

ANIMAL GENETICS & BREEDING

UNIT - III

The Principles of Animal Breeding Theory

Breeding Strategies for Small Ruminants

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OBJECTIVES OF BREEDING STRATEGIES

- (i) Genetic improvement of indigenous livestock breeds through selective breeding, upgrading and cross breeding.
- (ii) Rearing and distribution of improved male animal for natural services.
- (iii) Expansion and strengthening of infrastructure to propagate the elite germplasm using modern reproductive technologies.
- (iv) Conservation of indigenous breeds.

BREEDING PLAN FOR SHEEP IN INDIA

- The indigenous sheep have low level of performance for fleece weight, its quality & mutton production.
- The best animals of both sexes are selected by performance test.
- The fleece wt. is phenotypically & genetically correlated with live wt.
- Thus the animals can be selected on the basis of live wt.

- Fine wool exotic breed:- **Rambouillet, Merino**
- Mutton breeds of exotic origin :- **Suffolk, Dorset**

I. Fine wool :-

- The cross breeding of native breed of hilly region, Nali & Chokla of Rajasthan, Patanwadi of Gujrat, Nilgiri of Tamil nadu with Rambouillet & Merino rams has been recommended.
- Exotic inheritance 50-75 %.

II. Carpet wool :-

- Selective breeding for improving carpet wool in breeds like Marwari, Jaisalmeri, Magra & Pugal.
- In southern India sheep upgrading, north Indian carpet wool breeds Nali, Magra used.
- Cross breeding of native breed Deccani, Bellary, Shahabadi & Chhotanagpuri with exotic breed can improve carpet wool quality.
- Exotic inheritance 50 %.

III. Mutton:-

- Upgrading & cross breeding are use.
- The native breed Malpura, Sonadi, Muzaffarnagri, Mandya & Nellore crossed with Dorset & Suffolk.

IV. Pelt:-

- Crossbreeding of coarse carpet wool Indian breeds with Karakul had good potential for pelt production.
- Native breeds Malpura & Sonadi used for crossbreeding.

BREEDING PLAN FOR GOAT IN INDIA

- The breeding strategies for improvement of indigenous Goat **Upgrading, Selective breeding & Cross breeding** are used.
- In addition to above plans, emphasis should be given to prevent the dilution of best indigenous breeds for milk (Jamnapari), meat (Black Bengal) & fiber (Chegu, Changthangi).

Cont..

- The implementation breeding plan for genetic improvement of Goat in the country require provision of superior germplasm with A.I. facilities, man power, recording of performance data & marketing facilities etc.
- The successful implementation of the long term programme also needs the coordination between different agencies like state A.H Deptt. NBAGR Karnal, CIRG Makhdoom(Mathura) & SAU's.

Breeding strategy by Govt. of Rajasthan

| S N | Species | Breeding strategy | Purpose |
|--------|---------|--|---|
| 1. | Cattle | <ul style="list-style-type: none">i. Selective breedingii. Grading upiii. Cross breeding | <ul style="list-style-type: none">✓ Milk production✓ Draught purpose |
| 2. | Buffalo | <ul style="list-style-type: none">i. Selective breedingii. Grading up | <ul style="list-style-type: none">✓ Milk production |

Breeding strategy by Govt. of Rajasthan

| S N | Species | Breeding strategy | Purpose |
|--------|---------|---|--|
| 3. | Sheep | i. Selective breeding ii. Grading up | ✓ Increase body wt. for meat (mutton) production ✓ Quantity & Quality of Wool |
| 4. | Goat | i. Selective breeding ii. Grading up | ✓ Milk production ✓ Increase body wt. for meat (chevon) production |

Breeds used for propagation

| S N | Species | Breeds |
|-----|---------|---|
| 1. | Cattle | <ul style="list-style-type: none">✓ Total 8 breeds are used✓ Gir, Hariana, Malvi, Rathi, Kankrej, Nagauri, Tharparker, Sahiwal |
| 2. | Buffalo | <ul style="list-style-type: none">✓ Total 2 breeds are used✓ Murrah and Surti |

Breeds used for propagation

| S N | Species | Breeds |
|-----|---------|--|
| 3. | Sheep | <ul style="list-style-type: none">✓ Total 8 breeds are used.✓ Marwari, Jaisalmeri, Magra, Pugal, Nali, Chokla, Malpura & Sonadi |
| 4. | Goat | <ul style="list-style-type: none">✓ Total 5 breeds are used.✓ Sirohi, Marwari, Jhakrana, Barbari and Jamnapari |

Region wise proposed breeds of Cattle

| S N | Division/ Region of Rajasthan | Cattle breed |
|-----|-------------------------------|----------------------------|
| 1. | Ajmer | Gir, Nagauri, Tharparkar |
| 2. | Bharatpur | Hariana, Gir |
| 3. | Bikaner | Rathi, Tharparkar, Sahiwal |
| 4. | Jaipur | Hariana, Gir, Tharparkar |
| 5. | Jodhpur | Gir, Tharparkar, Kankrej |
| 6. | Kota | Gir, Malvi |
| 7. | Udaipur | Gir |

Region wise proposed breeds of Sheep

| S N | Division/ Region of Rajasthan | Sheep breed |
|-----|-------------------------------|----------------------------------|
| 1. | Ajmer | Marwari, Malpura, Chokla, Sonadi |
| 2. | Bharatpur | Marwari, Malpura |
| 3. | Bikaner | Magra, Pugal, Nali, Chokla |
| 4. | Jaipur | Malpura, Chokla, Nali |
| 5. | Jodhpur | Marwari, Magra, Jaisalmeri |
| 6. | Kota | Marwari, Malpura |
| 7. | Udaipur | Sonadi |

Region wise proposed breeds of Goat

| S N | Division/ Region of Rajasthan | Goat breed |
|-----|-------------------------------|---|
| 1. | Ajmer | Sirohi, Barbari |
| 2. | Bharatpur | Sirohi, Jamnapari, Barbari |
| 3. | Bikaner | Marwari, Sirohi |
| 4. | Jaipur | Sirohi, Barbari, Marwari, Jhakrana, Jamnapari |
| 5. | Jodhpur | Marwari, Sirohi |
| 6. | Kota | Sirohi |
| 7. | Udaipur | Sirohi |

Region wise proposed breeds of Buffalo

- ✓ **Murrah buffalo breed** are used in 6 division of Rajasthan(Ajmer, Bharatpur, Bikaner, Jaipur, Jodhpur, Kota).
- ✓ **Surti / Murrah buffalo breed** are used at Udaipur division of Rajasthan.

Thank You

