

A REVIEW OF EXTERNAL PARASITES OF SHEEP IN AFGHANISTAN

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Abstract. *Sheeps are important contributors for food production in Afghanistan, which is providing meat, milk and wools for the country. Skins are also important items to generate foreign currency for developing countries especially karakul skin are the huge resource potential of sheep populations for the country, which are constrained and threatened by compound effect of diseases, poor management and malnutrition. Parasitic skin diseases caused by external parasites such as mange mites, lice, keds and ticks are among these threats resulting in serious economic loss to the tanning industry and the country as whole. The economic impacts of external parasites in Afghanistan are not well documented. Aim of the study is to determine the external parasites of sheeps here in Afghanistan and studied its economic impacts on the society yearly incomes. The study was done as a review and approximately 45 articles and books were studied for the accomplishment of this study.*

Insects and pests limit production in the sheep industry are significantly high in Afghanistan. External parasites are feeding from body tissue such as blood, skin, wools and hairs. Wounds and skin irritation are produced by these parasites, and resulting discomfort and irritation to the animal were studied in this review research. Parasites could be transmitting diseases from sick to healthy animals. They could be reducing weight gains and milk production. In general, infested sheeps cannot be efficiently managed to realize optimum production levels.

Keywords: *external parasites, control, sheep, Damage, tanning industry.*

Introduction

Livestock production is an important sector of Afghanistan's agricultural economy. During 1970s Afghanistan exported approximately one million sheeps with other livestock species to some of its neighbor countries, mainly to Iran (FAO report). According to the FAO reports, sheep population in 1977 was reached around 22.01 million and in 2003 was reached around .88 million heads here in Afghanistan. Currently, different causes of skin diseases in Afghanistan are accountable for considerable economic losses particularly to the karakul skin and wools export. Otherwise, the most important problems is that, there are poor quality karakul skin, and hide products are

infested by external parasites such as lice, ticks, ked, fleas and mange mites. Arthropod and pests limit production in the sheep industry in many ways were examine much here. External parasites are those that live on the outside of the body, they feed from body tissue such as blood, skin and hairs. The wounds and skin irritation produced by these parasites result in discomfort and irritation to the animal body. Parasites can be transmitted diseases from sick to healthy animals. They can be reducing weight gains and milk production, generally, infested livestock cannot be efficient for the ranchers and society (مهريان، 1995).

Lice

Lice are external parasites which spend their entire life on sheep body. Both immature

and adult stages survive from blood or feed from skin. Louse-infested animals may be recognized by the dull matted coat or excessive scratching and grooming behavior. Lice are able to bite the sheep skin and drink blood from it. Biting lice have chewing mouthparts and feed by particles of hair, scab and skin exudations. The skin of these animals becomes irritated, resulting scratch and rubs which will be causing of raw areas and loss of fleece and hairs.

Lice are generally transmitted from one animal to another by rubbing and body contact. Lice, many times, are introduced into the herd by bringing infested animals from the outside into the herd. Most sucking and biting lice begin to increase in number during the fall and reach peak populations in late winter or early spring. Summer populations are usually low and causing little damages. (رشيق، 2006).

Control Strategies

There are many species of lice that parasitize both goats and sheeps. Some are specific to sheeps and others for goats. However, the control measures for these pests are often the same. In general, louse control is difficult because insecticides do not kill the louse egg. Most lice populations are low in the fall, grow rapidly in the winter and decline in the summer. Also wool harvests are removing a large portion of the lice (Lloyd, 1982).

- **Biting lice** eggs will hatch in 8 to 12 days and following the first insecticide application and secondly treatment should be applied in 14 days. Biting Lice live on the skin surface and feeding by bits of hair and skin surface debris. Biting lice egg hatch in 8 to 12 days and the entire life cycle is complete in one month (Butler, J. F. 1985).

