POSITION PAPER
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CLE Digital and Precision Agriculture Position Paper

Key Messages

1. **The EU Green Deal and Farm 2 Fork Strategy reflect societal demands to extend the regulatory framework to include more sustainable farming practices, addressing in particular climate change and biodiversity objectives. To deliver this will require innovative enabling tools.**
2. **Digital and Precision Agriculture tools will be key to delivering on these objectives, by completing the farmers' tool-box with the solutions needed to more efficiently plan, execute, and document farming operations, and ultimately to produce food and feed more sustainably.**
3. **Crop Life Europe calls upon policy-makers and food chain partners to support EU farmers in this endeavour by establishing a dedicated stakeholder forum tasked with generating data and documentation whilst removing existing roadblocks to increase the adoption of Digital and Precision Agriculture tools.**

Growing more with less is not a contradiction, optimizing resource use is at the heart of modern agricultural production. The EU Green Deal, and specifically the Farm to Fork and Biodiversity Strategies have set forth an ambitious policy direction with a more sustainable food production model as the ultimate goal. Digital and Precision Agriculture (D&PA) will enhance the farmer's tool-box, and provide the primary means by which more sustainable and productive agriculture can be delivered for all models of production and land holding sizes.

Development and adoption of D&PA is key to reaching the stated goals. A framework and roadmap is necessary to inform business strategies and investment decisions. CropLife Europe's ambition is to work with policy makers and food chain partners to remove roadblocks to the widespread uptake and implementation of D&PA, so that each farm and each crop is managed in the most sustainable way. This paper offers a high level description of D&PA and the benefits it brings to all stakeholders. It also identifies the roadblocks to D&PA and options to remove them.

• What is Digital and Precision Agriculture (D&PA)?

It is useful to define several key terms that are constituents of D&PA as it relates to agriculture in general, and particularly to crop protection:

Precision Application refers to applications of crop protection products (CPPs) or fertilizers that are accurately focused on the target (pest, weed, plant affected by disease, and nutrition needs) at

optimum rate and timing. It may involve the use of technology that helps users identify, assess, and locate application targets (e.g. GPS, camera systems). Precision applications help minimise unintended application to non-target organisms or environmental compartments. This can include semi- and fully automated systems (e.g. spot application, robots).

Precision Agriculture refers more widely to practices that use on-farm temporal, spatial, and other relevant data as a basis of seeding, irrigation, harvesting and other decision making on farm management by farmers. It includes collection and analysis of any data that can influence management decisions such as weather, soil quality, water flows etc.

Digital Agriculture broadly involves the collection, storage, reporting, analysis and use of electronic data and information along the agricultural value chain to achieve a wide variety of objectives, including crop protection planning, execution, and reporting.

Farmers have been using various forms of D&PA for over 20 years, and recent years have seen a paradigm shift in the amount of data collected as well as in the ways these data can be interconnected and utilised. Phones, tractors and machinery can carry sensors that provide information about how a specific crop has been managed or treated (e.g. by linking GPS data with Farm Management information Systems - FMiS), the weed/pest pressure the crop is subject to (e.g. by using sprayer mounted camera sensors), and what volume and quality of crop is harvested. Likewise, data can be collected, recorded, and analysed from multiple sources (e.g. FMiS, precipitation/pest pressure sensors, biodiversity apps, soil maps etc) to derive actionable smart information. This information and collected data can then be almost instantly evaluated with respect to recommending (and subsequently recording) best practices to ensure correct procedures are followed and that sustainability, protection of biodiversity, and energy efficiency/greenhouse gas emissions aspects are properly taken into account.

• What benefits does D&PA provide to farmers, food chain, and consumers?

European farmers and society agree on the common goal of producing sufficient nutritious food while at the same time protecting natural resources, climate and biodiversity. As a wealthy and temperate part of the globe, the EU must also shoulder its fair share of global food and feed production needs. These goals are expressed in terms of political aspirations in the Green Deal and Farm 2 Fork Strategy, and will subsequently need to translate into workable regulatory frameworks which seek e.g. to reduce input volumes, reduce greenhouse gas emissions, establish nature protection zones, improve biodiversity, reduce soil erosion/loss, and improve water quality. In addition to complying with these regulations, EU farmers need to consider profitability, productivity, climate resilience, labour availability and cost. In practice, Many EU farmers have already been taking these factors into account for many years as part of their sustainable business model, and seek to provide a global lead in terms of sustainable productivity. The following table identifies three main areas of relevance and opportunities, and provides some illustrative examples of the kinds of benefits that D&PA can provide.

