

MARYLAND

Small Ruminant

Flushing: Yes or No?

Flushing is a term known to most sheep/goat producers. It is the practice of providing extra nutrition (feed; mostly energy) to the ewe/doe prior to and during the early part of the breeding season. Nutrition has long been linked to reproduction performance in livestock.

Flushing increases weight gain and body condition of ewes/does, which may result in the birth of more offspring, i.e., more twins and triplets. Although re-

sults vary, prior research has shown that flushing can boost lambing percentages by 10 to 20 percent. Flushing should work similarly in goats, though there are fewer studies documenting its impact.

Flushing improves lambing/kidding percentages primarily by increasing the number of eggs (ova) that the female releases (ovulates) from her ovaries. Since there are few monozygote (identical)



twins in sheep/goats, the number of eggs ovulated usually determines the maximum number of offspring that can be born. There is also evidence that flushing may improve conception rates and early embryo survival.

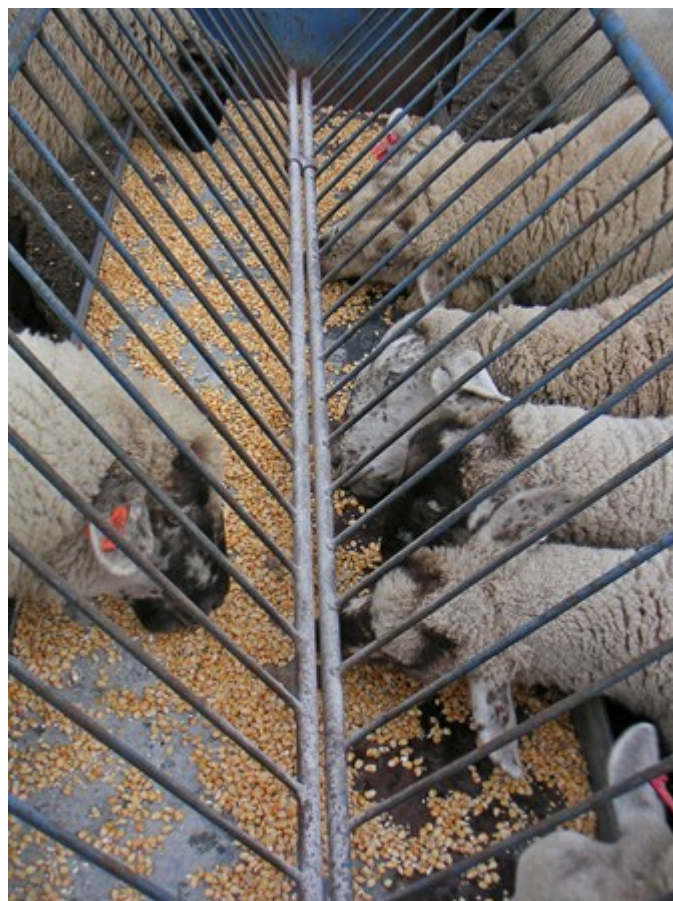
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Responses to Flushing

Responses to flushing are variable. There are many factors which influence response. In fact, flushing is not always cost-effective. Flushing is most effective in females that have not recovered sufficiently from their last lactation. Ewes/does with sub-optimal body condition scores (2 to 2.5) will respond more to flushing than those already in good body condition (3 or better). At the same time, overly thin females (1.5) may not respond to flushing unless the flushing period is started early enough.

Well-conditioned females (3.5 or above) do not usually respond to flushing. They can be conditioned for flushing and breeding by increasing exercise and reducing feed intake until they are in an appropriate breeding condition. Flushing ewes/does during the height of the breeding season, when they are naturally more fertile, may not be cost-effective. Flushing will be more advantageous during the early or late part of the breeding season. Mature females tend to respond more to flushing than younger females. It is usually not necessary to flush ewe lambs or doelings as they should already be on a good plane of nutrition, gaining weight steadily from birth to their first breeding. The same principle should apply to yearlings that have not lambed/kidded.

Flushing should be more beneficial for ewes/does in accelerated breeding programs, as these females are expected to re-breed after a short recovery period. Having ewes/does in good body condition is es-



sential for out-of-season breeding; flushing is recommended. Improved breeds (e.g. Boer) have higher nutritional requirements and may respond more to flushing than landrace breeds (e.g. Spanish). Flushing will not increase lambing/kidding rates above the genetic potential of the flock/herd. Prolific breeds usually respond less to flushing.

How to Flush

Flushing is usually accomplished by feeding a better-quality harvested forage, by moving ewes/does to a lush pasture, or by supplementing the forage diet with grain (usually corn, barley, oats, etc.). Grain feeding is the most common of flushing. The amount of supplemental feed is dependent on the size of the female and the quantity and quality of the forage in the diet.

