

# The benefits of healthy hay



## The University of Reading is to investigate how feeding an ancient food to livestock could be of huge benefit to the environment.

Ruminants, especially dairy cows, are major contributors to environmental pollution, but by eating sainfoin, an almost forgotten traditional fodder legume, the animals' polluting emissions could be cut significantly.

Now the University of Reading's Agriculture Department, in collaboration with other EU and Armenian colleagues, is part of a new Marie Curie research training network called 'HealthyHay', to investigate the benefits of feeding sainfoin to livestock.

Dr Irene Mueller-Harvey, who is leading the project at Reading, said: 'Ruminants utilise sainfoin protein very efficiently. They also make better use of the energy in sainfoin compared to grass of equal metabolisable energy content.'

'This is important because more efficient nutrient utilisation of protein and energy leads to less environmental pollution in terms of nitrogen and methane emissions.'

'HealthyHay' takes a holistic approach to a unique sainfoin (*Onobrychis viciifolia*) germplasm collection, and will develop a scientific and technical basis for animal feeding systems based on lower chemical inputs by re-popularising a traditional fodder legume for more efficient, animal- and environment-friendly farming systems.

Sainfoin is a Eurasian perennial herb and has pale pink flowers and curved pods. This highly nutritious plant is an important forage crop and source of honey in Britain, because the plant is rich in tannins which protect proteins from hydrolysis in the rumen allowing the protein to be absorbed in the abomasum. The plant has a deep taproot and so is very drought-resistant.

Sainfoin was widely grown in Europe before the use of commercial fertilisers and synthetic veterinary drugs, and has a very high voluntary intake by cattle, sheep and horses. It is thought that the unique nutritional, environmental and veterinary properties of sainfoin are governed by the presence of tannins, which are natural products that occur only in a few fodder legumes.

The English term sainfoin is derived from the French 'sain foin', which means 'healthy hay'. Research also suggests that the sainfoin tannins achieve good anti-parasitic effects. This could explain why it is such a good fodder for young livestock such as lambs and calves.

Dr Mueller-Harvey and her team will be working with the National Institute of Agricultural Botany (NIAB) in Cambridge who will be establishing the sainfoin germplasm collection, and Cotswold Seeds Ltd, who are providing their seeds and also hay samples for the project.

Also working on the project from Reading will be Professor Rainer Cramer, Biocentre, Drs Rebecca Green, Richard Frazier and Dr Wayne Hayes, School of Chemistry, Food Biosciences and Pharmacy. From the NIAB will be Mr Steven Bentley and Dr Lydia Smith, and joining them will be Ian Wilkinson from Cotswold Seeds, which is based in Moreton-in-Marsh, Gloucestershire.

HealthyHay brings together 13 teams from Armenia, Austria, Denmark, Greece, France, Spain, Sweden, The Netherlands and the United Kingdom. It aims to train researchers with less than four years of research experience.

