

## Reproductive patterns in Equine

- 1- the great majority of mares are seasonally polyestrous .
- 2- the breeding season extends from April until November in the northern hemisphere, and October to May in the southern hemisphere.
- 3- The age of puberty is (10-24months of age).

### Estrous cycle

- the estrous cycle in mare is on average 21 days long.
- It consists of 14 days of diestrus and 7 days of estrus ( with a variability of 3-9 days related to the season). Thus, estrus is extended in autumn (7-10 days) and is shortened considerably, in late spring and early summer (4-5 days).
- Estrus is the time the mare is "hot" , "in" ,or "standing" It is the "follicular phase", as the overt signs of estrus are attributable to the estrogen production by the follicle on the ovary.
- Estrus signs include, the vulva becomes enlarged and swollen and also scarlet or orange in color, wet and covered with a film of transparent mucus. The vaginal mucosa is highly vascular and thin watery mucus may accumulate in the vagina.
- The tubular portion of the mare reproductive tract is extremely sensitive to ovarian steroids, estradiol  $17\beta$  causes secretion of fluid by the uterus. This results in an edematous texture of uterine tissue.
- External signs of estrus include: **Docility, Urination stance, bright yellow urine with a characteristic odor, exposure of the clitoris(winking), Tail raised, and acceptance of the stallion's advances.**
- The duration of estrus varies among individuals and also among estrous cycles of the same mare.
- Diestrus is called "cold", "out", or the luteal phase, since it is dominated by progesterone produced by the corpus luteum. The diestrus or luteal phase begins with the formation of CL, which is responsible for the synthesis of progesterone ( $P_4$ ). In fact, most research estimates an average duration of 14-15 days, but can be more durable in mid-summer (16 days) than in spring (13 days).
- Signs of diestrus include: **Hostility, Rejection of stallion's advances.**
- Ovulation occurs 24 to 48 hours before the end of estrus. Ovulation occurs while the levels of LH., are still rising, thus maximal or peak levels of LH. have occurred after ovulation. The ruptured follicle can be palpated up to 24 hours after ovulation as a soft fluctuant area .
- After ovulation, the granulosa cells develop into both large and small luteal cells which responsible for the secretion of progesterone, Progesterone causes the uterus to become turgid and this turgidity is important during early pregnancy for attachment of the conceptus and gestation. while the theca cells are degenerated before the ovulation.
- The corpus luteum reaches only one-half to three-fourths the size of the follicle after the ovulation.
- In non pregnant mares, luteal regression begins as early as the 12<sup>th</sup> day of diestrus.

### **Ova transport :**

- The fertilized ova are transported to the uterus whereas unfertilized ova are **trapped** in the Isthmus of the oviduct for seven months in both pregnant and non-pregnant mares.
- the time when fertilized ova arrive to the uterus in the mare is much later than in cow (more than 144 hours), Trans uterine migration of ova occurs in 50% of cases.

### **Corpus luteum and pregnancy**

- during the early pregnancy a single corpus luteum verum is present and this regresses at approximately 40 days of pregnancy.
- Between 40 to 150 days of pregnancy, ovarian activity occurs and as many as 10 to 15 follicles formed undergo luteinization to form the accessory corpora lutea.
- From fifth to seventh month of pregnancy both the primary and secondary corpora lutea regress completely, the mare doesn't show any signs of estrus due to placental secretion of progesterone until the end of pregnancy.
- From the seventh month onward only vestiges of corpora lutea are present. but during the last 2 weeks of pregnancy follicular activity commences in preparation for the post partum estrus (foaling estrus).

Gestation period in mares ranges from 315 to 360 days and is influenced by maternal size, fetal genotype and the stage of breeding season when conception occurs.

Twinning is rare and if happens, it is identical. Twin pregnancy is unwanted in equine because of the high rate of abortion. Stillbirth is frequent in twin pregnancies. Subsequent conception rate is not affected by twin birth but it decreases following abortion.

### **Pseudo pregnancy:**

Pseudo pregnancy is a term used to describe a syndrome in which non-pregnant mares that have been mated do not return to estrus. It occurs if there is early embryonic death after 15 days of gestation with persistence of the corpus luteum verum resulting in a prolonged luteal phase.



**Mare showing typical signs of estrus: tail raised, and urination stance**