

# GrassGen



## Genetic fingerprinting of grassland soils; the potential of soil biology to cycle and supply nutrients for sustainable intensification

Soil is a vital non-renewable resource that requires sustainable management for the delivery of economic, environmental and societal benefits. Across the world agricultural production systems are being intensified and chemical fertiliser use is being increased, with fertiliser inputs costing an estimated at €19.2bn for European farms. However, the current levels of nutrient use efficiency in grazed grassland systems are relatively low (26% for N and 65% for P in 2015). Soil biology is central to the breakdown of organic matter in soils and for recycling nutrients for crop production. In order to improve the efficiency of nutrients used on agricultural soils new understanding of the role and function of soil biology is critical. This project aims to assess the biological potential of different soils to cycle/supply nutrients for grassland production. New technologies will be used to find out what soil microbes are present, what influence they have on soil nutrient supply and how active they are under different management regimes. The results from this research will provide the basis for future knowledge transfer and advice for farmers to better manage fertiliser applications to optimize soil fertility and nutrient efficiency leading to profitable and environmentally sustainable production.

**Project Duration:** 36 months (18M IRET + 18M Teagasc)

**Collaborating Institutions:** Teagasc Johnstown Castle Soil Science Research Centre, Ireland  
National Research Council, Research Institute on Terrestrial Ecosystems (CNR-IRET), Italy

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