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UTILIZING CARCASS TRAITS IN A BREEDING PROGRAM

Rich Blair
Vale, South Dakota

Blair Brothers Angus is a multi-generational ranching operation in Western S.D. near Sturgis, which is much better known worldwide for Hogs than Angus cattle. However, by hogs I mean Harley Davidson motorcycles and the local biker bar does advertise Certified Angus Beef. Our normal annual rainfall is 14-15 inches, but normal the past few years would be welcome. We calve the heifers in late February, and cows begin the first of March. We run the cows in groups of 300-400 head, on a timed rotation grazing system, which works well with June rains. We supplement cows in the wintertime with hay, and feed replacement heifers a limit fed ration. Bull calves are fed to gain three pounds per day. Steers in the feedlot will consistently gain 3.5lbs/day, so we believe we are not burning up the bulls by overfeeding. By making cattle compete throughout their life we believe we allow the cream to rise to the top.

My brother Ed and I have been fortunate to have an interested, enthusiastic younger generation to provide labor and technological advice and input. Ed's son Chad and son-in-law Troy Hadrick are involved in the ranching operation full time. My son Britton is attending college at SDSU pursuing a meats degree, but spends summers at the ranch.

We, who at that time consisted of my brother Ed and I started AIing heifers in 1989. At that time we were not satisfied with the type of Angus bulls that we had available to buy, and thought that proven AI sires might be the way to improve our cow herd. Dr. Terry Goehring was the extension beef specialist at that time, and I give him the credit or blame for starting us on an AI program, which now involves the total cowherd. The Angus sire summary and EPD's were fairly new at that time, but we quickly saw the results of using proven bulls. We began the AI program with one main goal in mind, which was to build a cowherd. That main goal has not changed, but more traits have been added to the list of what makes a good cowherd. A good cowherd today has to work efficiently in the pasture, in the feedlot, and produce a desirable consumer product. We began breeding the first calf heifers, so naturally calving ease was the first priority. We like the labor saving and financial benefits of easy calving cows so well, that we still use what most people would classify as calving ease bulls almost exclusively. We typically like to use bulls under a +2 birth weight EPD. If two bulls will do nearly the same thing we'll use the lighter birth weight EPD bull every time. The tradeoffs of using calving ease bulls have declined dramatically the past few years, by that I mean ribeye and growth traits do not have to be sacrificed any longer. Extreme growth has never a primary trait that we selected for, because we didn't want our mature cow size to get out of hand. We also question whether our environment will allow those growth traits to be expressed. We're content to use bulls with +70-80 pound yearling weight EPD's. I like weaning weight EPD's to be as large as possible, but that becomes the trade off against all other traits. I want calves to grow fast, but mature cows to not get too big. I think what is important is growth curve. We all remember the kid in eighth grade that was a big kid, but at our ten year reunion was average size. That is the type of growth curve I want in my

cowherd, not the little kid that grew to over six foot tall after high school. Throughout the early nineties we were not too concerned with the carcass traits of our Angus cows. We had too many other traits we wanted to improve on, and frankly Angus cattle were known for their marbling ability so why bother. I should have known better, because Angus cattle were also known for moderate mature size, calving ease, and milking ability, all traits which we were trying to improve on. We had fed some of our calves through the SDSU Calf Value Discovery Project, and had been satisfied with their performance and grading ability. However, in 1997 along came a new company, U S Premium Beef, which promised to pay a premium for high grading cattle. After having tried a couple different alliances this looked like the one we were looking for, so we bought shares in the fledgling new company. What interested us most was a high quality based grid, and the promise of carcass data. It continues to be tough even today to get good carcass data back on cattle, especially if you do not retain ownership of the cattle all the way through slaughter. We have always believed that if you think your cattle are so good why not retain ownership. We have yet to find someone that has wanted to pay us more for our steer calves than what we thought they were worth to us, based on our data of how the cattle will feed and grid. Too many producers know less about their cattle than their buyer does.

