Goat herd health; reproductive management, feeding the doe, care of the kid

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Reproductive management practices

Regardless of the species of small ruminant the clinician is treating, there are several herd/flock health practices that are useful in enhancing productivity and improving reproductive health. Included in these practices are: (1) Perform pregnancy diagnosis on all bred females 45 to 60 days after breeding (Note: a linear array 3.5-5 mHz transducer can be used in most small ruminant females). Proper restraint, use of a coupling agent, and knowledge of the reproductive tract of each species lends itself to excellent results. (2) Maintain a separate area for confirmed pregnant females and do not mix any new animals with pregnant small ruminants. (3) If the herd has a history of disease-associated pregnancy wastage, and efficacious vaccines are available, then the breeding females should be vaccinated for those specific abortion causing diseases one month before the start of breeding. In herds with a history of infectious abortion, consider adding ionophores and/or tetracycline to feeds or mineral mixtures. (Note: The clinician should always be mindful of United States Department of Agriculture regulations concerning feed additives). (4) Monitor and record all herd members' body condition score. Prevent over-conditioning and provide plenty of exercise for parturient does. Scores of 2.5 to 3.5 (on a 5-point system) for goats are desirable. Periodically check pregnant does for ketones with urine sticks in herds with a history of pregnancy toxemia. If animals examined have higher than normal ketone values, take steps to correct the problem (e.g., feed niacin and/or ionophores, feed more grain, force more exercise). (5) Trim feet as needed, and maintain good hoof care. Avoid hoof disease late in gestation. (6) Provide a clean, dry, draft-free area for maternity pens, or a well-drained, clean pasture with shelter. (7) Give yearly vaccination boosters of toxoids for *Clostridium perfringens* type C and D and *C. tetani* and other required vaccinations for that herd 30 days before kidding. (8) Insure a well-designed parasite control program is instituted. Preference should be given to programs that minimize the need to deworm, and enhance refugia by selective or targeted deworming (FAMACHA©).

Life cycle feeding

Goats have greater nutritional requirements on a body-weight basis than do cows. Good-quality grass forage or browse with free access to fresh water and a trace mineral/salt supplement is will meet the demands of most goats. Range or pastured goats, does in late gestation or early lactation, and bucks used for breeding may require supplemental concentrates. A complete, loose, trace-mineralized salt containing selenium (in deficient areas) should be offered free choice year-round to all goats. Salt and/or mineral blocks designed for cattle are commonly used may not be suitable for goats and may be associated with broken teeth or injured mouths. The caregiver should avoid over-supplementation of concentrate. When feeding does of poor to moderate body condition (<3) increasing their energy intake three to four weeks prior to breeding increases the ovulation rate. This increased feeding, or flushing, can be done by feeding good quality forages free choice, allowing creep grazing, feeding concentrates, or increasing the amount of concentrate the animals are receiving. Pregnant does should receive supplemental feed four weeks before and after kidding; however over-conditioning should be avoided. Obesity is associated with dystocia, pregnancy toxemia, and raises production cost. Bucks can be fed a ration used as maintenance for does. The clinician should be cognizant of the potential for urinary calculi and feed males rations to minimize the incidence of this disease. A creep fed starter ration and good quality hay should be provided to kids from the first week of life

Feeding to minimize the incidence of pregnancy toxemia

Pregnancy toxemia is a rarely diagnosed condition of late term gestation in goats carrying multiple fetuses that are unable to consume energy adequate to meet metabolic demands. Environmental conditions that decrease energy intake yet increase energy demands (e.g., cold, wet, windy conditions) predispose pregnant does to this condition. Extremes in body condition (e.g., obesity, emaciation) also

predispose does to pregnancy toxemia. Does carrying twins or triplets require much more energy than those carrying a single fetus. Some does are not capable of consuming an adequate amount of feed to meet demands of late gestation particularly if the feed is of poor quality. Chronic illnesses (e.g., parasitism, foot rot, foot scald, caprine arthritis-encephalitis, etc.) that cause weight loss and depressed appetite can lead to this condition. If energy supply does not keep pace with demands, the liver may become overwhelmed with free fatty acids and may release toxic levels of ketone bodies.

The signs of pregnancy toxemia are depression, incoordination, circling, teeth grinding, tremors, and stargazing. The diagnosis can be confirmed by documenting an increase in urine and blood ketone concentrations. Treatment should include oral propylene glycol, sodium propionate, or intravenous glucose solutions and should be initiated immediately.

Dietary strategies useful in prevention of pregnancy toxemia include: (1) feeding to meet the energy, protein, mineral and vitamin requirements of late gestation; (2) decreasing stress in late gestation (e.g., parasite and predator control), (3) dietary supplementation of niacin and/or ionophores during late gestation; (4) identifying the does carrying multiple fetuses, separating them from those pregnant with one fetus, and feeding them accordingly; (5) providing adequate bunk space to insure adequate intake by all does; (6) monitoring body condition score throughout gestation of all pregnant does; (7) keep reserve feed for emergencies; and (8) cull all poor-doing non-pregnant does and does with chronic disease.

Feeding the kid

All newborn kids should receive 8% to 10% of their body weight in colostrum within three to 12 hours after birth. The dam's colostrum is best but if it is not available from the dam frozen colostrum can be thawed and used. All colostrum stored frozen and fed to should be free from diseases. If possible, colostrum should be fed for two to three days. If the kid has been orphaned and is to be hand-fed then feeding 10% to 20% of their body weight of good quality species specific milk is preferred. Hand-fed kids, lambs, or crias can be switched to a 2-3x daily feeding regimen by the third week of life. If a dry milk replacer powder is used, it should be thoroughly mixed with water and heated to ≈103°F before feeding. All feeding equipment should be cleaned and dried after use. Kids can consume small amounts of dry feed during the first two to three weeks of life but may not be able efficiently utilize forage nutrients until two to three months of age. Creep feeding can help reduce the stress associated with weaning, increase nutrient intake, and hasten the time to weaning and reduce labor associated with hand-feeding. When weaning, it should be the only stressful event (weather changes, new hay, new feed, farm management changes, etc.). Weaned animals should have access to good quality, highly digestible forages (14-16% crude protein).

Other reading

Pugh DG, Baird AN: Sheep and goat medicine, 2nd ed. Philadelphia: Elsevier; 2011.
Smith MC, Sherman DM: Goat medicine, 2nd ed. Ames (IA): Wiley-Blackwell; 2009
Committee on the Nutrient Requirements of Small Ruminants: Nutrient requirements of small ruminants: sheep, goats, cervids, and new world camelids: animal nutrition series. Washington DC: The National Academies Press; 2007.