Improving client profitability by increasing veterinary services in the sheep and goat production cycle

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Abstract

Bovine veterinarians frequently advise cattlemen regarding management practices and herd health procedures that improve the economic success and productivity of the cattle enterprise. Small-scale sheep and goat producers are often unaware of these routine veterinary practices that would similarly increase their success in livestock production. Bovine practitioners can increase small-scale client profitability by educating them about routine procedures that should be undertaken prior to breeding season, routine parturition, and neonatal care. Areas where increasing on site veterinary services improve profitability include breeding soundness examination, establishment of the veterinary-client-patient-relationship, use of controlled intravaginal drug release devices in sheep, pregnancy diagnosis, recommendations for the dry period, treatment of dystocia and creation of standard operating protocols for producers. Both bovine veterinarians and sheep and goat producers benefit from increased use of veterinary services.

Key words: sheep, goats, veterinary service, herd health

Résumé

Les vétérinaires bovins donnent souvent des conseils aux producteurs de bœufs concernant les pratiques de régie et les procédures de santé de troupeau permettant ainsi d'accroître le rendement économique et la productivité des élevages. Les petits producteurs de moutons et de chèvres ne sont souvent pas au courant de ces pratiques vétérinaires de routine qui augmenteraient tout aussi bien le succès de production de leur élevage. Les praticiens bovins peuvent augmenter la profitabilité des petits élevages en informant les éleveurs sur les procédures de routine qui devraient être mises de l'avant avant la saison d'accouplement, la mise bas routinière et les soins néonataux. L'utilisation accrue de services vétérinaires sur le site peut accroître le rendement dans plusieurs domaines incluant les tests de fertilité, l'établissement d'une relation entre le vétérinaire, le client et le patient, l'utilisation de dispositifs à libération contrôlée intravaginaux chez le mouton, le diagnostic de gestation, les recommandations pour le tarissement, le traitement de la dystocie et la mise en place de procédures d'exploitation normalisées pour les producteurs. Les vétérinaires bovins tous aussi bien que les producteurs de moutons et de chèvres bénéficient de l'utilisation accrue des services vétérinaires.

Introduction

Over the past several decades, food animal veterinarians have developed consulting practices to assist cattlemen, dairymen, as well as poultry and swine producers with all aspects of their management to increase production efficiency. At the other extreme, many sheep and goat producers search frantically for any available veterinarian when a traumatic event or health crisis affects their herd. Food animal veterinarians have the skills and knowledge necessary to increase productivity and decrease the incidence of disease in small ruminant herds, and there are several steps in the livestock production cycle where veterinary knowledge is of benefit to the sheep or goat producer.

Breeding Season

The easiest way to look at the livestock production cycle is to begin with the breeding season. Though the onset and duration of breeding season may vary across this country, European breeds of sheep and goats are seasonally polyestrous throughout the United States, and both species exhibit some degree of anestrus period in the spring and early summer. European breeds are short-day breeders, and both their reproductive function and milk production can be manipulated by altering day length with artificial lighting. Those breeds of sheep and goats that originated near the equator exhibit a longer breeding season in North America than the European breeds, and some breeds will cycle year round. Breeds that cycle year round do not respond to artificial alteration of day length to manipulate either reproduction or milk production.

Producer management practices can markedly affect reproductive success. Sixty days prior to the onset of the scheduled breeding period, producers should examine the males to update their vaccination status, trim feet, check their teeth, score body condition, and provide a diet with higher levels of protein and energy to encourage semen production. Because rams and bucks frequently lose up to 15% of their body weight during breeding season, they should have a body condition score

of 3 to 4 on a scale of 5 before entering the female herd. Longwool sheep producers should shear the males at least 60 days prior to introduction to the female flock, and both sheep and goat producers should remove long hair or wool from the scrotum to prevent heat damage to the sperm.

Breeding Soundness Examination

A site visit by the herd veterinarian at this time would include breeding soundness examination with semen evaluation of all males, and collection of blood samples to test rams for *Brucella ovis* antibodies and to determine genetic susceptibility to scrapie. Ram lambs between 8 and 14 months of age should have a scrotal circumference greater than 30 cm, while mature rams should have a scrotal circumference greater than 32 cm. Goat bucklings should have a scrotal circumference of 25 to 28 cm by the time they weigh 100 lb (45.4 kg), and should be 70% of mature body weight prior to use for breeding. Males from both species produce small volumes of very highly concentrated sperm that should have greater than 30% individual progressive motility (range of 30 to 70%) and more than 70% normal sperm when examined microscopically. There should be no clumps of white blood cells in the ejaculate.

