



RED DEER IN A FARM SYSTEM

Hinds

Upon reaching puberty at 16 months of age, the hind is capable of producing a single calf (rarely twins) annually. However, getting hinds to express their potential for high annual productivity requires considered management through the year based on an understanding of their reproductive cycle.

Timing of ovulation and the oestrous cycle

Adult hinds initiate ovulation and oestrus ('heat') mainly in October in the UK. On average, about 85% of hinds actually conceive to their first oestrus mating of the season (this is very high compared to cattle). However, hinds that fail to do so will undergo an 'oestrous cycle', whereby they ovulate and show heat again 18-21 days later. This ovulation is equally fertile, and thus most well-managed hinds will conceive between October and Mid November.

Occasionally some hinds will fail to conceive and they exhibit continuous oestrous cycles through to February....but this is rare unless they have no access to a fertile stag.

How can the timing of conceptions be advanced?

Summer calving doesn't always suit pasture production on UK deer farms and many farmers would prefer their hinds to calve 3-4 weeks earlier. This would give the hinds more time to effectively rear a calf before pre-rut weaning. Hinds are 'hard-wired' to begin ovulating in autumn, but it is possible through good nutritional and weaning management to optimise conceptions early in their season (i.e. early-mid September) to get earlier calving. Key factors to consider include:

1. Ensuring that hinds are in good body condition prior to and during mating
2. Pre-rut weaning of calves allows hinds to 'dry-off' before the rut, and divert feed from lactation to improving condition.
3. Early joining of hinds with stags
4. Minimising stress on hinds before and during mating.
5. Culling later conceiving hinds as identified by scanning.

The pregnancy cycle and gestation length

Following conception in autumn, the embryo implants in the uterus between 3 to 4 weeks of age, and the foetus undergoes a typical mammalian growth process in which the main anatomical features develop early on but the bulk of foetal mass does not occur until the last third of gestation.

Gestation length, the interval between conception and birth, averages 233-234 days in red deer. As foetal genotype influences gestation length, red deer hinds carrying hybrid foetuses generally calve after 240-245 days.

However, while we talk about average gestation length, in reality it is highly variable for red deer....and can range from 218 to 248 days for hinds carrying red deer foetuses. Recent research has shown that the level of nutrition a hind receives over the last third of pregnancy, the period when the foetus is at its fastest growth rate, strongly influences gestation length. Hinds under modest feed restriction in spring tend to have long gestations. This seems to be caused by retardation of foetal growth rate. However, the longer gestation ensures the calf is born at a normal birth weight (8-10 kg).

Further studies have also shown that early conceiving hinds tend to have longer gestations, partly (but not completely) mitigating the birth date advantage from conceiving early. However, it is still advantageous to advance conceptions since for every ten days earlier that a hind conceives, she will calve six to seven days earlier. It is thought that this may also be due to modest feed imbalances during the last third of pregnancy.

Calving and lactation

Calving generally occurs from early May to Mid June. One or two days before calving, hinds become agitated and often pace fence-lines in search of an ideal birth site. They will separate from the main herd to seek an isolated site, preferably elevated and with low cover (e.g. tussock). The birthing process generally takes between 10 minutes and 2 hours, with the hind licking the new-born calf for 30 minutes to 2 hours after birth. Hind-calf bonding occurs during this period, and it is important to minimise disturbance at this time. The calf will generally suckle at least once during the bonding process. However, it is not uncommon on intensive farms that are subject to frequent disturbances, for the hinds to leave the calf hiding near the birth site. She will return to feed the calf 2-3 times each day, until such time as the calf is able to constantly follow the hind (1-2 weeks after birth). It has been

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observed on more extensive farms that are subject to minimal disturbance, that hinds may remain with the calf until it is running at foot. This indicates very plastic behaviour to suit the needs of the environment.

Lactation is initiated at or near birth, although mammary development can be observed to occur up to 2 weeks before calving.

Some farmers use this to indicate when hinds are likely to calve, although the first appearance of the mammary can be highly variable relative to calving date. Peak lactation occurs around 6 weeks after calving.

What is the breeding life of hinds?

Most hinds have their first calf at 2 years of age. Thereafter, they can reproduce annually until 15-17 years of age. This is a very long breeding life for a ruminant. Some hinds have been recorded living to the ripe old age of 20-23 years, but few are capable of conceiving beyond 17 years...they simply outlive their ovaries' capacity to produce eggs.

In reality, most farmed hinds are culled before they reach the end of their potential breeding life. In many cases, harsh environments take their toll long before old age....teeth wear probably limits the life-span of hinds in hill country environments.