Artificial Insemination

Beneficial Category

Background

Purchasing a bull or semen is a long-term investment which can impact the herd's genetic potential, profitability and overall herd performance. Through improvement of genetic evaluations of beef bulls, selecting the best bull for your operation can be done with increased confidence. Natural selection and artificial insemination (AI) both have associated costs and economic benefits. It is important to have set goals or objectives for your breeding program to help decide if AI or natural breeding will be most beneficial. Below are some pros and cons for both AI and natural breeding to help you get started.

	Natural Service	**Artificial Insemination**
Pros	Decreased labour	Improved genetic selection
	Lower input cost	More uniform calf crop
	Decreased management/planning	Increased number of calves born in first 21 days
Cons	Longer calving season	Increased labour
	Reduced genetic variability potential	Increased management
	Higher maintenance cost	Increased equipment cost
	Bull performance not based on individual data until after use	Requirement of handling facilities

There has been a lot of research into cattle genetics and reproduction, including research into the most efficient AI protocols. It would be beneficial to contact someone who is familiar with AI and various protocols to help determine the best option for your operation.

Examples of Ways to Implement AI

Adopting AI will vary across different operations depending on available facilities, herd size, land availability, and bull/cleanup bull availability. Once a decision has been made to implement AI in the breeding plans, it is important to plan which cattle (if not all) will be AI'd, who will perform the AI, where the semen will be obtained, and which bull(s) will be used for cleanup. The list below of general steps will help you get started with the planning process. For more personalized information and help meeting

specific needs on an operation, it will be beneficial to contact a local veterinarian or AI/semen representative that can work directly with you to create a protocol to match your specific needs and timelines. Professional technicians or those trained and experienced in artificial insemination programs are recommended to improve conception rates and ensure proper techniques and timings are met.

Step 1

AI protocol planning

Step 2

Heat detection

Step 3

Artificial insemination timing

Step 4

Semen handling

Step 5

Insemination process

Potential Economic Costs/Benefits

Specific dollar values of costs and benefits will vary across operations. However, the general costs and potential benefits are listed below.

	Expected Costs	Potential Benefits
Artificial Insemination	Semen	Increased weaning weight
	Cleanup bull	Increased longevity of heifers/cows
	Required equipment	
	Estrous synchronization drugs	
	Labour and/or training	
Natural Breeding	Bull(s)	Salvage value from cull bull(s)
	Maintenance of bull throughout the year	Increased pregnancy rate (not including cleanup bulls)
	Yearly semen testing	

AI Calculator Tools

To get a more specific economic value on AI versus natural breeding, there are a variety of calculators available. By inputting specific values, a more personalized economic analysis can be determined.

The Beef Cattle Research Council has created a [Bull Valuation Calculator](#) to better estimate the true value of using a natural sire, as their cost is often underestimated.

The Beef Reproductive Task Force is based out of the United States, but they have created [an AI Cowculator](#) tool to determine the economic feasibility for artificially inseminating your cattle. Please note these values are based on USD($) and US values.

Kansas State University has created a [Bull vs AI Breeding costs Excel spreadsheet](#) to evaluate the economic costs and benefits of using natural breeding and AI. Please note these values are based on USD($) and US values.

Financial Incentives for AI Adoption

There are currently no financial incentives available for adopting artificial insemination on farm.

For more information on adopting artificial insemination, visit the following links:

[Beef Reproductive Task Force](#)

[Beef Cattle Research Council](#)

[SEMEX](#)

[GENEX](#)

[Beef Sire Selection Manual 2nd edition](#) by the National Beef Cattle Evaluation Consortium (NBCEC)

[Canadian Veterinary Medical Association](#)

[Oklahoma State University Fact sheet](#)

[Kansas State University Bull vs AI breeding costs spreadsheet](#)

[Mississippi State University Extension Publication](#)