- **Sucking lice** attack sheep and the most common are the *African blue louse* found on the body, head and neck of the animal. Heavy populations have caused death from sheep herds. Second is the *foot louse* which prefers to attack the feet and legs of sheep. In advanced stages, the foot louse affects the belly area of both sexes and the scrotum of the male animals. An important control difference is that, the egg hatching takes long time, for sucking lice that average will be 7-14

days. Therefore, second treatment should be given in 21 days.

- One best management practice (BMP) for the control of biting and sucking lice is a residual spray or dipping them in the late fall, because before winter season, insect populations build up rapidly. A second insecticide application should be made 14 to 21 days (*for control of newly hatched eggs*) following by the first application.

- If biting lice are dominant, apply the second treatment in 14 days; if sucking lice are dominant apply treatment in 21 days. If both types are apparent problems, make the second application in 21 days. A spring application may or may not be justified depending on infestation levels (رشيق، 2006).

Damage and Economic Loss

Lice infestations are primarily responsible for downgrading wool quality. The wool becomes ragged, torn and may be completely removed in large patches due to rubbing and scratching. African blue louse feeding can leave large patches of blood stained fleece on the rib and shoulder areas. There are noted reports; the blue louse feeding can cause death in some instances (Butler, J. F. 1985).

Sheep Keds

Sheep ked, are also known as louse flies, they are large and flattened, usually wingless parasitic flies which are attacking on both sheep and goats. Two species from them are feeding from goats, and one reproduces on birds, deer and feeds from sheeps. All species in this family are parasitic and both sexes are blood feeders. Sheep ked bites become irritated and prompt sheep to rub, bite, and scratch. Animals often roll on the ground in an attempt to relieve irritation. Ked usually do not cause great damage if the animal is fed high nutritious diet, but sheep grazed throughout the year on pasture or range may acquire heavy burdens of ked during the winter and early spring.

Ked eggs are retained and hatch within the body of the adult female ked. The newborn Ked pupa (immature stage) is attached to the fleece and develops into a mature feeding adult. A female ked is capable to developing only one larva at a time. During the female's life of 100 to 130 days, she produces around 10-15 young, giving birth every 8-9 days. The

pupa stage is at least from 18 to 30 days. (رشيق، 2006).

Control Strategies

Sheep keds spend their entire life on domestic sheep. They are transferred from animal to animal by direct contact. Ked populations fluctuate seasonally with highest numbers occurring in winter and spring while the lowest populations are in the summer.

- BMPs for Sheep Kids: Sheep ked populations can be reduced by approximately 75 percent by *shearing prior to lambing*. If ewes are not shorn prior to lambing, keds will move from the ewes and infest their lambs. The infested lambs, will not be shorn until the following spring, and can serve as a reservoir for re infections of the herd (Lloyd, 1982).

- Insecticides are available as body spray, pour-on, dust and dips for sheep ked control. Treating sheep after shearing will give optimum ked control.

- Bio-security of the herd requires that replacement animals and newly purchased breeding rams should be treated before they are brought into the herd. When possible after the new animals are treated, they should be isolated from the herd for a period of 7-10 days allowing the insecticides to kill the adult keds. *Water soluble insecticides appear to work better than oil based insecticides for ked control because water soluble insecticides travel more freely through the fleece.* (Lloyd, 1982).

Damage and Economic Losses

Sheep keds have been reported to cause 8 percent reduction in weight gain, 15 percent reduction in wool production and 30 percent reduction in value of sheep skins. Feeding by sheep ked causes dense, hard nodules to develop in the skin and such condition have known as cockle. These nodules are not easily penetrated by dyes but weaken and discolor are occurring in the hide and resulting are downgrade in the leather. The quality of wool is also negatively affected due to sheep ked debris. There is no confirmed evident that keds are vectors of any important disease of sheep (Lloyd, 1982).

