

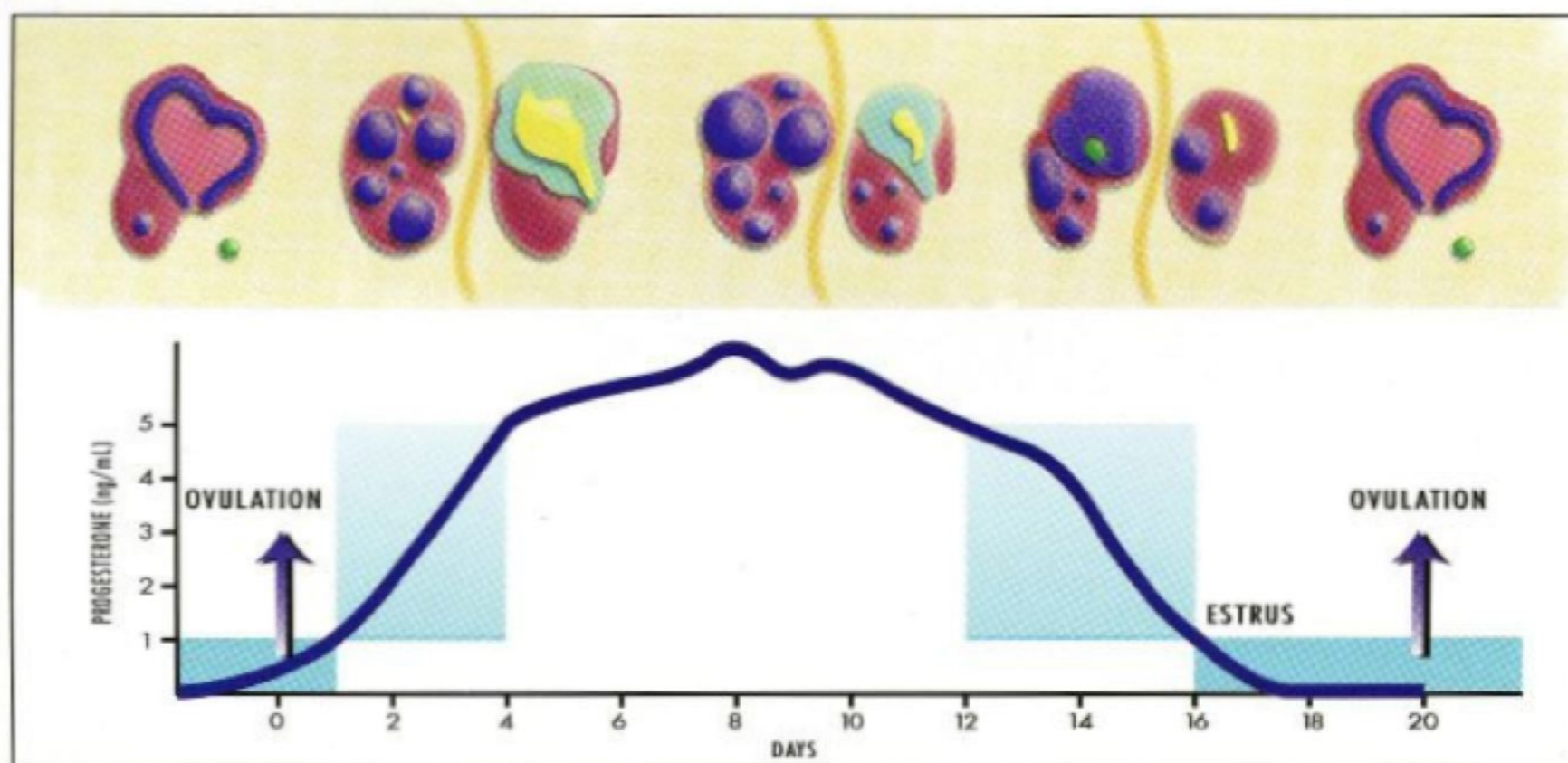
Improving Reproductive Performance of the Mare

UTILIZING PROGESTERONE ASSAY TESTS

MARES HAVE ONE of the lowest reproduction rates among all domestic animals; less than 60% bred annually produce live foals. The variability of the mares' estrous cycle, their seasonal breeding pattern, and the uncertainty of the time of ovulation contribute to this low reproductive efficiency. In order to reduce time and labor involved in detecting estrus and timing ovulation, better knowledge of ovarian activity is required.

The normal estrous cycle in mares is defined as that period from one ovulation to the next. Once normal cycling has begun, the length of the estrous cycle is 21 to 22 days. Estrus in mares is defined as that period when progesterone levels are very low, below 1 ng/ml. The average duration of estrus in normally cycling mares is about seven days with ovulation occurring at the end of the estrus period.

During the winter months, the mare's reproductive system is shut down or in anestrus; no cycling occurs. However, when the daylight hours start to grow longer during the end of February and early March, the mare's hormonal systems start to wake-up. She is entering the normal transitional period from anestrus to normal cycling. The mare in transition is probably not cycling normally, although she is likely to be displaying erratic and irregular estrus behavior and the time of the first ovulation is difficult to predict. She may stay in heat for 30-40 days without ovulating or come in and out of heat every few days. Some mares can retain a corpus luteum through the winter from the previous breeding season; and since the corpus luteum is producing progesterone the mare will not come into estrus. Anestrus mares and the mare with a retained corpus luteum are treated in opposite ways yet their behavior toward the teaser is often exactly the same. A progesterone assay will clearly diagnose the mare with retained corpus luteum and prostaglandin can be administered to regress the corpus luteum.



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The beginning of the normal breeding season for most mares is marked by the first ovulation of the year and a rise in progesterone levels. The beginning of normal cycling can be confirmed by a progesterone assay.

After normal cycling begins, usually in late April or early May, the mare cycles every 21 days. Close monitoring of ovarian activity by measuring the fluctuating progesterone levels can improve reproductive efficiency by revealing when the corpus luteum is regressing and when estrus is approaching. Ultrasound scanning and/or palpation offer good ways to monitor ovarian structures, but one needs to scan or palpate frequently enough to learn the pattern of follicular changes. Because the size and texture of the ovaries, as well as the number and size of follicles present varies from mare to mare, cycle to cycle and even day to day, ultrasound or palpation must be done repeatedly to accurately diagnose the pattern of ovarian changes. Because a corpus luteum becomes more tissue-like throughout diestrus, a mature or persistent corpus luteum is not easily detected by either technique. Many times it is difficult to determine whether

or not a mare has truly ovulated and formed a corpus luteum. The advantage of using a progesterone assay is that both the presence and functional status of a corpus luteum can be easily determined.

The interval from the onset of estrus to ovulation is extremely variable. A breeding schedule based solely on a mare's behavior towards a stallion or teasing is likely to have a low efficiency rate. Progesterone concentrations have been found to be accurate methods of evaluating ovarian activity. Estrus behavior is not usually seen until progesterone concentration is less than or equal to 1 ng/ml; but not all mares exhibit clear signs of estrus. When used to assess ovarian activity in mares, measurements of progesterone are more reliable than estrual behavioral patterns.¹

Careful scheduling will result in breeding at optimal times to a fertile stallion and covering as few times as possible per cycle. Progesterone assays, used as breeding management tools, are designed to maximize the chances of a mare becoming pregnant as early in the breeding season as possible.

Reference: 1. Management of the Mare for Maximum Reproductive Efficiency, 1989, B.W. Pickett, E.L. Squires, A.O. McKinnon, R.K. Shideler and J.L. Voss, Colorado State University.