

Breed Selection and Breeding Geared for Value Based Marketing Lesson 2



Introduction

Grid or formula pricing is an alternative marketing avenue for fed cattle. It is based on the value each individual carcass contributes to the total weight in the transaction. It is for this reason that grid pricing differs greatly from other beef pricing systems (live or dressed weight pricing). As such, this pricing system permits buying cattle based on their individual carcass merit or lack thereof. Under such system, packers can pay better prices for carcasses that fit market specifications, and discounts for those that do not fit market specifications, or that exhibit anti-quality factors (age or dark cutting beef). This is likely the reason all major packers today offer grid marketing as an alternative to live or dressed weight-pricing systems. It is estimated that currently (2000) over 45% of USDA graded, fed cattle marketed in the US are priced on a formula or grid. Within 5 years, this figure may reach 90%. Most components of the grid are largely determined by genetics of the calf; although, feeding and management factors further impact carcass characteristics. Therefore, genetic decisions made by cow-calf producers, and management and marketing decisions made by cow-calf producers and cattle feeders affect the ultimate value of cattle. Cow-calf producers who wish to align their breeding and management plan to reap the benefits of this value-based marketing strategy must first understand the various components that constitute a grid, know how grid pricing works, determine how their breeding and management decisions affect carcass characteristics and grid pricing, and establish and maintain a breeding and management program to fit specific grid structures.

Components of a Grid

The main components of a grid are quality (QG) and yield grade (YG), and whatever carcasses do not fit the grid, or “out-cattle”. The latter are defined as carcasses that reach B-maturity and score slight or less for marbling (sometimes these carcasses are referred to as no-roll), carcasses for which weight falls outside the range stipulated by the formula (often carcass weights ≥ 900 lb. or weights ≤ 550 lb.), and carcasses that display dark ribeyes (dark cutting beef). Quality grade is determined first by age, then by degree of marbling. Age and degree of marbling are estimated at chain speed. Carcasses determined to be within A maturity (9 to 30 months) may fall into quality grades widely recognized as Prime, Choice, Select and Standard. Within B maturity (30-42 months), carcasses must have the upper 2/3 marbling scores (modest, moderate) for USDA choice. USDA Select grade was eliminated from B maturity carcasses in 1997 in an effort to reduce tough-eating beef. Therefore, B-maturity carcasses that do not reach the choice grade will be rolled USDA Standard.

Yield grade is an estimate of carcass primal cut yield relative to total carcass weight (these cuts represent a small but highly priced components of the carcass), which varies between 54.6% for YG 1 and 45.4% for YG 5. Factors used to determine YG include carcass weight, fat content and 12th rib eye area (muscle).

Grid Pricing System

Grid pricing is based on a pre-determined price (base) that reflects industry or plant averages and specified premiums and discounts for carcasses above and below the base or standard quality specifications. Base prices are established by packers or alliances based on average prices of cattle purchased by the plant where the cattle are scheduled to be slaughtered for the week prior to or the week of slaughter, specific market reports, such as the highest reported price for a specific geographic market for the week prior to or the week of slaughter, boxed beef cutout value, reported price for the live cattle futures market price, futures market price, and/or a negotiated price (Schroeder et al., 1997). Weekly national carcass premiums and discounts for slaughter steers and heifers can be found at the following web site: www.ams.usda.gov/lsg/mncs/lc_desm.htm.

The word grid describes the arrangement of all possible QG and YG arrangements (Table 1), with a separate discount list for cattle that do not fit QG and YG categories (B-maturity carcasses with small or less defined marbling, heavy or light carcasses, dark cutting carcasses, bullock or heiferette carcasses).

Table 1. Grid arrangement of premiums and discounts for carcasses falling in various quality and yield grade categories (the top figure within each cell defines the quality grade adjustment, the bottom figure defines the yield grade adjustment).