The site visit for the pre-breeding examination is an excellent opportunity to perform targeted testing for chronic diseases such as Johne's disease, ovine progressive pneumonia, caprine arthritis-encephalitis, caseous lymphadenitis, and parasites. Large herds may find the use of teaser males helpful to synchronize large numbers of females to cycle together in a shorter period of time. Females bred at the same time tend to give birth at the same time, and this creates larger numbers of young stock that are similarly sized for better marketing. Use of a teaser male may cause the females to cycle earlier in the breeding period, which would allow for earlier sale of offspring when market prices are traditionally higher. Rams selected for use as teaser rams should be *B. ovis* test-negative to prevent spread of disease, and there should be at least one teaser ram per 75 ewes exposed. Surgical methods to create teaser males include penile deviation, vasectomy and epididymectomy, and the surgery should be performed at least 8 weeks prior to teaser introduction into the female flock.

Site Visit to Establish VCPR

While on the farm, the veterinarian should examine the management practices and nutrition program to meet the requirements for establishing the veterinary-client-patient-relationship required for extra-label drug use. The veterinarian and producer should discuss parasite prevention, nutrition, breeding ratio, use of breeding harnesses, methods of estrus detection, and the advantages of keeping accurate breeding records using individual animal identification. If the herd has a history of abortion due to *Chlamydophila* or *Campylobacter,* then this would be an opportune time for the veterinarian to suggest pre-breeding vaccination for either or both abortion diseases.

Prior to introduction of the males for breeding, the producer should also evaluate the females for body condition, symptoms of parasitism, enlarged external lymph nodes, mastitis and presence of individual identification. Longwool ewes should have the wool around the perineum shorn or crutched to enable the rams to detect estrus and breed the ewes. As with the males, this a good opportunity to target test thin females for chronic diseases before breeding them again. Females should be grouped according to body condition and fed appropriately throughout the breeding period. Metabolic diseases such as pregnancy toxemia, hypocalcemia and lactational ketosis are best prevented through proper nutrition. Many producers increase the energy content of the ration prior to breeding to improve body condition on thinner females and to increase the number of ovulations. Females with a body condition score of 3 to 4 may need a higher energy ration for only 2 weeks, while thin females with a BCS of 1.5 may need 9 to 10 weeks of flushing. Teaser males should be introduced into the female herd for 3 weeks prior to insertion of breeding males, and producers commonly introduce teasers during the last three weeks of the flushing period. The producer should be reminded to record all male introduction and removal dates, breeding dates if estrus is observed, and group changes for both males and females. Ear tags or visible identification should be replaced as needed, and the records should be updated frequently.

Use of CIDR's in Sheep

In October 2009, the Food and Drug Administration approved the use of CIDR's, or controlled intravaginal drug release devices, in sheep under the Minor Use Minor Species Act. These progesterone pessaries can be used to alter the breeding season for artificial insemination, embryo transfer, and accelerated lambing programs in addition to spreading out the lambing season for better utilization of facilities, labor and markets. Use of CIDR's may be particularly beneficial to the dairy sheep industry by allowing sequential groups of ewes to lamb, so that milk production remains more level over the year. Research application for similar use in goats has been completed, but CIDR's have not yet received FDA approval for use in goats.

Pregnancy Diagnosis

The next logical use of veterinary expertise would be through diagnosis and treatment of reproductive failure for both males and females during the breeding period. The producer with accurate breeding records can identify females with abnormal estrus intervals, as well as males that fail to breed. The herd veterinarian can examine these individuals and recommend appropriate testing, treatment or culling while there is still time for the animals to reproduce with the rest of the group.

Veterinarians can assist sheep and goat producers with accurate pregnancy diagnosis through use of a serologic test or ultrasound. Individual serum samples can be submitted to Bio-Pryn more than 30 days following breeding for determination of placental-origin pregnancy-specific protein B. Current fee per sample is $7.50, and further information is available from their website at www.biotracking.com. Transabdominal ultrasound between 45 and 60 days post-breeding allows for pregnancy determination and fetal counting, while ultrasound in the later stages of pregnancy can be used to observe fetal viability. Ultrasound performed early in the breeding season creates an opportunity to identify open females that might indicate an infertile male, and allows the producer to expose open females to a different male. Ewe lambs that are not pregnant by ultrasound are still young enough to be sold as lambs, not mutton, and will bring a higher price. This herd visit is also a good opportunity to re-evaluate the nutrition and parasite prevention programs while changes can still be made prior to the stress of late pregnancy. Goats that fail to cycle, as well as those that have been bred, should be ultrasounded to identify hydrometra as a cause of reproductive failure. Affected animals often maintain normal milk production, and the producer may assume that the exposed does are pregnant since they do not exhibit estrus. Administration of prostaglandin to does with hydrometra will terminate the condition so that they may be bred again.

