WORK PACKAGE 2.3: AGRICULTURAL SYSTEMS AND LAND MANAGEMENT

The aim of Work Package (WP) 2.3 is to help provide the science needed for Scotland to improve the efficiency of production of good food whilst protecting the environment, rural communities and animal welfare.

The science is useful to a broad range of end users, from government to businesses, and aims to strengthen the performance and sustainability of Scottish agricultural systems by delivering the tools (e.g. disease control, welfare and genetic tools), component science (e.g. microbiology, physiology, behaviour and ecology), integrative concepts and approaches (e.g. systems and socio-economic approaches) and their application and demonstration in rural communities and environments to support the Scottish Government's strategies and policies relating to the productive and sustainable management of rural economies.

Agriculture faces an ever-increasing demand to achieve enhanced productivity/economic resilience in a sustainable manner, including minimising adverse impacts while fostering positive changes on the environment (greenhouse gases (GHG), air, soils and water), product quality (including human health attributes), animal health & welfare and crop/plant/soil health. Combinations of solutions will be required within an integrated management framework and a greater understanding across scales is needed to provide robust solutions for future application. WP 2.3 focuses on agricultural systems, developing the science from the previous Strategic Research Programme, in addition to establishing new areas of integrative science.

The research in WP 2.3 aims to provide the evidence base underpinning resource use efficiency and the production of increased amounts of good food from agricultural land (e.g. sustainable intensification) to improve the competitiveness of Scotland's rural economies, and to help Scotland become a "Good Food Nation", including through the activities of Scotland's Food Commission.

Significant improvements in resource use efficiency have already been realised (including from the Scottish Government's Main Research Providers research in previous Strategic Research Programmes), for example in breeding and genetics. WP 2.3 aims to continue these trajectories, as well as improve rates of return through new innovations and thus improve the competitiveness of Scotland's agricultural production and rural economies.

WP 2.3 aims to enable the generation of more sustainable agricultural land use across Scotland. This will be achieved through a mix of natural sciences in combination with social sciences to both understand and value current and likely future land use systems through:

- Research that contributes to greater efficiency and resilience of livestock farming that also leads to improvements in the quality, health and welfare of livestock.
- Developing systems that take account of the effect of both farm management and the wider environment in order to control diseases in animals and crops.
- Encouraging land management methods that limit impacts to soil, air and water quality.
- Finding ways to encourage greater take up of GHG reduction measures in agriculture, and also developing new approaches that contribute to the Scottish Government target of reducing GHG emissions by 80% by 2050.
- Demonstrating how 'big data' in agricultural supply chains and industry networks can help improve their efficiency, and how new technologies and sensor systems may play their part in those systems.
- Examining how sustainable agricultural businesses can thrive while maintaining a balance with the environment and communities in which they operate.

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