

Beef Cattle Producer Synchronized Timed-AI Survey  
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Research Brief:

Reproduction is unquestionably the single most important criterion in the beef cattle enterprise, because profitability begins with new birth, which is the initiator of new wealth. It is from the American ranchers who devote their resources and every ounce of energy into producing new wealth that accompanies each newborn calf.

Replacement heifers are literally the backbone of any beef cattle operation's future performance, efficiency, and profitability. Therefore, selecting and breeding heifers to elite sires with known performance and efficiency traits is of utmost importance to the progressive cattleman. Because reproduction is the most profitable single management tool, heifers that calve early at the start of the calving season produce more pounds of beef and demonstrate greater herd longevity and lifetime productivity compared to their later calving counterparts.

For small to medium sized farm managers, access to elite sires is for the most part out of their reach financially; however, accessing the merits of elite sires artificially with known genomic enhanced genetic potential is the most rapid and efficient method to enhance genetic merit of replacement heifer offspring.

Yes, artificial insemination is labor intensive, which is why <10% of breeding age females in the U.S. beef cattle herd are bred artificially? Nonetheless, cattlemen who know the value of the enhanced genomic merit available through AI devote the labor and focused time required to breed heifers artificially by appointment. And when TAI pregnancy rates approaching 60.0% or greater are attained, breeding cost per pregnant female is reasonably priced, because bull semen cost per unit has not increased appreciably over time compared to the average herd bull cost per pregnant female.

A voluntary survey of cattle ranchers that synchronize replacement heifers for AI was initiated with the 2021 breeding season for the purpose of establishing trends and identifying areas where future research efforts can be expended. Currently, two rancher breeding seasons (2021 and 2022) have been summarized in Table 1. Without exception, environmental insult from drought, blizzards, long winter cold spells, and nutrition play a heavy role in heifer response and pregnancy rate. Drought during the 2021 breeding season and back-to-back April 2022 blizzards effected pregnancy rates. Looking ahead into 2023, brutally cold temperatures in all likelihood will have a negative effect on pregnancy rates unless nutritional energy supplementation is provided to ensure

heifers are in a positive energy and gaining condition 30-days before, during, and 30-days after AI has been completed.

Looking at year-over-year change between heifer synchronization results from 2021 and 2022, costs increased for feed, vaccine, semen, and veterinary services, while pasture grazing system heifer pregnancy rates declined 17.0% due to stress resulting from the back-to-back blizzards. Thus, for the upcoming 2023 synchronized heifer breeding season, TMR diets with increased energy content and energy-based pasture supplementation will be necessary to ensure heifers affected by the recent unusually cold 2022-2023 winter are in a gaining condition before, during, and after heifers have been artificially inseminated.

Voluntary rancher heifer synchronization survey results for 2023 will be added to the database and the 3-year breeding season results will be provided in this report next year.

Table 1. Beef cattle rancher heifer synchronization survey results (2021, 2022).

	<b>DRYLOT</b>	<b>GRAZING</b>	<b>DRYLOT</b>	<b>GRAZING</b>
	<b>2021</b>	<b>2021</b>	<b>2022</b>	<b>2022</b>
Number of Systems	<b>3-Drylot</b>	<b>3-Grazing</b>	<b>1-Drylot</b>	<b>5-Grazing</b>
<b>TMR Diet</b>				
Lb/Hd/Day	25.7	-	35.0	-
Cost/Ton	\$58.15	-	\$73.42	-
Suppl/Lb/Hd/Day	2.17	-	4.0	-
<b>Grazing</b>				
Tame Grass & Native Range	Yes	Yes	Yes	Yes
Cost/Ac	-	\$16.67	-	\$14.20
Cost/Day	-	\$0.90	0.70	\$0.61
Pasture Yield, T/Ac	-	0.567	-	1.08
<b>Vaccine Cost (Range \$1.91 - \$11.56)</b>				
	\$8.29	\$5.88	\$19.75	\$17.53
<b>Synchronization</b>				
No. Synchronized	133	52	194	62.2
No. Inseminated Before TAI	160	2	165	65
TAI Pregnancy	56%	74%	59.0%	57.0%
Repeat Pregnancy	47.2%	-	13.0%	-
TAI + Repeat Pregnancy	75.5%	-	72.0%	-
Bull Bred	16.7%	-	18.6%	27.15%
Open	7.81%	-	10.0%	12.83%
<b>Semen Cost</b>				
Average Semen Cost	\$21.33	\$16.21	\$20.00	\$20.20
Average Vet Preg Check Cost	\$4.83	\$3.67	\$6.00	\$5.05