Mini-Documentary: *Farming at Your Fingertips*

**Farming with Big Data**

Recent advances in agricultural technology have moved big data from the conference room into the corn field, providing farmers with access to local, real-time data to help them quickly and confidently make informed management decisions for their farming operations.

This new level of data gathering helps to optimize the practice of precision agriculture—a management system that is location-specific, with data compiled from soils, crops, nutrients, pests, moisture, and/or yield, for optimum profitability, sustainability, and protection of the environment. Precision agriculture, also called “site-specific” or “prescription” farming, helps growers tailor their operations on a micro level, acre by acre, field by field, for maximum output and profit.

In basic terms, it is the process used to determine what to plant, where to plant, and when to plant that will produce the greatest profit, with the least impact on the environment and resources. These critical factors are necessary to meet the 70% increase in global food production required to feed the estimated world population of over 9.1 billion people by 2050. Utilizing these new technologies, not only are the farmers more successful on a local level, the benefits of smarter farming helps increase global food production levels to meet the 70% target by 2050.

By using smarter big data analysis, precision agriculture is able to provide local farmers with more precise and predictive information on their soil microclimates, precipitation, growth stage calculations, seed selections, growing degree units (GDU), and more.

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If global population reaches **9.1 billion by 2050**, world food production will need to rise by **70%**, and food production in the developing world will need to double.

*How to Feed the World in 2050*,
UN Food and Agricultural Organization, 2009
However, in the all-too-busy days of farmers, how can they find the time to compile their own data and take advantage of the data resources available to them? In the past, agricultural extension programs run by local universities would disseminate scientific research and agricultural know-how to farmers, but there was no method for real-time information dissemination on critical issues for growers. Quick growing seasons mean that farmers have small windows of opportunity to ensure a bountiful harvest; success is often dictated by their ability to be nimble and react quickly.

Now, with the ubiquitous adoption of smartphone technology, up-to-the-minute, vital information is as close as a farmer’s mobile device. Using online delivery tools in real time on their smartphone or tablet, growers can input and analyze their data, consult with other agronomists on local product knowledge, and maximize their return on every acre. Experts in precision agriculture predict continued growth for smartphones in farming due to high levels of current smartphone use among farmers, their existing knowledge of telemetry and data plans, and the rapid growth of quality and availability of internet accessibility in rural areas.

From Field to Fingertips

Working with agronomists, scientists, and information technology experts, DuPont Pioneer has developed Pioneer® Field360™ services designed to provide growers with the ability to turn field data into insightful, actionable information. This suite of tools includes planting and harvest mapping, multiple apps and a software subscription powered by GPS features, so the crop location can be mapped and stored with all pertinent data, even photos.

Pioneer® Field360™ Select software features an interactive, web-based subscription service that combines field data with real-time agronomic and weather information to provide a comprehensive picture for making critical decisions. Aggregated information allows layering of data across field boundary maps and other insight tools such as a growing degree units (GDU) calculator, growth stage estimator, harvest and seeding maps that are positioned to help with field-by-field and whole-farm decision making.

Much of the success of DuPont Pioneer has come from its close relationship with the customer, collaborating on a local level to provide solutions and knowledge with each product. The Pioneer® Field360™ services continue to build on customer interaction, providing the technology behind farming that complements the science of plant breeding, agronomy and biotechnologies to meet the local needs of the farming community around the world.

**Additional Resources**

- **FAO says Food Production must Rise by 70%**, Population Institute.
- **Farms of the Future Will Run on Robots and Drones**, Taylor Dobbs, NOVA Next, PBS, 9 July 2013.
- **The Future of Farming May Hold Drones**, Kristy Foster Seachrist, Farm and Dairy, 13 September 2013.