Data Instructions: How to get the most from your data
Cranberry Research Farm – Drone flights: July and August, 2

Thank you for choosing Crop Sensors to fly the Cranberry Research Fa
farm
was flown on 2 separate days (July 9 and August 12, 2015) using a Sensefly fixed wing drone. For each flight mission, an RGB visual sensor (standard camera) was mounted, followed by a Near-Infrared (NIR) sensor. Photos were then downloaded, stitched and processed.

Contents of the USB stick:

Top level folders	Subfolders	Description and instructions
July 2015 imagery **August 2015 imagery**	**Google tiles**	There are 2 main files here – an HTML file and a KML file. You can double click on the HTML file to open the imagery in a Google Maps view. In this view you can zoom in and out on the aerial imagery and view it in proper geographic space. The KML file is compatible with Google Earth which you can download for free at the link below if needed: https://www.google.ca/earth/download/gep/agree.html
	Raw photos	These folders house the individual, original photos taken by the drone during flight. These files are not processed or improved by image editing software, unlike the stitched mosaic.

	Stitched mosaic	This is a compilation of the best photos collected during the flight, stitched using photogrammetry software. This stitched mosaic is a professional orthophoto, which means that angles, areas and distances can be measured off of the imagery accurately inside of a GIS. This process also removes distortions, image artifacts and other issues with the data in its raw form. These two raster images (July and August) were assigned the following projection: NAD83 UTM Zone 10N. This information is useful for anyone importing it as a layer in a GIS. The web-based version of the imagery (see below) is set to Web Mercator Auxiliary Sphere (WMAS) projection.
	Maps (PDFs)	2 copies of air photo mosaics (orthophotos), one designed at 11x17, one designed to be printed 24x36. 2 maps are also provided of the NDVI output (at the same two map sizes).

Hard copy maps:

As part of the overall package, 8 total hardcopy maps have been provided:

July maps	**August maps**
11 x 17 – Standard orthophoto	11 x 17 – Standard orthophoto
11 x 17 – NDVI map	11 x 17 – NDVI map
24 x 36 (Arch D) – Standard orthophoto	24 x 36 (Arch D) – Standard orthophoto
24 x 36 (Arch D) – NDVI map	24 x 36 (Arch D) – NDVI map

All of the maps above can be accessed as digital PDFs as well on the USB stick provided (see the table on page 1).

How to access and use the secure web map:

http://www.cropsensors.com/cranberry-research-farm-delta-bc/

Enter password: **cranberry2015** and click “Submit” , then click on image to access web map. Once you have gained access, you can zoom in/out, pan, measure distances and areas, and turn layers on/off. The web map can be a

powerful tool to assist with crop management.

How to use your imagery on a tablet in the field:

One of the best ways to use your imagery in the field (with no internet connection required) is to load imagery as MBTiles format onto a tablet. MBTiles GPS is available at: https://itunes.apple.com/ca/app/mbtiles-gps/id592703465?mt=8 for free, or a similar app with more functionality (MapTiler) is available for $2.29. If you would like to implement this solution, please contact Mike for further direction on how to load the MBTiles format.

Interpreting NDVI

Normalized Difference Vegetation Index (NDVI) is one of the most widely used indices for showing plant "greenness" or provided a measure of photosynthetic activity. This gives an indicator of plant health and relative density of the crop. In the maps and data included, the darker green indicates highest NDVI values (+1) and the red indicates the lowest values (-1), the latter of which indicates stressed vegetation, dying vegetation, or areas where there is no vegetation present (e.g. Man-made structures). As you can see in Figure 1 below, healthy plants reflect higher in the near-infrared (NIR) spectrum, as the plant canopy changes and becomes greener and more dense. Gravel areas and areas where there are man-made structures will show in the red or dark orange, as no NIR reflectance is taking place.

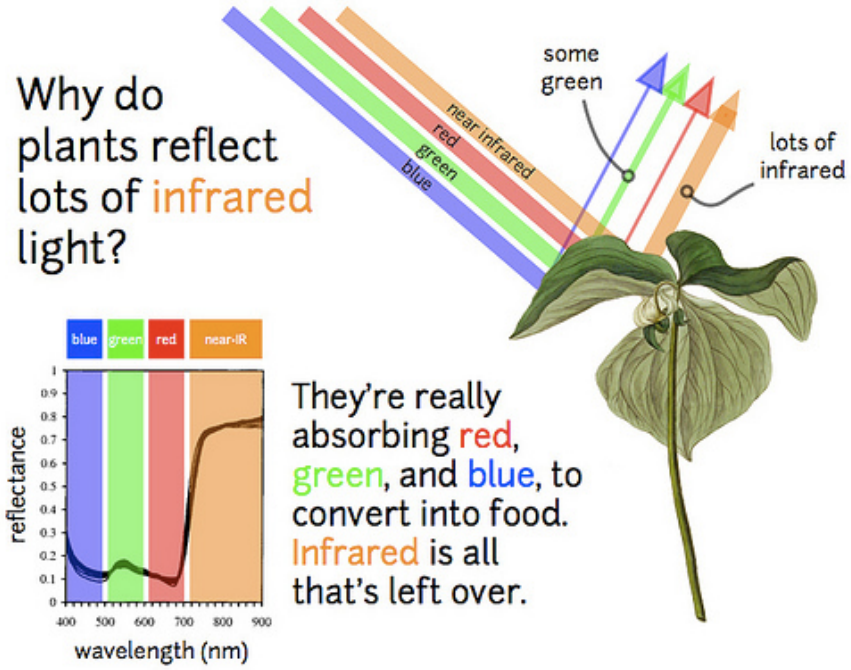

Figure 1 – NDVI requires analyzing the near-infrared wavelength through a basic formula (NIR + Red / NIR – Red)

If you have any questions about your data and how to make use of it, please give me a call at 604-970-0024 or email at mike@cropsensors.com

All the best,

Mike Morellato
Owner, Crop Sensors