These grid sheets are not scientific data, and are not all inclusive of cattle fed that year. These just represent our experience; feeding our calves, in a custom feed yard, and retaining ownership until they are priced on a packer grid. All cattle were implanted in the feedlot, and except for the contest steers had no special handling from normal feedlot practices. The steers were either direct sons of AI sires, or sons of bulls that we raised from AI sires. We started selling a few bulls in 1993, and we have used our own Angus bulls exclusively as cleanups since then. The first requirement to keep a bull calf was that his dam and he had to be an AI progeny. With that in mind the top end of the steer calves were retained as bulls each year, and the number of calves kept as bulls has grown through the years. In 1993 we sold ten bull calves, and last year we sold over 250 bulls private treaty. We have also tried to breed nearly all of our heifer calves each year. They are all exposed AI once and cleanup bulls turned out for a maximum of thirty days. The last two years we have tried to breed AI the repeats on the second heat following synchronization. Heifers are ultrasound pregnancy tested in August, and the open heifers have then been sent to the feedlot. The heifer data is on all the heifers fed those years, and consists of the open heifers that would have been replacements if they had bred. Through most of the years we were trying to expand our cowherd, and turn generations as quickly as possible so very, very few heifers were culled before breeding. Some of the cleanup bull bred heifers have been sold as bred heifers. Those open heifers have consistently been the most profitable cattle to feed, if you’re going to feed something that looks like the place to start.

Table 1 is the first steers we sent to US premium beef. At that time, 1998 they looked pretty good. They graded 65% choice, and 11.5% CAB, no Y4's but one heavy. Note that at that time heavy carcasses were over 950 pounds, now that threshold is 1000 pounds. The most exciting thing was they brought a premium of $5.23/head; we could actually get paid for better than average carcass genetics! The steers were placed in March at 785 pounds, fed 128 days gained 4.18/day, converted 5.31 DM basis and had an out weight of 1342 pounds. Their extra age and back grounding time helped their ADG and yield grade.

Table 1

7/14/98	36 Steers	Live Wt 1342
	Yield 63.99	Carcass Wt 859

		+/-	$Value
Choice +	64.26%	$6.10	$193
Prime	0.00%	$8.00	$0
CAB	11.50%	$3.50	$124
YG2	42.07%	$1.50	$0
YG3	50.01%	$0.00	$0
YG4	0.00%	-$12.00	-$134
950# +	6.22%	-$15.00	-$288

Net Live Premium $5/Head

At about this time, I had a chance conversation with a buyer for a major packing company that changed my focus. He was lamenting the fact that it was hard to find cattle that graded real well. I made the statement that one of their problems was that they had never really told producers what kind of cattle they should be raising. I was thinking along the lines of Herefords, or Angus, or Charolais cross. His retort was a jaw dropper to me in the fact that it was simple and oh so obvious. He replied, "Yes we have, we laid our grid out there and told producers exactly what we wanted." After that I took a closer look at the grid! Let's see, the packer will pay me a premium for choice over the plant average 50% of generally $8-10/cwt carcass wt., a premium on top of that for CAB of $4.50/cwt., the prime premium was $8/cwt. He will dock me for YG4's and 5's, and heavies and hardbones and ungradeds of normally $12-20/cwt. The YG1 premium is $3/cwt and YG2 is $1.50/cwt if I beat plant average. It's obvious what the market wants when you look at the grid. Choice, prime, and CAB will command a significant premium, and YG4's, 5's, and heavies are a significant discount. YG1's and YG'2's don't fit my cowherd parameters and don't pay enough of a premium to worry about, so maybe we ought to concentrate on improving marbling. I realize there is some argument about whether marbling is the primary indicator of a quality steak, but the market pays a premium for marbling, so it is my job to give it what it wants and not argue. Since that time the quality premiums have increased, and discounts and YG premiums have not. The prime premium has been as wide as $40, choice over $20, and CAB over $10. A Forty-dollar prime premium amounts to $240/head on an eight weight carcass, and it costs no more to run the cow or feed the steer. It's a free lunch; all I have to do is select bulls that are elite marbling bulls along with the other traits I desire. Table 2 shows the heritability estimates for some commonly selected traits. Through experience we know that birth weight, weaning weight, and yearling weight are traits we can change in a herd, and yet marbling and ribeye are more heritable. Progress can be made quicker with these traits; the problem is we can't see it when we look at a herd of cows. It's hard to sell at the sale barn, but the premiums are real if the avenues to capture them are pursued. Tables 3-9 document our pursuit of selecting for, and capturing those premiums.

