

Organic field trials of winter and summer crop mixtures of grain legumes and cereals in Belgium

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Summer- and wintersown crop mixtures of faba beans or fodder peas together with wheat/barley/triticale were tested in field trials in the growing seasons 2013-2014 and 2014-2015. Different regionally available varieties and European plant material of faba bean and fodder pea were harvested together with cereals as dry grain. Special attention was paid to weed suppression capability and crop reliability.

Materials and methods

The trials were conducted at operating organic farms in Beitem and Lo-Reninge and at the conventional research farm in Bottelare (Belgium). All locations have a fertile sandy loam soil. The maritime climate is moderate. The trial was set up as a randomized block design with 4 replicate blocks with a net plot size of 20 m².

The small demand for organic cereal and legume seeds in Belgium is for the most part filled by foreign seed providers. The tested varieties are a selection of their suitable offer for the region. Five breeding lines of winter pea from the Getreidezüchtungsforschung Darzau (D) were tested. Also a separate trial with breeding lines of summer pea and faba bean from Latvia was conducted but is not in the scope of this article.

Summer crop mixtures

In these summer trials, varieties of faba bean together with summer wheat var. Epos (2014) and varieties of fodder pea together with summer barley var. Calcule (2014, 2015) were sown at the start of April. Early crop development and weed suppression were good but reliability towards the end of the season was low. Late ripening of faba bean together with bad weather conditions caused lodging and breaking and subsequent foraging by birds by the time of harvest (Figure 1). This was even more the case in the pure stand where the faba bean grew taller. The fodder peas were susceptible to lodging and foraging by birds, even though plant density was moderate and all varieties were semileafless.

Suggested focus:

Faba bean: early ripening, resistance against lodging (shortness, sturdiness)

Fodder pea: resistance against lodging (semileafless, short, twining types)

Winter crop mixtures

In these winter trials, varieties of faba bean and fodder pea together with triticale var. Borodine (2013-2014) and var. Vuka (2014-2015) were sown at the start of November. The vigorous triticale component suppressed weeds sufficiently in both seasons. Faba bean with triticale resulted in a reliable crop in both years. In the first year, high plant density of fodder pea caused lodging by the time of harvest. The second year, plant density of fodder pea was

too low because of foraging by slugs and wildlife during late winter and early spring (Figure 2). The 5 pea lines from Darzau could not be assessed due to very low presence in the crop.

Suggested focus:

Faba bean: winter hardiness, resistance against lodging (shortness, sturdiness)

Fodder pea: winter hardiness, post-winter resilience (slugs, birds, wildlife) and growth vigour, resistance against lodging (semileafless, short, twining types)

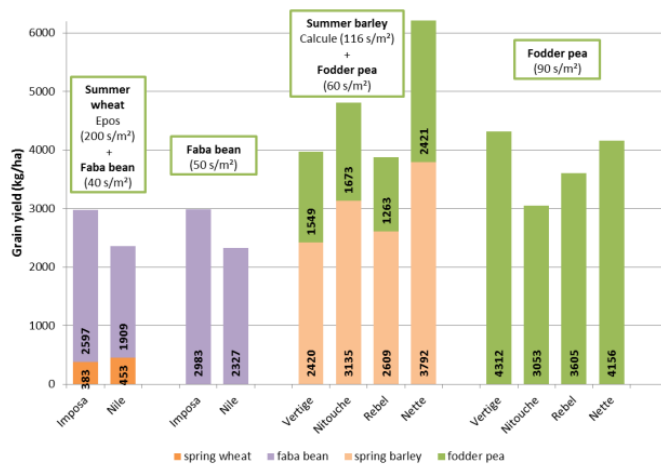


Figure 1: Summer crop mixtures of wheat/barley with faba bean/fodder pea and pure stands of faba bean and fodder pea in Beitem in 2014.

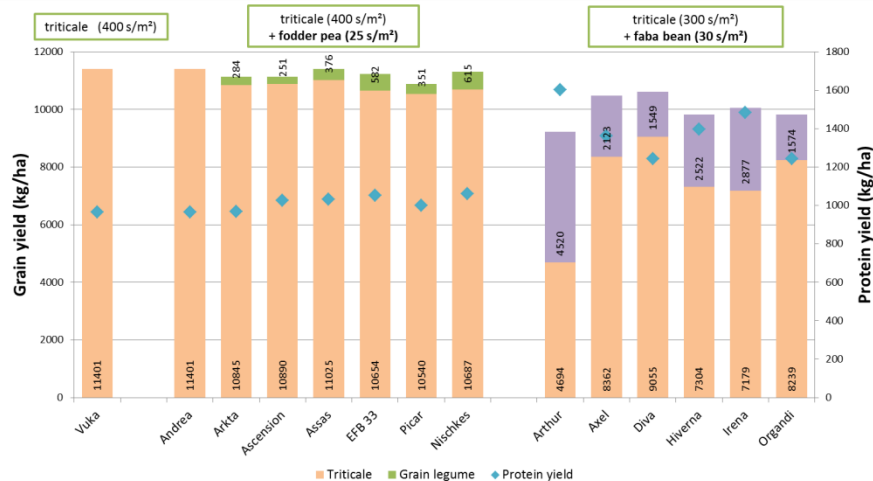


Figure 2: Winter crop mixtures triticale with faba bean/fodder pea in Lo-Reninge in 2014-2015.

References

Dissemination reports to organic farmers in Flanders: www.biopraktijk.be and www.inagro.be

Quendt, U. Haase, T., Hess, J. 2014. Breeding winter peas in diversity for diversity. In:

Diversity strategies for organic and low input agricultures and their food systems. Proceedings of SOLIBAM congress 7-9 July 2014. 107-108.

Acknowledgements

Financial support provided by the CORE Organic II ERA-NET Funding Bodies and the Flemish Government, Department of Agriculture and Fisheries.