

Precision Ag Conference

Advances in remote sensing



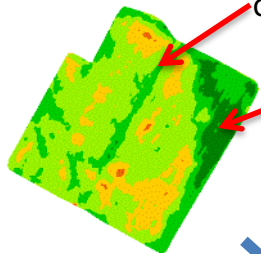
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Felix Weber, T.Ag.,
Palmerston, Ont.*
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<http://agbusiness.ca/>



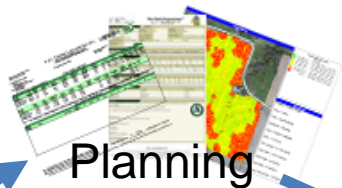
soil maps & other data

old fence row

higher OM
silty soil



Precision sampling



Planning

Applying



& Planting



Scouting



Scouting

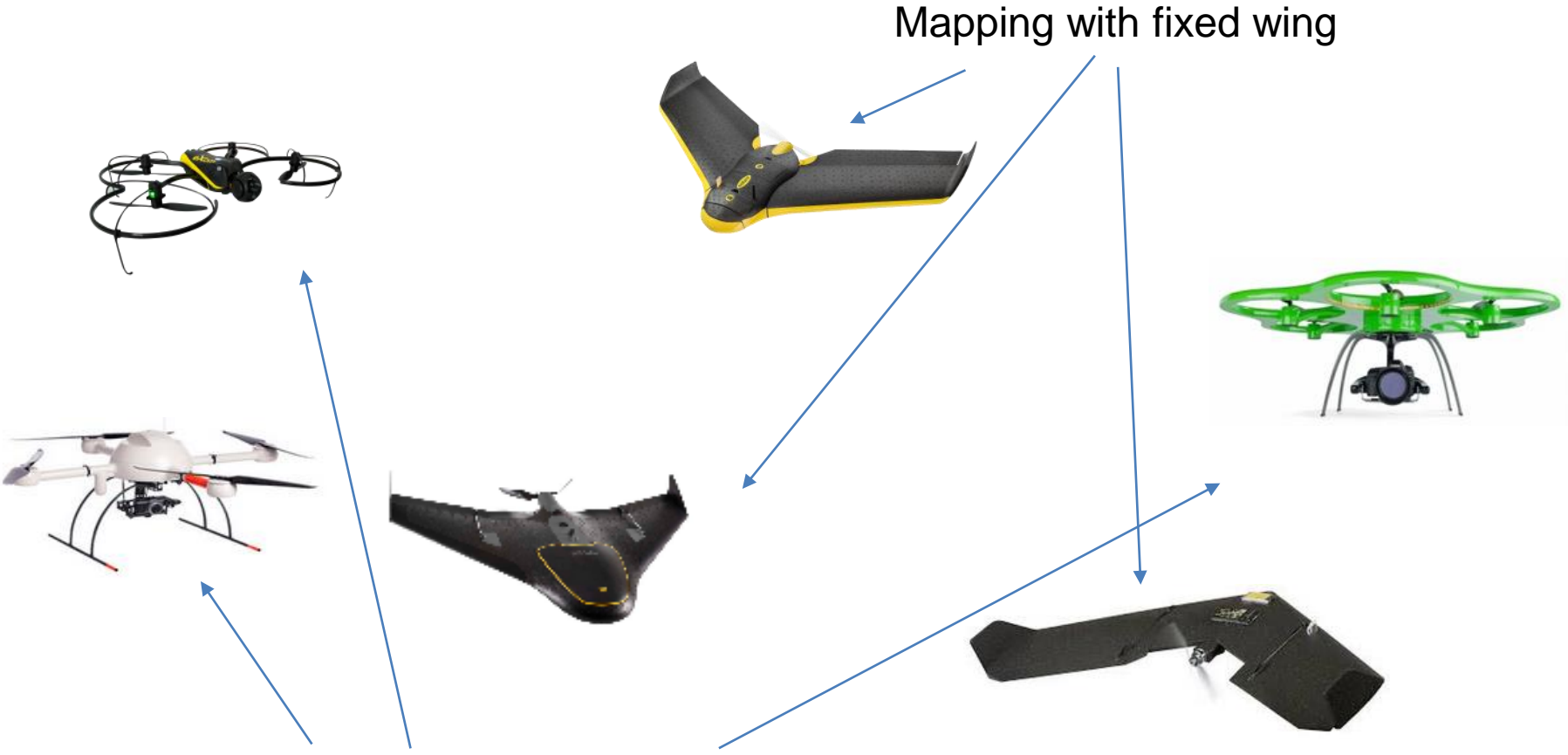


Crop Protection





Ag Business & Crop Inc.

- What UAV/UAS is the right tool?



Fixed Wing vs. Rotary Wing



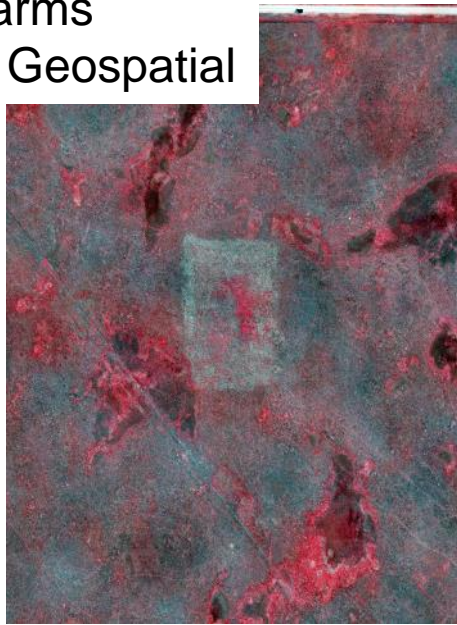
		