The most recently published Nutrient Requirements for Small Ruminants (National Research Council, 2007) do not give requirements for flush-

ing. They simply recommend a 10% increase in energy intake during the breeding season (compared to maintenance requirements). This is the amount of additional energy required to retain embryos in early pregnancy, not to flush.

The 1985 NRC requirements (for sheep) recommend a more than 50% increase (above maintenance) in energy intake for flushing. One half to 1 lb. of grain per head per day is usually sufficient for most ewes/does. Ewes in an accelerated lambing program may require an even bigger boost in energy intake (e.g. 200% of maintenance requirements), according to research conducted at Michigan State University.

Different feedstuffs can be used for flushing, so long as they provide the necessary energy boost and are cost-effective. In some areas of the US, whole cottonseed (not hulls) is fed as a high-energy supplement. It is also high in protein, though protein supplementation is not usually necessary unless the forage diet is deficient in protein. When using grain (starch) for flushing, it is important to add grain to the diet gradually to give the rumen time to adjust. Never start out feeding a pound of grain per head per day.

Pasture can be used for flushing so long as the nutrients are there, and the stocking rate is low enough to allow sufficient intake. In fact, pasture is usually a more economical method of flushing and is recommended (over concentrate feeding) when animals are less likely to respond to flushing for the aforementioned reasons.

Specialty crops (e.g. brassicas) are sometimes planted for flushing. Legume pastures used to be problematic for breeding due to their estrogen content, but newer cultivars have been selected for lower estrogen content and should not cause breeding issues. Endophyte-infected fescue pastures are not known to have an effect on fertility in sheep/goats, especially if ewes/does are mated in the spring or fall, but it might be wise to avoid (infected) fescue pastures for summer breeding.

Most of the literature suggests beginning flushing two to three weeks before the onset of breeding and continuing it for two to four weeks after breeding. Earlier flushing may be advisable if animals are in poorer body condition. According to a Canadian fact sheet, it takes six weeks of grazing a good quality pasture to increase the body condition of a ewe by one condition score; 3 weeks for a half score. Body score changes will be more rapid with higher energy flushing diets.

Flushing should not be continued for too long into the breeding season, as the extra feed is costly and will not result in further improvements in reproduction. It may also cause some ewes/does to get overly fat. At the same time, there should not be a significant loss in body condition during the rest of the breeding season. The first two to three weeks after breeding are the most critical, as this is when the embryos implant. Flushing is believed to improve the success rate of fertilized eggs attaching to the uterine wall.



Body Condition Scoring

Sheep and goats are usually body condition scored using a scale of 1 to 5, with 1 representing emaciated (very skinny), 3 being average, and 5, obese. Half scores are used. It is usually necessary to touch animals to determine body condition score (BCS). Visual assessment of body condition can be misleading because fleece (or coat) and even pregnancy can hide the true status of an animal.

Body condition score is assessed by feeling for fat and muscle over the backbone, ribs, and loin. Bones are sharp and the loin is shallow in animals with low body condition scores (2 or less), whereas animals in good body condition (3 or above) should feel smoother (rounder) and have fuller loins. It is difficult to detect the bones in an obese animal (5).

Body condition scoring is different in goats (and some hair sheep breeds), as they carry more fat in their abdomens and less on their bones. For this reason, it is normal for goats to carry less condition than sheep and hair sheep to have less external fat than conventional woolled sheep. There are numerous fact sheets and videos that can be used as guidelines for body condition scoring sheep/goats.

After the first month of gestation, the plane of nutrition can return to maintenance levels until the last six weeks of gestation when fetal growth begins to place significant demands on the ewe/doe. Nutrient requirements, especially energy, increase substantially in late pregnancy.

Don't forget about the boys!

While we don't usually think about flushing rams and bucks, it is important that they be in peak condition at the time of breeding. Sperm production takes 7 to 8 weeks, so it's a good idea to begin supplementing males about 8 weeks before the onset of the breeding season. A 10 to 11 % increase in energy intake is recommended by NRC. Intake of energy would need to be increased if the ram/buck was in sub-optimal body condition (below 2.5).

Aim for rams and bucks to have a body condition score of 3 to 3.5 at the time of breeding. Less condition (2.5) is usually acceptable for range rams. Be sure not to get males too fat (>3.5) or they may lack the vigor necessary to breed females.



Reproductive efficiency is the primary factor determining profitability of a sheep/goat enterprise. Flushing may be a cost-effective means to improve the reproductive output on some small ruminant farms.

References

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