Quality	Yield				
	1	2	3	4	5

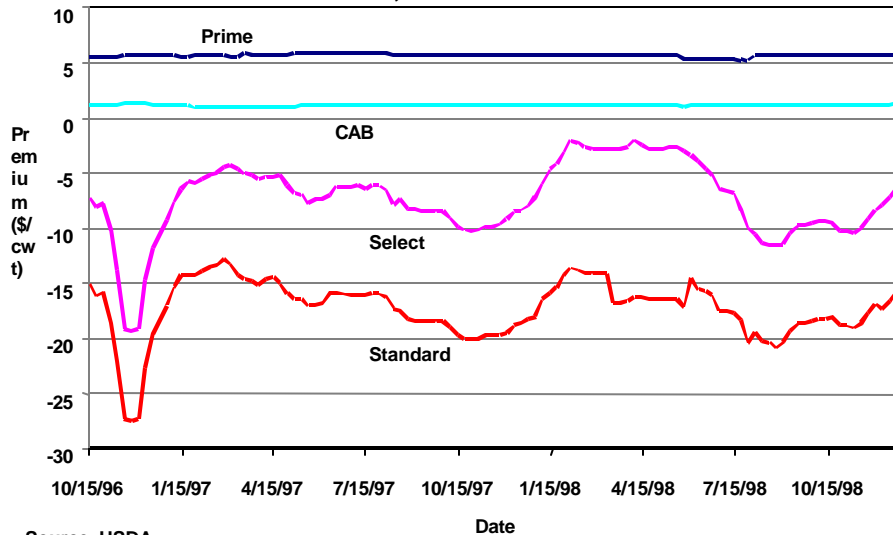
Prime	+ 8.00 + 3.00	+ 8.00 + 1.50	+ 8.00	+ 8.00 - 20.00	+ 8.00 -25.00
Choice	+ 3.00	+ 1.50	Base	-20.00	-25.00
Select	- 7.40 + 3.00	- 7.40 + 1.50	- 7.40	- 7.40 -20.00	-7.40 -25.00
Standard	- 35.00	- 35.00	- 35.00	- 35.00	-35.00
Out cattle:	Weight<650	Weight>950	No roll	Dark cutter	Age
Discount:	20.00	20.00	20.00	20.00	20.00

In the example (Table 1), base price is defined by the plant for the specific day of the transaction, to which quality and yield grade premiums or discounts are added or subtracted to arrive at the price for which that carcass or group of carcasses will be bought. Thus, any and all Choice, YG 3 carcasses will be bought for the base price. Alternatively, a Choice, YG 4 carcass would be discounted \$20/cwt, and a Select, YG 4 carcass would be discounted \$27.40/cwt (-\$7.40 and -\$20.00/cwt discounts for QG and YG, respectively). Similarly, a group of Prime, YG 3 carcasses would be bought at a premium of \$8/cwt. Grid price discounts on this grid example between \$17 and \$32/cwt carcass translate to live fed price discounts between \$7.50 and \$15/cwt. Thus, the net price for discounted fed cattle may readily approach that paid for cull bulls or cows, especially when combinations of discounts (such as a Select, YG 4 carcasses) are encountered.

It is obvious from this example that price discounts are more significant than premiums paid for QG or YG (between \$9.50 and \$11/cwt). Because in practice some features of the grid displayed as an example vary, producers are encouraged to study the details of the various grid-pricing structures for which they may consider establishing a breeding and management program. For instance, most grids today offer a premium intermediate between low Choice and Prime grades that describes carcasses that fit certain special marketing programs such as Certified Angus Beef®, Certified Hereford Beef®, Sterling Silver®, etc. However, requirements for these programs are quite specific to carcasses grading average to high Choice, YG 1 to 3 displaying a specific marbling pattern (smaller flecks). Additionally, the example displayed above assumed that all price adjustments for the combinations of QG and YG between Select and Prime, and YG 1 and 5, respectively, were additive. In reality, packers or marketing alliances may have fixed discounts regardless of QG or YG. This concept was illustrated in the example for Standard grade, and all discounts for “out” cattle. Beef contact information and individual marketing program specifications can be found at the following web site: www.ams.usda.gov/lsg/certprog/industry.htm.

