

DEWORMING FOR IMPROVING THE PRODUCTIVITY IN GOATS



NATURAL RESOURCES INSTITUTE



BAIF DEVELOPMENT RESEARCH FOUNDATION

BACKGROUND

Goat keeping as a means of livelihood is common in most semi-arid regions in our country especially for the poorer sections of the community. With limited natural resources available in such regions, the animals are often required to walk a long distance in search of feed. However, during the dry season, goats are often underfed and in times of drought, their plight is even worse. Their poor nutrition is further compounded by the heavy infestation of helminthes in the digestive tract. These parasites compete for the nutrients available in the gastro-intestinal tract and also block sites of nutrient absorption, thereby reducing the supply of nutrients to the animals and affecting their performance.

CONSTRAINTS

An extensive system of goat management is practiced by goat keepers in Karnataka with hardly any attention paid to supplementary feed or deworming. The worm infested animals become weak due to less supply of nutrients required for survival and production. The farmers are either unaware of the ill effects of these parasites or have no access to an effective remedy. The cost of the treatment and the need for repeated use are additional constraints in regular deworming of these animals. There is thus a need to educate the goat keepers about the ill effects of worms in the animals and demonstrate effective deworming methods.

In the long dry season, the forages available for grazing goats are not enough to meet their nutrient requirements. Hence any wastage of nutrients has to be avoided or reduced to improve the nutrient supply to the animals. In Karnataka, the late pregnancy period of does occurs during the beginning of monsoon when the animals are kept indoors and have limited access to feeds and fodder. Thus lack of proper nutrition often leads to abortions, birth of weak kids, high mortality and low growth of kids. It was therefore hypothesized that if does are dewormed in late pregnancy, this would result in less abortions, better milk production, less mortality, higher birth weight and growth rate of kids.

METHODOLOGY

Although, goat management is widely practiced in Karnataka, a systematic study on goats is lacking. Realizing the need to improve the productivity of these animals, which are an essential means of livelihood for small farmers, researchers and goat keepers decided to develop a participatory research technology. The project area included Nigadi, Devarhuballi and Benkankatti in Dharwad district as goats are extensively managed in these areas without proper deworming.

Research studies were undertaken by BAIF and Natural Resources Institute researchers in the years 2000 and 2001 to find out the effectiveness of deworming on the performance of does and kids. The first study also aimed at creating awareness on the benefits of deworming among the local community while the second was targeted to assess the efficacy of a local herb, which was used for deworming of buffaloes by a local community.

TREATMENTS

The study included pregnant does. In the first study, the pregnant animals were dewormed with 7.5 mg/kg body weight of Fenbendazole, 15 days to one month before kidding and again on the day of kidding. The second experiment tested the efficacy of a local herb (*Mucuna pruriens*) for deworming in comparison with the Fenbendazole treatment.

The use of the herb and the quantities used for deworming of buffalo calves was standardized with the local users. The trichomes on the pods of the herb were used for treatment @20 mg/kg body weight of the animals. This was roughly equivalent to the trichome of two mature pods for each adult doe (25 kg body weight).

Preparation of Trichome Mixture

The method for preparation of mixture involves the following steps.

The materials includes *Mucuna pruriens* pods, jaggery/sugar (20 grams) and two glasses of warm water. Scrape the trichomes off the pods with a sharp knife. Required quantity of trichomes should be collected for



Scrapping of trichomes (bristles) for separating the pods.



Drenching the mixture for deworming.



Preparing the mixture of mucuna bristles and jaggery with water.

treatment of target numbers and their weights. For effective separation of trichomes, scrape the pods from top to bottom.

Care was taken to avoid direct contact of trichomes with the skin as this can lead to severe irritation. Half the jaggery or sugar was dissolved in a glass of warm water and the animal drenched with this mixture. The remaining jaggery was mixed with one glass of warm water and the required quantity of trichomes. Again, the animal was drenched with this mixture. Drenching was done carefully to prevent the solution from entering the respiratory tract.

To enable regular monitoring of the selected does, the names of the does and identification marks of both does and kids were recorded after consultation

with the family. The horns were painted in yellow, green and red colours to ensure easy identification. To monitor their weight, a piece of gunny cloth, rectangular in shape punctuated with four holes and fastened with a piece of rope in all the four corners, was hung on to the weighing balance.

The fecal samples of 20 pregnant does (6/7 from each treatment) before treatment and seven days after treatment were collected and analysed in the laboratory for the parasitological load. The fecal pellets were collected directly from the anus of the does and preserved in 10% formalin solution prior to the test. The samples of all the groups were collected from the same family. The does were weighed every fortnight to monitor the gain or loss in weight before and after kidding. The birth weight and weekly gain in weight of kids from the stage of birth up to one month of age were recorded. The mortality in kids during this period was also monitored regularly.

