Farming Truth

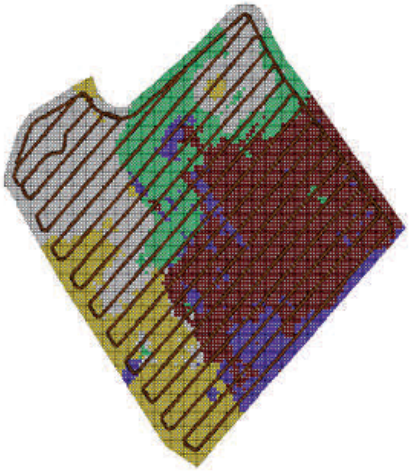
In agriculture today the standard way to apply fertiliser is still by homogeneous application. This is not the most economical nor the most environmentally responsible approach. With better understanding of the spatial and temporal variation within the fields, fertilisers can be distributed to more precisely compensate the actual local deficit in soil fertility. FarmingTruth provides farmers, growers, agronomists and agricultural consultants with "within field" soil and crop information based on the integration of innovative in-field soil sensing techniques with Earth Observation data to achieve increased yield at reduced effort and fertiliser costs.

Who needs what?

Farmers and growers need recommendations to optimise inputs applied into the soil and crop, which enable them to reduce input costs and increase yield for the same field area. This might be achieved by the implementation of precision agriculture by applying the right amount of input into the right place, at the right time and using the right methods. One of the strategies to achieve these targets is variable rate application of different inputs including fertilisers, agrochemicals, seeds and water used for irrigation, etc, responding to the underlying within field variation of soil and crop measured with high resolution sampling methods.

Challenge

Currently farmers often apply inputs (e.g. fertilisers) homogeneously to their crops. At best they apply a variable rate based on indirect or incomplete measurements with a spatial resolution much lower than the actual combined variability of soil properties and crop growth status. They cannot closely match soil and crop growth variability because they do not know it with sufficient resolution. This may result in over- or under-applications of input, which directly influence the input cost, crop performance and yield.



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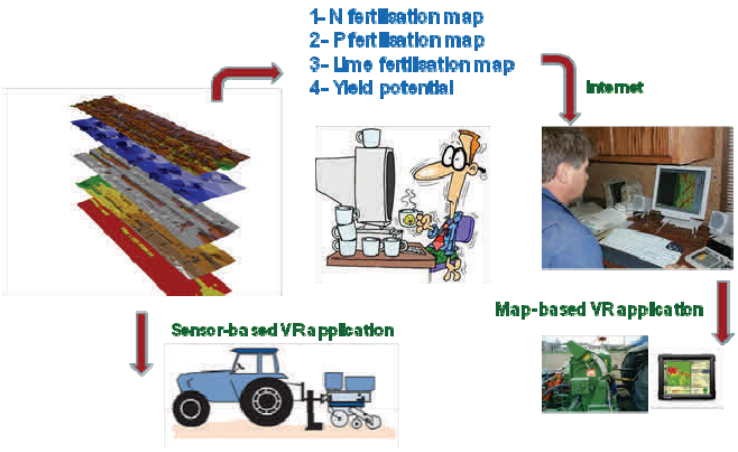
FarmingTruth solution

FarmingTruth aims to achieve its goals by:

1. utilising a new and innovative GNSS-equipped online soil sensor to collect geo-referenced, high sampling resolution (~1500 readings per ha) data on total nitrogen, organic carbon, P, pH, moisture content, clay, Ca, Mg and cation exchange capacity;



2. integration of soil data with other information such as satellite imagery of crop growth and development, weather data, DGNSS-derived topography and yield maps (recorded in the field during the harvest using GNSS), to develop algorithms to determine rules for variable rate applications. FarmingTruth will provide basic maps of soil properties, vegetation status and yield potential, as well as three novel added value services, namely, variable rate fertilisation recommendations of N, P and K, variable rate fertilisation recommendations of soil micro elements, and recommendation for lime application.

Outcome

For the first time, FarmingTruth combines high resolution in-situ soil information with satellite derived crop information into an integrated precision farming service. Farmers will be able to apply fertiliser at variable rate controlled to minimise fertiliser consumption while maximising yield. FarmingTruth increases profitability while reducing environmental impact.

Project details

The study has been performed by Cranfield University (UK, prime), HITEC (Lux, Subcontractor). Users are farmers in the UK and Denmark, as well as sector associations such as HGCA (UK), Knowledge Centre of Agriculture (Dk) and Douglas Bomford Trust (UK). For more information please contact:

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The study is further described on:
http://iap.esa.int/projects/farmingtruth

Collaborating with ESA

The Integrated Application Promotion (IAP, or ARTES 20) programme funds feasibility studies and demonstrations. It aims at generating sustainable services which meet the needs of public and private organisations. FarmingTruth is just one example of IAP applications. Do you think that space technologies and services such as space imagery, satellite navigation, satellite communication, manned space technologies might help you better address your operational challenges? ESA's IAP programme can make it happen. For further details please contact us at:

Email: iap@esa.int

Website: http://iap.esa.int

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