Cow-calf producers must understand that premiums and discounts vary over time due to wholesale beef market conditions (Ward et al., 1999). This information is necessary to determine if cattle they breed fit a grid structure better at one point in time than another. Most QG and YG premiums tend to be quite stable over time (Figures 1 and 2), while discounts,

Figure 1. USDA Packer Survey Quality Grade Grid Premiums/Discounts, October 1996-December 1998

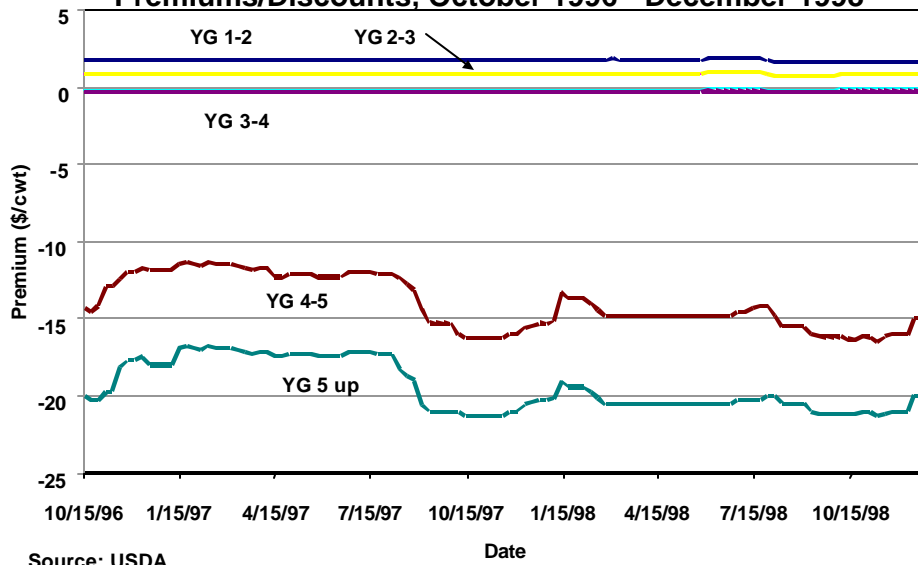


Source: USDA

especially those reflecting Choice-Select grade differences, follow the Choice-Select price spread for wholesale boxed beef on a weekly basis (Figure 1; Ward et al., 1999).

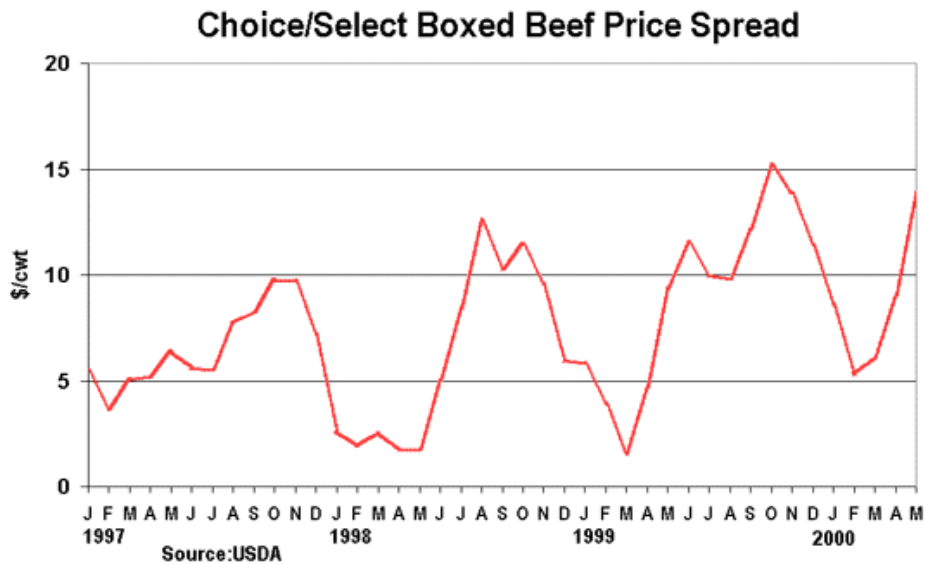
Select carcass discounts were lowest for the periods between January and April 1997 (\$5/cwt), and January and June 1998 (approximately \$3/cwt). During these periods, the Choice-Select price spread for wholesale-boxed beef was similar (Figure 3). Weight discounts are highly variable and likely dependent on market outlets for extreme weight carcasses (export or niche markets). Similarly, dark cutting beef, bullock and heiferette carcass discounts vary considerably.

