Institution of Agricultural Engineers (IAgrE)
Annual Conference 2019

Can Big Data lead to Smarter Farming?

Will “big data” be the new tractor for agriculture?

Opening Remarks

Professor R Jane Rickson, FIAgrE
President, Institution of Agricultural Engineers

An agricultural revolution?

Agriculture has gone through many revolutions in the past:

settled farming……

https://dunyalilar.org/ancient-hunter-gatherers-and-farmers-made-love-not-war.html/

An agricultural revolution?

Agriculture has gone through many revolutions in the past:

settled farming……

mechanisation…….

"JotoDeer" tractor, Wuhan, 2017

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An agricultural revolution?

Agriculture has gone through many revolutions in the past:

settled farming……

mechanisation…….

improvements in crop breeding…….

https://nature.berkeley.edu/advising/majors/genetics-and-plant-biology

An agricultural revolution?

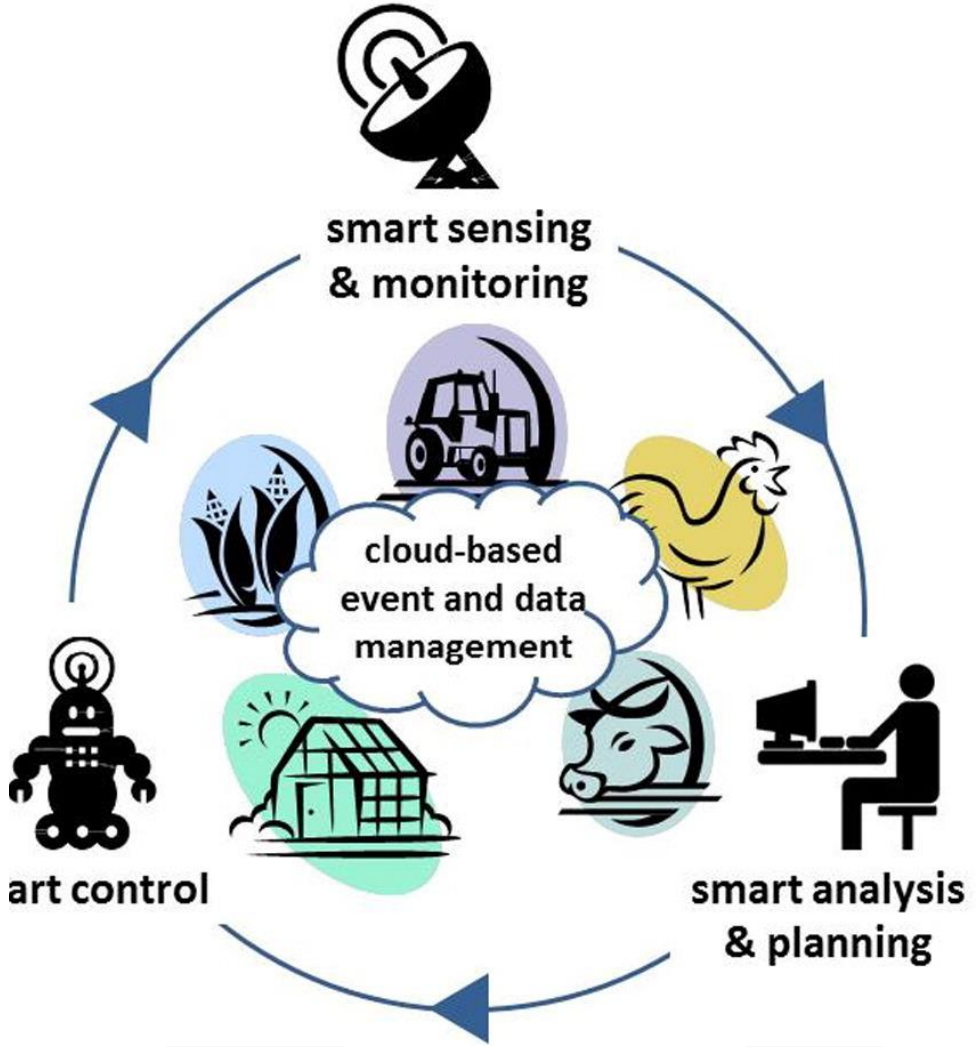
Are we on the verge of the 4th Revolution?

Data drives agricultural production and processes

Is the Revolution is imminent?

What are the implications of ‘big data’* for future farming and land based industries?

**when data sources are “too large, messy, rapid, and diverse to handle with traditional relational database management systems and statistical software programs” (McAbee et al., 2017. Inductive reasoning: The promise of big data. Human Resource Management Review, 27(2)).*



Wolfert et al. (2017) ‘Big Data in Smart Farming – A review’. *Agricultural Systems*, 153, pp. 69–80.

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Push and pull factors that drive the development of Big Data and Smart Farming

(from Wolfert et al. (2017), Agricultural Systems)

PUSH FACTORS (enabling Big Data)
General technological developments Internet of Things and data-driven technologies Precision Agriculture Rise of ag-tech companies
Sophisticated technologies Global Navigation Satellite Systems Satellite imaging Advanced remote sensing Robots Unmanned aerial vehicles (UAVs)
Data generation and storage Process-, machine- and human-generated data Interpretation of unstructured data Advanced data analytics
Digital connectivity Increased availability to agricultural practitioners Increases in computational power
Innovation possibilities Open farm management systems with specific apps Remote or computer aided advice and decision support Regionally pooled data for scientific research and advice On-line farm shops

PULL FACTORS (where Big Data is needed)
Business drivers Efficiency increase by lower cost price or better market price Improved management control and decision-making Better local-specific management support Better cope with legislation and paper work Deal with volatility in weather conditions
Public drivers Food and nutrition security Food safety Sustainability
General need for more and better information

https://www.youtube.com/watch?v=jEh5-zZ9jUg

Today's programme….

The potential of Big Data to achieve 'sustainable intensification': maximising production without harming the environment

From field to fork – use of Big Data throughout the multi-sector land based supply chain

Use of Big Data in small companies up to multinational agribusinesses

Big Data technology transfer and exchange

Developments in technologies (hardware, software) and applications

Who benefits and who pays? Private or public goods? Who should invest?

Questions:

Are we there yet? How do we get there? ….Do we want to go there?

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