EXTENSIVE LIVESTOCK PRODUCTION SYSTEMS WITH EMPHASIS ON EXTENSIVE LIVESTOCK BREEDING

Models that work, New trends and Practices

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Definition

Extensive farming agriculture (as opposed to intensive farming) is an agricultural production system that uses small inputs of labour, fertilizers and capital relative to the land area being used.

- In livestock extensive farming commonly refers to cattle, sheep and goat farming in areas with low agricultural productivity.
- Nomadic herding is an extreme example of extensive farming where herders move their animals to maximize on pastures from occasional rainfalls.

Boran breeding cattle in the clutsh for pregnancy diagnosis in Taita ranch

Definition Cont'd

- In the East African region, extensive livestock farming is mainly in the Arid and Semi-arid areas where water for crops farming is not available.
  - These areas are normally large and sparsely populated.
  - The animals are kept free range for part or all of their production cycle.

Advantages

- Less labour per unit area required .
- Greater efficiency of labour means generally low product prices.
- Animal welfare is generally improved since the animals are not kept in stifling and squalid conditions.
- Mostly animals are grazed on pastures native to the locality therefore less likelihood of problems associated with exotic species.
- Little damage to the local environment and soils usually caused by overuse of chemicals in intensive farming.

A team of veterinarians during Heat synchronisation in Lualenyi ranch

Disadvantages

- Yields tend to be much lower, growth late slower, time to maturity much longer.
- Unforeseen droughts can lead to devastating losses.

Breed Improvement Challenges

- Lack of scientific based and documented knowledge of selection methods for improving the breeds.
- Poor control over the use of the breeding males selected using traditional methods leading to inbreeding.
- Common watering points and competition for pastures become areas for transmission of breeding diseases.

County Veterinarians preparing to leave after heat synchronisation

Breed Improvement Challenges Cont'd

- Inadequate herd health and clinical services to prevent or treat breeding diseases.
- No records in the extensive production systems to guide breeding lines.
- A lot of traditional knowledge which is helpful but also leads to resistance to uptake of new ideas for breeding improvement.

Breeding challenges versus Extensive Livestock Production Systems

- The terrain, seasonality of rainfall and pastures and the methods adopted in livestock keeping leads to breeding challenges.
- The socio-cultural background of the livestock keepers in arid and semi arid areas also plays a significant role in decisions regarding breeding.

LET US NOW LOOK AT:

EXTENSIVE LIVESTOCK BREEDING

Historical background

- Livestock breeding arose in ancient time when man began to tame wild animals, domesticate them and use them for farm needs and as source of food.

- By tenacious efforts over along period of time man changed the nature of many wild animals and succeeded in sharply increasing their productivity. This was mainly done through selection process for desired traits.

Historical background Cont'd

- Livestock breeding is a branch of agriculture concerned with propagating farm animals to increase productivity ,adaptation and disease tolerance.

- The main objective is to provide the population with various foods (milk, meat, eggs etc) and light industries with raw materials (hides, skins and wool, among others)

- It also provides the tractive force and sporting outlets as in horses, oxen, asses, mules, camels and deer.

Historical background Cont'd

- Other products of livestock breeding are organic fertilizer (manure) various kinds of other animals feeds (skimmed milk, tankage, bone meal etc.) and medicinals (therapeutic serums and hormones).
- The development and productivity of livestock breeding are closely linked to the development of plant life and the intensity of land use.
- Livestock breeding includes cattle (dairy and beef), swine, sheep, goat, camel, poultry, fish, rabbit, horse, donkey, mule, dog, apiculture and fur farming.

Breeding objective

- This is determined by market requirements.
- In the tropics the overall breeding objective in the extensive beef cattle can be considered in terms of growth, productive rate, carcass quality, adaptation and temperament.
- Growth rate is a simple efficient selection trait and is easy to select for.
- Mature weight and productive performance are important attributes to consider in selection process.
- Current market trends towards younger slaughter stock point to the need to identify marker traits in bulls for cow fertility.
- Adaptive traits have been defined for heat tolerance, parasites and disease resistance.