Projects	Mapping	Small area mapping & inspection
Applications	Land surveying (rural), agriculture, GIS, mining, environmental mgt, construction, humanitarian	Inspection, cinematography/videography, real estate, surveying (urban), construction, emergency response, law enforcement
Cruising speed	High	Low
Coverage	Large	Small
Object resolution	cm/inch per pixel	mm per pixel
Take-off/landing area	Large	Very small
Flight times & wind resistance	High	Low



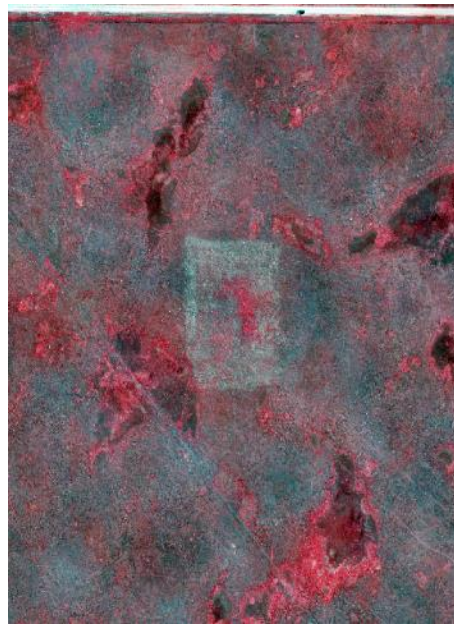
Resolution of Remote Sensing

1. **Spatial** (What area and how detailed)
2. **Spectral** (what colours- bands)
3. **Temporal** (time of day/season/year)