Table 2

Heritable Trait Percentage

• Conception Rate	• 0-10
• Milking Ability	• 15-25
• Calving Ease	• 10-40
• Birth Weight	• 35-40
• Weaning Weight	• 25-30
• Ribeye Area	• 60-65
• Fat Thickness	• 40-55
• Marbling Score	• 40-45

Source: U.S. Meat Animal Research Center

Table 3 is the steers sent in 1999, as we began AIing more cows we had more AI sired steer calves, and more second-generation AI calves. In my mind, the second generation yields a higher percentage of CAB and prime carcasses, as the stacking of pedigrees for any trait seems to add consistency and accuracy to those progeny. In herd data that I have looked at by pulling out different cow groups bred to the same bulls, a definite difference exists between progeny. The calves from a set of boughten heifers graded 75-80% choice and 21% CAB, while home raised young cows calves graded 100% choice, 22% prime, and 41% CAB. The table 3 steers were placed in March at 700 pounds, fed 156 days, gained 3.68/day, converted 5.8 DM basis, and had an out weight of 1285 lbs.

Table 3

8/16/99	77 Steers	Live Wt 1285
	Yield 63.17	Carcass Wt 812

		+/-	$Value
Choice +	81.97%	$9.72	$1,821
Prime	6.67%	$9.00	$375
CAB	45.69%	$4.50	$1,285
YG2	19.46%	$1.50	$0
YG3	71.34%	$0.00	$0
YG4	3.99%	-$12.00	-$60
950# +	0.00%	-$15.00	$0

Net Live Premium $37/Head

Table 4 is the steers sent in 2000, this is a representative sample of several sets that were sent to USPD between June 1 and September 1. The younger calves graded 50-60% choice and 12% CAB, while the older calves at slaughter graded 90-95% choice, 35% CAB, and 5-15% prime. It seems that a couple months of age can make quite a difference in grade on calves that are slaughtered between 14 and 16 months of age. Premiums ranged between $0-77, and averaged $35.00/hd, which was big money at that time feeding cattle. The grid steers example were placed in March at 753 pounds, fed 166 days, gained 3.54/day, converted 5.69 DM basis, and had an out weight of 1344 lbs.

Table 4

8/22/00	64 Steers	Live Wt 1344	
	Yield 65.33	Carcass Wt 878	
		+/-	$Value
Choice +	90.66%	$4.26	$925
Prime	4.84%	$9.00	$244
CAB	32.60%	$4.50	$824
YG2	33.16%	$1.50	$0
YG3	50.94%	$0.00	$0
YG4	15.90%	-$12.00	-$758
975# +	1.75%	-$15.00	-$147
		Net Live Premium $33/Head	

Table 5 is an example of the steers sent in 2001. It shows a continued improvement in the prime and CAB percentages. Hot yield affected the premium paid between the 2000 and 2001 grids. The calves that were grided in June and July were quite a bit better than the previous year as they graded 78-81% choice, 30-35% CAB, and 10% prime. The grid steers were placed in February at 732 pounds, fed 163 days, gained 3.78/day, converted 5.47 DM basis, and had an out weight of 1349 lbs.

