

Crop species mixtures for weed suppressionTheo Verwijst¹, Anneli Lundkvist¹, Roman Krawczyk², Sylwia Kaczmarek²¹Swedish University of Agricultural Sciences, UPPSALA, Sweden²Institute of Plant Protection - National Research Institute, POZNAN, Poland

The aim of this study is to assess the weed suppressive ability of crop mixtures and impact of weeds on crop yield as a function of species and densities by means of field experiments and controlled experiments with mixtures of barley and pea, conducted in Sweden and Poland. The performance of crop mixtures was compared to the performance of pure crops with regard to their ability to suppress weeds. In the fields, natural weed populations were used while the controlled experiments employed *Elytrigia repens* or *Sinapis alba* as a model weed. Preliminary results from the controlled experiment in Sweden showed that the presence of a crop (sole crop or intercrop) significantly diminished the growth of *E. repens*. The ability to compete was lower in peas, compared to barley and the intercrop. No significant differences were found in the ability to withstand competition between sole cropped pea, sole cropped barley, and the intercrop. In the field experiment, the overall weed pressure was rather high (> 750 g DM m⁻²). No significant differences in total dry matter were found for spring barley, sown in different proportions in pea/spring barley mixtures. Total dry matter of peas was related to pea seeding density. Preliminary results from the field experiment in Poland showed that crops significantly suppressed weeds compared with the treatment containing only weeds. In the crop combination containing sole peas and 70% peas + 30% spring barley, the crop was not able to suppress the weeds as efficient as in treatments with a higher proportion of spring barley. No significant differences in seed yield were found between the treatments. In the glass house experiment with *E. repens*, the rhizome dry weight and rhizome length were significantly lower in treatments with both crop and weeds as compared with pure weeds.



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