

Yield stability in varietal mixtures of faba bean

Varietal mixtures of faba bean (*Vicia faba* L.) could produce as high grain yields as the highest-yielding single varieties.

The occurrence of chocolate spot disease was often lower in varietal mixtures.

Our study highlights that cropping system diversification can reduce the disease pressures and improve yield stability in faba bean.



Figure 1. Intercropping of faba bean and spring wheat (left) and faba bean leaves showing the symptoms of chocolate spot disease (right).

To investigate the potential benefits of legume varietal mixtures, three faba bean varieties (Alexia, Gloria and Julia) were cultivated in field as single varieties and in two- and three-varietal mixtures. All varieties and varietal mixtures were cultivated both as pure faba bean crops and in intercropping with spring wheat.

The field experiments were replicated at three sites (Figure 4). Occurrence of the fungal pathogen *Botrytis fabae*, causing chocolate spot disease, was estimated by repeated visual grading in the field plots. A disease index was calculated based on classification of % infected leaf area of 10 individual plants per plot.

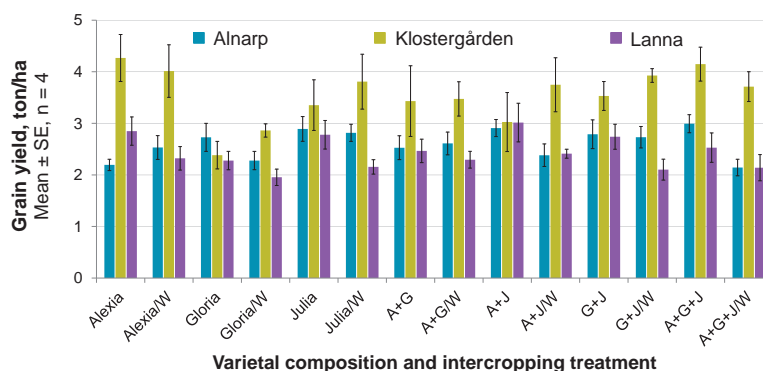


Figure 2. Harvested grain yields at the three sites Alnarp (blue), Klostergården (olive) and Lanna (purple) in September 2011. Varietal mixtures are abbreviated by the first letter of each faba bean variety (Alexia, Gloria, Julia), and /W indicates intercropping with spring wheat.

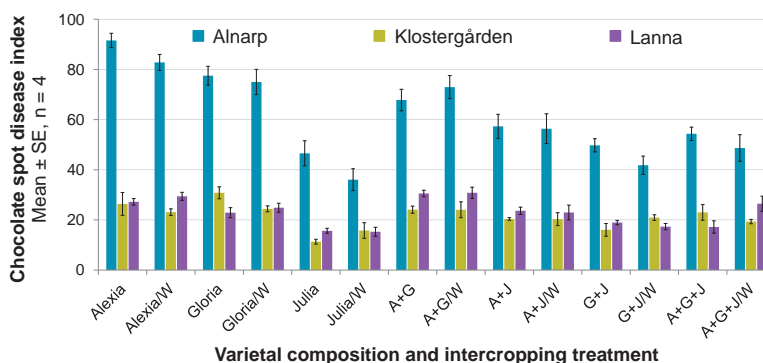


Figure 3. Disease index of chocolate spot disease (% infected leaf area) at the three sites in August 2011. For further details, see legend of Figure 2.

Harvest of whole-crop forage was performed in parts of the field plots at pod-fill, and grain harvest was performed at full maturity.

Samples are processed for analyses of N₂ fixation and product quality.

The results will provide a holistic evaluation of benefits and potential problems associated with crop diversification.

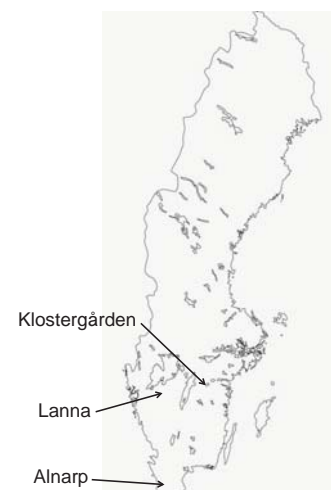


Figure 4. Location of the three field sites.