

Abstract Submission Form

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Preferred presentation	Oral
Preferred session	Session 7: Breeding for agroecological transition in sheep and goats
Email of corresponding author	Jean-Michel.Astruc@idele.fr
Title of your paper	Breeding for resistance to parasites in French dairy sheep: towards an increase in resilience and sustainability of sheep dairying

Insert ABSTRACT text

Anthelmintic resistance is increasingly present in French sheep flocks. The issue is particularly acute in dairy sheep, as the only anthelmintic drug still available during the lactating period without milk withdrawal time is eprinomectin, a macrocyclic lactone. In the Pyrenean dairy sheep breeds, for which the breeding system is based on pasture grazing under an Atlantic climate, some flocks are in dire straits with no more efficiency of the treatments against the gastrointestinal nematodes (GIN) during the lactating period. Management of GIN in France aims at an integrated control, based on a combination of solutions. It is advocated that treatment should be targeted and selective, grazing should be managed to limit the sources of contamination and resistance of sheep should be increased through genetic selection. This paper focuses on the genetic lever and describes the process undertaken by the Pyrenean dairy sheep organisations over the last decade to implement a selection for resistance to parasites in the Blond-Faced Manech and Basco-Béarnaise breeds. Phenotyping of resistance to GIN has been achieved since 2008 by experimental infection of the rams entering the insemination centre. The protocol is based on two successive infections with L3 larvae of *Haemonchus contortus*, separated by a 15-day recovery period.

Faecal egg count (FEC) one month after each infection and the variation of packed cell volume (Δ PCV) between the infection and one month after were measured. FEC and Δ PCV may be considered as indicators of, respectively, the resistance to parasites and the resilience of the animal. 1,723 Blond-Faced Manech rams and 502 Basco-Béarnaise rams have been phenotyped for this trait since 2008. All of them are genotyped. The estimation of genetic parameters of FEC and Δ PCV at each infection shows that FEC is moderately heritable while Δ PCV displays a lower heritability. The genetic correlations between FEC and Δ PCV are quite high, meaning that the more resistant rams are also the more resilient. The genetic correlations between FEC and Δ PCV on the one side, and the traits currently under selection (milk, fat and protein, somatic cell count, udder morphology) on the other side are low, close to zero. Consequently, the inclusion of resistance to parasites in the breeding objective would not hamper too strongly the efficiency of selection on current traits. A genomic evaluation of FEC and Δ PCV was performed in 2022 and the breeding organisation of the Blond-Faced Manech and the Basco-Béarnaise breeds decided to include resistance and resilience to parasites in the breeding criteria of these breeds. FEC and Δ PCV have been combined in a composite sub-index related to parasite resistance and resilience. This sub-index was then combined with the current selection index to produce a new Total Merit Index that is now used to select the rams in the breeding program.

Enter keywords

dairy sheep, resistance to parasites, breeding objective, genetic parameters