Principles for the use of Agricultural Data in Digital Farming

At Bayer, we are convinced that agriculture is moving towards a new paradigm where digitalization will play an ever more important role. We believe new technologies offer great opportunities and can support farmers to produce more efficiently and to increase profits while reducing the impact farming has on the environment.

Throughout history, technological advancements and disruptive innovations have also raised questions or concerns. In the case of digitalization in the agricultural sector this is not different. This is why we seek an open dialogue with all stakeholders.

In this document we lay out a set of principles which we are committed to globally. We believe that these principles are vital to making the digitalization of agriculture a reality:

> **Engagement**: The mega farm as well as the smallholder farmer can and should gain from data enabled agriculture.
>
> **Value Creation**: Digital farming technologies should be based on win-win business models and support farmers in agronomic decision-making.
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> **Data Use**: Specific terms and conditions should be agreed upon with the farmer prior to collecting and processing farmer-provided data.
>
> **Transparency**: Data policies, practices, and engagements with farmers should be carried out in an open and transparent manner and consistent with agreed upon terms.

Further **Data Use** and **Transparency** principles:

It is important to have **clear definitions and standards** of how data can be used and the way it is protected. We are committed to providing well-defined agreements for our Digital Farming solutions.

The collection, processing, and use of data will be clear and transparent. Farmers should be informed and agree to how the data they share is used and accessed.

The **exchange of personal data** (i.e. data that directly or indirectly identifies a single person) is vital for the success of digitalization in agriculture: only the processing of certain detailed information about a farmer's field like its location or the planted crop enables Bayer to provide its field specific digital services.

We collect and process personal data only for the purpose of enabling the use of our solutions for administration and security purposes or for other purposes for which consent has been given, in particular,to improve or develop applications and for user support, except where otherwise provided by law (e.g. in connection with pending litigation). Unlike physical assets, data is not finite and is forever reproducible, hence there is a **question of usage and access to data**. At Bayer, a farmer has the right to know which personal data is stored in our systems and may review and amend it if it is believed that it may be out of date or incorrect. Should there be an explicit request for the personal nature to be removed, the data will either be deleted or anonymized.

Non-personal and anonymized data (i.e. data that is altered to the effect no individual person can be linked) also plays an important role in digital farming. Such data may unlock new insights for farmers, technology providers, and researchers alike. We may use this data in order to gain new insights which will help farmers in future, for example: promote research, benchmark, as well as develop and market new tools and services for farmers.

The exchange of data must happen in a secure way. **Security is at the top of our mind**, and we take all necessary steps in order to protect data. Bayer uses technical and organizational security precautions to protect data from manipulation, loss, destruction or access by unauthorized persons. Any personal data that is provided to us will be encrypted, when in transit between systems, in order to prevent possible misuse by third parties. Our security procedures are continuously revised based on new technological developments.

Since farmers can obtain valuable insights through data it is important to be able to use it for multiple purposes. Data shared by the farmer across multiple Digital Farming related services and platforms **should be portable and interoperable** in order to allow farmers to choose the services which offer them the best possible solutions. We intend to work with other technology providers to develop capabilities to allow for the easy exchange of data. A farmer may request a copy of the data which had previously been shared or for example retain a copy of variable application maps provided within relevant Digital Farming solutions.

Continuous improvement of digital agriculture technologies is vital to provide farmers with the best possible tools. Lasting data sets are needed in order to constantly refine statistical databases, which are the foundation of digital farming technologies. A certain amount of concrete data is necessary for accurate analytics and statistics. At times, we may seek to obtain the rights to use field specific data, within the frame of a long term license agreement.

Outlook: Generating value for all involved in digital farming is our key imperative

It is very important for us that farmers are at the heart of the decision making when it comes to sharing their data and that business is conducted transparently. After all, the objective for us is to assist farmers with new digital tools that will enable them to get the very best out of their soil.

As a leading innovation company and technology provider in the agrilcultural space we have lots to share, but also much to learn from the farming community. We are eager to learn and engage in the ongoing discussion about the responsible use of data in modern agriculture.

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