

## **USE OF MONENSIN SODIUM IN RATIONS FED TO REPLACEMENT HEIFER CALVES DURING THE WINTERING PERIOD**

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The North Dakota Agricultural Statistics Bulletin Number 48 for 1981 indicates there were 120,000 replacement beef heifers in the state. Management and feeding of these heifers so they will grow and mature into useful productive cows is of prime concern to North Dakota cattlemen. Since feed makes up a large percentage of the cost of raising replacement heifers, anything that will reduce the feed cost without reducing or impairing reproductive performance should be incorporated into the overall management system.

The feed additive, Monensin Sodium, has been shown to be effective in reducing feed intake by 6-10% without affecting gains under feedlot conditions. With a six month wintering period, and heifers consuming approximately 17 pounds of feed per day, an 8% saving in feed would amount to some 245 pounds. At four cents per pound of feed this would amount to \$9.79 per heifer wintered, or approximately 1.2 million dollars in feed savings across the state.

Steer feeding trials reported in the 28<sup>th</sup> and 29<sup>th</sup> Annual Livestock Research Roundup indicate a feed savings and cost advantage when Monensin was fed at levels of from 150-300 mg per head per day.

Numerous research reports from across the United States have shown both a feed savings and a cost advantage when Monensin is fed. However, information on how Monensin might affect reproductive performance in heifers is rather limited.

In December, 1981, a trial was started to determine the effects of incorporating 150-200 mg Monensin per head per day in rations fed to replacement quality beef breeding heifers. The trial was designed to monitor feed intake and efficiency, economics, weight gain or loss, time of first estrus and overall reproductive efficiency.

Commercial quality Angus X Herford heifer calves weighing approximately 520 pounds were allotted to either a control ration or a control ration plus Monensin Sodium. Both rations fed as complete mixed rations, self-fed in straight sided self feeders. Rations were formulated to promote 1.5 to 1.7 pounds of gain per day. Monensin was added to the ration so that the heifers received between 150 and 200 mg per head per day. Heifers were weighed every 28 days to monitor weight gain and feed intake.

On February 9<sup>th</sup>, sterilized detector bulls were added to each group to help determine estrus activity. On April 26<sup>th</sup> both lots of a treatment group were weighed and combined and moved to large holding lots where they continued on their respective rations until May 17, at which time, the heifers were weighed and turned out on pasture. Records were kept on time of first estrus and all heifers were inseminated in June. Fertile Milking Shorthorn bulls were used for cleanup following the A.I. program.

The initial ration formulation and results of this first years' trial are shown in the following tables:

Table 1. Ration.

Table 2. Results of winter feeding phase.

Table 3. Heat detection record.

Table 4. Pregnancy test data.

### Discussion:

Heifers fed rations containing Monensin Sodium were able to gain weight faster (1.69 vs. 1.52 average daily gains) and on May 17<sup>th</sup> they were 26.9 pounds heavier after 154 days on trial. Heifers fed Monensin also ate less feed per day (20.7 vs. 21.2 pounds) and were therefore more efficient. However, due to the cost of the supplement containing the Monensin, actual feed cost savings per day were only one cent per head per day, for a cost savings of \$1.54 per head.

It appeared that about 14% more heifers fed the Monensin Sodium reached puberty by the end of March. However, data based on pregnancy test show no differences as it relates to stage of pregnancy.

### Summary:

The feeding of 150-200 mg per head per day of Monensin Sodium allowed crossbred Hereford – Angus heifers to gain 27 pounds more bodyweight during the 154 day feeding period in 1981-82. These heifers also ate less feed and were more efficient, although they only saved \$1.54 in feed costs over control fed heifers. It appears that 14% more heifers reached puberty prior to the first of April, although this early puberty did not result in a better or earlier conception rate.

This trial will be continued for at least another two years.

