

Breeding of Mares

management and accurate records
may increase percentage of live foals

Perry T. Cupps

Breeders of horses often are disappointed at the small percentage of live foals they obtain from breeding mares.

Horses are less efficient producers of young than other types of farm animals as the average foal crop is 45% to 55% of the mares bred while the average calf crop is 70% to 80%.

Breeding and management practices may be partially responsible for this low efficiency.

Breeding of horses tends to be seasonal because of the natural tendency for mares to breed only part of the year. Most mares manifest estrous cycles only during the spring and early summer although a few may have cycles at any season of the year. Also, breeders commonly breed their mares in the spring in order that foals may be born soon after the first of the year. Usually, the age of the animal is calculated as of the first of January, putting the foal born late in the season at a disadvantage.

The estrous or reproductive cycle is divided into several periods but only two

can be distinguished from the behavior of the animal. One period, estrus, is the time at which the mare will accept the stallion. The other period, called diestrus, is the part of the cycle when the mare is not receptive to the male. The length of these periods is variable between individuals and in one individual from one cycle to the next.

Estrus has an average duration of six days and a range of from two to eleven days. Occasionally a mare will remain in estrus for a longer period of time.

In addition to the extreme variations in the length of the heat period, some individuals will show a split period; the animal being in heat for a day or two then out of heat for one or two days then back in heat again. These animals may be very difficult to settle. Some individuals do not show any signs of estrus—the so-called silent heat. Although the reproductive organs may be functioning properly, the mare may refuse the stallion.

The egg is usually shed from the ovary the day before the end of heat. It lives

only a short time, six to twelve hours. The spermatozoa also live a very short time in the reproductive tract, with the average fertile time being between 24 and 36 hours.

Because the period of estrus is so variable and the life of the germ cells so short, it becomes apparent that fertile matings under standard management will not occur in all cases. In fact, settling the mares by one breeding or during one heat period is apt to be the exception rather than the rule.

The mares may also manifest estrus without ovulation. An animal may show all the external signs of heat but since no egg is shed she will remain sterile even though she is bred repeatedly. Heat without ovulation is more likely to occur in very young and very old animals and at the beginning and end of the breeding season.

The owner and breeder may be able to increase the breeding efficiency of his animals by observing them closely and keeping records of the cycles of the individual animals since each will tend to establish its own pattern. For example, if a mare has an estrus period of three days the optimum time for breeding is the second day. If she has an estrus period of seven days the optimum time for breeding is the fifth day. If she is bred on the second day chances for conception are very small.

Perry T. Cupps is Assistant Professor of Animal Husbandry and Assistant Animal Husbandman in the Experiment Station, Davis.

PASTURES

Continued from preceding page

nual cost item in the studies. On the average, a little over 60% of the total cash and labor cost was for water and irrigation labor. Water costs ranged from approximately \$2 per acre on land in certain irrigation districts to over \$20 where pumping was done from considerable depth. The labor cost of irrigating varied from less than \$3 per acre to more than \$17 per acre, due to differences in the method of irrigation, size of head and efficiency of the irrigation system.

Over 90% of the pasturage obtained by coöperators in the studies was during eight months—March through October inclusive. Total animal-unit months of pasturage for the four years of the studies averaged 10.0. Under favorable conditions, well-managed irrigated pastures in the Central Valley of California should produce at least 12 animal-unit months of feed at a total cost not over \$30 per acre—as of 1948—which would result in a cost per animal-unit month of \$2.50 or less.

Although most pastures in the studies were used by dairy cattle, a few records

were obtained on gains in weights of lambs and steers. These indicated that a gross gain, excluding mortality, of between 400 and 500 pounds of lamb or beef is commonly produced from an acre of irrigated pasture after allowances for any supplemental feeds.

Several coöperators in the Colusa County study harvested Ladino clover seed from a portion of their acreage. This is a relatively new practice which paid quite well for some growers during wartime high seed prices. However, it appears that seed production will become a specialized business in itself, not combined with a balanced livestock program, since about 2½ to three months of feed are lost in the middle of the pasture season.

B. B. Burlingame is Extension Specialist in Farm Management and Associate on the Gianini Foundation, Berkeley.

BLACK SCALE

Continued from page 7

leafy ground cover that makes the oleander a good insectary for the production of the African parasite.

In a hot dry climate the black scale

thrives only on the branches resting on the moist ground and covered by fallen leaves. In such an environment the scale exists in all stages of development, more or less protected from such parasites as *Metaphycus helvolus*.

Many, if not most, of the young scale, however, crawl up and toward the light so that they settle down on the exposed parts of the plant. It is these wanderers from the hidden colony under the leaves that serve as hosts for the African parasite and thus maintain a continuous population of parasites for controlling the black scale on the adjacent citrus trees.

The number of oleanders needed per acre of citrus will vary according to the needs of individual groves.

The planting of large acreages solely to one species of plant tends to produce a less favorable balance in nature than that which occurs in a natural mixed planting. The planting of oleanders in a citrus grove, therefore, is a return to a more natural state and better natural control.

Stanley E. Flanders is Entomologist in the Experiment Station, Riverside.

The above progress report is based on Research Project No. 1321.