION BEEF CATTLE IMPROVEMENT COMMITTEE

2230 Main Street	Ralph Steele, President	
Boise, Idaho 83706	Bob Henderlider, Exec. Secy.	2,698 Members

The Idaho BCIC provides a full program of record of performance. Production testing, performance testing and progeny evaluation are provided. Records are data processed at the University of Idaho if the cooperator desires.

The IBCIC sponsors field days at central test stations and the BCI manual.

ILLINOIS BEEF IMPROVEMENT FEDERATION

326 Mumford Hall	Ted Shambaugh, President
Univ. of Ill.	Leland Wenzel, Vice Pres.
Urbana, Ill. 61801	Larry Crandall, Secy-Treas
Gary Ricketts, Advisor	

22 Members

The Illinois BIF offers its members data processing for both weaning and post-weaning records. The Federation sponsors educational activities, field days and clinics concerning beef testing programs.

Three cow-calf tours were sponsored this year. Two new bull testing stations were opened and others are expected next year. A new publication on bull testing procedures was released this year.

INDIANA COOPERATIVE EXTENSION SERVICE AND INDIANA CATTLEMENS ASSOCIATION**

Lilly Hall Purdue Univ.	George Morten, President Ralph deKoch, Vice Pres.		
Lafayette, Ind. 47907	K. G. MacDonald, Secy., Ind. Cattlemens Assn.	1300	Members
	L. A. Nelson, Coordinator Ind. Beef Perf. Testing Progra	m	

Indiana offers its members data processing (cost of data processing is borne by Indiana Cooperative Extension Service).

The Indiana Beef Performance Testing Program is sponsored by the Indiana Cooperative Extension Service and ICA.

Events sponsored include the Indiana Cattle Feeders Day, Indiana Cow-Calf Field Days, Indiana Performance Tested Bull Sale, Hoosier Beef Show, and the Southwestern Indiana Cattle Feeders Day and county meetings.

IOWA BEEF IMPROVEMENT ASSOCIATION

123 Airport Road	Frank C. Myatt, Lost Nation, President
Route 2	J. David Nichols, Anita, Vice Pres.
Ames, Iowa 50010	Robert C. deBaca, Ames, Secy.
	Tom Chrystal, Coon Rapids, Treas.
	300 Members

300 Members

The IBIA offers its members data processing (weaning, yearling, carcass); bull testing (3 central stations, bull testing on farm with 28-day weights, steer testing in central stations and on farm); bull sales (from central tests and on farm); and heifer sales (from on farm). Also semen-test and backfat probe tested bulls.

Educational activities include: field days, annual meeting, newsletter, speaking engagements for officers and directors, special displays at cow-calf clinics and the state fair and the IBIA co-sponsored the BIF annual meeting in Omaha. KANSAS LIVESTOCK ASSOCIATION BEEF IMPROVEMENT COMMITTEE

2044 Fillmore	Henry C. Gardener, Chairman
Topeka	Keith Zoellner, Weber Hall, KSU,
Kansas 66604	Manhattan, Secy.

The Kansas Livestock Association BIC offers its members bull testing. The Association is also sponsoring the Beef Carcass Data Service for Kansas.

KENTUCKY CATTLEMENS ASSOCIATION BEEF IMPROVEMENT COMMITTEE

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The Association provides data processing for on-farm testing, coordinates bull testing and distributes beef carcass data service eartags.

The Association sponsors activities associated with two sales for on-farm performance tested cattle and one central test station sale.

LOUISIANA BEEF CATTLE IMPROVEMENT ASSOCIATION*

Room 239	John Barry, Baton Rouge, President	
Knapp Hall	H. F. Keever, Lake Charles, Vice P	res.
LSU	John Sullivan, Jr., Baton Rouge,	
Baton Rouge, La. 70803	Secy-Treas.	25 Members

The LBCIA offers to its members data processing of the cow herd; yearling records; bull testing (on-the-farm and central station). A spring field day and annual meeting is held. A bull sale is sponsored in the fall.

The LBCIA prepared a slide presentation of performance testing programs for use throughout the state. Programs were presented to producers on an area basis. Special training sessions are also sponsored for county agents.

MAINE BEEF CATTLE IMPROVEMENT PROGRAM**

Department of Agriculture Augusta, Maine James Worthley Livestock Specialist

14 Members

MASSACHUSETTS BEEF CATTLE IMPROVEMENT ASSOCIATION

University of Mass.	Marcel F
Animal Science Dept.	David Ke
Amherst, Mass. 01002	John Hil
	Byron Co

Marcel Rondeau, President David Keizer, Vice Pres. John Hill, Treas. Byron Colby, Secy.

24 Members

MBCIA services offered to its members are data figured on calculator, weighing and grading, and bull testing on farms (there may be a regional bull testing unit set up in New York State).

The MBCIA works with other groups and the industry each year in sponsor-. ing educational events.

MICHIGAN BEEF CATTLE PERFORMANCE TESTING PROGRAM**

105 Anthony Hall Animal Science Dept. Michigan State University East Lansing, Michigan 48823

130 Members

Participants in the Performance Testing Program are offered on-farm weighing and grading at both weaning and at a year of age.

