



Transition paths to sustainable legume-based systems in Europe

Why and how to grow into a living mulch of in-crop clover



Research findings

Living mulches, a permanent green crop understory, have potential as a sustainable means of arable production, particularly legumes such as clover. Demonstrated benefits include improved pest, weed and erosion control, reduced surface water pollution, improved soil structure, fertility, biota and organic matter content, and fixing of atmospheric nitrogen. Living mulches can also promote on-farm pollinators where appropriate flowering understories (such as clover) are used, and support carbon storage and nitrogen provision to the crop, potentially having a significant impact on pollinator conservation and climate change if widely adopted on large arable land areas. Living mulches therefore represent a potentially ‘multifunctional’ solution for production and the environment, with focus on the latter likely to be key to driving market competitiveness and achieving sustainable intensification in the future.

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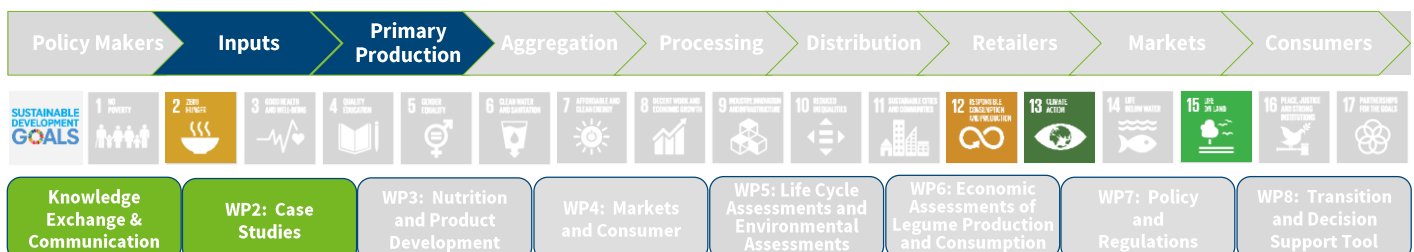
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Establishment of crop into living mulches can, however, be problematic. Though direct-drilling can be used, main crop yield often suffers due to competition with the living mulch. Using modern machinery provides an opportunity to overcome this issue; for example, state of the art strip-tillage machinery allows crops to be established in cultivated bands through mulches. A high-powered Baertschi Oekosem ROTOR Strip Till has been shown to effectively perform this task across a range of soil types in the UK, even allowing clover and crop to be co-established in a single pass when a suitable drill is fitted. To date this approach has allowed spring barley yields to be maintained in white clover living mulch polycultures, with further work underway in oilseed rape, winter wheat, maize and a range of other broad-acre crops.



Understory white clover living mulch before and after strip tillage.
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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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