ASA / IOWA STATE
HEIFER TRIAL REPORT

Matt Woolfolk | director of performance programs

When the Iowa State University (ISU) Beef Extension team approached us about the ability to develop a feed efficiency testing program for replacement heifers, we felt that was an opportunity that ASA had to take advantage of. The ISU team was particularly interested to study the potential correlation between feed efficiency, growth, and the onset of sexual maturity in growing heifers.

The trial was conducted at the ISU Beef Nutrition Farm. The participating breeders delivered their groups of six heifers in mid-October. They were given a period of acclimation to the diet and eating out of the Feed Intake Monitoring System (FIMS). The 98-day feed intake collection on the FIMS system began November 12. The heifers were scanned for carcass characteristics on the initial start date, to gather measurements of initial body condition. Heifers had body weights recorded every two weeks throughout the trial. The study concluded on February 18 with final weights taken, as well as the official carcass ultrasound data that was submitted to the ASA database. All heifers were 50k tested to get genomically enhanced EPDs.

The diet specifications for the trial are as follows
(Dry matter basis):
45% corn silage
15% grass hay
20% Sweet Bran
18.5% dried distillers' grains
1.5% mineral

50 NEg (Net Energy for gain)
15.6% Crude Protein
74.5% TDN (Total Digestible Nutrients)

At each of the weigh-ins, the heifers had blood collected to test their progesterone levels. The level of progesterone in these tests was a measure to pinpoint when these females started cycling. The reproductive tracts were scored via ultrasound imaging on December 10, January 21, and February 18. Additionally, pelvic measurements were recorded on the last day of the trial.

Results

As always, I believe it is best to let you draw your own conclusions from the information on specific pens of heifers, but I will highlight some of the main data collected on the group as a whole.

Heifers started the trial at an average weight of 547 lb., and had grown to an average of 805 lb. by the conclusion. That pencils out to a daily gain of 2.63 pounds per day. Going out, the heifers ranged from 623lb to 989lb. The heifers averaged an 11.5 sq. inch ribeye area with a 5.32% intramuscular fat on carcass ultrasound. The backfat was 0.42 inches.

The average dry matter intake was 16.54 pounds per day per heifer, ranging from 10.37 to 23.36 pounds per heifer. They converted this feed into pounds at a rate of 6.36 pounds of feed per pound of gain. The heifers ranged from 3.98 to 10.47 on their individual feed to gain. For the sake of comparison, we have one major data set to analyze feed conversion rates in this breed: the National Sire Test data. The 2018 crop that was harvested this past fall consumed 21.13 lb. of dry matter and had a feed to gain ratio of 6.59 pounds on the heifers in that trial, ranging from 3.95 to 9.43 feed to gain. Even though the specifications of these trials (length and diet) are not the same, it at least gives us some indication of what to expect from Shorthorn-sired females. From visiting with ISU, they indicated that the feed to gain conversions on these heifers was more efficient than other similar research trials they had conducted or studied in scientific papers from other universities. That's a victory for the Shorthorn breed!

At the time this report was started, the Iowa State team was working on the blood testing and data analysis of the reproductive information. Since then, the university has implemented strict social distancing and work from home protocols due to the COVID-19 outbreak. Hopefully, they will be able to return to a sense of normalcy soon and we will be able to learn more about this information from the trial in the near future.

The chart below displays pen averages for each of the seven pens of heifers in the study.

ASA/Iowa State Heifer Trial Pen Averages

Pen #	Breeder	Start Wt 1/12/19	Weight 12/10/19	Weight 1/21/20	Final Wt 2/18/20	Test ADG	REA	IMF	Fat	Test DMI	Test F:G
1	Peak View	550	610	723	812	2.67	11.8	4.74	0.42	15.65	5.94
2	Peak View	561	606	750	824	2.68	12.5	5.39	0.47	16.20	6.07
3	Leveldale	545	611	730	787	2.47	11.0	4.50	0.32	16.67	7.12
4	Bowman	548	619	739	814	2.71	12.0	7.11	0.43	16.96	6.28
5	Forni	547	610	758	826	2.85	10.2	4.91	0.45	17.04	6.00
6	Hoffrogge	493	554	650	723	2.34	11.0	5.15	0.38	14.81	6.30
7	Gilman	588	638	781	852	2.70	11.8	5.46	0.46	18.44	6.84
	Averages	**547.33**	**607.00**	**732.86**	**805.33**	**2.63**	**11.47**	**5.32**	**0.42**	**16.54**	**6.36**

What Have We Learned?

As a breed, this study helped us further establish a baseline for where our cattle stand on the traits that surround the newly explored realm of feed efficiency. As we continue to have feed intake data collected from various sources, we will be able to better gauge where Shorthorns stand from a general feed efficiency standpoint. Programs like this help us collect that information.

One of the goals was to gain insight on the necessary length of a feed efficiency test for breeding heifers. Another hypothesis might have developed along with that, as there might be something to learn on when in their life cycle that heifer feed efficiency testing should be done.

With heifers reaching sexual maturity towards the end of the trial, there was a disruption in the efficiency of some of the older females. This potentially coincides with heifers cycling and exhibiting the usual behaviors of heifers in heat. Obviously, that can be stressful and bothersome to a feeding pattern and conversion, especially in a confined space. It will be interesting to study this thought further to see if there is a need to put females on feed efficiency testing at a younger age to avoid the possible stress from a pen full of cycling heifers.

Final Remarks

As with all ASA performance and research endeavors, I want to thank the breeders who agreed to participate in this program, as well as ISU for allowing the breed to be a part of it. Hopefully, the relationship between ISU and ASA can continue with this program in future years. I believe it will be important to the growth of the breed to maintain and develop more of these opportunities. We are moving forward with plans to do another round of this test in late fall 2020. Be on the lookout for more information in the coming months!

Thanks to Our Participating Breeders

Bowman Superior Genetics, Greens Fork, Indiana
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Gilman Shorthorns, Stuart, Iowa
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Peak View Ranch, Fowler, Colorado
Leveldale Farms, Mason City, Illinois