Mange Mites

Itch or mange mites (Psoroptes, Sorcoptes) are feeding on the surface or burrow within the skin, making very slender, winding tun-

nels from 0.25-2.5 cm long. The fluid discharged at the tunnel openings are dries to form nodules. Toxin is also secreted which causes intense irritation and itching and infested animals rub and scratch continuously. Infestations are contagious and treatment of all animals in the herd is essential for control. Delayed egg hatch are required second repeat of retreatment in 14 days. The most common mange mite affecting sheep and goats is Psoroptic ear mite or sheep scab mite. It lives in the auditory canal of goats and temporarily on the body. In sheep these mites infest heavily woolen areas and cause crusting and matting of the wool (رشيق، 2006).

Control

Mange mites are having 2 week life cycle and can live on the sheep host as long for 3 weeks. The highest populations of mange mite on sheep is seen in the late fall and winter.

Transmission of mange mite is occurring by body contact and control is applicable by topical use of insecticide which is followed by second repeat in 14 days (P.E. Kaufman, 2012).

Damage and Economic Losses

Mange mite infestations are primarily responsible for downgrading wool quality due to scabbing and debris accumulation in the wool. The wool may become ragged, torn in patches due to rubbing and scratching and often weight loss and low productivity is associated with mange mite (P.E. Kaufman, 2012).

Ticks

Ticks are commonly known as insects, but they are actually arachnids; a group which includes spiders, mites and scorpions. All adult ticks have 4 pairs of legs, no antennae and two fused body parts, head and cephalothoraxes. Adult insects have 3 pairs of legs, one pair of antennae and three distinct body parts. However, the young ticks, called "seed ticks" have 3 pairs of legs.

Ticks that commonly infest sheep have 4 distinct life stages: egg, larva, nymph and adult. A larval or seed tick feeds on small vertebrate animals then drop from the host and molts to the nymph. The 8 legged nymph feeds on small vertebrate animals, drops to the ground and molts to the adult. The adult

attaches to the third host, (dog, human, and sheep) drops to the ground and lays eggs (1000-5000) and die. This is termed of 3 host life cycle and usually takes 3 years to complete the cycle. There are also ticks that complete their lifecycle on 1 and 2 hosts (Catts, E.P. 2002).

Control

Many insecticides that control external parasites will control ticks. High pressure sprays are noted as having the best results. Ear ticks can be controlled by applying insecticides to the ear only. Ticks are generally warm or hot weather pests but not always (1995, مهریان).

Damage and Economic Losses

Ticks are feeding from sheep body can damage the skin resulting in buyers downgrading quality and reducing the market price of sheepskins. Some ticks can cause paralysis in sheep when neurotoxin is found in the tick's saliva to inject the bloodstream of the sheep. Some ticks can transmit tularemia which is bacterial pathogen that circulates between rabbits and sheep. Ear ticks may cause secondary bacterial infections on feeding sites in the ear (1995, مهریان).

Biting Midges (Culicoides)

Biting midges are usually less than 3 mm in length. After taking blood meal, female midges develop a batch of eggs (400) that is deposited along the margin of aquatic environments including ponds, marshes, swamps, and irrigation channels. In 3-4 weeks, development from egg to adult can occur. Midges feed from animals in the late afternoon and early in the morning during low light periods are presented (1995, مهریان).

Control

BMPs for Biting Midges: When possible, drain aquatic areas are suitable for midge habitats that have to avoid such sites when choosing overnight camps and congregation areas. Spray and dust insecticides may be effective for the controlling of midges (Lloyd, J. E. 1982).

Damage and Economic Losses

Some midges are vectors of bluetongue and epizootic hemorrhagic disease. Economic losses in production and animal health can occur from the infested (Catts, E. P. 2002).

Black Flies

Black flies (Family Simuliidae) are small (6.25 mm in length) with an arched or "humpbacked" thorax, sometimes called buffalo gnats. About two to thirds of the black fly species feed from mammal blood. Black flies are associated with moving water of streams, creeks, irrigation ditches and rivers. Eggs are deposited near to moving water and larvae attach themselves to stones; branches, and vegetation near to moving water. The black fly larva develops over on few weeks and live up to 2 years. Adult flies live for 2-4 weeks while feeds during the day on thinly haired regions of animals. Targeted feeding sites are eyes, nose and the under belly of sheep and goats. Black flies are considered exophilic and will not enter to buildings (Lloyd, J. E. 2002).

