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Legally Operating a Drone in the Agriculture Industry

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Abstract

Drone activity in agriculture continues to increase, and the aerial imagery generated can provide unique insight throughout the crop production season. Over the past decade the Federal Aviation Administration (FAA) has continued to evolve the requirements for the operation of small unmanned aerial systems (sUAS, UAS, UAV or drones) to create a reasonable legal pathway for use in agriculture.

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March 18, 2020

Drone activity in agriculture continues to increase, and the aerial imagery generated can provide unique insight throughout the crop production season. Over the past decade the Federal Aviation Administration (FAA) has continued to evolve the requirements for the operation of small unmanned aerial systems (sUAS, UAS, UAV or drones) to create a reasonable legal pathway for use in agriculture.

In agriculture, if drones are used to collect imagery to help make management decisions, this is classified as commercial use of the drone. This includes collecting imagery for scouting crops, reporting crop damage or determining tile locations. The FAA has specific rules that must be followed, which are outlined under the [FAA's Part 107 regulations](#). This involves obtaining a remote pilot certificate, registering the drone with the FAA and displaying the assigned registration number (N-number) on the aircraft, and abiding by the FAA's rules for operating a drone. To meet these requirements, the [FAA suggests the following steps](#).

Step 1: Learn the Rules

Below are a few key rules from the FAA website pilots should understand to safely and legally operate a UAS for agricultural use under Part 107: [Summary of Small Unmanned Aircraft Rule \(Part 107\)](#).

- Unmanned aircraft must weigh less than 55 pounds.
- Unmanned aircraft must remain within the visual line of sight of the remote pilot or visual observer in command and the person manipulating the flight controls.

- Operate only during daylight or civil twilight (30 minutes before sunrise to 30 minutes after sunset) with appropriate anti-collision lighting.
- Yield right of way to other aircraft.
- Maintain maximum altitude of 400 feet above ground level (AGL).
- No carrying hazardous materials.
- Operations in Class G airspace are allowed under Part 107 without Air Traffic Control (ATC) permission. Operations in Class B, C, D and E airspaces (typically found around most airports) require ATC permission to fly. There are options to obtain permission to operate under the Part 107 in these areas by obtaining authorization through the Low Altitude Authorization and Notification Capability (LAANC) system.

There are many resources and online apps that can be used to understand what airspace your UAS operations are located in. The FAA website Visualize it allows a person to look up a field's location to understand the different airspaces and altitude requirements surrounding the location. B4UFLY is an app offered by the FAA used to understand specific airspaces and other temporary flight restrictions (TFR) that might be in the area. These or similar resources should be checked before any flight. Many Iowa fields are located in close proximity to a rural airport. There are airspace restrictions to consider in these areas, and the FAA has established reasonable procedures for conducting safe and legal operations in these areas. These procedures are outlined in many of the online training resources listed in this article.

Step 2: Become a FAA-Certified Drone Pilot

To become an FAA-Certified pilot, you need to pass an electronic knowledge test. The FAA's PSI exam center can be used to schedule the exam and locate a testing center. Before scheduling your exam, make sure to View Test Authorization Requirements. As of January 2020, an FAA tracking number (FTN) is required before you can schedule the exam. This can be obtained by creating an account with Integrated Airman Certification and Rating Applications (IACRA). The FTN links your FAA profile to your exam results and, eventually, your remote pilot certificate.

There are companies that provide study materials to help prepare for this exam. The FAA also has materials that should be reviewed before taking the exam: Airmen Certification standards, Knowledge Test instructions, Knowledge Test Study Guide, Knowledge Test Sample Questions and Pilot's Handbook of Aeronautical Knowledge. There are also instructional classes offered by organizations periodically. While these may be more expensive than other studying options, many of these classes are taught by pilots who can provide real-world examples of the application of their knowledge. One such class is offered by Kansas State University's Unmanned Aircraft Systems Group. There are also

several mobile apps available for test preparation. The Prepware Remote Pilot by ASA app has proven to be a valuable study tool for many and is available for a small fee in your app store.

Step 3: Register your drone with the FAA

All drones weighing over 0.55 pounds must be registered with the FAA and receive an N-number, which needs to be visible on the exterior of the drone. Print a copy of the registration card and keep it available to the pilot operating the drone. The registration is \$5 per drone and is valid for three years. To register your drone, use the FAA's DroneZone website.

Timeline

The entire process, from studying to receiving the official certificate in the mail, can take over two months. Generally, studying and preparing for the exam will require at least a week. Testing slots are often booked several days out, so book the exam date prior to or while studying the material. After passing the exam, make sure to link the exam to your application within your IACRA account. If you don't pass the exam, you must wait two weeks before retaking it.

A recurrent knowledge test must be passed within 24 calendar months after passing the initial exam and every 24 calendar months thereafter. A new certificate will not be issued for passing the recurrent knowledge test. Instead, the pilot must show a copy of their recurrent knowledge test report upon request.

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