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Drug & Nutritional Interventions against gastro-intestinal Nematodes.

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Executive Message

Small ruminants including goats are often kept by women farmers. Keeping these animals healthy is vitally important for the livelihoods of their owners.

- In South Africa, resource-poor farmers, most of whom are women, complain that their goats "don't multiply" and that worms are a major cause of animal death.
- As many of these women have no employment their goats could be a much better source of income if better feeding and use of drugs to control worms could be found.
- This could have a significant effect on the livelihoods of large poor families where the males often have to live in urban areas to find work.
- This project aims to identify and then disseminate information on simple ways of feeding animals and protecting goats against worms so that their owners have more to eat and surplus to sell.
- The scientists have started with an on-station trial the results of which will then be tested by a farmers group. The impact on the community is being measured and an extension manual being produced in appropriate languages with the help of local goat farmers.

Background

Nutritional/micronutrient deficiencies, gastrointestinal parasitism and haemonchosis have been recognized for many years as some of the most important livestock conditions impacting on the poor. In South Africa, resource-poor farmers are concerned that their goats "don't multiply" and that worms (locally known as "izikelemu" or "dibokwana") are a major cause of death. Their concerns are supported by results from studies elsewhere in sub-Saharan Africa, which show that gastro-intestinal nematodes cause poor growth, low reproductive performance and death and so keep poor farmers in poverty.

Objectives

Understanding how to better feed animals or use drugs against gastro-intestinal parasitism to increase growth and reduce deaths will assist goat farmers by enabling them to optimise production by using their limited resources wisely.
This project will provide farmers with advice based on quantified information regarding the relative benefits and cost efficiency of readily available intervention strategies for goat management and helminth control.

Highlights

The scientists first looked at the effects of supplementing goat nutrition using urea-molasses blocks and strategic anthelmintic treatment on the helminth parasite burden in goats. In the first instance this was as an on-station trial.

The results of this work need to be tested on farmers own goats as a field experiment and a number of villages have been identified and agreed to take part. The first year of a three-year socio-economic analysis of the villages has been implemented as a baseline to measure the effects on livelihoods. A goatkeepers' advice package is in an advanced stage of preparation.

On-station trial

The on-station experiment has been set up and is running smoothly. It consists of 4 groups of 20 goats each, which receive supplementation with urea-molasses blocks.
The groups are:

- wet season supplementation only
- dry only
- wet and dry seasons
- no supplementation at all (control)

The animals are grazed during the day and fed their supplements in their pens at night. The wet season feeding of the groups extended from the beginning of December 2002 until the end of February 2003 (summer); the "dry" season feeding will take place from the beginning of June to the end of August 2003 (winter).

Ten goats in each group were given a strategic anthelmintic treatment on 28 January 2003 to comply with the experimental protocol, although the faecal egg counts of the goats in all groups were actually very low (geometric mean < 150 eggs per gram of faeces (epg)). Nevertheless, this led to significant differences in faecal egg counts between treated and non-treated animals on each date of sampling during February 2003. The low egg counts are probably related to rainfall being lower than normal during August to November (124 mm compared to a 12-year average of 168 mm) and the fact that there is a considerable amount of browse available where the goats are kept. Even though rainfall for December 2002 and January and February 2003 was normal, egg counts were low (geometric mean < 250 epg) at the end of February.

Significant differences were seen in the egg counts between the 4 supplementation groups in November and December 2002. However, clinically these differences were not important (all geometric mean egg counts < 100 epg).

Goatkeepers' extension package

A goatkeepers' extension manual is being finalised. It consists of 12 laminated posters on disease conditions that farmers perceive as important. A smaller booklet entitled "Worms in your goats, sheep and cattle" will accompany the manual. The whole package will be translated from English into Zulu, one of the local languages. It will be tested by the farmers over a working period of 12 months before a final revision is produced.