After cattle are enrolled in the program and have been weighed and graded, the records are processed by use of automatic data processing equipment. Breeders receive the following information: 1) individual 205-day adjusted weaning weights, 2) weight ratio, 3) individual conformation grade, 4) grade ratio, 5) ranking by sires, 6) summary of the performance by individual sires and ranking of each calf by sex, within the sire group and 7) overall summary of herd performance. In addition, individual cow performance records plus code sheets for both bulls and cows are made available to the breeder.

MINNESOTA BEEF CATTLE IMPROVEMENT ASSOCIATION

101 Peters Hall	Robert Sallstrom, President	
Univ. of Minn.	Maurice Mitchell, Vice Pres.	
St. Paul, Minn. 55101	James Bryan, Secy-Treas.	
	Charles Christians, Ed. Advisor	330 Members

Data processing is offered to MBCIA members through two systems. One is through the University of Minnesota Extension Service computing service and the second is through each of the breed association's programs. The BCIA works cooperatively with each association. If the producer is enrolled in his national program, he automatically is on the MBCIA program, or vice versa.

The Association sponsored: 1) Meat and Livestock Clinic, 2) area and county performance testing meetings, 3) a performance tested steer contest in 4-H and youth programs in each county (the top performing steer in each county receives a trophy), and 4) annual meeting and central test station field day.

MISSISSIPPI BEEF CATTLE IMPROVEMENT ASSOCIATION, INC.

Box 5425	J. A. Howarth, President
State College	W. M. Swoope, State College, Secy-Treas.
Mississippi	Mickey Black, Sidon, Vice Pres.

193 Members

The MBCIA offers its members data processing and bull testing.

The Mississippi BCIA in conjunction with the Extension Service, sponsored four area performance testing workshops primarily for county extension agents and interested cattlemen. Results are already seen from this effort in that there has been an increase in participation in the program, with the supervising of weighing and grading being done by county extension agents and/or cattle committees.

MISSOURI BEEF CATTLE IMPROVEMENT ASSOCIATION

John W. Massey	Wilford Dugan, President	
132 Mumford Hall	Everett Forkner, Vice Pres.	
University of Mo.	Myra Bryson, Secy.	
Columbia, Mo. 65201	Keith Dunn, Treas.	700 Members

The MBCIA cooperates in an advisory capacity with two central testing stations.

Educational activities included the state and area cow-calf clinics.

Research activities include supplying funds to evaluate bulls with whole body counter.

Two state-wide performance tested bull and heifer sales and five to ten area performance tested sales are sponsored.

MONTANA BEEF PERFORMANCE ASSOCIATION

Room 604	Dale Davis, President	
Cobleigh Hall	Bob Sitz, Vice Pres.	
Montana State Univ.	Dan L. Weppler, Exec. Secy.	
Bozeman, Mont. 59715	Wayne Gibson, Treas.	650 Members

The Montana BPA offers its members data processing which includes: nursing ratios, gain ratios, yearling ratios, IPR indexes, sire summaries, performance pedigree credit, IPR certificates, plus the various adjusted daily gains, adjusted age weights, adjusted age of dam factors, adjusted inbreeding coefficients, etc. They calculate all information for all bull testing stations located in Montana as well as for individual members. Other services available are: various types of cow cards, signs, computer data storage notebooks, calving notebooks, scales, etc. The BPA publishes a bi-monthly newsletter and an annual membership directory.

The Montana BPA works with various groups around the state presenting slides, examples of data processing, examples of services available, and occasionally accompany guest speakers from the research branch of the agriculture department at MSU. Presently the BPA is working closely with the Agriculture Department at MSU in checking various age of dam adjustment factors basically to see if there is a significant difference between breeds.

The annual convention hosts nationally known speakers. This is a twoday event. MBPA had a display booth promoting performance testing at their two state fairs as well as some county fairs. The MBPC contributes to many county and area educational meetings and field days.

NEBRASKA BEEF CATTLE IMPROVEMENT ASSOCIATION

209 Marvel Baker Hall	Roger French, Mullen 69152, President
University of Nebraska	Bob Mueller, Kimball 69145, Vice Pres.
Lincoln, Ne. 68503	Ken Messersmith, Alliance 69301, Treas.
	Jim Gosey, Univ. of Ne., Lincoln 68503, Secy.

183 Members

The NBCIA sponsors three Nebraska bull test stations and four feedlot locations for steer testing, data processing service through the South Dakota Association.

The NBCIA publishes a bi-monthly newsletter and a bi-annual membership directory.

The NBCIA sponsors its annual meeting and presents a Sire of the Year Award, Commercial Man of the Year Awand and a Purebred Breeder of the Year Award.

NEVADA BEEF CATTLE IMPROVEMENT ASSOCIATION**

Animal Science Division	Ed Sarman, Gardnerville, President
University of Nevada	Steve Biddinger, Fallon, Vice Pres.
Reno, Nevada 89507	Laura Lingenfelter, Reno, Secy-Treas.