Table 5

8/03/01	41 Steers	Live Wt 1349	
	Yield 62.70	Carcass Wt 846	
		+/-	$Value
Choice +	88.42%	$6.19	$781
Prime	14.99%	$14.00	$727
CAB	39.49%	$4.50	$616
FAB	2.39%	$3.00	$24
YG2	16.97%	$1.50	$0
YG3	70.47%	$0.00	$0
YG4	10.09%	-$15.00	-$124
975# +	0%	-$15.00	$0
		Net Live Premium $27/Head	

Table 6 is the set of steers that we entered in the Best of Breed carcass contest held in 2002. They placed seventh in the nation, and proved in my mind that our objective to build a top cowherd was achieved. We sorted through a much smaller group of cattle than the top entries to get the eighty head minimum requirement, and took 110 bulls off of the top end. The contest steers and their 55 sorts were placed in January at 700 pounds, fed 163 days, gained 3.43/day, converted 6.00 DM basis, and had an out weight of 1277 lbs. The contest steers were not fed as hot of ration as normal, which would explain the higher feed conversion.

Table 6

6/18/02	79 Steers	Live Wt 1277	
	Yield 63.32	Carcass Wt 808	
		+/-	$Value
Choice +	98.79%	$9.17	$2,857
Prime	12.48%	$14.00	$1,116
CAB	67.32%	$4.50	$1,935
FAB	3.72%	$3.00	$71
YG2	6.54%	$1.50	$0
YG3	83.58%	$0.00	$0
YG4	9.88%	-$12.00	-$402
1000# +	0.00%	-$15.00	$0
	Net Live Premium $71/Head		

Tables 7, 8, and 9 are the open heifers that were placed in August, and fed 123, 110, and 95 days respectfully. We kept shortening the days, as we were trying to decrease the percentage of YG4's. The YG4's hurt because of the $12 discount, but they also hurt the CAB percentage, as a large number of YG4's in our data meet the CAB marbling requirement. Those cattle that fall out of the CAB category because of being an YG4, actually take a $20/cwt hit, because we take the 4 discount and lose the CAB premium.

Table 7

12/31/00	69 Heifers	Live Wt 1346	
	Yield 63.42%	Carcass Wt 853	
		+/-	$Value
Choice +	96.00%	$9.16	$2,348
Prime	15.00%	$14.00	$1,200
CAB	19.00%	$4.50	$498
FAB	7.19%	$3.00	$127
YG2	9.50%	$1.50	$0
YG3	60.64%	$0	$0
YG4	23.86%	-$12.00	-$1,318
975# +	8.55%	-$15.00	-$755
	Net Live Premium $15/Head		

Table 8

12/04/01	74 Heifers	Live Wt. 1353	
	Yield 62.75	Carcass Wt 849	
		+/-	$Value
Choice +	80.69%	$7.29	$1,405
Prime	11.45%	$14.00	$1,006
CAB	25.02%	$4.50	$707
FAB	5.14%	$3.00	$96
YG2	13.80%	$1.50	$0
YG3	51.87%	$0	$0
YG4	30.37%	-$12.00	-$1744
975# +	6.52%	-$15.00	-$614
	Net Live Premium $2.00/Head		

The heifers in table 9 were placed in August 2003 at 907 pounds, fed 95 days, gained 4.65/day, converted 5.11 DM basis, and had an out weight of 1349 lbs. Notice that the heifers graded 50% prime and plused the grid over $200.00, in spite of taking a hot yield discount. The 2003 heifers brought back $1359 to the ranch after the cost of feed was deducted, too bad more weren't open. A bred heifer four months later had to hustle to bring $1000.00.