On-farm trial and socio-economic analysis

The project is targeting the communities of Hlafuna, Njobokazi and Nkwazela in KwaZulu-Natal Province, South Africawith the socio-economic work being undertaken by the independent private company, Strategy and Tactics.
Preliminary analysis of official 1996 census data reveals some 3447 individuals in the targeted communities, almost all of African race. The majority of the population is female, reflecting the migrant labour pull on rural populations. More than 25% of the population are under 10 years old, and nearly 60% under 20. Community focus groups showed that the majority (71.2%) of unemployed people are women many of whom keep goats. This confirms the project objective that targeting poor goat keepers help will have a significant impact on livelihoods.

Next steps

During the next year the scientists intend to:

- Complete the on-station trial
- Assess the relevance and clarity of the goatkeepers' manual using a goatkeepers' interest group
- Select four members of this group to take part in the on-farm trial which includes testing the most appropriate nutritional and chemotherapeutic strategies from the on-station trial
- Assess the impact of health and production improvements on livelihoods as part of the second-part of the socio-economic analysis of the participating farmers.

Impact

The findings of this project are likely to have a positive impact on poor farmers both within and outside the project study area.

Direct beneficaries

Resource-poor women farmers in the goatkeepers' interest group are expected to be the first beneficiaries of this project Information is already flowing out to them. As the KwaZulu-Natal Department of Agriculture and Environmental Affairs is a collaborator and works closely with the extension services and the state veterinarians the results will also be quickly available to poor farmers in the whole of the South-Western region of this province.

Indirect beneficaries

Theses include:

- The Society for the Prevention of Cruelty to Animals which is an important service provider in similar resource-poor communities of this province
- The Farmer Support Group of the University of Natal
- NGOs such as the Valley Trust, Heifer Project International and Farm Africa
- Other Provincial Departments of Agriculture, particularly those of Gauteng and North-West Province.

Dissemination

As a collaborator in the fieldwork the KwaZulu-Natal Department of Agriculture and Environmental Affairs are expected to be an important promoter of research results. While the project has not been reported in the media as yet, the results of the present research as well as information from the goatkeepers' package will be published in *Nufarmer and African Entrepreneur*, a local newspaper aimed at the resource-poor farmer.

Presentations

A number of presentations were given at DFID Livestock Production Programme Link Project (R7798) workshop for smallstock keepers. Embu, Kenya, 4-7 February 2003

Vatta, A.F., Harrison, L.J.S., Krecek, R.C., Letty B.A., Pearson, R.A., Van Wijk, E.F. and Stenson, M.O. (2003)
Improving the livelihood of resource-poor goat farmers in Southern Africa through strategic drug and nutritional interventions against gastro-intestinal nematode infections: 2002 to 2003 update

Vatta, A.F., Krecek, R.C., Letty, B.A., Harrison, L.J.S. and Pearson, R.A. (2003)
Roundworms in goats - getting the message across.

Selected Publications

Vatta, A.F., Harrison, L.J.S., Krecek, R.C., Pearson, R.A. and Coop, R.L. (2002)
Improving the livelihood of resource-poor goat farmers in Southern Africa through strategic drug and nutritional interventions against gastro-intestinal nematode infections. In: Smith, T., Godfrey, S.H., Buttery, P.J. and Owen, E. (Eds.) *Helping smallstock keepers enhance their livelihoods: Improving management of smallholder owned sheep and goats by utilising local resources*. pp 111-115. (Hard copy and CD.)

Vatta, A.F., Pearson, R.A., Krecek, R.C. and Harrison, L.J.S. (2003)
Suspected multiple anthelmintic resistance in Boer goats from Northern Cape Province, South Africa. Tropical Animal Health and Production.

For farmers/extension staff

Vatta, A.F. (2003)
Worms in your goats, sheep and cattle. Extension booklet

Vatta, A.F., Krecek, R.C. and Letty, B.A. (2003)
Goatkeepers' manual. Extension manual