

History of Animal Breeding

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ANIMAL BREEDING

Scientific application of genetic principles to the improvement of livestock populations

Primary Function = production of high quality protein

Essential for proper growth and development of MAN.

Preferred = meat, eggs, milk

Efficiency of Production

Influenced by:

HEREDITY

Management

Disease Control

History Of Selection

- Prior to 1800 = *Natural Selection*
- *Evolutionary adaptation* = genetic response to the environment
 - ◆ Tropics => Brahman
 - ◆ Cold, wet => Hereford, Angus, Scotch Highland
 - ◆ Mountains => Charolais, Simmental
 - ◆ Desert => Angora goat

ROBERT BAKEWELL

- “Father of Livestock Selection”
- Introduced the systematic, methodical selection of breeding stock
- Developed a population of superior breeding animals through selection for specific traits
- Closed the herd and utilized inbreeding and linebreeding to produce a herd possessing **UNIFORM** superiority

European Expansion

- In the early 1800's, movement of livestock over long distances was very difficult
- During the 2nd half of the 1800's, European colonization of the world is at its greatest
 - ◆ Importation of European breeds to colonies
 - ◆ Breeding-up of “inferior” native livestock
 - ◆ RESULTS: Diversification of the gene pool

Population Shift

- 1900: World population begins to shift from rural to urban
 - ◆ Majority of population is NOT producing its own food.
 - ◆ Demand for increased efficiency of production
 - ◆ Significant movement of new breeds into US

Experiment Stations

- 1925: Establishment of US Experiment Stations to compare the performance of different breeds in different regions
 - ◆ Establishment of management principles
 - ◆ Performance testing
 - ◆ Selection based on genetic superiority rather than management

Great Depression

- Nation-wide demand for increased production of protein
- FOOD becomes a national priority
- Agronomist demonstrate that crossing “types” results in improved performance = HYBRID VIGOR
- Government advocates crossbreeding programs
 - ◆ Purebred breeders try to pass laws against crossbreeding

Modern Industry

- Since 1925, improvement in production include:
 - ◆ Milk Prod. Up 300%; cow #'s down 50%
 - ◆ Hog finish time down 50%; feed/# gain down 33%
 - ◆ Egg production/hen up 90%
 - ◆ Beef cattle weaning weights up 35%, feed/# gain down 35%
 - ◆ Beef cattle yearling weight up 25%, feed/# gain down 50%

FUTURE

- Future improvements in livestock production will come primarily through genetics
 - ◆ Improved access to superior genetic material
 - ★ AI, ET, semen/embryo transport, multiple ET
 - ◆ Increased access to exact genetic materials
 - ★ Cloning, nuclear transfer, nuclear fusion
 - ◆ GENE MANIPULATION
 - ★ Correction and/or alteration of gene sequences