Control

BMP for Black Flies: Avoid grazing or congregating sheeps from around the running water areas for long periods. Move sheep into barns to escape black fly feeding and insecticides for biting flies may effective for black flies (Lloyd, J. E. 1982).

Damage and Economic Losses

Black flies can cause sheep to bunch up and refuse to feed or move to water. Their bites are irritating and can result the lesions occurs in the skin which persist for days up to months. Often rubbing and scrubbing can occur after infestation (Lloyd, J. E. 1982).

Sheep Nose Bot

The sheep nose bot is large grayish fly which is having 15 mm length and that is deposits live larvae in the nostrils, of sheep and goats during the summer. Sheep react to the larvae by laying, running or walking with their noses close to the ground or huddling to groups. Once deposited, the larvae migrate to the sinuses where they live on mucous of the nasal passages and sinuses. Larval development takes 6 to 8 months to complete their stage. In the spring, larvae migrate back down to the nasal passages and drop to the ground for completing pupate stage. The adult fly emerges several weeks later than the pupate stage (1995, مهریان).

Control

Ivermectin is the only insecticide for the controlling of nose bot. It can be applied with

standard animal drenching equipments (Lloyd, J. E. 1982).

Damage and Economic Losses

Membranes of the nasal passages and sinuses are irritated by feeding of the bot larvae. This may result in a bacterial infection which can lead to pneumonia and death in some cases. Lamb weight gain can be reduced by as much as 4 percent (مهريان، 1995).

Flies and Fly Maggots

Infestations of Fly maggots, (Myiasis), are the presence of fly larvae in living host. Several kinds of maggots are infesting the wounds of warm-blooded animals; however, only one of that are feeds exclusively on live flesh as the primary screwworm.

Other species, such as the secondary screwworm and other blowflies may also be infested the wounds. These species normally lay their eggs on carcasses of dead animals and may occasionally occur in open wounds. The eggs take 8-24 hours to hatch and develop into the feeding larvae stage. These larvae feed for 4-7 days, fall to the ground; and form an encased pupa stage which develops into an adult fly in 10-20 days. Although these species may worry livestock, they will not consume living flesh and will feed only on dead flesh and wound secretions. Infestations of secondary screwworm usually occur following an injury which produces in untreated wounds. Wounds must be cleaned and protected in order to prevent secondary screwworm infestations. (Lloyd, J. E. 2002).

Control

BMPs for Fly Control: Control of the flies is occurring by maintaining the clean environment, in which sheep are housed. Move animal waste and carcasses immediately away from sheep congregation areas. Animal waste can be composted or spread from crop fields and carcasses should be placed in the ground and covered with at least 30-50 cm of top soil or composted in deep sawdust or wood shavings. Insecticides can be applied to animals. Force-use-dust bags may be effective for the controlling flies. (Force-use-dust bags are doubled burlap bags 2/3 filled with dust formulation of insecticide and placed in a location that forces the animal to come in contact with the dusting bags (Butler, J. F. 1985).

Damage and Economic Losses

Flies are the general causes of sheep herds to bunch up, go off feed and stop grazing. As a result, growth and weight gain are drastically reduced in the herd. Fly sticks can cause skin injury and reduce wool quality.

Keys to Pesticide Safety

1. Before using any pesticide, stop and read the precautions.
2. Read the label on each pesticide container before each use. Heed all warnings and precautions.
3. Store all pesticides in their original container away from food or feed.
4. Keep pesticides out of the reach of children and livestock.
5. Apply pesticides only as directed.
6. Dispose of empty containers promptly and safely.

