UNIVERSITY OF
FLORIDA Cooperative Extension Service

Institute of Food and Agriculture Sciences

Marion County Extension Service
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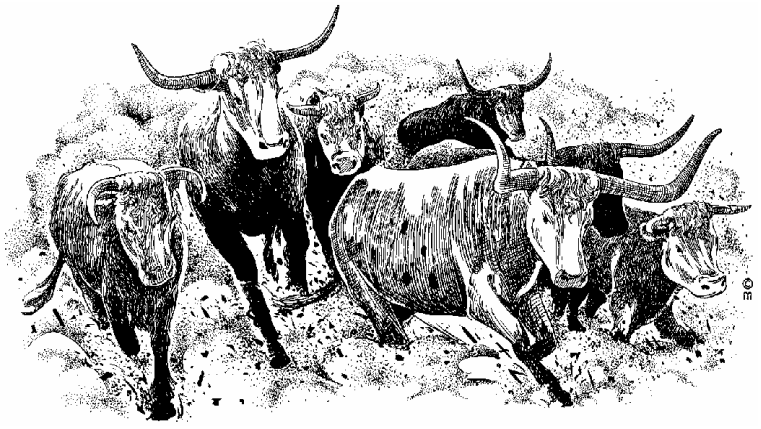

Vol. 8, No. 9

MARION COUNTY LIVESTOCK NEWS

NOVEMBER 2002

Central Florida Livestock Agents Group

2002
FLORIDA EQUINE
INSTITUTE & TRADE SHOW

November 21, 2002

ARABIAN NIGHTS
6225 West Irlo Bronson
Memorial Highway
Kissimmee, FL

Go to www.cflag.com for more information and details on accommodations.

2002
Equine Institute and Trade Show

PARTICIPANT REGISTRATION FORM

Name_____

Organization_____

Business
Address_____

City_____

State_____ Zip_____

County_____

Registration Includes: All seminars, trade show, proceedings, refreshment breaks, entertainment and lunch.

____$50 Registration Fee (postmarked by 11/12/02)

____$75 Late Registration Fee (postmarked after 11/12/02 or pay at gate)

Make Check or Money Order Payable To:
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It's all in the genes

The basic unit of inheritance is the gene. Each gene contains the directions (code) to build one protein and these proteins serve as the foundation for building the body. Chromosomes, long chains of deoxyribonucleic acid (DNA), have thousands of genes located at specific sites called loci. The variations in the genotype (genetic makeup) from one individual to the next are responsible for the differences among individuals.

Horses possess 32 different pairs of chromosomes. The sire contributes one half of each of these pairs, as does the dam. When the stallion produces sperm or the mare produces an egg, the reproductive cells split and produce a cell that has only one strand of each pair of the chromosomes in each cell. At fertilization, the egg and sperm come together to form a single cell that has a complete set of 32 pairs of chromosomes.

Heritability

The heritability estimate is defined as the percentage of a horse's expressed trait that is due to genetics. Even though certain traits are affected primarily by environment, others are determined by genetics and still others are affected by both environment and genetics. Additionally, some traits are highly heritable and some are low. The percentage that is due to genetics is an indication of the likelihood of a trait being passed from one generation to the next. The heritability estimate is a tool breeders can use to help guide decisions of which horses to mate based on superior performance for the trait in question, and also to predict the improvement of that trait in the offspring. To maximize the chances for greater progress in a specific trait it is essential to select highly heritable traits and work with a minimum number of traits. When breeding to improve only one trait, greater selection pressure can be applied by selecting individuals more outstanding for that particular trait.

Trait	Heritability Estimate
Height at withers	40-50%
Body weight	25-30%
Body length	35-40%
Heart girth circumference	20-25%
Cannon bone circumference	20-25%
Running speed	35-40%
Movement	40-50%
Type of conformation	Moderate
Reproductive traits	Low
Intelligence	Moderate to high

Table 1 – Horse Industry Handbook, 1994

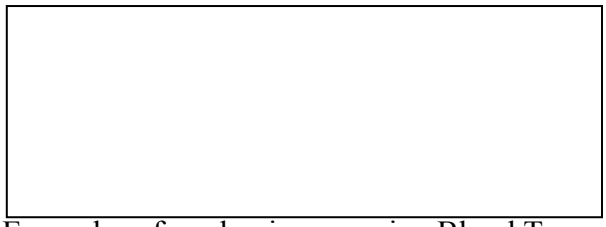
Paired genes located at the same position on a set of chromosome are referred to as alleles. If the paired genes are identical (AA) the individual is said to be homozygous for that pair. When the paired genes are not identical (Aa) the resulting individual is heterozygous for that pair. Therefore, homozygous individuals have only one allele to pass on to their offspring whereas heterozygous individuals can pass on either one of the two different alleles.

Gene Action

In qualitative gene action, a single pair (or conceivably two or three pairs) of genes influence a specific trait. The three primary types of qualitative gene action are dominance, co-dominance and partial dominance.

Dominance is the ability of one gene to cover up its recessive allele. Only one dominant gene is required to express a particular trait. However, two recessive genes must be present for an individual to express a recessive trait. Suppose P = normal mouth (dominant) and p = parrot mouth (recessive). An individual that possesses one dominant gene (P) and one recessive gene (p) will have a normal phenotype (appearance), and will also be a carrier of the parrot mouth gene. When breeding a homozygous normal dominant individual (PP) with a heterozygous individual (Pp), all the offspring would appear normal, fifty percent would have a carrier genotype (Pp) and fifty percent would be homozygous normal (PP).

