

Intercropping grain-legumes and cereals for improved protein concentration in the cereal

Problem

The increase of the world population requires analogous increases in food production, particularly of wheat with high grain protein content (Lithourgidis et al., 2011).

Solution

Intercropping with legumes i.e. lentil, pea, etc. improves cereal protein concentration (Fig. 1-3). The selection of a proper wheat cultivar for higher yield and protein content is crucial (Lithourgidis et al., 2011).

Outcome

Mixed cropping systems achieve higher protein content of bread wheat with no need to include N fertilizers.

Applicability box

Geographical coverage

Temperate climate

Application period

Autumn (November)

Required time

No additional time during cultivation. The harvested crop needs to be separated at a collection point

Period of impact

Duration of crop

Equipment

Standard machinery used for wheat cultivation

Practical recommendations

- The seed bed should be not too fine-grained after cultivation.
- Test soil samples and amend P and K levels if it is necessary.
- Select cultivars (wheat and grain legume) with the same maturity time according to local seed costs and availability on the market.
- Mix the seeds 70% grain legume and 30% wheat (comparing to the standard sowing quantities of the two crops) in the seed tank (check that the mixture is homogenous) and sow with a conventional seeder.
- Use same row spacing as for cereal.
- Apply weed control as needed (organic or conventional).
- Adjust height of harvester to pick up grain legumes close to ground.



Figure 1: Mixture of lentil and bread wheat.:



Figure 2: Mixture of pea and bread wheat.



Figure 3: Mixture of faba bean and bread wheat.

Practical testing/ Farmers' experiences

If this crop system seems suitable for you, we recommend that you test this under your conditions. Separate a part of your field before sowing and apply the mixture. Cultivate the rest of the field as usual and compare the intercrop to the sole cereals and/or legumes.





Further information

- Webpage: <https://www.remix-intercrops.eu/>
- Facebook Page: <https://www.facebook.com/RemixIntercrops/>
- Wiki: http://vm193-134.its.uni-kassel.de/En.DiversiWiki/index.php/Main_Page
- Scientific Journal: Lithourgidis A.S., Dordas C.A., Damalas C.A. and Vlachostergios D.N. 2011 Annual intercrops: an alternative pathway for sustainable agriculture. Australian Journal Crop Science, 5(4), 396-410.
- Check the [Organic Farm Knowledge Platform](#) for more practical recommendations.

About this abstract

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ReMIX is a H2020 multi-actor project that will allow designing cropping systems based on agro-ecology for the benefit of farmers and the whole EU agricultural community. ReMIX will exploit the benefits of species mixtures to design more diversified and resilient agro-ecological arable cropping systems. Based on a multi-actor approach, ReMIX will produce new knowledge that is both scientifically credible and socially valuable in conventional and organic agriculture. The project will tackle practical questions and co-design ready-to-use practical solutions. The project will span from the specification of end-user needs and the co-design of in-field and on-farm experiments to demonstrations with evaluation of new varieties and practices. ReMIX will contribute to the adoption of productive and resilient agricultural systems. The project is running from May 2017 to April 2021

Website: www.remix-intercrops.eu