Table 1. Methods to prevent external parasites of sheep

Insecticide	Application Method	Pest(s) Controlled	Restrictions and comments
Alphacryprin-50 EC (Alphacypermethrin 5%)	Spray	Lice, Keds, ticks, biting flies	Spray to back and to the crutch in a semicircular sweep
Atroban 11% EC (11% permethrin)	Spray	Keds, lice, ticks biting flies	Spray to thoroughly wet animal.
Cyprin-100 EC (Cypermethrin)	Dip or spray	flies, lice mites, ticks, mange mites	Dilute with clean water using at least 100 times the volume of clean water, mixing well until a milky stable emulsion is produced
Delttox-50 EC Deltamethrin	Dip or spray	flies, lice mites, ticks, mange mites	Follow label directions for treatment of specific pests.
Diason-600 EC (Diazinon)	Dip	flies, lice mites, ticks, mange mites	Mix 1000 ml Diason-600 with 2400 liters of water. Two treatments may be necessary for some pests.
GardStar 40% (40% permethrin)	Spray	Keds, lice, ticks biting flies	Spray midline to tail head until wet.
Ivomec, Privermectin (0.08% ivermectin)	Oral drench	Nasal bots	Product formulated specifically for use in sheep only.
Prozap Insectrin X (10% permethrin)	Spray	Lice, ticks, biting flies	Spray to thoroughly wet animal.
Python Dust (0.075% zeta-cypermethrin + 0.15% PBO*) *Piperonyl butoxide	Dust	Keds, lice, ticks biting flies	Apply by hand or shaker can evenly over the back.

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Conclusion

Afghanistan is the home of many Central Asians most unique breeds of sheeps, which are particularly well-adapted to the local conditions and highly valuable for commercially trade. Sheep production is an important sector of Afghanistan's agricultural economics. Sheep contribute meat, milk, skin, fiber and manure to the agricultural system and help to meet the country's demand for carpet wool,

ropes, bags, Kuchi's tents, skins and meat. Skins are very important items to generate foreign currency for developing countries especially karakul skin. Insect pests are limiting production in the sheep industry significantly in Afghanistan. The most important problems that result in poor quality karakul skin, and hide products are external parasites such as lice, ticks, ked, fleas and mange mites. External parasites are those that live on the outside of the body, they can feed from the body tissues such as blood, skin and hairs.

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ОБЗОР ВНЕШНИХ ПАЗАРИТОВ ОВЕЦ В АФГАНИСТАНЕ

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Аннотация. Овцы вносят важный вклад в производство продовольствия в Афганистане, которое обеспечивает страну мясом, молоком и шерстью. Шкуры также являются важными товарами для получения иностранной валюты для развивающихся стран, особенно шкуры каракуля представляют собой огромный ресурсный потенциал поголовья овец в стране, которое ограничено и которому угрожает комплексное воздействие болезней, плохого управления и недоедания. Паразитарные кожные заболевания, вызываемые внешними паразитами, такими как чесоточные клещи, вши, кед и тики, относятся к числу этих угроз, приводящих к серьезным экономическим потерям для кожевенной промышленности и страны в целом. Экономические последствия внешних паразитов в Афганистане недостаточно хорошо задокументированы. Цель исследования – определить внешних паразитов овец здесь, в Афганистане, и изучить их экономическое воздействие на ежегодные доходы общества. Исследование проводилось в виде обзора, и для его проведения было изучено около 45 статей и книг.

Количество насекомых и вредителей, ограничивающих производство в овцеводческой отрасли, в Афганистане значительно велико. Внешние паразиты питаются тканями организма, такими как кровь, кожа, шерсть и волоски. Раны и раздражение кожи вызываются этими паразитами, и возникающие в результате дискомфорт и раздражение у животного были изучены в этом обзорном исследовании. Паразиты могут передавать болезни от больных животных к здоровым. Они могут снижать прибавку в весе и выработку молока. Как правило, зараженными овцами невозможно эффективно управлять для достижения оптимального уровня продуктивности.

Ключевые слова: внешние паразиты, борьба, овцы, повреждения, кожевенная промышленность.