Figure 2. USDA Packer Survey Yield Grade Grid Premiums/Discounts, October 1996 - December 1998



Source: USDA

Figure 3. Choice/Select Boxed Beef Price Spread For January, 1997 Through March, 2000 (Cattle-Fax).



Due to this system of pricing a group of cattle based on individual carcass merit, cattle feeders are forced to discover the value of the cattle before they market them (the burden of risk is on the cattle feeder), or even before they purchase them. Therefore, astute cattle feeders who seek to be compensated for the value of the cattle they produce must evaluate this pricing alternative from the moment they make a purchasing decision, throughout the feeding program, and especially when deciding where and how (base price) to market on a grid. As cattle feeders discover the value of cattle they feed, they will either compensate or discount cow-calf producers according to the value they receive. Discounts and premiums received will be reflected in future price of feeder cattle. Grid price discounts between \$17 and \$32/cwt carcass translate to live fed price discounts between \$7.50 and \$15/cwt. Thus, the price for discounted steer resembles that of a cull bull or cow. Feeders and buyers will be forced to discover which cattle fit and which cattle don't fit the grid. Discounts received translate to loss in feeder calf value between \$5 and \$35/cwt. While premiums received increase live price of fed and feeder cattle only \$10 and \$5/cwt, respectively. Thus, the system discourages cattle that don't fit the grid. Sharing a portion of the discounts or premiums with cow-calf producers is required to ensure that feeder cattle supply conforms to grid pricing structures. However, because of the slow genetic progress in breeding beef cattle, it is important to recognize that cow-calf producers who need to make genetic selection progress toward improving carcass characteristics have to begin improving now to ensure that their cattle meet market specifications within five years.

Genetic and Management Factors that Affect Carcass Traits

As cow-calf producers consider making adjustments to their breeding and management programs to produce cattle that fit market specifications, the question they inevitably ask is: with so many factors affecting carcass traits at the breeding, feeding, managing and harvesting and processing segments, who is ultimately responsible and for what carcass traits? The answer to this question needs not be complicated, and responsibility needs to be defined to make progress toward an integrated value-based production system. Most carcass traits are the result of breeding and selection decisions as they respond readily to selection; however, many of these are accentuated

or hidden by management strategies implemented before or after weaning. The following table (Table 2) outlines carcass traits, factors that affect them and the beef industry segment under which they can be managed. It is provided as an initial step to direct efforts to improve carcass value, but it is by no means complete and final.

Within each trait, two things are evident from Table 2, cow-calf producers are responsible for the genetic direction of the trait and, with this in mind, cow-calf producers and cattle feeders share equal responsibility in ultimately determining the value, or lack thereof, of a carcass. Contrary to public perception, and, considering the relatively small incidence of dark cutters, the packers' share of responsibility in influencing carcass value is small.

Astute cow-calf producers that wish to gear their breeding and management program to fit the grid must concentrate on three major areas: genetics (to prevent large mature size, to avoid breeds or family lines of aggressive, bad temperament cattle, and to breed for a specific market: quality, yield grade, or both), reproductive management (to produce uniform calf crops that will be harvested at the optimum time of the year), and managing cattle for the sale (to avoid heavy carcass weights, aged cattle, or reduced marbling at harvest, and to enhance the health of cattle in the feedlot). These areas of focus must not detract from the goals of improving pre- and post-weaning cattle performance (rate of gain and feed efficiency) longevity and reproductive efficiency.

Table 2. Factors that affect carcass traits (G = genetic; M = management), and beef industry segments (C = cow-calf; F = feedlot) that can contribute to managing them.

