



Strategies for Enhancement in Food Production

1

ANIMAL HUSBANDRY

01

- Agricultural practice of breeding and raising livestock useful to humans.

02

- Some of the products and the animals involved are

Useful products	Source
Milk	Cows, buffaloes, Goats
Eggs	Poultry birds; Chicken, Ducks, Turkey, Geese
Meat	Cattle, Sheep, Pigs
Wool	Sheep
Silk	Silk worms
Honey	Bees

- More than 70% population of livestock is in India and China but contribution to world's farm produce is 25% that result in

- Problem** ↓
- Productivity per unit is low
 - Insufficient food supply due to ever increasing population size.

Solution ↓

- Improvement in conventional practices of animal breeding by applying biological principles.
- Application of newer technologies to Animal Husbandry

Extension of
Animal husbandry → Poultry farming
→ Fisheries

2

FISHERIES

- Industry devoted →



Rearing, Catching,
Processing &
Selling

→ of →

Fish, Molluscs (shell-fish), Crustaceans
(prawns, crabs), Aquatic animals

• **Aquaculture:**

Enhancement in aquatic yield including plants and animals

• **Pisciculture:**

Increase in total fish yield

Products from fishery

Food : lobster, prawn, fish, edible oyster

↓
Fresh water (FW)

Catla, Rohu, Common carp

↓
Marine (M)

Hilsa, Sardines, Mackerel, Pomfrets

To meet the increasing demand on fisheries, different techniques have been employed that led to Blue revolution

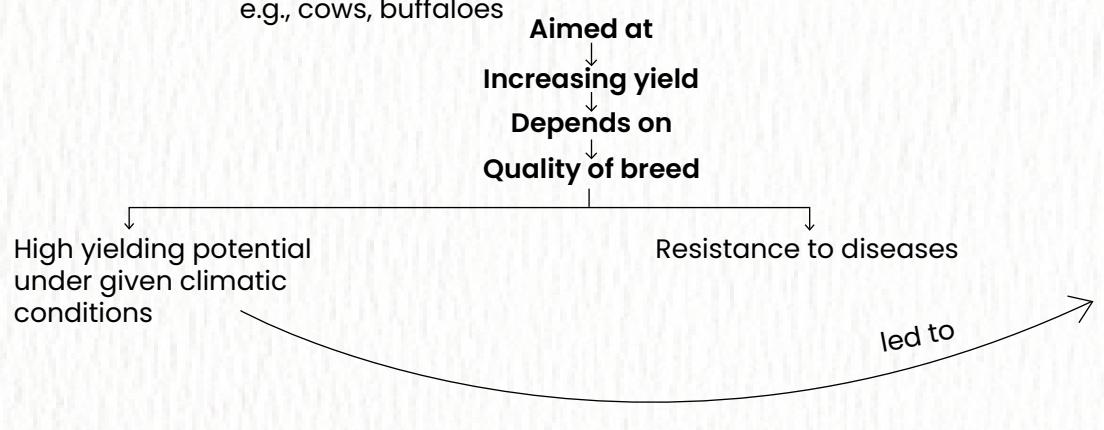
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MANAGEMENT OF FARM AND FARM ANIMALS

- A professional approach to boost our food production. Some of the management procedures employed in animal farm

system are Dairy farm,
Poultry farm Management :

1. Dairy farm management/Dairying: Management of animals for milk and its products for human consumption e.g., cows, buffaloes



Improving quality of milk

Practices involved

- Effective housing
- Adequate water
- Maintain disease free conditions
- cattle diet fodder
 - Quality↑(oil cake rich)
 - Quality balanced

- Stringent cleanliness of
 - Cattle
 - Handlers
- Regular inspection by veterinary doctor

2. Poultry farm management

- Involves use of birds for food
- Birds : Fowl, chicken, ducks, turkey, geese.



Eggs
Meat

Practices involved

- Selection of disease free and suitable breeds.
- Proper and safe farm conditions.
- Proper feed and water.
- Maintaining proper health care and hygiene.