10 Members

The NBCIA offers bull testing, progeny testing and commercial steer samples at its central testing station. The BCDS eartag program is also sponsored by NBCIA.

The NBCIA field day is held annually.

NEW HAMPSHIRE BEEF PRODUCERS ASSOCIATION

Durham	David Hamilton & James Roantree, Co-Chairmen
New Hampshire 03824	James Roantree, Treas.

12 Members

NEW MEXICO BEEF CATTLE PERFORMANCE ASSOCIATION

Northeastern Branch Sta.	Gene Robberson, President
Tucumcari, N. M.	A. L. Grau, Secd. Vice Pres.
or	John Hicks, First Vice Pres.
Box 3AENM State Univ.	George Meeks, Third Vice Pres.
Las Cruces, N. M. 88001	Ted Peabody, Secy.
2	John Mahill, Treas.

50 Members

The central bull test offers the members a basis to select sires for future use. The Bull Session newsletter is published by the N. M. Extension Service.

The New Mexico Beef Cattle Performance Association has had their Annual Performance Tested Bull Sale in March of every year for the past 10 years.

NEW YORK BEEF CATTLEMENS ASSOCIATION

114 Morrison Hall	Owen Boyd, President	
Cornell University	Ardeau Warner, Vice Pres.	
Ithaca, N. Y. 14850	Ellis Pierce, Secy.	
	Roger Bradley, Treas.	649 Members

The NYBCA offers its members data processing.

The NYBCA sponsors educational meetings, feeder calf sales, marketing and grading demonstrations, a state-wide tour and their annual meeting.

NORTH CAROLINA BEEF CATTLE IMPROVEMENT PROGRAM

109 Polk Hall	Charles Lockhart, President	
N.C. State Univ.	Jerry White, Vice Pres.	
Raleigh, N.C. 27607	C. M. Reese, Secy-Treas.	250 Members

The N.C. Beef Cattle Improvement Program offers its members preweaning (205 day weight), postweaning on-the-farm 140 day test, central bull testing station and yearling weights for heifers (optional).

County, area and state meetings and field days are sponsored.

NORTH DAKOTA BEEF CATTLE IMPROVEMENT ASSOCIATION, INC.

University Station	Soren Iverson, President	1
Fargo	Gerold Efferty, Vice Pres.	
North Dakota 58102	Lloyd Nygard, Treas.	
	M. A. Kirkeide, Secy.	120 Members

The NDBCIA offers data processing to its members which is made available through the University. The Association cooperates with two bull testing stations and offers both sire certification and cow certification programs.

The NDBCIA sponsors an educational program at its annual meeting. The Association cooperates with fairs on the carcass evaluations. The Association also sponsored calf grading schools and the computer cow game. New brochures and publications on beef improvement were published this year.

OHIO BEEF CATTLE PRODUCTION TESTING PROGRAM

2029 Fyffe Rd. Ohio State Univ. Columbus, Ohio 43210 W. W. Wharton

350 Members

The Ohio BCPTP offers to its members data processing of 205/365/550 day

data, lifetime cow records including days between calvings (progeny record of each cow), bull testing station and carcass data. The Ohio data processing service is used by breeders in Pennsylvania and Connecticut.

The Ohio BCPTP cooperates with Select Sires, Inc. in sire analysis with cooperating herds of 300 cows. OBCPTP processes records for select sires for out-of-state research herds and they cooperate with Ohio Research & Development Center in processing and analyzing research herds (breed differences).

The Ohio BCPTP sponsors displays and exhibits at state cattle meetings, exhibited at Farm Science Review on PT and conducted grading demonstrations at the 1971 Farm Science Review (approximately 6,000 people).

BEEF CATTLE IMPROVEMENT COMMITTEE OF OREGON CATTLEMENS ASSOCIATION

212 Withycombe	Bill Wolfe, Chairman	
Oregon State Univ.	W. Dean Frischknecht, OSU,	
Corvallis, Oregon 97331	Corvallis 97331, Secy.	440 Members

Agents weigh and grade on ranches and at test stations. Record analysis is provided for those not wanting computerized records (prefer breed programs & PRI for data processing). Educational meetings are conducted for understanding and evaluation of testing and related procedures.

The BCIC of Oregon Cattlemens Association had 36 steer carcass contests or demonstrations involving 900 steers and 4400 people in 1972. The Computer Cow Game was conducted 6 times for 580 participants. A mobile refrigerated beef exhibit trailer brings the story of quality beef to approximately 40,000 people each year.

There are now 170,000 commercial cows in Oregon which are individually identified. During 1971, detailed carcass information was collected on 3560 head of steers. Oregon's Progeny Testing Station tests 444 steers representing progeny of 39 sires.

The Oregon BCIC co-sponsored, with the state breed associations, cattlemen and the Beef Council, the Annual Beef Day at Oregon State University, the Annual Field Day at the Progeny Testing Station and the Annual Field Day at RSI Bull Testing Station. The BCIC also sponsors the beef carcass service eartag program and has distributed 3500 eartags.

