Precision farming - Technology assessment of site-specific input application in cereals -
DTU Orbit (12/07/2019)

Precision farming - Technology assessment of site-specific input application in cereals
About 400 Danish farmers have within the large 10 years adopted some precision farming technologies on their farms. Precision farming is a management system, in which the use of variable inputs (fertilisers, lime and pesticides) is applied according to the spatial soil and crop variation at a sub-field level. Most precision farming systems uses the GPS-system for geographical positioning. This study assesses the technical, environmental and economic barriers and potentials of precision farming in Denmark. The project is based on a combined participatory technology assessment approach with businesses economic and socio-economic analysis. The current status of precision farming in Denmark is as follows: •The technology is primarily applicable for large farm holdings •Economic viability depends on site-specific yield variation •So far, the business economic benefits from most PF-practices are modest but it seems possible to obtain a socio-economic benefits from lime, variable rate herbicide and possibly nitrogen application •The technology may improve farm logistics, planning and crop quality (e.g. protein content) - but •The costs of implementing PF-practices are high and •Technical functionality and hardware-compatibility is a concern among farmers Precisions farming is primarily economic viable on relative large farm holdings and site-specific application is only economic attractive if some degree of soil texture variation is present on the field. There is a need for additional information about yield potentials from variable rate nitrogen application. It is recommended that focus is put on the following key areas to further develop precision farming. The scientific documentation of yield potentials and reduced nitrogen applications must be improved. In this respect it is important to focus on a combined application of mineral fertilisers, manure and slurry. The development of compatible and uniform technologies is vital in order to increase the diffusion of the technology. It is however, important that farmers, advisors as well as software-producers are involved in creating decision support systems for variable application. The agricultural services provided by manufactures, companies etc. should be more objective and less commercial. Improvements of the advisory service will probably emerge in line with a higher concentration and specialisation in these advanced systems at the regional advisory centres. In the years to come it is expected that tractor mounted sensors and advanced autonomous sensor systems for precise input application will be available in practice. However, it is vital that these systems will be designed according to the farmers premises. It is expected that it will take several years before the next generation of precision farming systems will be available in practice. Meanwhile, those farmers who already have invested in yield monitors and soil analysis for precision farming should be able to use the current technology in the best possible way.

General information
Publication status: Published
Organisations: Department of Management Engineering
Contributors: Pedersen, S. M.
Publication date: 2003

Publication information
Publisher: IPL
Original language: English
URLs:
http://www.ipl.dtu.dk/publikation/7185/dk/
Source: orbit
Source-ID: 63176