**Table 1. Initial Rations of Monensin Sodium Trial with Replacement Heifers**

<b>Trials Rations:</b>	<b>Control</b>	<b>Monensin</b>
Alfalfa-grass hay, %	56.5	56.5
Corn, %	41.0	39.75
SBOM, %	1.8	1.8
Beef Mix 600*	-	1.25
Di cal, %	0.1	0.1
Limestone, %	0.1	0.1
Trace Mineral Salt, %	<u>0.5</u>	<u>0.5</u>
	100.0	100.0

\*Beef Mix 600 will provide 7.5 mg of Monensin per pound of complete feed consumed. At 20 pounds of intake, heifers will get 150 mg of Monensin.

**Table 2. Combined Data for the Replacement Heifer Trial with and Without Rumensin  
From December 14 to May 17, 1982**

	<b>With Rumensin</b>	<b>Control</b>
No. Head	34	34
Days Fed	154	154
May 17 Wt/lot, lbs.	26,585	25,670
Avg. Wt/hd., lbs.	781.91	755.0
Dec. 14 Wt/lot, lbs.	17,745	17,700
Avg. Wt/hd., lbs.	521.91	520.6
Total Gain/lot, lbs.	8,840	7,970
Avg. Gain/hd., lbs.	260.0	234.4
ADG, lbs.	1.69	1.52
<b>Feed Consumption/day, lbs.:</b>		
Corn	9.79	10.36
SBOM	0.31	0.32
Mixed Hay	10.09	10.33
Di-cal	0.03	0.03
Limestone	0.02	0.02
Trace Mineral Salt	0.15	0.15
Beef Mix 600	0.27	-----
<b>Total feed/hd./day</b>	20.66	21.21
<b>Feed Cost/lot, \$:</b>		
Corn	2,761.15	2,923.81
SBOM	192.20	200.32
Mixed Hay	1,485.08	1,520.47
Di-cal	35.79	35.62
Limestone	5.32	5.55
Trace Mineral Salt	54.09	54.16
Beef Mix 600	187.90	-----
Grinding	1,382.88	1,420.13
<b>Total cost/lot</b>	6,104.41	6,160.06
Cost /hd./day, \$	1.14	1.15
Cost /hd., \$	175.56	177.10
Cost/Cwt Gain, \$	67.52	75.55

**Table 3. Replacement Heifers With or Without Rumensin Data before Lots  
Were Combined on April 16, 1982**

	With Rumensin	With Rumensin	Without Rumensin	Without Rumensin
Lot Number:	19	21	20	22
No. Head	17	17	17	17
Days Fed	133	133	133	133
April 26 Wt/lot, lbs.	12,915	13,005	12,615	12,175
Avg. Wt/hd., lbs.	759.7	765.0	742.1	716.2
Dec. 14 Wt/lot, lbs.	8,855	8,890	8,840	8,860
Avg. Wt/hd., lbs.	520.9	522.9	520.0	521.2
Total Gain/lot, lbs.	4,060	4,115	3,775	3,315
Avg. Gain/hd., lbs.	238.8	242.0	222.0	195.0
ADG, lbs.	1.80	1.82	1.67	1.47
<b>Feed Consumption/lot, lbs.:</b>				
Corn	22,432	22,369.9	23,948.1	23,775.1
SBOM	697.4	696.9	743.5	724.6
Mixed Hay	23,464.6	23,381.7	24,100.1	24,117
Di-cal	83.4	82.9	81.1	84.4
Limestone	38.7	38.6	41.2	40.1
Trace Mineral Salt	372.5	370.2	366.1	378.5
Beef Mix 600	<u>606.2</u>	<u>604.8</u>	-----	-----
<b>Total feed</b>	47,695	47,545	49,280	49,120
Animal days	2,309	2,309	2,309	2,309
<b>Feed Consumption/day, lbs.:</b>				
Corn	9.72	9.69	10.37	10.30
SBOM	.30	.30	.32	.31
Mixed Hay	10.16	10.13	10.44	10.44
Di-cal	.04	.04	.04	.04
Limestone	.02	.02	.02	.02
Trace Mineral Salt	.16	.16	.16	.16
Beef Mix 600	<u>.26</u>	<u>.26</u>	-----	-----
<b>Total lbs/day</b>	20.66	20.59	21.34	21.27
<b>Feed Cost/lot, \$:</b>				
Corn	1,182.17	1,178.89	1,262.06	1,252.95
SBOM	80.20	80.14	85.50	83.33
Mixed Hay	645.28	643.00	662.75	663.22
Di-cal	16.43	16.33	15.98	16.63
Limestone	2.22	2.22	2.37	2.30
Trace Mineral Salt	24.58	24.43	24.16	24.98
Beef Mix 600	77.59	77.41	-----	-----
Grinding	<u>596.19</u>	<u>594.31</u>	<u>616.00</u>	<u>614.00</u>
<b>Total cost/lot, \$</b>	2,624.66	2,616.73	2,668.82	2,657.41
Cost/hd./day, \$	1.14	1.13	1.16	1.15
Cost/hd., \$	151.62	150.29	154.28	152.95
Cost/Cwt Gain, \$	63.49	62.10	69.50	78.44