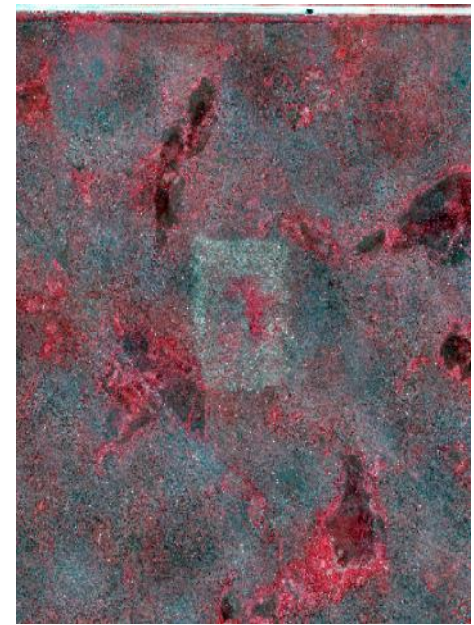
CKP Farms
Ventus Geospatial



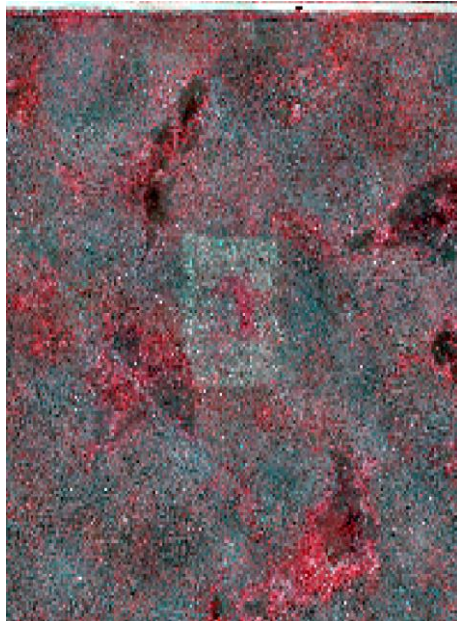
5 cm x 5cm



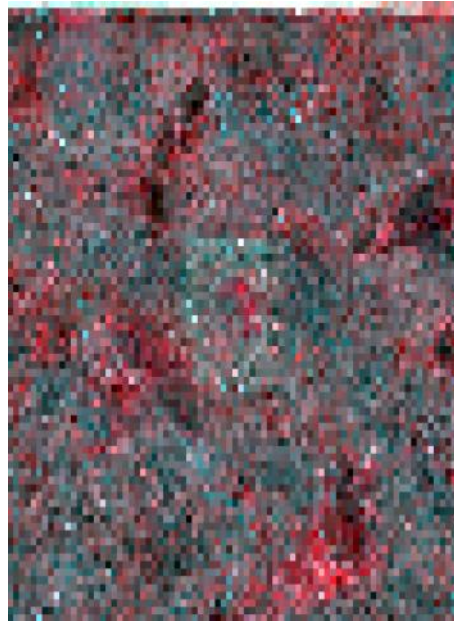
50 cm x 50cm



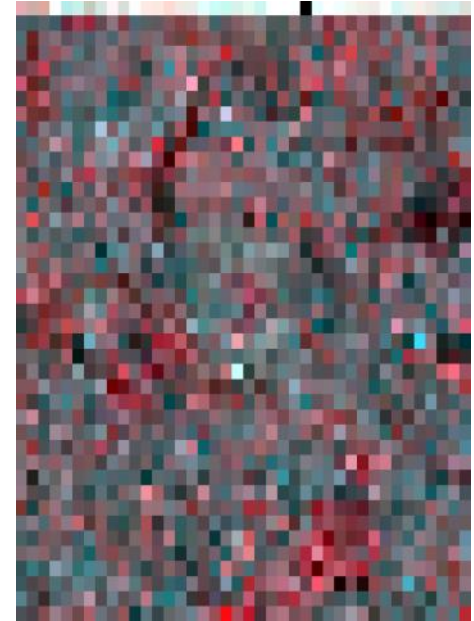
1m x 1m



2m x 2m



5m x 5m