PENNSYLVANIA BEEF CATTLE IMPROVEMENT PROGRAM

324 Animal Industry Bldg.	Fred E. Smalstig, President	,
University Park	Gilbert Watts, Vice Pres.	
Pa. 16802	Ben Morgan, Secy.	115 Members

Pennsylvania conducts on-farm testing programs using Ohio data processing service. An animal evaluation center at the University handles 10 sire groups for growth data and complete carcass evaluation. SOUTH CAROLINA BEEF CATTLE IMPROVEMENT ASSOCIATION

Room 230	Ben Oswald, Allendale, President	
P&AB1dg.	Jim Suber, Vice Pres.	
Clemson, S.C. 29631	L. F. Cato, Secy.	
	Mell Gerard, Treas.	102 Members

The SCBCIA offers data processing and calf weighing and grading to its members.

The South Carolina BCIA presents plaques for the top producer of each breed annually.

SOUTH DAKOTA LIVESTOCK PRODUCTION RECORDS ASSOCIATION, INC.

801 San Francisco St. Rapid City	Bob Healy, President Leo Hamm, Vice Pres.	
South Dakota 57701	Mick Crandall, Secy.	•
	Gunther Flier, Treas.	
	Lowell Anderson, Director	
	of Field Activities	800 Members
	Lowell Anderson, Director	800 Members

The S. D. Livestock Production Records Association offers a complete data processing service (weaning, yearling and cow summaries) and coordination of bull testing stations, individual and herd certification for qualified individuals and herds. The Association also supplies field books and all necessary forms for keeping the records. The Association also sells ear tags and scales to members. A slide series on European cattle was developed.

The Association is assisting with research on weaning weights of crossbred versus straightbreds. The Association also contributed to the weather modification research.

TEXAS & SOUTHWEST CATTLE RAISERS ASSOCIATION

410 East Weatherford St.	William C. Donnell, President
Fort Worth	Hilmar Moore, Vice Pres.
Texas 76102	Don C. King, Secy.
	L. A. Maddox, Beef Improvement
	Advisor

TENNESSEE BEEF CATTLE IMPROVEMENT PROGRAM (1971 Report)

University of Tennessee P. O. Box 1071 Knoxville, Tenn. 37901 ATT: Dr. Haley M. Jamison

270 Members

The TBCIP processes birth to weaning data for all participants. A central test station for participants and supervision of the on-the-farm bull test-ing program is available.

A number of educational activities and events were sponsored by the TBCIP in 1971.

Three research projects were conducted in 1971.

UTAH BEEF IMPROVEMENT ASSOCIATION

88 West	Gayle Evans, President	
100 North Federal Bldg.	Preston Marchant, Vice Pres.	
Provo, Utah 84601	Clair R. Acord, Secy-Treas.	50 Members

Data processing for on-the-farm testing and bull testing is available to members of the UBIA.

Activities include a field day, reporting results of bulls and discussing programs, a tour for members, and a sale for bulls on test.

VIRGINIA BEEF CATTLE IMPROVEMENT ASSOCIATION

Agnew Hall	W. A. Stuart, Jr., President	
Va. Tech.	Robert Alger, Vice Pres.	
Blacksburg, Va.	Joseph C. Kelley, Secy-Treas.	
	A. L. Eller, Advisor	250 Members

Services offered to members of the VBCIA are 1) on-farm weighing and grading of calves and yearlings, 2) computer processing of calf and yearling data, 3) central bull feed tests and 4) regular news correspondence to members including a periodic newsletter "The Bull Sheet."

Research activities included testing a modified grading procedure based on frame-size and fatness. Genetic principles are researched in using records collected in the program. Beef Carcass Data Service tags are sponsored to assist members in carcass evaluation.

Educational activities include cooperating with other cattle interests in an annual convention. A series of member analyses meetings are also held.

WASHINGTON BEEF CATTLE IMPROVEMENT ASSOCIATION

121 Clark Hall Washington State Univ.	L. C. Chesnut, President Lawrence Berg, Vice Pres.	· ·
Pullman, Wa. 99163	Howard Copenhaver, Treas. Bill McReynolds, Secy.	60 Members

WBCIA members are offered data processing, bull testing, F1 heifer certification and certification of breeding bulls. The Beef Carcass Data Service is available to all cattlemen in the state.

The WBCIA co-sponsored the Washington Beef Cattle Improvement Day held in conjunction with the test station sale.

WEST VIRGINIA BEEF CATTLE PERFORMANCE TESTING PROGRAM

Agri. Science Bldg. West Virginia University	Sherman Beard, President H. L. Reggle, Vice Pres.	
Morgantown, W. Va. 26506	Joe Emch, Secy. Ben Wamsley, Ed. Advisor	259 Members

The members are offered data collection and processing on calfhood program, central bull testing program and sale, on-farm bull testing and replacement heifer sale (performance records required).

WISCONSIN BEEF IMPROVEMENT ASSOCIATION

224 Stock Pavilion Madison	Lowell Keach, President Don Udelkoven, Vice Pres.	
Wisconsin 53706	Vern Felts, Secy. Carl Hirschinger, Treas.	340 Members

Data processing and bull testing are offered to members of the WBIA.

