Precision Agriculture - An Opportunity for EU Farmers

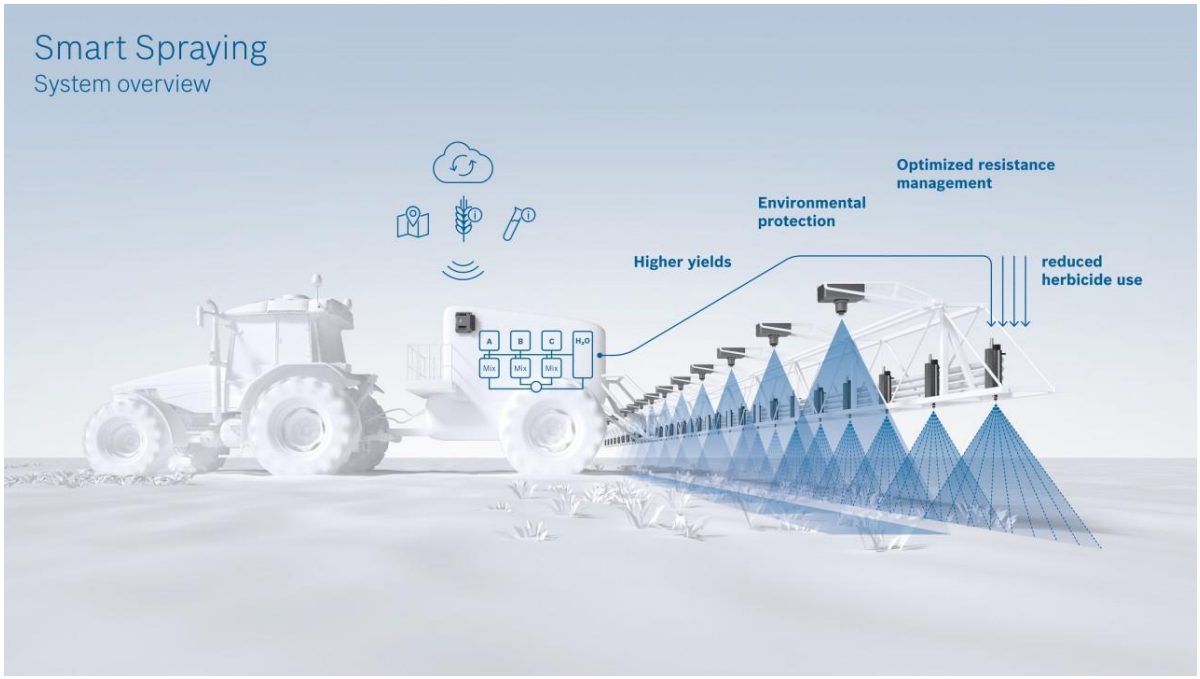
- Potential support with the 2021-2027 CAP

Although more complex definitions exist, the simple description of Precision Agriculture (PA) is a way to *"apply the right treatment, in the right amount, in the right place, at the right time"*. It is a farming management system based on observation, measurement and responding to variabilities inside and between fields.

PA offers benefits including optimized use of resources with reduced exposure of non-target areas and therefore better protection of the environment and the biodiversity in and around fields. Key advantages include reduced inputs such as herbicides, increased yields and increased profitability for farmers.

PA therefore contributes to sustainability of agricultural production delivering on the Green Deal and the Farm to Fork Strategy targets, especially towards reduction of risk and use of pesticides. Implementation of PA has become possible thanks to development of new sensing technologies and computer modelling combined with digital mapping and precise control of farming practices such as tillage, seed drilling, and fertilizer, herbicide & pesticide applications. In Europe, adoption of PA has so far been most established on larger arable cereal farms, primarily to manage in field variabilities and optimize use of inputs.

Example: Smart Sprayer
BASF and Bosch have designed a smart spraying technology which combines use of cameras, crop and weed modelling, algorithms and artificial intelligence. The system is capable of recognizing weeds and selectively applying herbicides only where they are needed. So, how does it work?



First, crop and weed images are recorded using cameras which cover the entire operating range of the sprayer. Then, “deep learning” algorithms and machine learning are employed to recognize and localize weeds in the field and to distinguish them from crops. Based on this data, the agronomic decision engine recommends the most appropriate products and customized dose rates. Finally, based on a pre-defined risk-based threshold, the software guides the spraying decision on exactly how to apply herbicides - only where they are actually needed. Resulting real volumes applied as a percentage of a conventional cover sprays are automatically calculated and documented. No internet connection is needed during the application process in the field.

The rapid speed of the process allows farmers to apply crop protection products in a single sweep. This can for example be critical when applying herbicides within small windows of opportunity, for maximum efficacy. The system offers great potential for saving on herbicide volumes, as they are selectively applied only where actually needed. In addition, reduced application volumes provide improved operational efficiency with fewer spray tank re-fills being required.

- ***300 milliseconds - time limit to recognize a weed and spray it***
- ***Speed of application comparable to conventional technologies***
- ***Up to 90% herbicide volume reductions achieved in experimental stage, thanks to Smart Spraying***

Market launch of the BASF/Bosch Smart Sprayer is foreseen in Europe for the 2022 season, together with Amazone as the first pilot customer.

Support from CAP 2021-2027

In the EU Commission’s new Common Agricultural Policy (CAP) *Eco-schemes* are foreseen as a new instrument to reward farmers who choose to go further in environmental care and climate action. The new CAP will therefore play a crucial role in managing the transition towards a sustainable food system and in supporting European farmers through this process. By doing so, *Eco-schemes* will also contribute significantly to this transition and towards achieving the Green Deal targets.

Potential agricultural practices identified by *Eco-schemes* will include digital farming and for example precision crop farming to reduce inputs.

Member States are therefore asked to include Precision Agriculture technologies in their respective national CAP strategic plans, to foster uptake of these technologies and help delivering on the Farm to Fork targets.

This could for example be done through dedicated subsidies to support farmers who invest in these technologies and to support and motivate their use.

BASF believes that application subsidies for farmers should be provided via surface area-based payments independent of whether farmers use their own equipment or they make use of renting services e.g. a certified contractor/cooperative equipped with these technologies. We also believe that it will be important for PA subsidies to make use of documentation of the amount of inputs applied in comparison with quantities which would have been applied using conventional technologies.