



Transition paths to sustainable legume-based systems in Europe

## How can legumes help in biomass production?

**Problem:** as monocrops, legumes offer only non-commercially competitive quantities of biomass for feed, silage, or anaerobic digestion. However, as components of intercrops they significantly increase nutritional provisions, crop abiotic- and biotic-stress resilience, and productivity, as well as fertility-building for subsequent crops.

**Experimentation:** a series of autumn-sown trials in Scotland were carried out assessing intercrops of winter-cereals (wheat, barley, oats, rye, triticale) with winter-legumes (peas, faba beans, vetch) at several locations, seasons, fertiliser rates, proportions, component numbers, and varieties. These were cut as ‘whole crop’, wilted, baled for fresh- and dry-weight, plus digestibility analysis.

**Research findings:** peas and vetch contributed positively to yield and quality if grown at low fertiliser rates and appropriate variety-proportion combinations. Faba bean water content tended to be too high. Oats and rye together or separately were the best cereal components for yield. Barley and wheat contributed to quality but performed poorly under low nitrogen. High proportion of peas, beans, and oats gave positive yield effects on subsequent cereal crops directly drilled into their stubble. Cereal density must be sufficiently high for weed control. The addition of ryegrass to mixtures allows post-harvest grass-biomass cut (precipitation permitting).

**Author(s)**

Adrian C. Newton, Pietro P.M. Iannetta

*James Hutton Institute,  
Invergowrie Dundee DD2 5DA  
Scotland, UK*

**Contact**

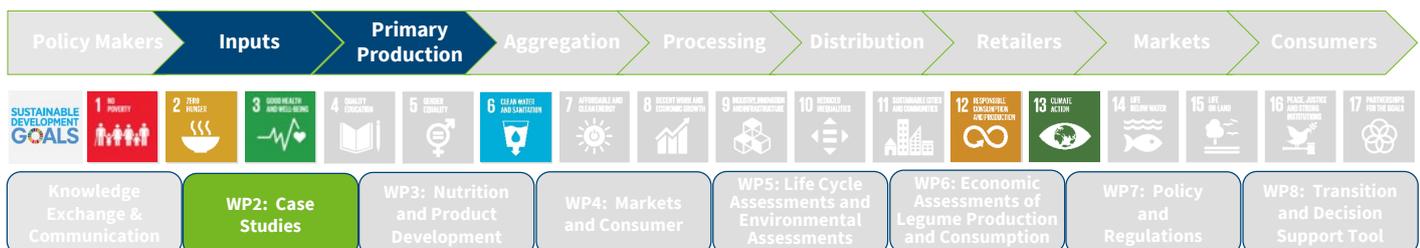
[Adrian.Newton@hutton.ac.uk](mailto:Adrian.Newton@hutton.ac.uk)  
[Pete.Iannetta@hutton.ac.uk](mailto:Pete.Iannetta@hutton.ac.uk)

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All Practice Abstracts prepared by the TRUE Project in the EIP-Agri common format can be found here: <https://ec.europa.eu/eip/agriculture/en/find-connect/projects/transition-paths-sustainable-legume-based-systems>





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**Practical recommendation:** For highly productive winter biomass production, it is recommended to choose competitive legume varieties at appropriate densities and low nitrogen fertiliser rates in intercrop combination with oats, rye, and other cereals.



**Figure 1.** Intercrop of winter-cereals with winter-legumes. *Photo credits ©: Adrian C. Newton*



### About TRUE

The EU funded project "TTransition paths to sUustainable legume based systems in Europe" (TRUE) is a balanced practice-research partnership of 24 institutions, which aims to identify the best routes, or "transition paths" to **increase sustainable legume cultivation and consumption across Europe** and includes the entire legume feed and food value chains.

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