Sonoray demonstrations, and performance exhibits at field days are key educational activities. Special programs are offered at the bull sale. Beef Carcass Data Service eartags are also sponsored for members.

WYOMING BEEF PERFORMANCE ASSOCIATION

Box 3354	Ed Barnes, President
University Station	Marilyn Jarvis, Secy-Treas.
Laramie, Wyoming	

15 Members

The Association sponsors the bull testing activities.

REPORT OF NATIONAL ASSOCIATION ACTIVITIES

AMERICAN ANGUS ASSOCIATION

3201 Frederick Boulevard	Robert Swain, President	
St. Joseph	Sam Fullerton, Vice Pres.	
Missouri 64501	Lloyd D. Miller, Exec. Secy.	46,000 Members

The AAA offers its members production measure, carcass evaluation, herd classification and the National Sire Evaluation Program.

AMERICAN HEREFORD ASSOCIATION

Hereford Drive	Alfred Meeks, President	
Kansas City	P. T. White, Vice Pres.	
Missouri 64105	W. T. Berry, Jr., Exec. Vice Craig Ludwig, Director of	Pres.
	Research & TPR	11,435 Members

Data processing for calf and yearling records is offered to anyone enrolled in the TPR program. The AHA staff assists and supervises the Hereford progeny testing program in five cooperating feedlots. AHA assists with 48 state field days and 5 to 10 area conferences.

At Texas Tech the AHA, with cooperation from Texas Tech, is measuring fattening differences between bulls, steers and heifers at various ages and of different body types.

AMERICAN-INTERNATIONAL CHAROLAIS ASSOCIATION

1610 Old Spanish Trail	Bill Campbell, President	
Houston	Walker Wilson, Vice Pres.	
Texas 77025	Harold Demorest, Treas.	
	J. Scott Henderson, Exec. Secy.	
	Mrs. D. E. Barns, Recording Secy.	

18,520 Members

The Charolais Herd Improvement Program (CHIP) is offered to members. This is a newly initiated data processing service that is complete from breeding through all stages of production including carcass data, and sire and dam summaries. The system is designed to combine the records necessary for registration and performance plus computer printed applications for registration are available.

The AICA sponsored a leadership conference for junior Charolais breeders stressing production techniques including performance testing.

Research projects financially supported by AICA: 1) Calving Difficulty Study at the US Range Livestock Experiment Station, Miles City, Mont., 2) Female Fertility Study at the US Range Livestock Experiment Station, Miles City, Mont., 3) Sexual Behavior and Fertility of Charolais Bulls, Pa. State Univ., 4) Study of Double Muscling, Texas A&M, 5) Study of Double Muscling, Univ. of Cal. Support is also given to several production studies by assisting in the enlistment of breeder cooperation to provide needed semen and/or cattle.

AMERICAN POLLED HEREFORD ASSOCIATION

4700 East 63rd Street	Orville K. Sweet, President	
Kansas City	C. K. Allen, Ed. Director	
Missouri 64130		771 Members

Data processing, bull testing, progeny testing and national sire ranking are offered members of the APHA.

In 1972 APHA sponsored the Cattlemens Conference at Fort Collins, Colo. APHA collected weights, ages, fat thickness and skeletal measurements of cattle in leading Polled Hereford Shows. Performance information and composite judging was used in judging. APHA supports research at Penn. State on genetic defects.

AMERICAN SHORTHORN ASSOCIATION

8288 Hascall Street	Lyle V. DeWitt, President	
Omaha	R. B. Stimson, Vice Pres.	
Nebraska 68124	C. D. Swaffar, Secy.	
	Ted L. Aegerter, Asst. Secy.	7,000 Members

Herd classification and records of performance are available to members.

AMERICAN SIMMENTAL ASSOCIATION

P. O. Box 24	Jerry Moore, President	
Bozeman	Dale Cutler, Vice Pres.	
Montana 59715	Rob Brown, Treas.	2,402 Members

The members of the American Simmental Association are offered complete data processing on performance and a performance pedigree which includes data on birth, calving, weaning, yearling, carcass, most probable producing ability for the cows, and the national sire summary for the bulls.

AMERICAN GELBVIEH ASSOCIATION

Rt. 1, Box 126	Gallagher Rule, President	
Newkirk	Jack Shoup, Vice Pres.	
Oklahoma	Mitchell Dobson, Secy.	
	Carl Foster, Treas.	135 Members

Performance data and performance pedigrees are available through cooperative programs with PRI.

RED ANGUS ASSOCIATION OF AMERICA

Box 776	Kenneth Thatcher, President	
Denton	Julius Todd, Exec. Secy.	
Texas 76201		975 Members

The Association provides computerized data processing service and recently added breeding values for four traits printed on pedigrees.

Educational activities include the Computer Cow Game for members, field days and meetings on regional or state basis and the annual convention.

PERFORMANCE REGISTRY INTERNATIONAL

P. O. Box 133	Tom Burch, Mill Creek, Ok., Pres.
Joplin	Wm. Graham, Miami Lakes, Fla., Treas.
Missouri 64801	Carlton Corbin, Eureka, Ks., Vice Pres.
	Glenn Butts, Exec. Secy.
	1,843 Members
	(1971 Report)
Data processing and registr	v are offered PRI members.

