

IMAGERY, IMAGERY, IMAGERY!

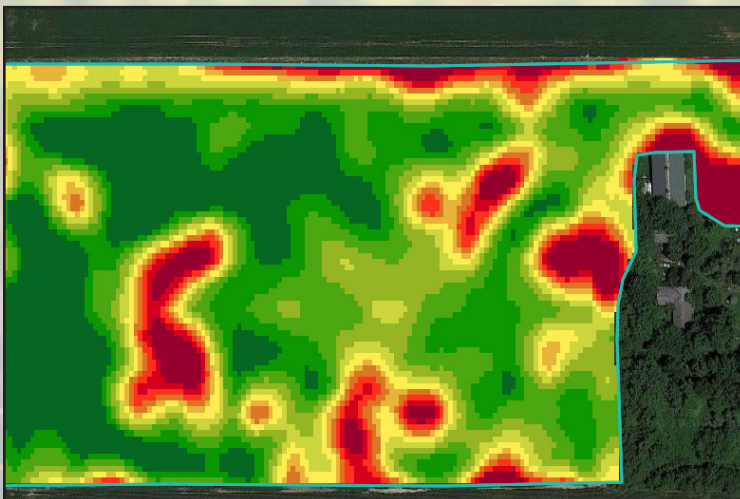


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The technology around imagery has drastically improved over the last decade, making imagery more readily available today than ever before. The ease of viewing imagery is only a couple clicks away on a smart phone, table, or computer. Satellites, manned aircrafts, and drones are three ways to acquire aerial imagery. When deciding which method to use, you may find that in many cases the different methods can complement each other. For example, satellite imagery may be the method for identifying a potential issue in the field, while the drone can pinpoint and allow for diagnosis of the issue.

Imagery has several uses in the agriculture industry, with one very common use being in-season directed sampling and scouting. Soil and plant variability can be identified using imagery and turned into actionable recommendations. Weeds, insects, disease, and nutrient deficiencies are a few of the many issues you can discover using imagery. The true benefit of imagery is when you can act on those discoveries to save and/or increase your yields.



Processed satellite image showing plant variability throughout the field at 10 m resolution

SATELLITE IMAGERY

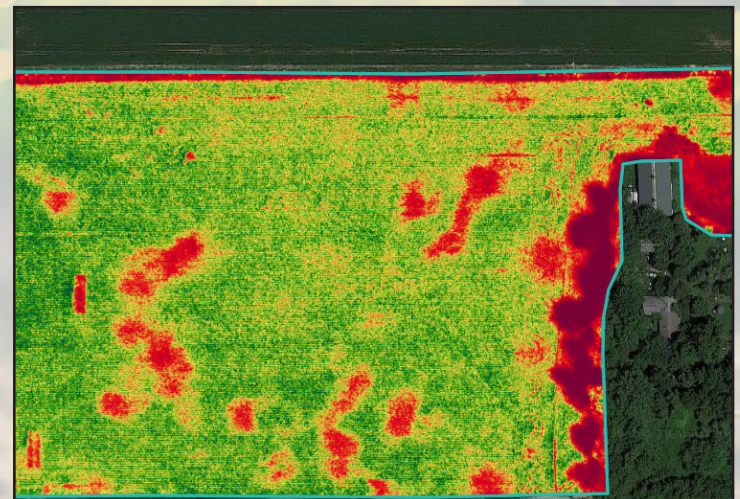
Satellite imagery is perhaps the most common source of imagery used in agriculture today. Besides in-season field monitoring, satellite imagery is commonly used for creating management zones and side-dress nitrogen prescriptions. The image frequency can be as often as one image every few days when cloud obstruction is minimal. The image resolution varies from 3 meters to 30 meters depending on which satellite the image was sourced from. Because of the lower image resolution, some field issues may not be visible in the satellite imagery.

Advantages:

- Captures the largest area of imagery at one time
- “Automatic” image acquisition
- Low cost

Disadvantages:

- Lowest resolution (3 - 30 meter)
- Image frequency is dependent on satellite orbit and cloud cover



Processed manned aircraft image showing plant variability throughout the field at 8 cm resolution

MANNED AIRCRAFT IMAGERY

Manned aircraft imagery provides significantly higher resolution than satellite imagery. Since the images are manually captured, the image frequency is essentially on demand, weather permitting. Cloud shading is still a concern with manned aircraft imagery as the shading can affect the image color. The number of acres that can be imaged per day is less than satellite but significantly more than drone.

Advantages:

- Captures large areas of imagery at one time
- High resolution (~8 centimeter)
- Low to medium cost
- “On demand” image frequency

Disadvantages:

- Higher cost than satellite imagery
- Requires a person to physically fly the field

DRONE IMAGERY

Drone imagery provides the highest resolution out of all three methods. With the higher resolution comes the ability to sometimes diagnose issues without setting foot in the field. Another advantage of a drone is the ability to fly to a certain area of the field to get a precise image of an issue. Drone imagery has a higher cost due to the increased time it takes to image the fields.

Advantages:

- Highest resolution (sub-millimeter)
- Remote scouting capability
- “On demand” image frequency

Disadvantages:

- Higher cost
- Requires a person to physically fly the field

With today’s technology, imagery can be highly valuable on every farming operation. The software today could automatically identify issues in the field via machine learning, saving time and producing actionable insights.



Processed drone image calculating plant population

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