Cows ready for examination

Methods of cattle, sheep and goat breeding

- There are three main methods of breeding namely;

1. Natural mating – where AI services are not available, a healthy and proven bull/ram/buck is used for mating. The selected male should meet the desired traits and where possible, Estimated Breeding Value established.
2. Artificial Insemination - this is a method where semen is introduced into the female uterus artificially using a pistolette or other such means.

-the semen so used must have been obtained from healthy and qualifying males in terms of meeting the breeding objectives.

-AI can also be enhanced through Heat Synchronization protocols to cut down on labour , time and help plan when to have births on the farm or ranch.

Methods of cattle, sheep and goat breeding Cont'd

3. Multiple Ovulation Embryo Transfer (MOET)-this is a method where embryos (fertilized eggs) are transferred into the female uterus where the mother carrying the offspring to term and giving birth ,does not have any genetic relationship to the young one.

NOTE

- The choice of a breeding method is determined by availability of the service, overall breeding objective and the cost involved.
- Pedigree semen is recommended as this provides known traits and is free from breeding diseases.
- If one opts to use natural mating they must ensure that the pedigree is known and healthy. The Choice is Yours.

MODELS THAT WORK,

TRENDS

AND

PRACTICES

MODELS THAT WORK

1. Use of technically selected bull, ram and bucks

- Selection of breeding males by breed experts and using them for a designated period to curtail their being used on their daughters.
- The males are either sold off to other farms/ranches or communities or exchanged with the ones from those farms after the designated period.

Advantages

- Desired traits are promoted.
- The selected males are subjected to health tests to eliminate breeding diseases.
- Inbreeding is controlled by the removal of the males from the breeding stock in good time.

CONT'D

Disadvantages

- Keeping the males for natural local breeding purposes is an expensive undertaking.
- Transmission of undesired genetic diseases is very high since no progeny testing is done prior mass use.
- High risk of infecting many female with breeding diseases such as Brucellosis and Trichomoniasis should there be an introduction of a sick female population.
- Failure of performance by the males resulting to loss of time as a more potent male is sought.

CONT'D

2. Communal Sire/Sire camp model

- Communities select males and use them communally either at a fixed station or let them run freely with the breeding females.
- Risks of transmission of genetic and breeding diseases are very high.
- Chances of prolonged use leading to inbreeding are very high, as seen in ranches in Taita Taveta County and other pastoral Counties.

CONT'D

3. Use of Artificial Insemination model

- Practiced by well managed ranches and farms.
- Proven sires normally used.
- Provides greater diversity of genetic materials.
- Key desired traits are bred for.
- Inbreeding is effectively controlled.
- Chances of transmitting genetic and breeding diseases is curtailed.
- Heat synchronization can be used to plan or determine when the young ones should be born. For example in Ol Pajeta and currently in Taita, Kutima and Lualenyi ranches in Taita Taveta County, among others.

COST/BENEFIT ANLYSIS

Communal Sire/Sire camp model

- This model appears easy to use but has deleterious effect on the genetic pool.
- Although AI and Heat synchronization models appear expensive they achieve proper breeding objectives and limit inbreeding and diseases transmission as opposed to the other two.
- The AI model with Heat synchronization is faster, provides for better planning and increases the population size monumentally.

FUTURE PROSPECTS/RECOMMENDATIONS

- Adoption of AI and Heat synchronization in Extensive Livestock Production Systems to achieve the global livestock objectives.
- The uptake of modern management practices in Livestock husbandry to further enhance productivity.
- The market trend will continue to inform any development in Livestock production moving forward.
- Players and actors in Livestock sector must not be complacent but keep abreast with all the developments in this industry.

A veterinarian preparing hormone injection for Heat synchronisation

THANK YOU