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BIG DATA ANALYTICS

Can Big Data Help Solve World Hunger?



John Edwards, Technology Journalist & Author
7/18/2013
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Thanks to new technologies and enhanced agricultural practices, today's farmers produce three times as much food as they did a half-century ago while requiring just 12 percent more land. Yet even this impressive efficiency isn't sufficient to feed a hungry world with a rapidly growing population.

As researchers look for answers to the global hunger problem, one solution shows a significant amount of promise: combining precision agriculture with big data analytics. For centuries, crops have been managed by performing a particular task, such as planting or harvesting, on a predetermined schedule. But by collecting real-time data on weather, crop maturity, soil and air quality, and even labor and equipment costs, predictive analytics can lead to smarter decisions on when to perform specific tasks. The approach is part of a technique known as [precision agriculture](#).

Taking it higher

Big data can take precision agriculture to an entirely new level by providing massive amounts of actionable data. By tapping into sensors placed in fields, installed on machinery, and even flown remotely overhead, farmers can amass deep insights that previous generations could only dream about. Prior to the arrival of [precision agriculture analytics](#), gaining insight from the massive datasets being generated by the new types of sensors now being deployed would be impossible. With big data tools, the task becomes much more manageable.

Big data is opening the way for many new precision agriculture opportunities. At the most basic level, data generated by various types of sensors can be analyzed in real-time to uncover critical values that are vital to crop production decision-making. At a more advanced stage, high-resolution spatial maps showing soil moisture levels can be created to help farmers manage irrigation processes more efficiently. Likewise, detailed insect damage maps can be developed to help farmers precisely target anti-pest controls in different fields. At an even more sophisticated level, dynamic, three-dimensional views of soil, plant, and environmental properties can be produced to show a comprehensive view of field conditions at any given moment.

Facing challenges

For the time being, however, agricultural big data opportunities are being overshadowed by several important challenges. The biggest problem may be that there are relatively few data scientists and other big data experts available to create and execute the algorithms necessary for analyzing large amounts of agricultural data. Also, there are often mismatches in the precision, scale, and accuracy of data arriving from different sensor sources. Critical data variances can create an erroneous view of what is actually happening in a field.

Despite current challenges, it's only a matter of time before big data-driven precision agriculture becomes a mainstream technology. While big data analytics alone may not be enough to solve the world's hunger problems, agricultural experts will, at the very least, have another powerful tool in their hunger-fighting arsenal.

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PAGE 1 / 3 > >>



Pradeepta Mishra, User Rank: Bit Player
7/30/2013 | 3:54:20 PM

Can Big Data Help Solve World Hunger ?

Can big data help solve world hunger? The question is very ambitious. Though it is practically possible but yes, prediction of events on one hand and execution of the plans and strategy on the other hand has to be balanced. Technology can definitely help in better farming but I do not see it can remove world hunger in near future.

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Saul Sherry, User Rank: Blogger
7/23/2013 | 1:00:57 PM

Re: Does it mean more GMOs?

@smkinoshita well Farm Hack seems to be heading in that direction.

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smkinoshita, User Rank: Exabyte Executive
7/22/2013 | 9:01:09 AM

Re: Does it mean more GMOs?

@Saul Sherry: You're right, and I'm pretty sure indy farmers are already doing it as we speak. Isn't there a sort of farmer social network for data of this kind? Can't remember the name off-hand.

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Saul Sherry, User Rank: Blogger
7/22/2013 | 2:28:22 AM

Re: Does it mean more GMOs?

I wonder how much farmer's are open to this sort of government interaction... I know there's a lot of funding intervention for Farmers... but there must come a point where having everything monitored feels like a bit of a nanny state.

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Saul Sherry, User Rank: Blogger
7/22/2013 | 2:25:01 AM

Re: Does it mean more GMOs?

I can see this being the area we've covered on the site before where indy farmers can collectivise their data and get regional insights from it, without having to rely on governments etc.

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Saul Sherry, User Rank: Blogger
7/22/2013 | 2:18:14 AM

Re: Finally its growing!

Farming is one of those areas where the same data sets will be handy across all areas. Not all the results will be the same, but the presumption needs to be that if we launch a platform for farmers to easily extract insight from data inserted, it could be rolled out in a useful way to almost any farm.

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smkinoshita, User Rank: Exabyte Executive
7/21/2013 | 10:01:23 PM

Re: Does it mean more GMOs?

Debra Howard: "In no country farmers can rely on big data untill and unless government helps them."

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Agreed, and it's in every country's best interest to help their independent farmers, lest we be at the mercy of corporations for food production.

Still, I can see farmers adapting to the technology fairly naturally. I've heard a lot about farmers who use whatever tools can best help them predict what to do and what will happen. I think that this learning, adaptable attitude is critical when it comes to using big data.

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technetronic, User Rank: Blogger
7/21/2013 | 2:47:46 PM

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Re: Does it mean more GMOs?

I think this is the recent [May 8 initiative](#) you're talking about in Japan

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Really interesting and positive that the government would be getting involved in this.

What do the farmers think about it? What role will they play in helping to adjust and enhance the quality of the assumptions, data, and results? I agree that there are real risks to "critical data variances"

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Qasim Bajwa, User Rank: Petabyte Pathfinder
7/21/2013 | 9:42:14 AM

Help the Farmers!

I read a few good lines, it's somewhere close to this topic let me share them with the BDR community :)

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At least once in your life you'll need a Doctor, a Lawyer, an Architect but everyday three times in a day you'll need a Farmer, Save them!

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Qasim Bajwa, User Rank: Petabyte Pathfinder
7/21/2013 | 9:39:54 AM

Re: Does it mean more GMOs?

@a.sajid, It's more like a Merger, the Farmers take the initiative, the government takes notice, the government has the resources to provide the cutting-edge technology to the Farmers to help them monitor their crops' life cycle, their livestock. Assisting them in deploying state of the art sensors. Nothing is done without the Government's consent, however if the government is not taking notice and the farmers are struggling on their own, it's a failure on the government's part.

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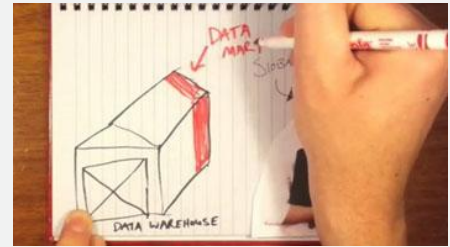
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In the next 40 years, the demand for food will raise by 70% ..

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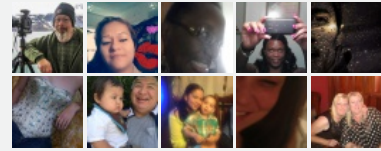
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