



LEGUMINOSE
the way to a green transition

Sowing time as crucial factor for successful intercropping



Main results and practical implementation

Sowing time is critical for successful intercropping.

The LEGUMINOSE project is testing different combinations of cereal and legume species in over 165 field trials across nine countries (seven European and two non-European). This research helps develop practical guidelines to make intercropping not only better for biodiversity and soil health but also more profitable for farmers.



Benefits and impact

Legume-cereal intercropping harnesses the benefits of nitrogen-fixing species, such as legumes, and crops that utilise the fixed nitrogen, like cereals.

Success of intercropping depends on carefully planning the optimal sowing time. For instance, winter-sown cereals develop more slowly at first compared to legumes, but during tillering and stem elongation, they may overshadow low-growing legumes like lentils or grass peas. Therefore, it is advisable to consider spring sowing or using shorter cereal varieties when intercropping with these species.

To maximize nitrogen benefits from legumes, it is essential to align the peak nitrogen release during the legume's vegetative phase with the grain-filling stage of the cereals, as this is when the cereals have the highest nitrogen demand.



Challenges (and solutions)

We have identified three main sowing strategies for intercropping:

- **Staggered Sowing:** Sowing crops at different times to avoid overlapping peak resource demands and reduce competition.
- **Simultaneous Sowing:** Sowing crops at the same time to synchronise growth stages and improve resource sharing.
- **Sequential Sowing:** Sowing one crop after the other to exploit the different growth phases and resource needs over time.

Given the variety of soil and climatic conditions and variation in crop development among the species, there is no one-size-fits-all solution. The LEGUMINOSE field trials, along with the our computational models, can help farmers in managing intercropping more effectively, especially by carefully planning the sowing to fit local conditions.

Get in touch for more support!

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