

Assisted Reproduction

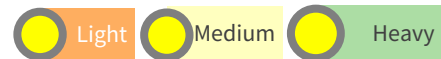
Assisted reproduction refers to artificial insemination, where semen is deliberately introduced to fertilise eggs in domestic animals. Artificial insemination helps in obtaining genetic improvements that yield higher production levels. This practice is more expensive but more efficient than natural reproduction. Artificial insemination reduces the risk of disease transmission and injuries or accidents during mating. Sperm duplication can be done from a single ejaculation to make hundreds of doses and distributed across farmers to have variety of breeds rather than off-spring from single bulls. This prevents inbreeding and promotes hybrid vigour among farmers'. In the southern African context, where most grazing is communal, use of bulls to improve breeds can be challenging as it is difficult to adopt a grazing system that will ensure good quality breeds are able to pass their progeny to the next generation, as young and likely non-superior bulls are likely to mate with cows during grazing. To achieve genetic improvement using open grazing requires controlled grazing systems, e.g. by use of paddocks to manage bulls grazing and mixing with cows.

MOST SUITABLE AGRO-ECOLOGICAL CONDITIONS

Value chain



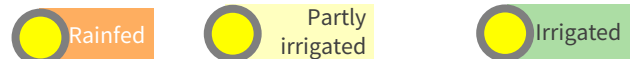
Soil texture



Climatic zone



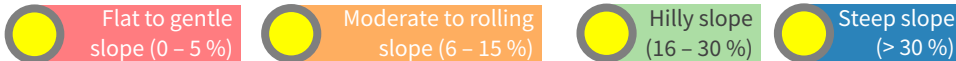
Water source



Annual average rainfall (mm)



Topography



MOST APPROPRIATE CONDITIONS AND REQUIRED INPUTS

Farming system

Does it require collective action



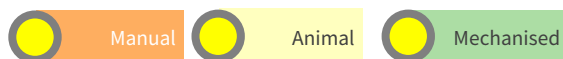
Characteristics



Farm size (ha)

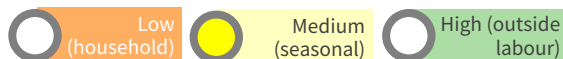


Mechanisation



Human resources

Labour intensity - level of effort

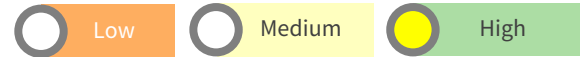


Gender/youth smart (low investment/low labour requirements)