Relevance and opportunities	Activities and data that are required	Examples of questions that can be answered
Precise timing of crop management Farmers can automatically consider field specific thresholds, pollinators, and wind for crop management decisions.	Advanced models at a good spatial resolution to merge wind, precipitation, disease pattern, field history and growth stage data and derive exact application timing window.	• When to spray with what equipment (e.g. nozzles). • How to improve Crop Protection Product (CPP) efficiency, save CPP volume, and protects pollinators at same time? • How to grow more with less CPP volume?
Precise local execution of crop management Farmers can consider field and buffer zones, spot spray, nitrogen efficiency and variable rate when executing a crop management decision	Merging above data with soil analysis, maps of protection zones, water bodies, elevation/slope, etc. and camera imagery derives exact application dosing information.	• How to comply with efficiency, timing, sustainability requirements at sub-field spatial resolution? • How to get most out of today's commonly used sprayers, and which technology components are success-critical (e.g. direct injection) • How to grow more with less CPP volume?

Precise documentation of sustainable agricultural practice Farmers can electronically document crop management measures and results, biodiversity measures and status, and CO_2 footprint improvements	Compiling all data on agronomic pressures and corresponding measures to document efficient, compliant and sustainable crop management.	• How to demonstrate to authorities, customers and end consumer the quality of crop management? • How to demonstrate best practices to earn subsidies or a price premium for protecting crop and public goods like water, insects, biodiversity, carbon, etc.?

Roadblocks to adoption of Digital and Precision Agriculture tools

The use and full development of D&PA tools is currently limited or restricted in the EU Member States, and even at regional level in some Member States. These roadblocks can be considered as falling under the following three main themes:

Some major roadblocks lie in **policy and regulatory frameworks** that can for example: limit funding support for innovative technologies, restrict use of automated land vehicles and aerial drones, or discourage technology uptake through tax and insurance regulations etc.

Data availability/ accessibility to support precision execution of agricultural practices in the field is also an important roadblock. A significant portion of this data is held by Member State authorities, and frameworks for data sharing are often limited.

A sufficiently **good investment climate** also still needs to be developed and supported. Considerable investment will be required to support widespread adoption of D&PA tools and platforms, and this cost burden will need to be fairly shared.

How to remove roadblocks

It is critical that D&PA tools are fully enabled and unambiguously supported by policy makers and food chain partners: without such a mindset of clear support it is difficult to envisage how the further improvements in sustainability required to realise the aspirations of the Green Deal and Farm to Fork Strategy can be delivered. In this context:

- CropLife Europe calls upon policy makers to systematically assess, streamline, and **'future proof' all relevant aspects of the policy framework such as the CAP and revised SUD** to ensure that the latest proven technologies can be financed and applied as part of the programme of sustainably protecting the public good.

- CropLife Europe calls upon policy makers to take steps to ensure that **relevant data held under the responsibility of governments are available to farmers and companies,** for example: at all times (24/7, via application programming interface [API]), in sufficient quality (ensuring consistent detail resolution/ format, and harmonized legal status across EU Member States and regions), accessible across Member States and regions (fixed and mobile data transfer capacity), and across technology platforms (e.g. data exchange standards, formats and interoperability). Access to such data and agreements on data sharing would help allow farmers to easily and effectively record and provide information demonstrating correct and sustainable growing practices.

- CropLife Europe invites policy makers and food chain partners to enter into dialogue to explore how we can **jointly create an investment climate** that enables new business models, promotes premium incentives to farmers or other market participants that invest in D&PA tools to support sustainable productivity.

In order to support the above transformation and swift adoption of D&PA tools, CropLife Europe calls specifically upon the European Commission and/ or its agencies to establish a dedicated policy maker and **stakeholder engagement platform** tasked with promoting uptake of D&PA tools and making recommendations for removing roadblocks to their adoption.