

Yield stability in varietal mixtures of *Vicia faba*

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We have performed the first years' field experiments according to the plan, at the three sites Alnarp (Skåne), Lanna (Västra Götaland) and Klostergården (Östergötland). The same treatments and sampling protocols were applied at all three sites as follows: Three faba bean (*Vicia faba* L.) varieties (Alexia, Gloria and Julia) were sown in pure stands and in two- and three-varietal mixtures, all combinations with and without spring wheat (*Triticum aestivum* L. cv. Dacke) intercropping. The experimental design resulted in 15 treatments (including spring wheat in pure stand) randomly repeated in four blocks, in total 60 20-m² field plots per site.



Occurrence of the fungal pathogen *Botrytis fabae*, causing chocolate spot disease, was estimated by visual grading of disease symptoms at five occasions between mid July and late August. At all grading occasions, leaves were also sampled for DNA-based quantification of *B. fabae* infections. Harvest of whole-crop forage was simulated by hand cutting of one 0.5 x 0.5 m square in each plot at the development stage filled pods. The manual biomass sampling was repeated at full maturity, followed by grain harvest of each plot with combined harvester.

The dried biomass samples are currently subject to preparation for ¹⁵N analysis in order to quantify N₂ fixation. The grain yields have been used for initial data analyses showing differences between faba bean varieties and potential for higher yield stability in some of the tested varietal mixtures. Grain samples are prepared for product quality analyses to be measured by contents of protein, starch and fiber. Sample preparation and analysis proceed during winter and spring 2012, along with planning of the second-year repetition of the field experiment. The project has so far been used for three MSc theses which are finalized during spring 2012. These MSc projects include both analyses based on the field experiments and assessments of stakeholders' perception of the potential of faba bean, varietal mixtures and intercropping for more sustainable cropping systems.