

The Akkerweb platform: models and data to support precision farming

Frits K. van Evert, Wageningen UR

Thomas Been, Wageningen UR

Herman N.C. Berghuijs, Wageningen UR

Anton J. Haverkort, Wageningen UR

Corné Kempenaar, Wageningen UR

Geert J.T. Kessel, Wageningen UR

(Bert) E.J.J. Meurs, Wageningen UR

Leendert P.G. Molendijk, Wageningen UR

Annette A. Pronk, Wageningen UR

It is believed that precision farming (PF) will contribute to increased profitability of farming, to a reduction of the environmental impact of agriculture and, ultimately, to increased global food security. PF is based on the concept of observing and responding to spatial and temporal variability in crops and soils, both between and within fields. Thus, a first challenge in the implementation of PF is collecting and storing large amounts of geo-referenced data; a second challenge is to utilize this data to generate recommendations that can be used by farmers. Akkerweb (<http://www.akkerweb.nl>) is a web-based portal that allows for safe and easy storage of spatial and temporal soil, crop, climate and management data. Akkerweb provides a mechanism to deliver model-based recommendations, such as variable rate application (VRA) of seeds, fertilizers and crop protection agents. Akkerweb is an initiative of Wageningen UR and the Dutch farmers' cooperative Agrifirm. We describe first the process of ingesting data from farms, soil analysis labs, UAVs, and satellites, as well as a prototype of automatic data capture. We then detail how modelling is used to generate recommendations to farmers for most of the important decision points in growing potatoes, namely nematode control, application of sidedress nitrogen, late blight control, and potato haulm killing. Akkerweb recommendations allow potato farmers to reduce the use of nitrogen fertilizer by up to 15% and of crop protection agents by 25% relative to current practice.