Data processing and registry are offered PRI members.

Performance pedigrees are an important phase of the PRI program. PRI has printed 20,000 performance pedigrees. Twenty-five Certified Meat Sire Award Certificates were issued in the last six months of 1972. Of approximately 100,000 cows enrolled in PRI programs, 90% have at least two performance reports certified.

PRI sponsors educational activities at their annual meeting.

NORTH AMERICAN LIMOUSIN FOUNDATION

Livestock Exchange Bldg.	Burwell M. Bates, President
Denver	Bryan Harris, Vice Pres.
Colorado 80216	R. H. Vantrease, Ex. Vice Pres.
	David Allard, Secy.
	Fred DeMier, Treas.

INTERNATIONAL MAINE-ANJOU ASSOCIATION

P. O. Box 5636 Kansas City Missouri 64102 Calvin Fryar, President Ancel Armstrong, Vice Pres. Bill Webb, Secy-Treas. Richard Sneddon, Ex. Director

AMERICAN BRAHMAN BREEDERS ASSOCIATION

4815 Gulf Freeway Houston Texas 77023 R. W. Mayronne, Jr., President M. E. Hammond, Vice Pres. Harry Gayden, Secy.

RED POLL CATTLE CLUB OF AMERICA

3275 Holdrege Street Lincoln Nebraska 68503 LaVerne S. Russell, President Paul B. Hanks, Vice Pres. Wendell H. Severin, Secy.

NATIONAL ASSOCIATION OF ANIMAL BREEDERS

512 Cherry Street Columbia Missouri 65201 W. L. Campbell, President Robert E. Walton, Vice Pres. William Durfey, Secy.

AMERICAN NATIONAL CATTLEMENS ASSOCIATION

1001 Lincoln Street Denver Colorado 80218 John Trotman, President William McMillan, Ex. Vice Pres. George Spencer, Ex. Vice Pres. Gordon VanVleck, Vice Pres. J. Burton Eller, Secy.

INTERNATIONAL BEEF BREEDERS*

P. O. Box 29009 Denver Colorado 80229 Walter Rowden, BIF Representative

INTERNATIONAL BRANGUS BREEDERS ASSOCIATION*

908 Livestock Exchange Bldg.ReKansas CityReMissouri 64102

Royal Buckley, President Roy Lilley, Exec. Secy.

CURTISS BREEDING SERVICE*

Box 7205 Lexington Kentucky 40502

CARNATION BREEDING SERVICE*

Carnation Washington 98014

Melvin C. Kenley, President Bernard M. Jones, Jr., BIF Rep.

C. L. Hall, General Manager Ed Harmon, BIF Rep. Rt. 2, Box 243 Ft. Lupton, Colo.

Robert Ellis, President

Robert Fincham, BIF Rep.

MIDWEST BREEDERS COOP.*

Shawano Wisconsin

NOBA, INC.*

Box 607 Tiffin Ohio 44883

AMERICAN BREEDERS SERVICE*

DeForest Wisconsin 53532 Max Drake, Manager Don Hutzel, BIF Rep.

2212 S Duff Ames, Iowa 50010

Robert Walton, President Ray Woodward, BIF Rep. Box 1195 Bozeman, Mont. 59715

SELECT SIRES*

1224 Alton Darby Rd. Columbus Ohio Roy Wallace, BIF Rep.

NAME AND ADDRESS OF CENTRAL BULL TESTING STATIONS

This list was compiled by the Beef Improvement Federation Central Test Committee. The addresses were obtained from state extension specialists. This listing does <u>not</u> imply that the stations are sponsored by nor certified by B.I.F. or the respective state B.C.I.A.'s. The list is being made available solely to facilitate communication.

ALABAMA	Auburn University Test Station Animal Science Department Auburn University Auburn, Alabama 36830 <u>Operator</u> : Dr. Troy B. Patterson
ARIZONA	Arizona Beef Cattle Improvement Station Tucson, Arizona 85721 Operator: Dr. Bruce Taylor, Supervisor University of Arizona
ARKANSAS	South West Branch Experiment Station P.O. Box 573 Hope, Arkansas 71801 <u>Operator</u> : Mr. Cecil Bittle
	Newport Beef Substation P. O. Box 663 Newport, Arkansas 72112 <u>Operator</u> : Mr. William T. Wallace
	Main Experimental Station Department of Animal Science University of Arkansas Fayetteville, Arkansas 72701 <u>Operator</u> : Dr. C. J. Brown
CALIFORNIA	Will Gill Feedyard 25719 Avenue 13 Madera, Ca. 93637 <u>Operator</u> : Will Gill, Jr. <u>Contact</u> : Ken Ellis, Tech. Advisor Calif. BCIA University of California

University of California Davis, Ca. 95616 Cal Poly Bull Test Station

Calif. State Polytechnic College San Luis Obispo, Ca. 93401 Operator: Frank Fox

Bill Peters Ranch Route 1, Box 593 Montague, Ca. 96064 <u>Operator</u>: Bill Peters <u>Contact</u>: Ken Ellis, Tech. Advisor Calif. BCIA University of California Davis, Ca. 95616

COLORADO Hereford Bulls, Inc. 3090 Grandview Ave. Canon City, Colorado 81212

> Colorado State U. Exp. Sta. Hesperus, Colorado 81326 Operator: Dr. Jim Brinks

FLORIDA Lykes Brothers Feedlot Brooksville, Fla.