Carcass trait	A result of	G or M	C or F	Influenced by
Carcass weight	Cow size	G	C	Breed/breeding
	Calving season	M	C	Breeding season
	Days on feed	M	F	Fed price
	Implant	G/M	F	Breeding/feed efficiency
Age	Breed	G	C	Breed/breeding
	Backgrounding	G/M	C	Feed, feeder price
	Calving season	M	C	Breeding season
	Days on feed	M	F	Fed price
Dark cutter	Implant	M	F	Feed efficiency
	Breed	G	C	Breed/breeding
	Loading	M	F	Handling/facilities
Quality grade	Unloading	M	Packer	Handling/facilities
	Breed	G	C	Breed/breeding
	Backgrounding	M	C	Feed, feeder price
	Days on feed	M	F	QG vs. YG adjustments
	Dietary energy	M	F	Corn price
Yield grade	Implant	G/M	F	Breeding/feed efficiency
	Breed	G	C	Breed/breeding
	Backgrounding	M	C	Feed, feeder price
	Harvest date	M	C	Calving date/backgrounding
	Days on feed	M	F	YG vs. QG
	Dietary energy	M	F	Corn price

Several studies have evaluated the impact of grid pricing on profitability of cattle feeding operations. Factors that were important profit determinants before grid pricing became available continue to be profit determinants under grid pricing systems. For instance, grid price (fed price) had the single largest impact on profit followed by feeder cattle price in a study that evaluated fed cattle marketing under two grid price structures (McDonald and Schroeder, 2000). The authors concluded that due to the intense management of these price factors, they offer the greatest opportunity to manage profit risk over time. Corn price, not surprisingly, followed grid and feeder cattle price as the third largest factor affecting profit. When evaluating factors that are the result of feeding and management decisions, or cattle genetics, average daily gain (ADG) or feed efficiency (FE) had the single largest impact on profit. Individual grid factors (incidence of QG, YG, and discounted carcasses) had a small impact on profit, but when taken all grid factors together their impact on profit was larger than that of ADG or FE.

Using a formula developed to project price adjustments based on the incidence of carcasses falling into Choice or better QG, and the incidence of carcasses falling into YG 1 and 2 relative to industry targets (Schiefelbein, 1998), DiCostanzo and Dahlen (2000) determined the minimum QG and YG requirements to market fed cattle on the grid. Assuming there are no discounted YG 4 and 5, Standard grade, or “out-cattle” carcasses, the minimum required QG and YG to consider marketing on the grid would be having carcasses reaching 38% Choice or better QG and 53% YG 1 and 2. Also, for cattle of higher quality or yield grading ability, this recommendation can be adjusted. Thus, when cattle have the propensity to reach Choice or better QG, the minimum requirement to market cattle on the grid would be having carcasses that reach 45% Choice or better and 35% YG 1 and 2. In contrast, when cattle have a high propensity to reach YG 1 and 2, the minimum requirement to market cattle on the grid would be having carcasses that reach 32% Choice or better and 70% YG 1 and 2. Using this oversimplified guideline for the data in Table 3 would aid in explaining why, in spite of 7.87% of total carcasses reaching YG 4, and .79% of total carcasses falling into Standard grade, calves from the 1998 Minnesota Carcass Merit Program (86.61% Choice or better and 36.22% of carcasses in YG 1 and 2) received the greatest premiums of all lots evaluated. Also, because carcasses of calves fed in 1997 reached QG and YG near the minimums (35.95% Choice or better and 57.52% of carcasses in YG 1 and 2), but experienced severe discounts due to YG, QG, and “off-weight” cattle (10% of the carcasses), the price adjustment was negative and severe. This explanation also applies to yearlings (9.13% discounted cattle) and heifers (12.44% discounted cattle) fed in 1996 (Table 3). In contrast, cattle fed in 1994 had a greater propensity to produce leaner carcasses (higher proportion of YG 1 and 2), calves fed in 1996 had a greater propensity to produce carcasses of higher QG (higher proportion of Choice or better carcasses), and those fed in 1995 represented a fairly balanced mix. All these combinations of QG and YG with the relatively small proportion of discounted carcasses (1.87% or less) led to price adjustments that were largely positive.

