



Transition paths to sustainable legume-based systems in Europe

New rhizobia strains for common bean

Rhizobia are beneficial soil microorganisms that promote the growth of legumes through biological nitrogen fixation (BNF), a process of converting atmospheric nitrogen (N) into plant assimilable nitrogen such as ammonia. Rhizobial inoculants (applied to seed at sowing) have been used for many years in agricultural systems to improve productivity of legume crops, enhance soil fertility and reduce the use of synthetic chemical fertilisers.

The utilisation of rhizobial inoculants under field conditions often produces inconsistent results around the world. Research aiming at isolating and characterizing indigenous rhizobia is of great importance for selecting novel strains adapted to the local crop varieties and environmental conditions.

Common bean is an important legume crop that is cultivated as a grain or vegetable crop in many parts of the tropics, subtropics, and temperate regions. Common bean can establish symbiotic relationships with a great number of rhizobial species, but it displays reduced BNF ability compared to other legumes and it is therefore considered a poor nitrogen fixer pulse. Hence, best common bean varieties or landrace need combined with the best rhizobia.

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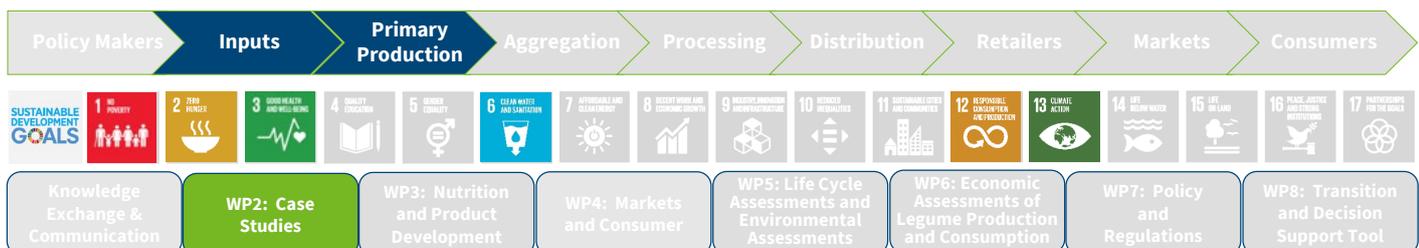
Greece

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Use of the best rhizobia is considered a sustainable agricultural practice to maximise nodulation, BNF and achieving optimal biofertilisation - regardless of soil, climatic and management conditions. To this end, the study of indigenous rhizobia nodulating common bean in Greece ascertained for first time their diversity and identified novel strains, while others were found for first time in European soils.

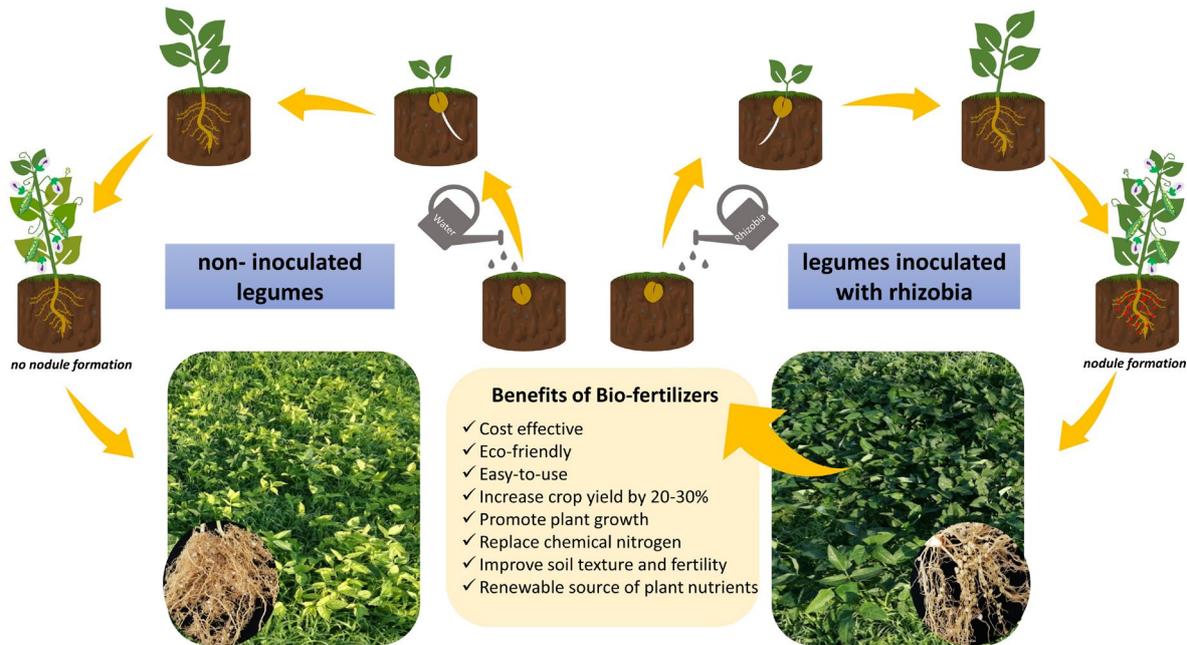


Figure 1. Effects of rhizobia-based biofertilizers on plant growth and performance.
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About TRUE

The EU funded project "Transition paths to sustainable 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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