**Table 4. Data on 21-Day Combined Feeding Period for the Replacement Heifer Trial  
With and Without Rumensin from April 26 to May 17, 1982**

<b>Lot Numbers:</b>	<b>19&amp;21</b>	<b>20&amp;22</b>
	<b>(735 Animal Days)</b>	
No. Head	34+bull	34+bull
Days Fed	21	21
May 17 Wt/lot, lbs.	26,585	25,670
Avg. Wt/hd., lbs.	781.9	755.0
April 26 Wt/lot, lbs.	25,920	24,790
Avg. Wt/hd., lbs.	762.4	729.1
Total Gain/lot, lbs.	665.0	880.0
Avg. Gain/hd., lbs.	19.6	25.9
ADG, lbs.	0.93	1.23
<b>Feed Consumption/lot, lbs.:</b>		
Corn	7,591.8	7,757.1
SBOM	277.0	273.8
Tame Hay	7,156.4	7,072.7
Di-cal	15.4	15.3
Limestone	15.4	15.3
Trace Mineral Salt	76.9	76.1
Beef Mix 600	257.0	-----
<b>Total feed</b>	<b>15,390</b>	<b>15,210.3</b>
<b>Feed Consumption/day, lbs.:</b>		
Corn	10.3	10.6
SBOM	0.38	0.37
Tame Hay	9.74	9.62
Di-cal	0.02	0.02
Limestone	0.02	0.02
Trace Mineral Salt	0.10	0.10
Beef Mix 600	0.35	-----
<b>Total lbs/day</b>	<b>20.91</b>	<b>20.73</b>
<b>Feed Cost/lot, \$:</b>		
Corn	400.09	408.80
SBOM	31.86	31.49
Tame Hay	196.80	194.50
Di-cal	3.03	3.01
Limestone	0.88	0.88
Trace Mineral Salt	5.08	5.02
Beef Mix 600	32.90	-----
Grinding	192.38	190.13
<b>Total Cost/lot:</b>	<b>863.02</b>	<b>833.83</b>
Cost/hd./day, \$	1.17	1.13
Cost/hd., \$	24.57	23.73
Cost/Cwt Gain, \$	125.36	91.62

**Table 5. Pregnancy Palpation Data Collected on September 13, 1982**

<b>Estimated Days Pregnant</b>	<b>Rumensin</b>		<b>Control</b>	
	<b>Number Head</b>	<b>%</b>	<b>Number Head</b>	<b>%</b>
150+	12	35.3	12	35.3
120+	12	35.3	13	38.2
90+	3	8.8	3	8.8
Open	<u>7</u>	<u>20.6</u>	<u>6</u>	<u>17.6</u>
<b>Total</b>	34	100.0	34	100.0

**Table 6. Time of First Estrus in Heifers Fed With or Without Monensin Sodium**

<b>Time of Detection</b>	<b>Rumensin</b>		<b>Control</b>	
	<b>Number Head</b>	<b>%</b>	<b>Number Head</b>	<b>%</b>
March	10	29	5	15
April	16	47	22	65
May	5	15	3	9
Not detected or prepuberal	<u>3</u>	<u>9</u>	<u>4</u>	<u>11</u>
<b>Total</b>	34	100	34	100