



Transition paths to sustainable legume-based systems in Europe

How can greenhouse gas emissions in milk production be lowered?

Problem

Agriculture in Ireland is a major source of greenhouse gas (GHG) emissions and removal of the milk quota has stimulated a rapid increase in milk output. This has made it more difficult to meet GHG reduction targets, although several avenues for lowering GHG emissions from dairy farms while maintaining profitability exist.

Practical recommendations

Available 'off the shelf' technologies include:

- (1) significantly reducing fertiliser Nitrogen (N) input and rely on white clover nitrogen fixation in the paddocks to make up for the reduced N input;
- (2) using protected (N-(n-butyl) triphosphoric triamide-treated) urea as a fertiliser instead of calcium ammonium nitrate and urea;
- (3) using a trailing shoe instead of the commonly used downward-facing splash plate for slurry application; and,
- (4) selecting high breeding index cows, resulting in an increased milk and milk solids output.

Author(s)

James Humphreys, TEAGASC - Agriculture and Food Development Authority

Contact

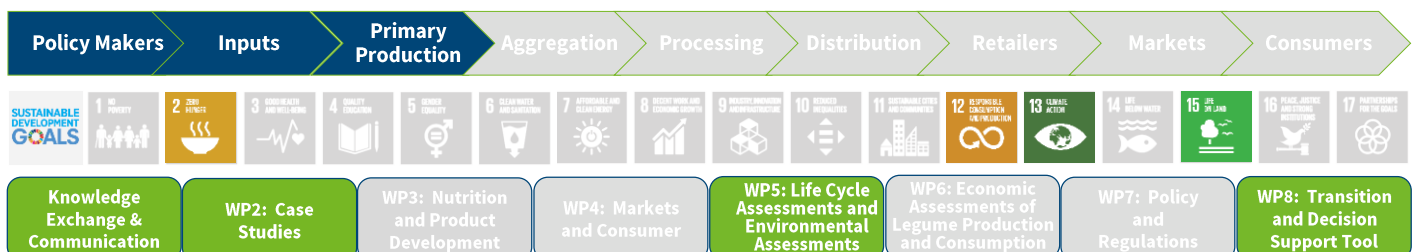
James Humphreys,
james.humphreys@teagasc.ie

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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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Research findings

The current Irish national average emission is 1.23 kg CO₂-equivalents per litre milk. To reduce this number, while maintaining current levels of milk output per ha and profitability, at the Solohead Research Farm, a control group having standard farm practices is being compared with a Low Carbon (LC) group where the above-mentioned strategies were implemented simultaneously. Results to date show a 17% emissions reduction in the LC system, as well as higher milk and milk solids output with lower inputs. The decreased inputs and increased outputs also help to maintain or even improve farm profitability.



Herd of cows grazing at TEAGASC research farm Solohead. *Photocredits © TEAGASC*



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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