Disease

Bird flu

Cause Symptoms H₅N₁ virus

People at risk Respiratory difficulty, fever, malaise

People at risk

- Poultry farmers exposed to infected birds.
- People who eats under cooked eggs/poultry

- Increased mechanisation in dairy farming particularly milking, storage and transport of milk, reduces chances of direct contact of the produce with the handler

4

BEE-KEEPING (Apiculture)

1

- It is the maintenance of hives of honeybees for the production of honey

2

- Age old, high income yield cottage industry and is not labour intensive

3

- Most common bee in India : *Apis indica*

Advantages

- a. Increases product yield

Products obtained from honey bee

Bees wax

- Preparation of cosmetics and polishes

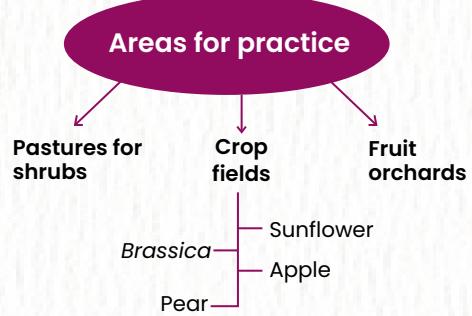
Honey

- Food: High nutritive value
- Used in Indigenous medicine

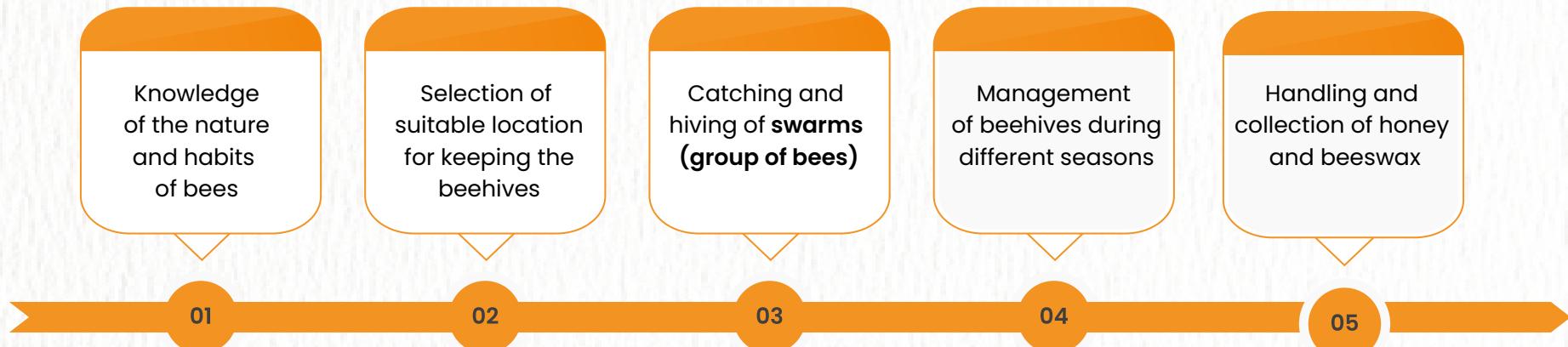


B. Enhances crop yield

Bees are effective pollinators



Salient points for successful bee keeping



Keeping beehives in crop fields during flowering period increases pollination efficiency and yield.

