

Ag Drone School

Consort School

July 29-30, 2019

Day One: Morning

Monday, July 29

8:30 a.m. **Welcome & Introductions**

9:00 a.m. **Field Crop Uses for RPAS**

While the focus of the school is safe drone operation, the magic really is in the sensor! This presentation will go through the current state of technology, including satellite, manned, and unmanned imagery collection. Explanation of the most common technologies, with focus on Normalized Difference Vegetation Index (NDVI) and benefits of multispectral imaging/calibration.

10:15 a.m. **Introduction to RPAS**

Remotely Piloted Aircraft Systems: history of development, purposes and applications; airframes and propulsion systems, and the theory of flight.

11:00 a.m. **Certification Process & Intro to Air Law**

Introduction to the legislation around RPAS operations, the Canadian Aviation Regulations, and the process for acquiring a Pilot's Certificate or an SFOC. Participants will examine the airspace restrictions in their area to determine which level of certification will be required.

Day One: Afternoon

Lunch is provided ~ noon

12:30 p.m. **Semi-Autonomous Mapping Workflows**

We will present the theory behind the generation of maps and 3D models from semi-autonomous RPAS flights. Discussion of the most common vegetative indexes and the opportunities for multispectral imaging.

Several examples of complete workflows will be presented, including the three stages of flight planning, flight execution and map processing.

1:45 p.m. **Manual Flight Manoeuvres**

Participants will learn to fly through a series of practice flights, under the direct supervision of an experienced operator and instructor. Typically, this will be conducted indoors, space permitting.

Students will use DJI Mavic-series aircraft - beginning with first takeoff and ending with a manual "point of interest" flight. If there are more than 10 students, we will be breaking into groups to reduce wait time so that everyone gets plenty of "stick time". You will be comfortable flying in tight quarters indoors before the day is out.

3:00 p.m. **Human Factors & Preflight Planning**

Continuation of RPAS ground school, including review of the human factors in aviation. This session will also include discussion of many factors to be considered for safe flight operations, including meteorology, field hazard assessment, navigation, radiotelephony and flight operations.

4:00 p.m. **School concludes for the day**

Day Two: Morning

Tuesday, July 30

- 8:30 a.m. Map Data Processing**
Software workflows from drone to final maps will be demonstrated for RGB (MapsMadeEasy and DroneDeploy), NIR (Sentera FieldAgent), and multispectral (Slantrange) datasets. Sample crop imagery and its agronomic interpretation will be discussed.
- 9:30 a.m. Livestock & Other Farm RPAS Uses**
Field crop mapping has been the focus of most RPAS and imaging companies when entering the agriculture space. But there are many other uses for drones on the farm, both simple and complex, and those will be discussed during this session.
- 10:15 a.m. Emergency Management**
Prudent operation of an unmanned aircraft requires preparation for various emergency scenarios. We will discuss various real-life scenarios and how to prepare for them. Topics also include the human factors in aviation and flight operations.
- 11:00 a.m. Best Practices: Maintenance, Storage & Travel**
Practical advice to ensure that your aircraft and its ground support elements are always in good repair, to ensure safe flight. Considerable focus will be put on battery management using DJI systems as examples.
- 11:30 a.m. The Business of Drones**
Business models for agricultural applications, from on-farm RPAS to imagery service providers. Discussion about business pain points, costing, and insurance. We will also present the details of the LandView Pilot Network to be launched this spring and a brief presentation on the complete farm-ready packages that LandView offers.

Day Two: Afternoon “Fly Day”

Lunch is provided ~ noon

- 12:30 p.m. Online Transport Canada test (optional)**
If you are inclined to “get it over with”, we encourage you to bring a laptop or tablet to take Transport Canada’s Small Basic Operations test at the end of class. We are not able to assist you during the test, but it may be best to just take the test while the material is fresh. If you do take the test & pass, we will print and laminate your Pilot’s Certificate to celebrate your achievement. If you don’t pass, we will provide you with online learning materials and pay for your rewrites so that you can obtain your Certificate.
- 2:00 p.m. Fly Day:**
Participants will have the opportunity to operate several different RPAS, including both manual flights and execution of mapping missions previously prepared by them. Missions will be conducted safely, with individuals taking turns as pilots and visual observers. Various scenarios will be canvassed to help participants understand contingencies for which they will need to prepare when flying their aircraft.

[Note that this will be dependent on weather allowing flight within manufacturer’s specifications]
- 4:00 p.m. School concludes – thank you for attending!**