Co-dominance is an intermediate state between the two parents, such as in blood type. Because each blood type is different and known, it is possible to determine blood type genotype.



Examples of co-dominance using Blood Type

The dilution gene for color is an example of partial dominance. With the addition of one dilution gene, the base color chestnut is diluted to produce a palomino. Two dilution genes will change the base color chestnut to cremello.

The majority of inherited traits in horses are influenced by quantitative gene action. In quantitative gene action, the effects of many single genes are added together to produce the trait. Consequently, each individual gene has only a small effect on the trait of interest. Speed in racehorses is an example of an inherited trait that is affected by quantitative gene action. Mature size, efficiency of heart, lungs, muscles; length of legs, coordination and other traits that affect desire and determination are all factors that work

together to produce speed in a racehorse.

Relationships

The relationship between a parent and its offspring is fifty percent. For each generation an individual is removed from another, the genetic effect is cut in half. Simply put, all horses receive 50% of their genetic makeup from each parent. Grandparents contribute 25%, great-grandparents 12.5% and so on. Therefore, when all of an individual's ancestors are unrelated, it is apparent that the potential for genetic influence from any ancestor decreases rapidly after only a few generations.

Full-siblings have the same sire and dam and are related 50% to each other (25% through the sire and 25% through the dam). Relationships between individuals not in direct line of descent (such as half-siblings) can be determined by halving for each intervening animal in the pedigree. Consequently, foals that have the same sire, but are out of different dams have an average relationship of 25 percent.

Inbreeding is the term for mating systems that involve producing offspring from related animals. The amount of inbreeding obtained is determined by how closely the offspring's the ancestors are related. The result is an increase in more uniform progeny within the inbred population caused by the reduction in the genetic variation. The less genetic variation within these lines, the more predictable their performance will be in crossing.

The practice of inbreeding involves the entire genotype, not just the genes of the selected trait(s). While desirable traits can be improved through inbreeding, undesirable traits can also become more prevalent. The more inbred an individual, the more homozygous for all traits the individual will be.

Linebreeding is a mating system designed to produce progeny with a high degree of relationship to an outstanding individual in their pedigree. Although inbreeding will eventually occur, linebreeding is done in such a manner as to minimize the amount of inbreeding of the resulting progeny.

Out crossing is the mating of unrelated animals within the same breed. The idea of outcrossing is that the resulting progeny will show an added response in performance above that expected from the average of the parents. This superiority is known as hybrid vigor.

Summary

- Genetic improvement occurs more rapidly when selecting for a trait that is controlled by only one gene. As more traits are selected, progress will become slower.
- Inbreeding or linebreeding systems may be used to increase the quality of progeny. It is extremely important to carefully choose breeding animals and to select out the undesirable traits as they occur.
- Genetic improvement will occur faster if high selection pressure is used and only the best animals are bred.
- Progress is slower for traits influenced by several genes.
- Good records, high selection pressure and adhering to selection criteria will allow breeders to identify and eliminate lower quality animals more quickly.

Beef Cattle Management Tips

NOVEMBER

⇒ Observe cows daily to detect calving difficulty
⇒ Use high magnesium mineral if grass tetany has been a problem in the past
⇒ Check for external parasites and treat if needed
⇒ Maintain adequate nutrient level for cow herd
⇒ Calve in well-drained pastures
⇒ Survey pastures for poisonous plants
⇒ Start summarizing your annual records, both production and financial - then you will have time to make adjustments for tax purposes
⇒ Re-evaluate winter feeding program

DECEMBER

⇒ Check mineral feeder
⇒ Begin grazing small grain pastures, if ready
⇒ Check for external parasites and treat if necessary
⇒ Deworm cows and heifers prior to winter feeding season
⇒ Check cows regularly for calving difficulties
⇒ Rotate calving pasture to prevent diseases
⇒ Observe calves for signs of scours
⇒ Investigate health of bulls **before** you buy
⇒ Check replacement heifers to be sure they will be ready to breed 3-4 weeks prior to the main cow herd
⇒ Complete review of management plan and update for next year.

John Mark Shuffitt
Livestock Agent II
Marion County Extension Service

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2002
FLORIDA EQUINE INSTITUTE & TRADE SHOW

A.M.

9:00 **Trade Show Opens**

9:45 **Welcome**
Dr. Michael Martin, Ph.D.
Vice President of Agriculture & Natural Resources – University of Florida

10:00 **Equine Learning Psychology**
Dr. Cindy McCall, Ph.D.; Associate Professor
Auburn University

11:00 **Trade Show & Break**

11:30 **Arabian Nights Liberty Work Demo. Featuring "The Black Stallion"**

P.M.

12:15 "**Memorable Luncheon Entertainment" Arabian Nights**

1:15 **Integrated Equine Therapy (Acupuncture & Massage)**
Dr. Mike Lokai, D.V.M.
Central Equine Hospital, Ocala

2:15 **Parasite Control**
Dr. Charles Courtney, III, D.M.V., Professor & Associate Dean, Ph.D.
Veterinary Medicine, University of Florida

3:15 **EEE, WEE, and West Nile Update**
Maureen T. Long, Assistant Professor, D.V.M.
University of Florida

3:45 **Mosquito Control**
Dr. Roxanne Rutledge, D.V.M.; Assistant Professor
University of Florida

4:15 **Trade Show & Break**

4:45 **Factors to Consider in Selecting a Veterinarian**
Mark Shuffitt-Extension Agent
Marion County

5:00 **Adjourn**

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