Veterinary Recommendations for the Dry Period

Due to the nutritional demands for maintenance as well as the growth of the developing fetuses and mammary systems, dairy goats should have a 45 to 60-day dry period prior to parturition. The veterinarian can provide advice on how to safely end lactation, diagnose mastitis, administer dry treatment, and dispense prescription medications. The best time to eliminate mammary infections in both species is during the non-lactating period, so this would be an opportune time for producers to palpate the dry glands for swelling, firmness or masses. Sixty days prior to onset of lambing or kidding, veterinarians might prescribe daily oral tetracycline in feed to prevent abortion in herds that have previously experienced *Campylobacter* or *Chlamydophila* outbreaks. Thirty days prior to anticipated parturition, pregnant ewes and does should receive booster vaccination against tetanus and *Clostridium perfringens* types C&D. Herds that have experienced high incidence of coccidiosis in neonates or abortion due to *Toxoplasmosis* may benefit from use of a coccidiostat in the salt or concentrate ration prior to parturition. With a valid VCPR in place, veterinarians can prescribe decoquinate or monensin in goat feed to prevent abortion or neonatal death loss from coccidiosis, and decoquinate or lasalocid for similar use in sheep.

Normal Parturition and Dystocia

Prior to the onset of parturition, the veterinarian should discuss the normal stages of parturition with novice clients and describe when the producer should intervene or call the veterinarian for assistance. Sheep and goat dystocia are frequently corrected through manual manipulation when diagnosed early, but Caesarian section or fetotomy is indicated when assistance is delayed or maternal-fetal malproportion occurs. Malpresentations are common due to presence of multiple fetuses, and the person relieving the dystocia should make sure that all fetal parts moving through the vagina at one time belong to the same fetus. The most challenging correction in sheep and goats may be lateral deviation of the head and neck, due to the relatively long neck of lambs and kids. With good lubrication, replacement of all exteriorized legs inside the dam with retrieval of the head first, followed by 1 forelimb aids in correction of this common malpresentation. Producers with large numbers of animals often attempt correction prior to calling for assistance, but veterinarians should stress that early intervention while the uterus is still distended with amniotic fluids increases survival rates for both dam and offspring, and decreases cost of treatment due to fewer medications used and less time involved in treatment.

Good communication with producers may yield early diagnosis and treatment for postpartum metritis, selenium or vitamin E deficiency, ketosis, hypocalcemia, mastitis, or neonatal illness. If abortions occur, the herd veterinarian and producer should collect fetuses, placentas, and paired serum samples for submission to a veterinary diagnostic laboratory, and the affected females should be separated from the healthy adults and neonates. The herd veterinarian may prescribe antibiotics in feed to prevent further abortions once a diagnosis has been made, and the veterinarian should educate the producer about potential zoonotic diseases.

Normal Neonatal Procedures

Veterinarians provide varying degrees of involvement in neonatal care, depending on the skill and experience of the producer. Producers should be advised to dip navels in 7% iodine at birth to prevent umbilical infections, and they should monitor colostrum intake on nursing offspring or provide adequate colostrum to hand-raised young. Neophyte producers may require education concerning docking or castrating lambs and dehorning or castrating kids. Both procedures should be done at a young age to decrease the amount of pain perceived by the neonate, and to decrease the incidence of infection following the procedures. Entropion is a common congenital defect in both species, and producers should be taught to recognize and treat the condition at a very young age. Entropion is considered a heritable fault, so affected individuals should not be kept for breeding purposes, and breeding records should be examined to prevent the defect in future matings. Flocks that participate in youth shows or sell market lambs should vaccinate against sore mouth or contagious ecthyma by 2 weeks of age. The herd veterinarian should monitor the young stock nutrition, vaccination, and parasite prevention programs to minimize the incidence of coccidiosis and poor growth rates.

Development of Standard Operating Protocols

The herd veterinarian can play a large role in health management for an individual producer by working with the client to develop Standard Operating Protocols or SOP's for routine health procedures on the farm. The veterinarian might develop a checklist or protocol for steps the producer would take when finding an ill animal prior to calling the veterinarian. SOP's could be developed for routine neonatal care, resuscitating a neonate, tube feeding weak newborns, administering medications, proper handling and storage of pharmaceuticals, examination of the pregnant female in labor, trimming feet, and examination for external or internal parasites. Veterinarians are an important partner in educating producers about the FAMACHA program to reduce the incidence of parasite resistance, and more information about this important program can be found at www.scsrpc.org.

Conclusion

Food animal veterinarians are uniquely qualified to help small-scale sheep and goat clients increase productivity and profitability through adopting better management practices, improving nutrition, and development of disease control programs. Routine procedures such as breeding soundness examination, body condition scoring, nutrition counseling, vaccination strategies, pregnancy diagnosis, parasite control and neonatal care help small-scale producers better manage their livestock and increase their profitability over time.