These observations confirm what other researchers have concluded. When cattle feeders make the decision to market on a grid structure, they must understand what type of cattle (potential for discounts and premiums) they are feeding. Due to this, the decision to market cattle on the grid is now made long before cattle are ready to market; perhaps before cattle are purchased. Thus, when cattle feeders procure feeder cattle, they keep in mind the grid pricing structures available to them and purchase cattle accordingly. So it should be with cow-calf producers, they must make a decision to breed, select, feed and manage cows and calves with a specific market target in mind. Once calves are marketed, cow-calf producers must strive (and pay) to obtain and utilize carcass information to continue to improve on their breeding and management aim. A summarized statement of actions for cow-calf producers to prepare for grid marketing follows:

- Determine what your genetic goal is
- Understand grid components
- Obtain information on cattle
- Use information to:
 - Make breeding/culling decisions
 - Modify management decisions

Table 3. Average price adjustments (\$/cwt.) calculated directly from eight grids (average) or estimated from a multiple regression model.

Component	'94 Yrlg	'94 Calf	'95 Calf	'96 Heifer	'96 Calf	'96 Yrlg	'97 Calf	'98 Calf
Head	129	104	214	41	160	197	160	127
Live, lb.	1274	1253	1279	1139	1246	1254	1330	1272
Carcass, lb.	781	781	778	688	755	751	823	800
Carcass, %								
Choice 1	3.88	1.94	5.14	2.50	0.00	0.00	2.61	3.15
Select 1	6.98	6.80	6.54	15.00	1.26	2.03	1.96	0.00
Choice 2	23.26	26.21	37.38	20.00	22.01	14.21	13.73	25.98
Select 2	28.68	29.13	22.43	5.00	13.84	19.80	39.22	7.09
YG 3	36.43	34.95	26.64	47.50	59.12	54.82	37.25	54.33
YG 4	0.78	0.00	0.47	10.00	2.52	7.61	2.61	7.87
YG 5	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00
Light	0.00	0.96	0.00	2.44	0.00	0.00	0.63	0.00
Prime	0.00	0.97	0.00	2.50	4.40	0.00	0.00	3.14
CAB	11.14	11.14	7.01	5.00	14.47	8.12	3.92	28.35
High Choice	1.05	1.05	0.00	2.50	0.00	0.00	0.65	3.15
Program	12.19	12.19	7.01	7.50	14.47	8.12	4.58	31.50
Low Choice	33.54	42.17	56.54	47.50	55.97	41.62	31.37	51.97
Select	54.26	44.66	35.05	42.50	25.16	48.22	61.44	12.60
No roll	0.00	0.00	1.40	0.00	0.00	1.52	1.96	0.79
Heavy	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00
Adjust, \$/cwt.								
Grid avg.	.87	1.39	1.94	-.97	2.10	-1.01	-1.36	2.26
Model	.62	1.25	1.81	-1.46	1.54	-1.48	-1.94	1.07

Establishing and Maintaining a Value-based Breeding and Management Program

The following are some examples of plans of action for establishing and maintaining value-based breeding and management programs.

- **Breeding and management to optimize muscling and quality:**
 - Minimum 38% Choice or better and 53% YG 1 and 2
 - No YG 4 or 5, no standard, no dark cutters, no off-weight carcasses
 - Choose a British X Continental cross
 - Example: Simmental X Angus
 - Finish wt and age: 1280 to 1350 lb. @ 16 mo.
 - Mature cow size, less than 1300 to 1350 lb.
 - Watch for rattail prone cows
 - Limit backgrounding period, but not the ADG

- Work for 50 to 60% Choice and 55% or better YG 1 and 2
 - Select for marbling in bulls
 - Maintain muscle and growth in bulls
- **Breeding and management to optimize quality:**
 - Minimum 45% Choice or better and 35% YG 1 and 2
 - No YG 4 or 5, no standard, no dark cutters, no off-weight carcasses
 - Choose a British X British cross
 - Example: Hereford X Angus
 - Finish wt and age: 1200 to 1300 lb. @ 18 mo.
 - Mature cow size, less than 1300 lb.
 - Watch for excessively fat cow lines
 - Backgrounding at low ADG recommended
 - Work for 70 to 80% Choice and 35% or better YG 1 and 2
 - Maintain marbling in bulls
 - Select for muscle and growth in bulls
 - Retain some or full ownership
- **Breeding and management to optimize muscling:**
 - Minimum 32% Choice or better and 70% YG 1 and 2
 - No YG 4 or 5, no standard, no dark cutters, no off-weight carcasses
 - Choose a Continental X Continental cross
 - Example: Charolais X Gelbvieh
 - Finish wt and age: 1300 to 1400 lb. (Nov-April)
 - Mature cow size, less than 1400 lb.
 - Cull hot-tempered cows
 - Don't ever background
 - Wean early and feed high energy rations
 - Feed/manage for harvest between January and April
 - Work for 35% Choice and 70% or better YG 1 and 2
 - Retain or enhance muscling in bulls
 - Select for marbling ability in bulls
 - Retain some or full ownership
- **Breeding and management programs for other breeds:**
 - Large frame, late maturing
 - Limousin, Salers, Maine Anjou
 - Same as for Charolais X Gelbvieh
 - Medium to large frame, moderate maturing
 - Charolais X Angus, Gelbvieh X Angus, Simmental X Hereford
 - Same as for Simmental X Angus
 - Medium frame, early maturing
 - Shorthorn X Hereford, Hereford X South Devon, Angus X Shorthorn,