RESULTS

In the first study using Fenbendazole, it was observed that the mortality of kids was lower in dewormed animals (8%) as compared to untreated animals (18%). Birth weights of kids did not differ due to treatment but



Significant difference in goat between kid from untreated doe (first from the left) as compared to two kids from dewormed doe (second and third from the right).

growth rate of kids born to dewormed does was higher than those born to untreated does.

The second study revealed that all the pregnant does were suffering from parasitical infestation during the preparturient period. Eight types of termotodes and nematodes were observed with variable proportions. Parasitical fecal egg count reduced significantly on the seventh day of deworming in the case of groups tested with *Mucuna pruriens* pod trichomes and Fenbendazole. Fecal egg count increased significantly in the control group on the seventh day.

Table 1: Parasite egg count (No./g) in the faeces of experimental animals

Treatment	Number of samples	Before treatment	After treatment
Untreated	6	717	983
<i>M. pruriens</i>	7	971	271
Fenbendazole	7	757	114

The data revealed that herbal antihelminthic is as effective a deworming agent as chemical antihelminthic in pregnant does.

The data on other parameters is presented in Table 2.

Table 2: Growth and mortality of kids in the trial

	Control	<i>M. pruriens</i> pods	Fenbendazole
Number of does in the trial at the start	26	26	26
Number of does completing trial	24	24	23
Birth weight of kids	2.1	2.3	2.2
Weight gain from birth to 4 weeks	2.0	2.6	2.6
Kid mortality from birth to 4 months of age (%)	40	16	20

There was no significant effect of deworming on the average birth weight of kids. Dewormed does did tend to have kids with slightly higher birth weights but the differences were not significant. In the fourth week, the gain in weight of the group treated to pod trichomes was higher than the control group. However, no difference in weight was recorded in the fourth week for the *Mucuna* and Fenbendazole treated group. Statistical analysis of the data revealed that the growth rate of kids from dewormed does was significantly higher than the growth rate of kids from untreated does.

As against the first year, there was no difference in mortality of kids in the groups till one month of age. During this period, mortality was lower than the previous year. This was perhaps due to less rainfall and associated lower disease incidence. The data also revealed that up to four months of age, the mortality was higher in kids born to untreated does. In the kids of dewormed does, the mortality was 50% less as compared to the control group. The weight loss was also higher at one month of lactation in the control group as compared to the treatment groups.

The study revealed that *Mucuna pruriens* pod trichomes is effective in the control of endo-parasites and in registering higher growth rate in kids. This technology has tremendous potential in developing countries. The dosage for different types of animals needs to be tested. The study also highlighted the effective use of indigenous knowledge of the local communities and strengthening such knowledge through research studies.

COSTS AND BENEFITS

The trial showed effectiveness of the treatment for deworming of goats. In the earlier studies up to one month age, the kid mortality in treated does was about 40% of the control. In the second year study, up to one month, there was no difference in kid mortality but till 4 months of age, the kid mortality was about 50% of the control. It can thus be expected that from 10 treated does, 2 extra kids would be obtained. At the prevailing market price, this means an additional income of Rs. 600. The higher weight of kids at marketable age will mean an additional income of Rs. 50/kid with an income of Rs. 500/10 does. The total income is thus expected to be Rs. 1100. The cost of the treatment for Fenbendazole is Rs. 100 for 10 goats per year while in case of the pods, the cost of treatment will be very low. The benefits accruing from the treatment thus seem to be outweigh the costs

even with a chemical compound while with pods, it would further increase substantially. In addition, local availability will be an additional advantage in case of the latter.

CONCLUSIONS

High incidence of helminthes in the digestive tract of farm animals reduces the availability of nutrients to the host animal and increases its susceptibility to other diseases thereby affecting their productivity. These studies have conclusively proven that local knowledge of medicinal plants can be used very effectively to develop a technology for improving the productivity of the farm animals. The low cost and easy availability of such materials make it a cost effective alternative to the more conventional treatments.



Ruffled coat in worm infested animal

Further information may be obtained from :

Dr. A.L. Joshi

BAIF Development Research Foundation
Dr. Manibhai Desai Nagar
Warje, Pune, 411 029, India
Tel. 91 20 5231661, Fax 91 20 5231662
E-mail : baif@vsnl.com

Dr. M.A. Conroy

Social Sciences Department
Natural Resource Institute
Central Avenue,
Chatham, Kent ME4 4TB, U.K.
Tel. 44 (0) 1634 883057
Fax 44 (0) 1634 880066
E-mail : m.a.conroy@gre.ac.uk