Ag drone school itinerary

Day one: Morning

8:30 am **Welcome & Introductions**

9:00 am **Introduction to RPAS**
- history of development, purposes and applications;
- airframes and propulsion systems, and the theory of flight.

10:00 am **On-Farm Uses of Drones**
- basic flight technology and its capabilities,
- different uses for drones on the farm
- different types of sensors that have applicability to agriculture (RGB, NIR, thermal, lidar)

11:00 am **Certification Process & Intro to Air Law**
- introduction to the legislation around RPAS operations, the Canadian Aviation Regulations,
- the process for acquiring a Pilot's Certificate

Participants will examine the airspace restrictions in their area to determine which level of certification will be required.

Day one: Afternoon

12:00-1:00 lunch

1:00 pm **Human Factors, Site Survey & Pre-Flight Planning**
- human factors in aviation,
- safe flight operations, including meteorology, field hazard assessment, navigation,
- radiotelephony and flight operations.

2:00 pm **Manual Flight Manoeuvres**
- fly through a series of practice flights, under the direct supervision of an experienced operator and instructor.
- you will be comfortable flying in tight indoor space before the day is out.

3:30 pm **Best Practices: Emergency Management, Maintenance, Storage & Travel**
- emergency scenarios,
- human factors in aviation and flight operations.
- practical advice to ensure that your aircraft and its ground support elements are always in good repair, to ensure safe flight.
- battery management

4:00 pm **Semi-Autonomous Mapping Workflows**
- generation of maps and 3D models from semi-autonomous RPAS flights.
- discussion of the most common vegetative indexes and the opportunities for multispectral imaging,
- flight planning, flight execution and map processing.

4:30 pm **School concludes for the day**

Day two: Morning

8:30 am **Map Data Processing & Analysis**
- Software workflows from drone to final maps will be demonstrated
- Sample crop imagery and its agronomic interpretation will be discussed.

10:00 am **Livestock & other Farm RPAS Uses**
- Use cases for drones on the farm, both simple and complex
- We will also go through the applications for drones with focus on cattle – examples of thermal and zoomable cameras that can be used for finding, monitoring, or counting livestock.

10:30 am **Spraying by Drone**
- We will discuss practical and regulatory aspects of spraying herbicides or liquid fertilizers, and broadcast seeding of cover crops.
- We'll present our view of the future of product-application by drone, including information on the Agras products.

11:30 am **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. farm-ready packages.

Day two: Afternoon "Fly Day"

12:00-1:00 lunch

1:00 pm **Test Preparation**
Review of ground school concepts and the relevant sections of the Canadian Aviation Regulations (we will hand out a study guide at the end of Day 1 for overnight study and then review as a group).

1:30 pm **Online Transport Canada test** *(optional, $10 fee payable to Transport Canada)*
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.

3:00 pm **Fly Day:**
Various scenarios will allow participants to gain experience and to understand both site survey and emergency procedures, while taking turns as pilots and visual observers.

There will be a selection of "missions" to complete in small groups, with all participants getting "stick time". You will **learn to do by doing**. If you own a drone, please do bring it along so that we can ensure the mapping apps work correctly for you, or provide technical support.

Note: Dependent on weather allowing flight within manufacturer's specifications

4:30 pm **School concludes**