

Novel solutions for the sustainable control of nematodes in ruminants – Studies in Italy.



In Italy there is a population of about 7,000,000 sheep and 1,000,000 goats (FAO, 2005). The sheep and goats industry is concentrated mainly in Central-Southern Italy and in Islands (Sicily and Sardinia).



In the Campania region there are about 11,539 sheep/goat farms spread all over the region. The small ruminant flocks are located in the more marginal areas, in hilly rocky shrub lands, where the percentage of cultivable land is very low and the farming system is characterized by low inputs and stocking rates. The production systems are interrelated with local tradition and local sheep

and goats breeds. These farming systems are very important in the maintenance of rural areas, providing a means to enhance the value of family labour.

In Italy, the small ruminant farms are specialised in milk production; in the European scenario, Italy is the first nation for sheep milk production and the second for cheese production after the Greece (see following table),



Dairy sheep census and production in Italy (FAO, 2005)

	Heads		Milk production		Cheese production	
	<i>N</i> ×1000	(%)	<i>T</i> ×1000	(%)	<i>T</i> ×1000	(%)
Italy	7,000	25.8	820	28.6	94,350	25.7

N= number of heads; *T* = metric tons.

Among the parasitic infections, gastrointestinal (GI) parasitism is the most serious problem affecting sheep and goats in Italy. In the Campania region the prevalence of gastrointestinal strongyles is 96.7%. Economic losses caused by GI strongyles are related to decreased production, costs for treatment and prophylaxis and animal death. Effective control of GI strongyle in small ruminants is one of the most difficult challenges encountered by veterinary in practice. In Italy, as elsewhere, the control of gastrointestinal (GI) strongyle infections in small ruminants relies almost exclusively on dosing with anthelmintics.

The most commonly anthelmintics used for helminth control in small ruminants include three chemical groups: Imidazothiazoles/Pyrimidines (Im/Pm), Benzimidazoles/Probenzimidazoles (Bz/Pbz) and Macrocyclic Lactones (ML).

Data from a questionnaire survey concerning GI strongyle control practices of sheep farmers ($n^{\circ} = 460$) in central-southern Italy revealed that anthelmintics are used by 84% of the farmers; the number of treatment per year is 1 (65%), 2 (28%), 3 (5%) or 4 (2%) and the most common anthelmintics used against GI strongyles are benzimidazoles and probenzimidazoles (49%), followed by macrocyclic lactones (25%), cholinergic agonist (11%), associations and others (15%).

Traditionally in Italy the most common times for deworming the animals are in Spring (March-April) and/or following the dry summer period in the Autumn (August-October).

Effective chemical anthelmintics remain irreplaceable for worm control and their



elimination is not practical on animal welfare and economic grounds. Any anthelmintic scheme has three main goals, i.e. the parasitological efficacy, the strategic efficacy and the economic efficacy.

Although anthelmintic resistant populations are common in many countries, data generated in Southern Italy suggest that anthelmintic resistance is not a common phenomenon in this area. There are only two reports of resistance in small ruminants to date, one referring to benzimidazole resistance in *Trichostrongylus colubriformis* in goats and one to imidazothiazole and macrocyclic lactone resistance in trichostrongylidae in sheep. A recent study conducted within the PARASOL project in southern Italy showed no resistance in trichostrongylidae to 8 anthelmintics belonging to benzimidazoles, pro-benzimidazoles and macrocyclic lactones.



A study on the effects of five anthelmintic treatment regimes on milk production in goats naturally infected by GI strongyles showed that a scheme based on two treatments, one in February and one in June (the common lactating period of goats in many Mediterranean zones), is very effective in terms of productivity.

Field trials conducted in Southern Italy within the PARASOL project, demonstrated that the strategic anthelmintic treatment scheme based on two treatments timed in relationship to parturition, i.e. the first in the periparturient period (during the last month of gestation or soon after lambing during the period when lambs were suckling) and the second at the mid/end of lactation caused a consistent increase in milk yield in sheep naturally infected by gastrointestinal strongyles.

