

Precision Agriculture Data Impact on Farmland Values: Big Data in Ag

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Historical yield, soil test results, and other production data have been included in farmland sales and/or rental agreements, but these data have not directly influenced farmland values. These data have been site specific (i.e. yield monitor data or grid soil samples) in electronic form or printed maps, and sometimes annual whole-field yield written on the back of an envelope; regardless the data may have somehow helped prove historical productivity and soil amendment utilization but not likely directly impacting farmland values. This is analogous to providing oil change records for an automobile, the used car has the same value with or without those records but it may speed up the sale. But what if the data were sufficient to be considered ‘big’ as in ‘big data’?

Once the big data sector of the agricultural industry is mature, farmland values and rental rates will be a function of quantity and quality of bio-physical meta-data and geo-spatial, i.e. site-specific, data. Meta-data includes management information but not limited to: seeding depth, cultivar, machinery diagnostics, time and motion, and the dates of tillage, planting, scouting, spraying, and input application. Geo-spatial data includes the site-specific soil, scouting, and harvest yield.

In a mature ‘big data’ system, the management of an individual tract of land will depend upon in-field data along with data from nearby and potentially further away fields. Likewise, management of other fields by the farmer will be influenced by presence of data from the given field such that data availability may impact their whole farm system.

In some scenarios, a farmer who does not have a history of true big data for their current fields may opt to pay a premium to secure at least one field that includes data. The reasoning is that in order to participate in a big data system, it is expected that farmers are required to submit data. If the farmer desires to participate in the big data system then they are more likely to pay higher rental rates or purchase price for data-endowed land.

A close analogy may be mineral rights and farmland. Landowners sometimes retain the mineral rights when they sell the surface rights of farmland. Several scenarios exist where the data may be retained by the farmer or may be negotiated separately. Unlike mineral rights and the minerals themselves, data are electronic in a big data system; and copies of electronic data are considered identical to the original. In other words, once a copy of the data has been made available to another party then the original owner of the data has very little control of the data.

It remains unclear whether the ‘data premium’ will be a true premium (an amount added to the market price of land) or a penalty (an amount deducted from the market price of land). In the short-run, early movers who choose to provide data to land buyers may see a premium. However, as the transfer of data with a land sale becomes more common a penalty to land parcels without data may be more common.