Table 9

11/17/03 42 Heifers Live WT 1349

Yield 61.73 Carcass Wt 833

		+/-	$Value
Choice +	100.00%	$21.45	$3,750
Prime	50.31%	$32.46	$5,710
CAB	18.50%	$9.01	$582
FAB	7.19%	$7.51	$188
YG2	23.80%	$1.50	$0
YG3	71.55%	$0	$0
YG4	4.65%	-$15.00	$0
1000# +	0%	-$15.00	$0

Net Live Premium $209/Head

Table 10 was taken from a set of heifers that we fed in 2004. Due to drought, the heifers were placed in May and slaughtered in October. I chose three weight groups almost at random to analyze differences in value at similar carcass weights. These heifers were sorted as the bottom end of our replacement heifers, and were fed together and slaughtered on the same day. The difference in value within weight groups and from top to bottom indicates the amount of work we have left to do within our cowherd. In the early 90's when we began feeding our steers in the SDSU Calf Value Discovery Project it was not unusual to see a $200 difference between the values of a producers five steers. We realized at the time that was too much money to ignore, but we have failed miserably in narrowing that spread. The theory was to bring the bottom end of the cattle up to the top end, and capture the $200. From this table it is easy to find a large difference in value between the same weight carcasses not to mention when performance is added in. The six weight carcasses vary in price by $180 with the lightest carcass the most valuable. The prime 603 pound heifer is still more valuable than a select 810 pound YG4. Whoever said I would rather sell a pound of gold than a pound of lead must have looked at data like this. The nine weight carcasses show a difference in value of nearly $400, and from top to bottom in this pen of heifers the difference is an astounding $700.00. It doesn't take rocket science to think I should flush the mother of the prime YG3 908# heifer, and sell the mother of the 627# select YG2. I'll bet those heifers cost nearly the same to feed in the lot, and their mothers cost the same to run every year, but they will bring nearly the same price at the sale barn, because the market can't see the difference with the hide still on. The prime YG3 is $35/cwt more valuable than the select YG2, that's $300/hd on an eight and a half weight carcass. As a producer it is now apparent to me what kind of cattle I should be raising, all I have to do is look at the grid and believe the data.

Table 10

HCW	QG	YG	Dressed Price/cwt.	Total Carcass Value
603	PR	2	$165.57	$998.39
627	SE	2	$130.70	$819.49
660	CH	3	$134.66	$888.76
667	CAB	3	$138.32	$922.59
802	CAB	2	$138.32	$1109.33
804	PR	3	$165.57	$1331.18
808	CAB	3	$138.32	$1117.63
809	CH	4	$125.19	$1012.81
809	PR	4	$156.10	$1262.87
810	SE	4	$121.23	$981.99
902	CAB	3	$138.32	$1247.65
907	CH	4	$125.19	$1135.50
908	PR	3	$165.57	$1503.38
938	CAB	3	$138.32	$1297.44
962	SE	3	$130.70	$1257.33

It seems when selecting a bull to use, the perfect one has not yet been created. There are always tradeoffs between calving ease and growth; yearling weight and mature cow size; milking ability and stayability, but I have not seen a tradeoff with sacrificing other traits in our pursuit of marbling genetics. YG4's are certainly a problem with British cattle, but fleshing ability is a good trait in Northern and semi-arid climates. Besides even select cattle can commonly be YG4's and it is not uncommon to have primes that are YG2's. I am proud of the fact that the feed yard owner and our mutual order buyer have been our volume bull buyers the past three years. We've been able to send bulls into eleven states and Canada, and seen good carcass results and closeouts from customers. I'm excited about the improvements we've made in our herd, but humbled by the knowledge we still have a long way to go. Good data is essential to any breeding program and I congratulate the Angus association on their quest to improve their EPD database. Without an Angus sire summary it would have been impossible to make the progress we have made. I truly believe in the not too distant future a set of calves advertised on a video auction out of superior $B value bulls will be market toppers. I thank the universities for their research, and the extension people for getting it in the hands of producers. Extension educators have been invaluable to our program. The old-timers say it takes a lifetime to build a good cowherd, and I just hope I live that long. "Boys find me the mother of that 908lb prime YG3 heifer she's the one with the short ears, bob tail, and nearly blind in one eye. I think I'll set her up for the flush program!"