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ANIMAL BREEDING

1

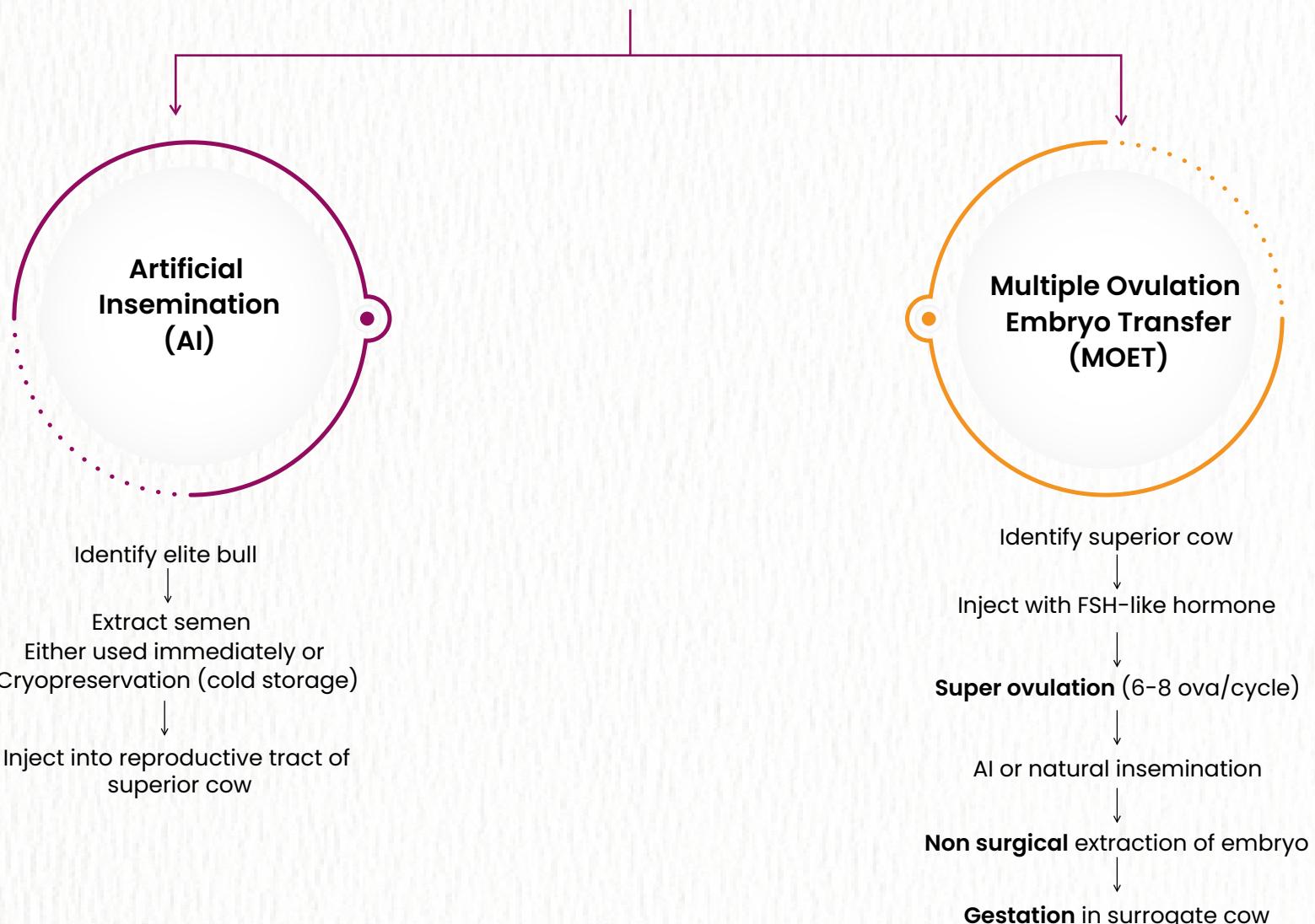
• Breed

A group of animals related by descent and similar in most characters like general appearance, features, size, configuration etc.

2

• Aims of animal breeding

- Increase the product yield (Quantity).
- Improving desirable qualities in produce and cattle.
 - High yielding variety.
 - Disease resistant.
 - High reproductive rate.
 - Longer productivity span.



Advantages

- Greater chances of fertilisation.
- Economically relevant as all sperms can be used since semen from 1 bull can fertilise more than 1 cow, if needed.
- Helps to overcome several problems of normal mating.

- Increase herd size and quality in less time.
- Genetic mother available for another round of super ovulation.

Disadvantages

- The success rate of crossing mature and is fairly low.

- Not applicable to fishes and birds.

- MOET is demonstrated on mammals such as cattle, mares, sheep, rabbits.
- **Superior cow** : High yield of milk/lactation
- **Superior bull** : Lean meat with less lipid } Have been bred successfully to increase herd size in a short time.

Types of selective breeding

1

Inbreeding

- Mating of more closely related individuals within the **same breed** for 4-6 generations
- Inbreeding increases **homozygosity** and is useful to evolve

Advantage

- Increases the productivity of population as superior genes are accumulated and harmful recessive genes are eliminated

Disadvantages

- Inbreeding depression (ID)** due to continued close inbreeding reduces
 - Fertility
 - Productivity

2

Outbreeding

- Mating between male and female of same breed (no recent common ancestor) or different breeds or different species.

1. Outcrossing

Mating of animals within the **same breed** but having **no common ancestors** upto 4-6 generations

2. Cross breeding

- Mating between superior male of one breed and superior female of another breed
- This method allows combination of superior qualities of two different breeds on a commercial scale.

3. Interspecific hybridisation

- Male and female of two different related species are mated

Advantage

- A single out cross helps increase productivity of animals below average
 - increase growth rate in beef cattle
 - increase milk production

Advantage

- Stable new breeds superior to existing breeds can be developed
- Example:** A new breed of sheep
 $\sigma^{\text{M}}/\text{Male}$ \times $\Omega^{\text{F}}/\text{Female}$
 Merino ram \times Bikaneri ewe
 \downarrow
 Hisardale
Location: Punjab

Advantage

- Progeny may combine desirable features of both the parents and may be of considerable economic value
- Example:**
 $\sigma^{\text{M}}/\text{Male}$ \times $\Omega^{\text{F}}/\text{Female}$
 Donkey \times Horse (Mare)
 \downarrow
 Mule (Sterile)

inbreeding depression can be overcome by out crossing i.e.. method to restore fertility and yield