The performance and racehorse industries favor foals born as early in the year as possible. Mares are seasonally polyestrous and during the winter months they enter a period where they are not reproductively active (anestrus). This can be overcome by using artificial lighting in a mare’s enclosure to elicit estrous earlier in the year. This technique can successfully coax the mare’s body into thinking that breeding time occurs earlier in the season.

The mare’s reproductive cycle is controlled by the length of day-light and dark (photoperiod). The retina of the eye perceives daylight and conveys that information to the brain via a complex nervous pathway to govern reproduction. The mare’s physiological response to photoperiod has more to do with the length of dark hours than the length of light hours. Melatonin, which is a hormone that suppresses reproductive activity, is produced during the dark hours. Because, the dark hours increase during the winter, the mare’s reproductive activity decreases. By reducing the number of dark hours a mare perceives, breeding managers can dictate when she will be reproductively active and can be bred.

The process of shifting the mare’s physiology from anestrus to estrus with artificial lighting takes 40 to 60 days of daily light manipulation. Mares would need to perceive 16 hours of total light per 24-hour period. Since day length typically falls short of 16 hours in the winter, artificial lights can be used to make up the difference. Research has shown that adding artificial light at the end of daylight in the evening, rather than in the early morning, is more effective in inducing an early estrous cycle. The recommended light intensity mares should be exposed to is at least 100 lux in a 12- by 12-foot stall. There can be no dark corners in the mare’s enclosure that might allow her to hide her head from the light. A well-known strategy is to light the enclosure enough so that a newspaper’s fine print can be easily read in the darkest corner.

You can easily add artificial lighting by retrofitting a stall with an appropriate light source on a timer. Using this technique in a turnout pen or on pasture, however, is not as feasible. Luckily, development of new technology is paving the way for more economical ways to implement artificial lighting. Equilume™ masks are a unique and effective method for delivering light to the mare to hasten the onset of the estrous cycle. The mask is fitted to the mare’s head, which allows for housing in any environment, including out on pasture. Research has shown this method is as effective as stalling under lights.

Techniques such as artificial lighting can easily be implemented in a breeding program. Putting mares under lights is a simple and effective management strategy to bring mares into estrus earlier in the season. New technologies, such as the Equilume™ mask, could make adding artificial light easy, especially for horses that are not in stalls.

**Artificial lighting tips:**
- Adjust artificial lighting frequently for the continual change in sunset and length of daylight to total 16 hours
- Implement a program of artificial lighting no later than December 1st to achieve February ovulations