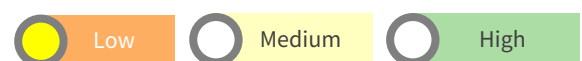


Financial resources

Initial investment



Maintenance Costs



Access to finance capital or credit required



Enabling Environment

Extension support



Access to inputs



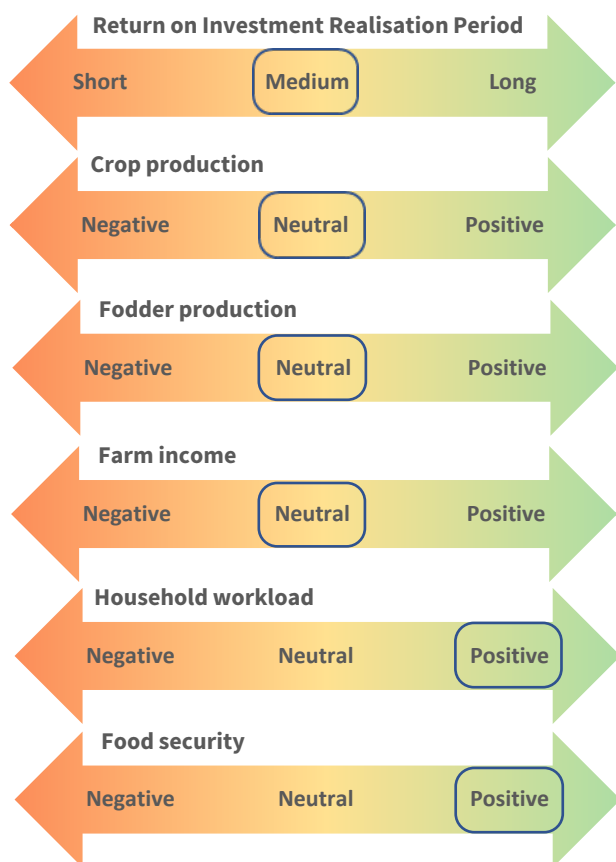
Market access



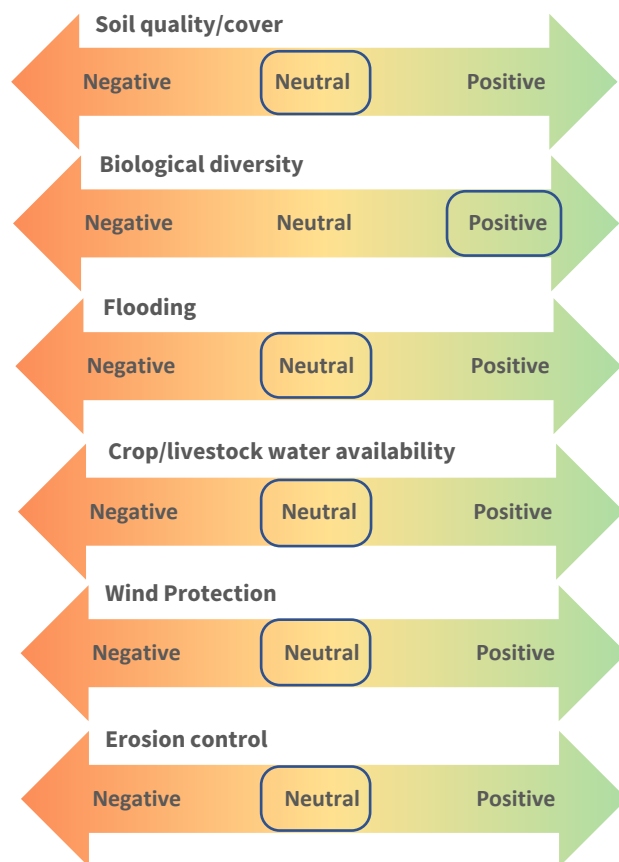
The purpose of this technical brief is to guide where this **practice, technology or strategy** could be applied. It may be applicable in other circumstances, but this brief focuses on where it is possibly **most suitable**. Content is general, and should be contextualised depending upon locality. The brief provides an overview, details of appropriate agroecological characteristics, appropriate conditions and inputs, possible outcomes and impacts, how the **practice, technology or strategy** should be applied, potential benefits and drawbacks, and provides suggestions for further reading in terms of CCARDESA materials and other sources, including those used to develop this technical brief.

POSSIBLE IMPACT/OUTCOMES

Socio-Economic Impacts Positive or Negative



Ecological Impacts Positive or Negative



These descriptors indicate whether the practice, technology or strategy has a positive, neutral, or negative impact or outcome. Those with no box are deemed not-applicable.

TECHNICAL APPLICATION

To effectively implement assisted reproduction using artificial insemination:

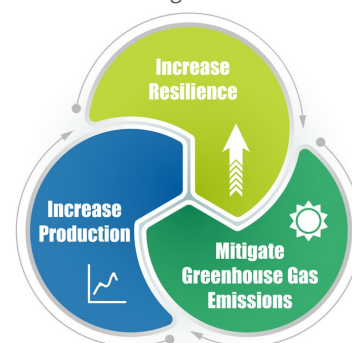
- **Step 1:** A qualified veterinarian or service provider should be readily available and preferably contracted to carry out the procedure as they should have the necessary training, instruments and facilities to carry out procedures;
- **Step 2:** The farmer should suggest the type of breed for his animal, and the veterinarian should advise the farmer on the feasible breed for the cow.
- **Step 3:** The farmer has to identify the cow on heat by observing the heat signs (uneasiness, making loud unusual noise, mounting others, standing when mounted, producing mucus discharge from the vulva, etc.)
- **Step 4:** The identified animal is isolated from the rest of the animals
- **Step 5:** Communicate with the veterinarian or trained service provider to carry out the procedure by determining the readiness of the cow to undergo the AI service (stage of heat cycle). Early reporting increasing chances of successful conception
- **Step 6:** The veterinarian or service provider then carries out the procedure to the cow after confirming readiness of the animal

CLIMATE SMART AGRICULTURE OUTCOME(S)

Reflecting how this **practice, technology or strategy** contributes to Climate Smart Agriculture outcomes

Assisted reproduction increases the chance of conception, producing more cattle for milk or meat.

Assisting reproduction in hybridised cattle can form part of an adaptation strategy.



SUMMARY/KEY ISSUES

Benefits

- Artificial insemination reduces injuries and accidents during mating, especially with heavier animals such as cattle.
- Farmers can collect semen and sell it to other people to obtain cash that will assist them in their daily activities to manage livestock.

Drawbacks

- It is more expensive but more efficient than natural processes.

SUMMARY/KEY ISSUES

CCARDESA Related Content

- CCARDESA, 2019. Technical Brief 17, Climate Smart Genetic Improvement Options for Livestock.

Additional Information

- Food and Agriculture Organisation (FAO) of the United Nations, 2002. [Animal Production and Health Paper 154](#). Rome, Italy.
- Food and Agriculture Organisation (FAO) of the United Nations, 1991. [Animal Genetic Resources](#). Rome, Italy.
- Food and Agriculture Organisation (FAO) of the United Nations, 1993. [Animal Zootechnie Zootecnia](#). Rome, Italy.