▪ Same as for Black Baldie

Summary and Recommendations

Cow-calf producers that are considering marketing in a grid must be prepared to understand the markets, genetics and management better than previously necessary. Of special concern to the cow-calf producers is the need to understand the intricacies of grid premiums and discounts and how cattle they produce fit these. Monitoring information signals from the marketplace, seasonal trends in cattle prices and for Choice-Select spread and average performance of cattle they produce are a must when considering making breeding and management plan changes. The time to act on this (at whichever stage you are today) is now. The generation interval in beef cattle breeding is such that bull-purchasing decisions made in the Spring of 2001 will have an impact on cattle born in the Spring of 2002 and harvested in the Summer and Fall of 2003 (that is almost a full three years from when you read this information). Assuming you made the right choice, and did not detract from this with bull power used in the Spring of 2002 and 2003, the minimum time span between deciding to act and seeing the fruits of this decision is three years. By then, the cattle cycle will be in a downward trend for prices, and grid pricing will be the system of choice when marketing cattle. Needless to say that the stakes are high in your decision to initiate or modify your breeding and management program today to fit value-based marketing in the future. The following is a checklist for cow-calf producers to begin the process of implementing changes to fit value-based marketing in the future:

- Build a long range plan
- Collect carcass information
- Focus on genetics and reproductive management and manage cattle for the sale

Focus on genetics:

- Wise breeding and culling
- Use your association services to:
 - Obtain information on bulls
 - Purchase bulls
 - Obtain carcass data
 - Connect with other cow-calf producers and cattle feeders

Focus on reproductive management: Calve heifers 21 days ahead of cows

- Test semen in bulls
- Breed for less than 84 days
 - Every 21 days age difference = 40 to 50 lb. weaning wt difference
- Conduct pregnancy check
- Eliminate open cows

Manage cattle for the sale:

- Become BQA certified
- Background only moderate frame, moderate maturing breeds
- Process calves for sale
- Sort calves for sale:
 - Similar color
 - Similar size
 - Similar muscling

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Notes

Lesson 2 Quiz

Breed Selection and Breeding Geared for Value Based Marketing

1. True or False Grid or formula pricing is an alternative marketing system based on buying cattle based on their individual carcass merit or lack thereof?

2. What are the two main components of a grid?

3. Cow-Calf producers that wish to gear their breeding and management program to fit the grid must concentrate on what three major areas?

4. Which of the following has the largest impact on carcass characteristics?
 - a. Genetics of the calf
 - b. Feeding factors
 - c. Management factors

5. Since 1997 B-maturity carcasses (30-42 months of age) no longer qualifies for which USDA Quality Grade.
 - a. Prime
 - b. Choice
 - c. Select
 - d. Standard

6. Who provides the least influence on carcass value?
 - a. Cow-Calf producer
 - b. Packer
 - c. Cattle feeder

7. What three steps should producers take to begin the process of implementing changes to fit value based marketing.

8. List two or more special marketing programs such as Certified Angus Beef®.

9. Grids refer to the term “out-cattle” Please list an example of “out-cattle.

10. What is the minimum time span (in years) between selecting a bull and seeing the fruits of this selection?

Please list any questions you may have that weren't answered in this lesson:

Name _____ Phone _____

Address _____

(Optional) Fax _____ E-mail _____