GEORGIA Beef Bull Gain Evaluation Test Station Coastal Plain Experiment Station Tifton, Georgia 31794 Operators: W. C. McCormick

North Georgia Beef Cattle Evaluation Center Northwest Georgia Branch Experiment Station Calhoun, Georgia 30701

<u>Contact</u>: M. K. "Curly" Cook Extension Animal Scientist University of Georgia Athens, Georgia 30601

IDAHO Shaw Beef Evaluation Center Route 2 Caldwell, Idaho 83605 Operator: Tom Shaw & Sons

> Intermountain Beef Cattle Performance Center Route 2, Box 173 St. Anthony, Idaho 83445 Operator: L. L. Rudd

ILLINOIS Beef Evaluation Station Western Illinois University Department of Agriculture Macomb, Illinois 61455 <u>Operator</u>: Dr. Loren Robinson

> Shaw's Bull Testing Station RR #1, Box 137 Trivoli, Illinois 61569 Operator: Allen Shaw

INDIANA Southwestern Indiana Angus Association Station Chrisney, Indiana 47611 Operator: Ed Cissna Indiana Coop. Bull Test Station Springville, Indiana 47462 Operator: Lawrence County Farm Bureau Coop. 1427 "G" St. Bedford, Indiana 47421 Iowa Beef Improvement Assn. 123 W. Airport Road Ames, Iowa 50010 Operator for the following tests:

IBIA-Beukema Bull Test Newton, IA 50208

IBIA-Salsness Bull Test Bronson, IA 51007

IBIA-Ehm Bull Test Creston, IA 50801

KANSAS

IOWA

Central Kansas Performance Test Station Route 2 McPherson, Kansas 67460 <u>Operator</u>: M. H. Georing

Corbin Bull Test Station Route 1 Eureka, Kansas 67045 Operator: Carlton Corbin, Jr.

Cimarron Valley Bull Test Rolla Kansas 67954 Operator: David and Sam Bozone

KENTUCKY

Seayway Farms, Inc. c/o Silas Mingua Route 5 Paris, Kentucky <u>Contact</u>: Russell BreDahl Extension Beef Specialist 803 Ag. Sciences Center, South University of Kentucky Lexington, Ky. 40506

LOUISIANA Livestock Testing Station Louisiana State University at Alexandria LeCompte, Louisiana 71346 Operator: John E. Pontif

MARYLAND Maryland Testing Station Ellicott City, Maryland 21043 Operator: Dave Green, Manager <u>Contact</u>: Bill Curry Extension Animal Scientist University of Maryland Jull Hall College Park, Maryland 20742

MICHIGAN

Southwestern Polled Hereford Association 8164 Gull Road Richland, Michigan 49083 Operator: Kent M. Beckman

Shorthorn Bull Test Route #1, Box 234 Charlotte, Michigan 48813 Operator: Gary Walters

Southwestern Polled Hereford Association Route 1, Box 225 Augusta, Michigan 49012 Operator: Dr. Donn Blevins

Charolais Bull Test 897 Ottawa Beach Road Holland, Michigan 49423 Operator: Leland Bauer

Good Bull Test Station Route 2 Charlotte, Michigan 48813 Operator: Fred Good

MINNESOTA

Minnesota Bull Testing Station Lake Benton, Minnesota 56149 Operator: Jack Delaney

MISSOURI

Central Testing Station University of Missouri 125 Mumford Hall Columbia, Missouri 65201 Operator: Keith Leavitt, Supervisor

North Missouri Center Spickard, Missouri 64679 Operator: Larkin Langford, Superintendent

Ozarkia Test Station, Kingview Ranch, Inc. Star Route, Box 22, Marshfield, Mo., 65706 Contact: Lloyd Hanna

Show-Me Certified Feeder Calf Evaluation Center Albany, Mo., 64402 <u>Contact</u>: Fred Conner, Area Livestock Specialist Wiley Stock Farm Calhoun, Mo., 65323 Contact: Jerry Wiley

Northeast Missouri Test Station Bethel, Mo., 63434 Contact: Larry Coon

Burk Test Station 2743 West Chestnut Expressway Springfield, Mo, 65802 Contact: Dale Burk

Boyle's Test Station RFD 3, Box 127, Warrensburg, Mo., 64093 Contact: E. Rodger Boyle, Jr.

