



Understanding Available Data and Layers in Digital or Prescription-Based Agriculture

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Precision agriculture can be an enabler for 4R nutrient management, on-farm trialing, and margin management. The purpose of this article is to provide some clarity on the terminology and various layers used to develop recommendations and actionable outcomes.

Remote Sensing: NDVI-Normalized Difference Vegetation Index is useful for quantifying the amount of green vegetation in a given area. The range in values is -1 (water), -0.1 to 0.1 (bare soil) to +1 for temperate and tropic rainforest. Ground proofing or another data layer is required to quantify the differences.

RGB-short form for Red, Green, and Blue, is the same type of picture that could be taken with a camera or phone. However, this is a georeferenced image of your field taken by satellite or drone, that can be used for management decisions.

Bare ground imagery-A geo-referenced RGB image of the field without crop. Can be used to identify management zones or areas of interest.

Crop/Plant Health-A geo-referenced image of crop development at a given point in the season, typically built off satellite imagery with proprietary analytics to develop the map/scale.

Soil Based: Electric Conductivity (EC)-a measurement of the electric conductivity of the soil. Measurements are typically developed using an EM38 or Veris unit. Useful in defining soil textures, areas of nutrient accumulation and salinity.

Organic Matter (OM)-Several options have the capability to measure OM changes throughout the field using a ground-engaging optical sensor.

Soil Tests-Most have experience with standard soil tests, with prescription based agriculture the question is how you assign it to an area. Typically, a zone is developed first (grid, or based upon another parameter), then samples are pulled from those zones to provide a result for site specific recommendations.

Spatial: Grid-is a management zone based upon a set square size. Typically, it is based in one (0.4 Ha) or 2.4 (1 Ha) acre grids. Other popular sizes are five or 10 acres. Typically used for fertility management.

Zone-refers to a geo-referenced area. It can be any size and is usually based on another data layer. Grids are one type of zone, other examples that could generate zones include; yield, bare ground, NDVI, etc. A zone is required to generate a prescription.

Composite-usually is in reference to a soil sample made up of 15 to 25 cores. A grower using composite soil sampling typically has one composite soil sample per 25 acres. This area may or may not be a geo-referenced zone.

Learning, Smart or Test Blocks-are checks or tests

References: NDVI – Sentinel Hub (<https://www.sentinel-hub.com/eopproducts/ndvi-normalized-difference-vegetation-index>) – Accessed February 27, 2019; Grain Farmers of Ontario – Understanding Precision Agriculture - <https://ontariograinfarmer.ca/tag/understanding-precision-agriculture/> - Accessed September 2018

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