

composting system, the vermicomposting often results in mass reduction, shorter time for processing and a better quality end-product (vermicompost) in terms of nutrient availability and levels of humus (Suthar, 2008).

Conclusion

Thus the use of earthworms may reduce parasitism and improve forage quality in tropical pastures. These results must be confirmed in experiments on pasture, with other ratios and combinations of earthworms.

Acknowledgement

The authors want to thank Duclos and Gardel experiment unit staff directed by Harry Archimède, for experiment management and lab work. This work has been partly supported by the European Union (FSE) and Guadeloupe Region.

Reference

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doi:10.1017/S2040470010000397

Parasitic Infections in Association with Serum Copper, Phosphorus, and Haematological values in sheep and goats of Swayback prone farms Central Trinidad

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Introduction

Coccidian and gastrointestinal nematode infections as mixed or single infections are major parasitic diseases affecting health and productivity of the sheep and goat industry in both tropical and temperate climates. Controlled dosing studies of gastrointestinal parasites in sheep have shown an association between parasitic infection and depressed blood Cu and P levels. Although the economic significance of these conditions is speculated upon, no field study has been done in Trinidad to demonstrate whether parasitic infections and Cu and P deficiencies occur concurrently and their importance to the sheep and goat industry of Trinidad.

Initially, a study was done to investigate two outbreaks (1987, 89) of a suspected Copper (Cu) deficiency condition swayback resulting in high mortality in grazing sheep and goats of rural farms and intensively reared animals of three government owned farms of Central Trinidad. Initial findings from blood serum of 131 sheep and 86 goats of a fixed sampling survey of affected farms indicated that more than 80% and 50% of swayback affected and apparently normal animals combined had low Cu levels ($<0.65 \text{ mg L}^{-1}$) and P ($<45 \text{ mg L}^{-1}$) (Mohammed, 1999).

The study presented here sought to investigate the possible association between parasitic infections, serum Copper, Phosphorus and haematological values in sheep and goats of affected and apparently normal animals combined from swayback prone farms.

Materials and Methods

Single faecal, whole and clotted blood samples were taken from one month to four year old sheep ($n = 66/131$) and goats ($n = 66/86$) from swayback prone farms. On the whole, blood and faecal samples, complete blood counts and the degree of parasitic infection were determined manually for the former and diagnostically by the number of eggs/ova per microscopic field (1+, 2+, 3+, 4+) for the latter. Total protein, fibrinogen, Copper (Cu) and Phosphorus (P) concentrations in plasma and serum were determined by heat precipitation, atomic absorption and colorimetrically, respectively. Data were analysed using a one way ANOVA.

Results

Fifty-five percent of sheep and 85% of goats displayed a mild to moderate degree of mixed parasitic infections (1+–3+). Haemoglobin, PCV, and Cu values varied significantly ($P < 0.05$) with the degree of parasitic infection in goats and slightly in sheep ($P < 0.07, 0.05$). Lower Hb

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and PCV values were found in goats without an apparent parasitic infection, an occasional and a 2+ degree of parasitic infection. Lower mean serum Cu concentrations were found in sheep without evidence of parasitic infections and in goats with both 1+ and 4+ degree of mixed infections. Twenty-five to 37% of parasitized sheep and goats had serum Cu ($<0.5 \text{ mg L}^{-1}$) and P ($<40 \text{ mg L}^{-1}$) Below Critical Levels (BCL).

Conclusions

The degree of mixed parasitic infections was somewhat related to the lowered Hb and PCV mean values and serum Cu concentrations more so in goats than in sheep from swayback prone farms. Both regular treatment for parasitism and mineral supplementation would impact positively on the growth, health and productivity of sheep and goats of Central Trinidad.

Acknowledgements

Special thanks are due to Drs. W. Harper and J. De Freitas, Messrs. N. Persad, F. Neckles, S. Deosaran, W. Christmas, J. Gangadeen, B. Lauckner, M. Jones and P. Antoine. We are deeply indebted to our local farmers who allowed us access to their animals to complete this survey.

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doi:10.1017/S2040470010000403

A long term experiment of integrated control of nematode parasitism in Creole goats

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Introduction

Infection with gastro-intestinal nematodes (GIN) is one of the most prevalent diseases affecting small ruminants in the tropics. Mixed grazing between sheep and cattle reduces infection of the small ruminants and improves growth performances (Mahieu *et al.*, 1997). Also, it is possible to select Creole goats on resistance to GIN during the post weaning growth and the periparturient period (Mandonnet *et al.*, 2006). This study presents the potential benefits of combining these two control methods.

Material and methods

Four different herds of Creole goats were used for the experimentation at INRA-Gardel in Guadeloupe: two herds grazing alone, one with average genetic level (R0) and the other resistant (R+) and two herds grazing with heifers, one with average genetic level (M0) and the other resistant (M+). The genetic index for the R0 and M0 herds was +0.08 and -0.12 for the herds R+ and M+. That represented 0.53 genetic standard deviation of faecal egg count (FEC) criterion. Each herd was grazing on the same paddock throughout the experimentation. The stocking rate was set to around 500 kg^{0.75}/ha for the R+ and R0 herds, and to 250 kg^{0.75}/ha (goats)+250 kg^{0.75}/ha f(cattle) for the M+ and M0 herds at the beginning of each cohort. Each herd was composed of pregnant and suckling goats, which allowed the comparison between dry and lactating dry goats.

Doe faecal samples were collected at weeks 4 and 6 after kidding. FEC were estimated using a McMaster method. The individual parasitic level was estimated with the mean of FEC at week 4 and 6 after kidding.

Data were collected beginning in 2006 corresponding to 12 cohorts and 435 does. The effects of the explicative variables (resistance level, grazing mode, physiological status, litter size, year, season, and their significant first-order interactions) were studied using the GLM procedure of SAS software release 8.1 (SAS institute Inc., 1999–2000). FEC data were cubic-root transformed before analysis to normalize the distribution. The results were then back transformed (geometrical means).

Results and discussion

Lactating does had a significantly higher FEC than dry does at each sampling point ($P < 0.0001$) except for three cohorts where the difference was not significant. Moreover, the litter size had a significant effect on the infection level: does with a multiple litter were significantly more infected than does with a single one ($P < 0.05$). These results are similar to those reported by Mandonnet *et al.* (2005). The FEC of the

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