MONTANA

Leo McDonnell 2315 Colton Boulevard Billings, Montana 59102 Area Code: 406, Phone 656-5638

MBCPT

Production Indexing Center Stanford, Montana 59479 Area Code: 406, Phone 566-2240 Manager: Lloyd Schmitt

Ankony Breeding Systems Box 250 Stanford, Montana 59479 Area Code: 406, Phone 566-2223 Manager: Lloyd Schmitt

Moiese Performance Bull Test Center Roy Snyder Moiese, Montana 59824 Area Code: 406, Phone 644-2348

Red Rock Testing Center Gerald Raaum, Owner Arne Skedsvold, Manager Culbertson, Montana 59218 Area Code: 406, Phone 787-6634

Treasure State Testing Station Irvin Meiwald Box 502 Havre, Montana 59501 Area Code: 406, Phone 265-9296 Gold Nugget IPR Test Center Harlen Krass Krass Feedlot Hogeland, Montana 59529 Area Code: 406, Phone 379-4251

NEBRASKA

Eastern Nebraska Bull Test Station Schuyler, Nebraska 68661 Operator: Gary Sierks

Western Nebraska Bull Test Station Ogallala, Nebraska 69153 Operator: Bill Roesch, Whitman, Nebr.

North Central Nebraska Bull Test Station Ainsworth, Nebraska 69210 Operator: Bud McBride

Black Angus Testing Station Bellwood, Nebraska Gordon Zeller

NEVADA

Nevada Beef Cattle Improvement Assn. Test Station University of Nevada Reno, Nevada 89507 Operator: University of Nevada

NEW JERSEY

Go to Maryland or New York Test Stations

NEW MEXICO

Tucumcari Bull Test Station Northeastern Branch Station-NMSU <u>Operator</u>: David Williams Tucumcari, New Mexico 88401 Supervisor: Wallace Cox Box 3AE, NMSU Las Cruces,New Mexico 88003

NEW YORK

Richard Hamilton Manager Emmadine Farm Poughquag, New York

NORTH CAROLINA

North Carolina Central Bull Testing Station Route 1 Battleboro, North Carolina 27809 Operator: T. M. Gorham

NORTH DAKOTA Beef Evaluation Center Lynn Frey, Manager Sawyer, North Dakota

Ohio Exposition Center Columbus, Ohio 43215 Contact: W. W. Wharton Extension Animal Scientist Ohio State University 2029 Fyffe Road Columbus, Ohio 43210 OKLAHOMA Holdenville Bull Test Station Holdenville, Oklahoma 74848 Box 271 Operator: Holdenville Chamber of Commerce Panhandle State College Bull Test Station Panhandle State College Animal Science Department Goodwell, Oklahoma 73939 Operator: Milton England Connors State College Bull Test P. O. Box 53 Warner, Oklahoma 74469 Operator: Robert A. Hodges Noble Foundation Bull Test P. O. Box 878 Ardmore, Oklahoma 73401 Operator: Noble Foundation Southwest Sire Evaluation Center Route 4 Frederick, Oklahoma 73542 Operator: Edgar L. Hamm American Beef Cattle Evaluation Center Ringling, Oklahoma 73456 Operator: Hollis Dickey Scott Sands Testing Station Route 2 Tonkawa, Oklahoma 74653 Operator: Murray Scott Ranch Services Incorporated Bull Testing Station Poe Valley Route Klamath Falls, Oregon 97601 Operator: Eddie E. Meeker Central Oregon Bull Testing Station Emerald Glen Ranch Route 1, Box 555 Prineville, Oregon 97754 Operator: Dr. Harry S. Pollard

OHIO

OREGON

SOUTH CAROLINA

South Carolina Beef Cattle Testing Station Clemson University Clemson, South Carolina 29631 Operator: Clemson University c/o J. F. Wise Extension Animal Scientist

SOUTH DAKOTA

Badlands Bull Testing Station Kadoka, South Dakota 57543 Operator: Ron Barber

Ideal Beef Center Ideal, South Dakota 57541 Operator: Wayne Nelson

Northwest Bull Evaluation Center Lemmon, South Dakota 57638 Operator: Gene Durick

TENNESSEE

U.T. Bull Evaluation Station Middle Tennessee Agricultural Experiment Station Spring Hill, Tennessee 37174 Contact: Dr. Haley M. Jamison Animal Science Dept. University of Tennessee P. O. Box 1071 Knoxville, Tn. 37901

TEXAS

Navarro County Junior College Test Station Corsicana, Texas 75110 Operator: Junior College

Pan Tech Research Farm Panhandle, Texas 79068 Operator: Research Farm

UTAH

Utah Bull Testing Station Centerfield, Utah 84622 Operator: Allen Frandsen

VIRGINIA

Culpeper Agricultural Enterprises Culpeper, Virginia 22701 Operator: Leece George, Manager

Red House Bull Evaluation Center James Bennett, Manager Red House, Virginia 23963

WASHINGTON	Lacrosse Bull Testing Station
	Lacrosse, Washington 99143
	Operator: Blaine Hinderer

WEST

- VIRGINIA W. Virginia Bull Test Station College of Agriculture W. V. University Morgantown, West Virginia 26506 B. W. Wamsley, Jr. Ecucational Advisor
- WISCONSIN Platteville Bull Testing Station Platteville, Wisconsin 53818 <u>Operator</u>: Manager Phil Wyse

WYOMING Beef Improvement Assessment Station P. O. Box 54 Sheridan, Wyoming 82801 Operator: Morris Dixon