10m x 10m



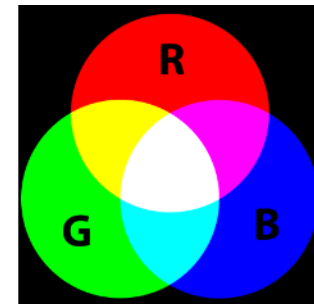
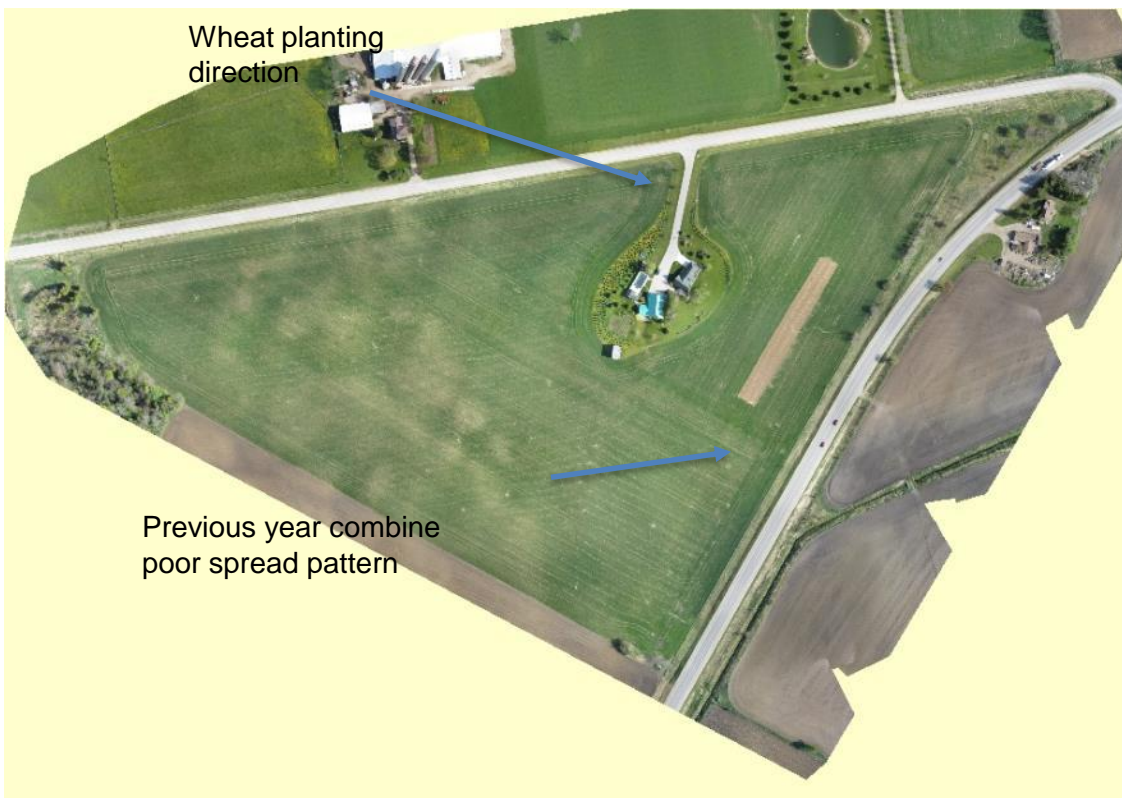
Resolution of Remote Sensing

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Evolution of Spectral Sensing

Crop: Winter Wheat

Band: RGB (Visual only)



