



## Investing in Genetics

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Agriculture Extension professionals as well as other agriculture industry professionals often extol the virtues of being the "low cost producer." In most cases being the low cost producer does lead to an increase in profitability. However, two different data sets have suggested a couple of areas that high profit producers actually spend more money on than low profit producers. Cattle fax presented data at the 2008 National Cattleman's Beef Association and data from Integrated Resource Management (IRM) also suggests that range and pasture improvement and genetics are areas that successful high profit producers spend as much money on or more than other producers. Does this mean that all producers should increase their spending on livestock genetics? Probably not, but it does mean that producers should utilize sound economic principals and carefully consider the benefits associated with improved genetics.

### Investments vs. Inputs

Intuitively, the data from both Cattle Fax and IRM makes sense. While there are many inputs available to utilize in the process of beef production there are fewer true investments. Often the reason a producer is a high cost/low profit producer is that too much money is spent on inputs. Inputs such as feed supplements, fertilizer, growth implants and many others undergo extensive research to define the average expected production improvements and total economic benefit to a producer. On an

individual basis the inputs create value for producers if they are at or above the average results. However, when producers purchase multiple inputs targeted at improving production the total gain achieved from the inputs is often not equal to the total potential gain when looking at each input separately. That is that by adding more and more products the expected value of the gains for each additional input decreases.

While the potential economic gain from inputs is limited, investments offer a greater potential for upside potential. Since it is difficult to predetermine the potential return on an investment, with this greater potential for upside benefit comes an increase in risk. Therefore, it is important to couple investments with a sound risk management plan.

### Investing in Genetics

While investing in genetics offers a producer an ability to improve their herd and potentially enhance profitability, it is not without risk. Bulls can injure themselves, die, or just chose not to perform their duties. Additionally choosing the "right" bull can be difficult. One of the best tools producers have at their disposal to select the right bull is Expected Progeny Differences (EPDs). EPDs certainly provide good information and are very valuable in predicting a bull's future performance, but EPDs on young bulls have a relatively low accuracy which again creates risk in the investment. So while data would show that profitable producers tend to invest more on genetics than low profit producers, how do producers know

which bulls are right for them and how much can they afford to pay for a given bull. While economics is important in this decision choosing the right bull is somewhat subjective depending on the improvements wanted in a herd. Producers who match their investment in genetics with their marketing program, resources and management plan certainly tend to be more successful.

### How Much is a Bull Worth?

Since purchasing a bull is a risky venture, and since it can take more than one year to break-even on the investment it is important to look at the time value of money when considering how much you can afford to pay for each bull. Table 1 analyzes the amount of additional revenue per calf required to

break-even on the additional investment per bull, given different interest rates or discount factors. Table 1 looks at three different additional investment levels \$500, \$1000 and \$1500 and three different potential interest rates. Interest rates range from a conservative 5% to a credit card like 18%.

### Using Table 1

Bull A would cost a producer \$1500. Bull B would cost a producer \$2500. Bull B requires an additional investment of \$1000. If the interest rate is 5% on the investment capital that means that bull B needs to generate \$220 more each year over 5 years at 25 calves per year than bull A to break even on the investment.

**Table 1. NPV Genetic Investment Example**

Additional Investment	Discount Rate	Annual Revenue	Annual Revenue
		5 Year Break-Even	Per Head @25 Calves/Year
\$500	5%	\$110.00	\$4.40
\$500	8%	\$116.00	\$4.64
\$500	18%	\$135.50	\$5.42
\$1000	5%	\$220.00	\$8.80
\$1000	8%	\$232.00	\$9.28
\$1000	18%	\$271.00	\$10.84
\$1500	5%	\$330.00	\$13.20
\$1500	8%	\$348.00	\$13.92
\$1500	18%	\$416.50	\$16.26

Another way to look at it is each calf from bull B would need to be worth \$8.80 more than calves from bull A. If you decided to purchase bull B on your credit card at 18% interest bull B would need to generate \$271 more per year to break even after 5 years or \$10.84 per calf.

### Partial Budgeting

To determine if a bull will generate sufficient extra revenue to break-even based on Table 1 a producer

should use a partial budgeting approach. Table 2 is an example partial budget. In this example bull A would cost \$1500 and bull B would cost \$3000. The producer sells weaned calves each fall so to improve his weaning weights bull B has a weaning EPD of 10 pounds more than bull A. Bull A's weaned calves would weigh 500 pounds and bull B's weaned calves would weigh 510 pounds.

Table 2. Partial Budget

II A vs. Bull B			
<b><u>Additional Costs</u></b>		<b><u>Additional Revenue</u></b>	
Feed on Heavier Calves	\$10	25 - 510 lbs Calves @ \$1.89	\$24,098
note: adding weight genetically to calves does not significantly increase feed costs.		note: due to price slide 10 pound heavier calves receive \$0.01 less	
<b><u>Reduced Revenue</u></b>		<b><u>Reduced Costs</u></b>	
25 - 500 lbs Calves @ \$1.90	\$23,750	None	\$0
Total \$23,760		Total \$24,098	
		<b>Net gain or loss \$338</b>	

Based on Table 2 results bull B would generate \$338 more annually than bull A. Since we paid an additional \$1500 for bull B Table 1 says we would need \$330 per year at 5% interest to break-even and \$416.50 per year at 18% interest. Therefore at 5% interest bull B would be a sound investment with a net gain per year of \$8. However, bull B would come up short \$78.50 per year if purchased on a credit card at 18%.

In this example the producer was selling weaned calves and looking to improve weaning weight. In the example, this looks like this could be a good strategy. However, sometimes producers pay more for genetic potential that is not realized until after weaning: yearling weight EPD or carcass trait EPDs, for example. If the producer was still selling weaned calves but looking to improve carcass quality, it probably would be difficult to show an economic impact. Producers that are investing in genetics that will be realized after weaning generally need to retain ownership beyond weaning in order to capture the return on their investment. Another method of capturing this investment return may be to market into some value added alliance or other group, where your price at weaning is based on your cattle possessing certain genetic potential or where you are rewarded after the fact if your cattle have superior feedlot performance or exhibit superior carcass traits.

## Summary

Investing in proper genetics has proven to be a successful strategy for profitable producers. However, they invest wisely choosing bulls that fit within both their marketing program as well as mesh with their specific production environment. Additionally, it can be helpful to utilize tools such as the ones provided in this document for a guideline when considering how much you can afford to invest in genetics.

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