



First Agroecology Europe Forum

Fostering synergies between movement, science and practice

25-27 October 2017, Lyon, France

Abstracts of talks and posters

Reduced tillage in organic farming? – Can under-sown legumes and row hoeing be the way forward?

LAGERQUIST Elsa

Multi-functionality, an approach for sustainable cropping systems.

Population growth and increased human consumption, as well as climate change challenges present agricultural practices. More food need to be produced while soil fertility is maintained and climate change mitigated. Out of regional and global needs practices related to conservation agriculture have developed to increase the sustainability of cropping systems e.g. to increase soil fertility and reduce soil erosion. Such practices include minimal soil disturbance, permanent soil cover and sound crop rotations. However, minimal soil disturbance can facilitate the propagation of weeds. Therefore, weeds often become a severe problem in conservation agriculture and the function of the system dependent on herbicides. With a multi-functional approach to cropping system design we are working on a system of organic farming that is less dependent on soil tillage and animal manure. Thus to achieve beneficial effects on soil fertility, while cereal yields are maintained or even increased.

Our objective is to optimize the crop sequence spring cereal – winter cereal regarding yield, nitrogen use and weed control. We sow the cereal crops in bands with a wider row spacing than the conventional 12 cm, to allow for row-hoeing. At the same time we use under-sown leguminous crops to provide weed control, soil cover and nitrogen fixation. We investigate the capability of different under-sown legume species, combined with different temporal and spatial placement, to grow and function in the system, as well as their impact on nitrogen use of the winter cereal. The spatial arrangements have implications for the time of sowing and the intensity of row-hoeing. Previous studies has evaluated the effect of the different system components, i.e. row hoeing and under-sown crops on weeds. With the technique of row traction the components are now put together into one system. The system will be evaluated in terms of yield, weed control, nitrogen cycling and carbon sequestration.

Contact details (e-mail, website, etc.)
First name, family name: Elsa LAGERQUIST Address: Institutionen för växtproduktionsekologi, Box 7043, 75007 Uppsala E-mail: elsa.lagerqvist@slu.se Other information: Co-authors: Per Ståhl (the Rural Ecology and Agricultural Society), Anita Gunnarsson (the Rural Ecology and Agricultural Society), Josef Appell (Appell Agri Consulting AB), Göran Bergkvist (Swedish University of Agricultural Sciences)