Benefits

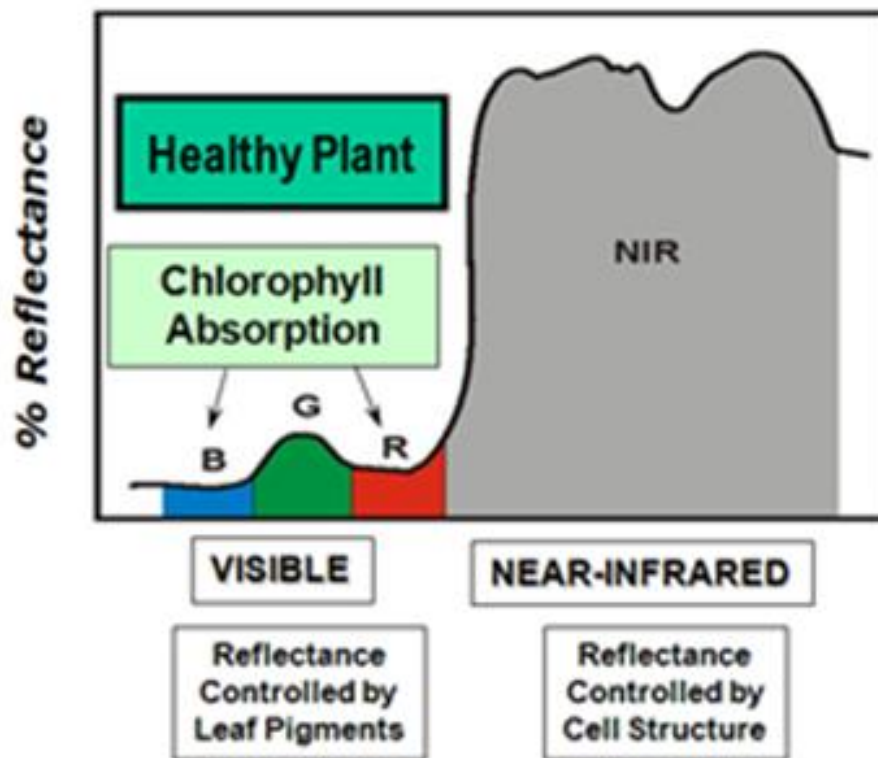
- ✓ Rapid, remote visual sensing
- ✓ Detecting crop patterns, problems only visual

Start field walk



Winter Wheat Survival (NDVI)

- ✓ Early detection crop stress
- ✓ Relative Crop biomass
- ✓ Crop Health
- ✓ Mid Season Scouting



Making Decisions:

- 55 ac. Replanting cost:

- Seed \$100/ac. \$ free
- no-till Planter \$25/ac. \$ 1,100
- Herbicide \$10 \$ 550
- Sprayer \$10 \$ 550
- \$ 2,200

	Min	Max	Area	CV%
	-9.03...	-3.10...	7.59	-20.6
	-3.10...	2.554...	25.03	-531.6
	2.554...	25.18...	32.15	38

