How strong is that algorithm?

BY **PETER GREDIG**

We are all hearing a lot about data. Big Data, to be more precise. A lot of hype surrounds the potential of this data for agriculture.

Data, on its own, is just a big pile of numbers. Like diesel fuel, it isn't worth much to you if you don't have engines that use the fuel. So what engine does data fuel? Algorithms.

An algorithm is merely a mathematical formula – and if it's a good one, it uses available data and generates an output that optimizes the power of the information. Algorithms attempt to determine or predict the best path to proceed.

There are examples of algorithms at work all around us. Netflix predicts titles that may be of interest to you based on an algorithm. Google Maps determines the preferred route to a destination using algorithms that take into account traffic patterns, speed limits, number of stops, weather, time of day, etc. Facebook's powerful algorithm filters what content is made available based on your historical use patterns.

These powerhouse algorithms take into account a huge range of variables – some of which may not even make sense to us, but supercharged computing power has detected a correlation so it's in the formula.

In agriculture, algorithms can use a wide range of data to improve efficiencies and enable more informed decisions. For example, an algorithm can direct aerial drones to specific areas within a field that historically suffers from a specific nutrient deficiency. The algorithm enables a more efficient and targeted process than flying the drone over every acre to look for random problems.

Irrigation systems benefit from algorithms that take into account the crop, soil type, soil moisture sensors and weather forecast, and generate an output that maximizes the water resource and economics.

Weather is the wild card that will continue to challenge algorithms for crop producers. Even with

Data, on its own, is just a big pile of numbers. Like diesel fuel, it isn't worth much to you if you don't have engines that use the fuel. So what engine does data fuel? Algorithms.

100 years of weather data and wireless weather stations in each field, weather will still throw curve balls at predictive algorithms. More controlled environments like greenhouses or livestock operations are more conducive to developing robust algorithms that deliver credible outputs.

It all sounds great, but there are some realities that should be mentioned. First, you can have the best algorithm in the world, but if the data is not high quality, the output may be less than helpful or even misleading. Second, if the algorithm is flawed, even the best data will not generate a good output.

Those providing data management and interpretation services will ask you how good your data is. Your question to them: how strong is your algorithm? ∎

Follow Peter: **@agwag**