

# Title: An investigation into reducing chemical N inputs and the environmental footprint of pasture based sheep production systems

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## Abstract:

Ireland's competitive advantage in sheepmeat production is based on the efficient production and utilisation of pasture. Challenges facing the agricultural sector are based on maintaining or improving current levels of production to maintain an economically viable sector but with an enhanced focus on environmental sustainability and a reduced dependence on chemical nitrogen use. A key focus of the DAFM Agri food strategy 2030 is to investigate the role of Grass, legumes and herbs that can deliver required sward yields and longevity at lower levels of nitrogen application.

Previous research investigating the incorporation of legumes (both white and red clover) and forage herbs (plantain and chicory) into sheep grazed swards have shown positive results. Binary sward mixtures containing perennial ryegrass and a companion forage (white clover, red clover, plantain or chicory) have the potential to support increased lamb performance above that of a perennial ryegrass monoculture in terms of pre-weaning, post-weaning and lifetime average daily gain and subsequent days to slaughter.

Reductions in chemical N requirements were also observed in swards with the addition of white clover which had positive effects from an economic and environmental perspective. The use of forage legumes and herbs in combination with perennial ryegrass warrants further investigation to determine their suitability relative to the traditional perennial ryegrass system in terms of their effect on animal performance and output; their physical production, utilisation and quality and to determine their potential to reduce the environmental footprint of Irish sheep production systems.

Further work is required concerning the management of both legumes and herbs within sheep systems to increase their contribution and persistence in grazed swards. Knowledge gained will support innovation, technology transfer and education.