Practice Abstract #24

TRansition paths to sUstainable legume-based systems in Europe

New rhizobia for tephrosia and common beans

One of the most important drivers of low agricultural productivity in smallholder farms in sub-Saharan Africa is the low use or lack of access to chemical fertilisers. Inoculating leguminous crops with effective rhizobia inoculants can significantly enhance biological nitrogen fixation (BNF), thus complementing or reducing the dependency on nitrogen-based chemical fertilisers. Identification and selection of indigenous rhizobia associated with leguminous crops can lead to the development of effective and affordable rhizobia inoculants that enhance BNF. In Western Kenya, the intercropping of fast-growing nitrogen-fixing leguminous species Tephrosia (*Tephrosia candida*) and common bean (*Phaseolus vulgaris*) in combination with maize (*Zea mays*) crop as part of a rotational agroforestry system, also known as 'improved fallow', is widely practised. To optimise BNF, the isolation, identification, and selection of common bean and Tephrosia rhizobia with varying morphological and genetic characteristics have been carried out and used to develop inoculants. These newly developed inoculants significantly improve grain yield and biomass production of common bean and Tephrosia in Western Kenya conditions. Due to the differences in compatibility and effectiveness of common bean and Tephrosia rhizobia, it is crucially important that each species be inoculated with specifically developed inoculants during planting.

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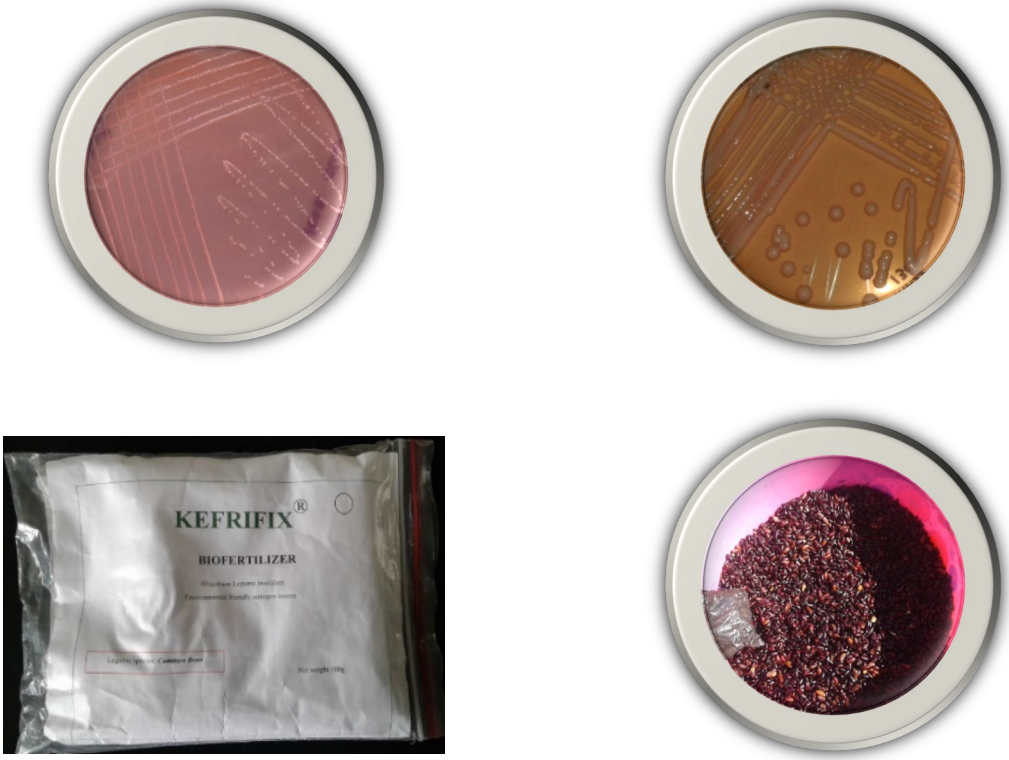

Figure 1-4. Tephrosia rhizobia, common bean rhizobia, inoculant packet, common bean inoculation at Nyabeda trial. *Photo credits ©: Emmanuel Makatiani*

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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