Practice Abstract #33

TRansition paths to sUstainable legume-based systems in Europe

Crop rotation schemes for organic common bean production under mild-winter climatic conditions

Common bean (*Phaseolus vulgaris* sp.) is the legume crop most cultivated globally for human food production due to the high nutritional and organoleptic value of its pods and seeds. However, the growth of common bean and the achievement of high yields is mainly dependent on nitrogen (N) supply through fertilisation due to its poor N-fixing capacity.

As the excessive application of inorganic nitrogen fertilisers of highly productive conventional cropping systems results in groundwater contamination with nitrates, organic farming systems could use the benefits of common bean crop to reduce less environmental burden.

Cultivating a cold season legume with high N fixing activity, such as faba bean, as green manure crop during the winter optimises the N availability in soil and therefore, the yield of the subsequent organic common bean crop. Green manure application can boost the yield of organic common bean at conventional standards, while producing pods and seeds with greater quality performance.

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In addition to this organic farming practice, inoculation of either faba bean or common bean with efficient rhizobia and maintaining an adequate phosphorus availability in soil enhances the N-fixing activity of the above legume crops, reducing dependency on inorganic N applications.

Figure 1 and 2. Crop rotation schemes for organic common bean production. *Photo credits ©: Ioannis Karavidas*

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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