

Bioactive forages for parasite control in sustainable production systems

Background

Gastrointestinal parasitism, caused by roundworms, is a major challenge to sheep production, as it compromises health, welfare and production. Worms are traditionally controlled by “anthelmintic” drugs, but the increase of drug resistance and the restrictions on their use in organic systems of production, have resulted in the need for alternative parasite control methods. The use of bioactive forages is one method.

Bioactive forages in sustainable sheep systems

Bioactive are forages that can affect the resident or incoming worm population of grazing animals. Grazing on bioactive forages, such as chicory, birdsfoot trefoil, sulla, and sainfoin has been shown to reduce the negative effects of parasitism in sheep.



Ewe and lamb grazing on chicory swards in SAC organic farm.

However, much needs to be learned about using bioactive forages in practical production systems. It is not yet known whether bioactive forages act directly against incoming or established worms or whether they work indirectly by improving the nutritional status of parasitised animals. We have been looking at these

questions in low input sheep production systems, where the preventative use of anthelmintic drugs is not allowed.

Achievements

Research at SAC has shown that:

- Chicory was the best and most promising bioactive forage for the Scottish climate.
- Grazing on chicory for 2 weeks resulted in a reduction in numbers of **adult worms** in the intestines of growing sheep.
- Grazing on chicory improved the **performance** and reduced the worm **egg excretion** in lambs grazing with their mothers.
- However, chicory consumption did not reduce the number of worm eggs excreted by **ewes close to lambing**.
- The administration of conserved bioactive forages, such as sainfoin hay, resulted in a reduction of the number of **worm eggs** excreted by parasitised sheep.

Likely benefits

Bioactive forages have direct effects on worms and short-term grazing on chicory or sainfoin may be useful for parasite control in sustainable systems of sheep production. Chicory plots could be incorporated in sheep grazing systems as deworming paddocks.

Work in progress: mechanisms of action of bioactive forages

Current work focuses on investigating the action of bioactive forages and in particular whether they can trigger an effective immune response in sheep against parasites. Future work will aim to use this knowledge and SAC will investigate efficient parasite control in practical sheep grazing systems.

For further information contact:

Dr Spiridoula Athanasiadou, Animal Health Group, SAC
Tel: 0131 535 3211
Fax: 0131 535 3121
Email:
Spiridoula.Athanasiadou@sac.ac.uk

Research Partners: SAC, Moredun Research Institute

Research Sponsors: European Union, Scottish Executive Environment and Rural Affairs Department, Department for Environment Food and Rural Affairs.

SAC Reference Number: 521411, 621720, 521332