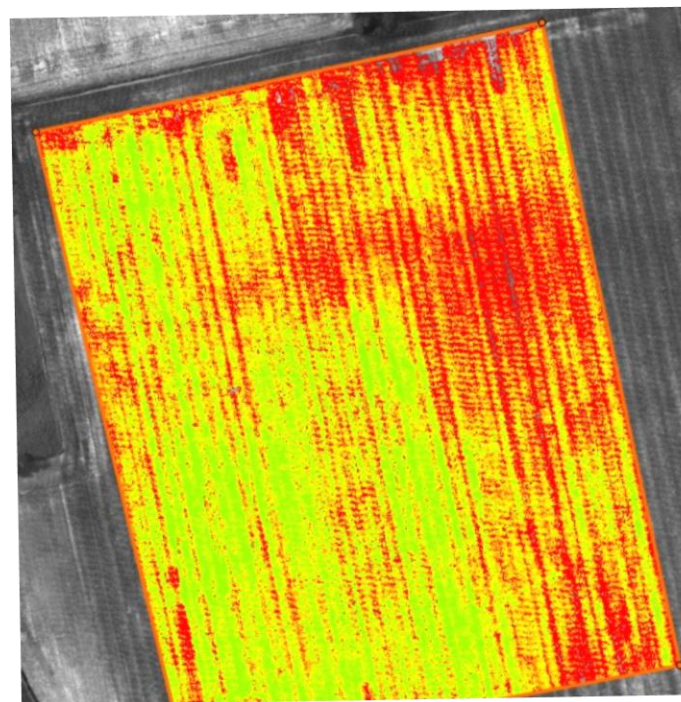
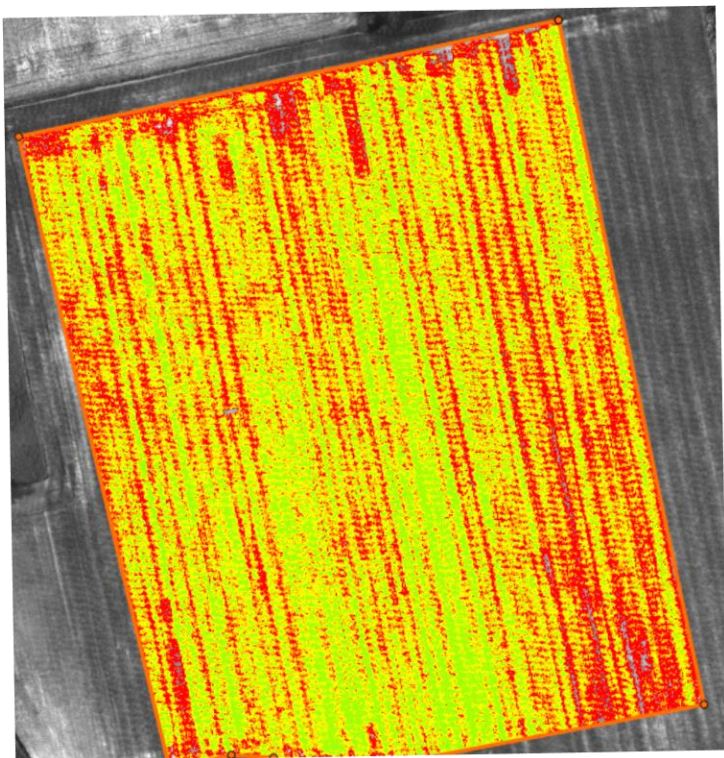
- front 8 ac. had 5 ac. of bare area

- leaving 3 ac. bare area
- Replanting cost \$ 320
- -----
- Savings \$ 1,880



NDVI

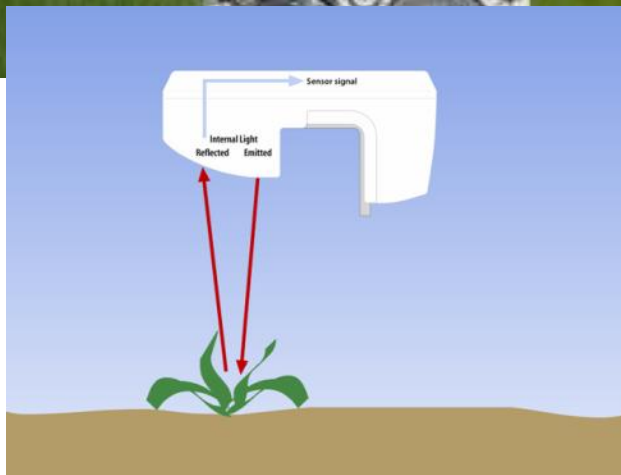
Red Edge IR



Corn N Trial – 2 Hybrid Split Planter Trial

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Light correction during the day:



NDVI – Red-Edge, calibration?



Next series of slides in the presentation present example use by Agronomist that collected has adopted sensory imagery collected by UAV for early detecting plant stress (disease) and making a management decision (fungicide application). Please note that ground proofing is required to validate if and what the problem is in the field. The sensors used allowed for rapid, early detection that would have been more difficult and time consuming to detect through either ground scouting or using standard RGB (visual) camera imagery.

For more information on example applications or this project please contact Ag Business & Crop. Email: info@agbusiness.ca