

Drones

Drone Laws and Regulations

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Drones, or unmanned aerial vehicles (UAV) or unmanned aircraft systems (UAS), have many potential applications for agriculture. Understanding the state and federal laws and regulations that govern the use of drones is an important first step toward successfully using them on the farm.

Additional information on this topic can also be found in a video at:

<https://www.youtube.com/watch?v=POG6ovfOQKA>

Federal Regulations

The Federal Aviation Administration (FAA) has a number of regulations that drone operators are required to follow.

Certification: Anyone operating a drone for commercial or educational purposes must receive the remote pilot (Part 107) certification. This also applies to farmers flying a drone over their own property to assist with agriculture-based decisions. To be certified, users must be at least 16 years old and pass (70% or greater) a 60 question multiple choice exam administered by an FAA Testing Facility. The exam is \$160 and the certification is good for 2 years. The certification must be available for every drone flight along with a photo ID. To find an FAA Testing Facility near you: <https://faa.psiexams.com/FAA/login>

Registration: Any drone, regardless of its intended use, over 0.55 lbs must be registered by the owner. If the owner is under 13 years old, it must be registered by a parent or guardian. Registration is \$5 per drone and can be processed online (<https://faadronezone.faa.gov/>) and is good for 3 years. Once received, the registration number must be written on the drone and the registration should be kept with the drone.

Daylight hours: A drone can only be flown during daylight hours. Flights can occur 30 minutes before official sunrise and 30 minutes after official sunset if the drone is equipped with anti-collision lights that are visible from a distance of at least 3 miles.

Altitude: The maximum altitude that can be flown is 400 feet above the ground the top of a structure (i.e. if a building is 200 ft tall, an operator could fly 400 ft above the building, or 600 ft above the ground) (Fig. 1).



Fig. 1. The Parthenon at Centennial Park in Nashville, TN. An operator could fly 400 ft above the roof of this building.

Airspace authorization: A drone operator must request authorization if flying within 5 miles of a controlled airport (Class B through E). To request airspace authorization: https://www.faa.gov/uas/commercial_operators/part_107/

Visual line of sight: A drone operator must be able to see their aircraft at all times. This cannot be done by using binoculars or a viewscreen, it must be done with the naked eye.

Non-participants: A drone cannot be flown over non-participating individuals (Fig. 2).



Fig. 2. In any areas where there are non-participants below, take precautions so you do not fly directly over others.

State Law

The FAA does not regulate privacy concerns related to drones, however, flying a drone over private property is considered criminal trespassing. Also, if someone sees a drone being operated in a way that is unsafe or illegal it is recommended to contact local law enforcement officials. Since drones can take pictures of individuals and property without actually being over private property, individual states have created their own laws that focus on these issues.

In Tennessee, a law (Tenn. Code § 39-13-903) was passed in 2016 related to regulating drone use. It outlined the following:

- 1) A drone cannot capture an image of an individual or privately owned property with the intent to conduct surveillance.
- 2) A drone cannot capture an image of an individual or drop an item into an open-air venue where >100 people are gathered for a ticketed event without venue owner/operator consent.
- 3) A drone cannot fly into or over a fireworks discharge site without venue owner/operator consent.
- 4) A drone cannot fly over a correctional facility.
- 5) A drone cannot fly within 250 ft of a critical infrastructure facility and capture images or video without written consent.

Manned aircraft: Drone aircraft must yield the right-of-way to any manned aircraft.

Visibility: In order to fly a drone, there must be at least three miles of visibility. This refers to weather-related visibility such as fog, smoke, or haze.

Speed: The maximum speed allowed is 100 mph.

Moving vehicles: A drone cannot be flown from a moving vehicle unless it is in a sparsely populated area.

External loads: A drone can carry cargo as long as it does not affect the controllability of the aircraft and does not cause the drone and cargo to exceed 55 lbs. Cargo cannot consist of hazardous materials and cannot cross state lines. Drones in Hawaii, D.C. or U.S. territories cannot contain cargo without a waiver.

Waivers: If a specific activity cannot be performed without infringing upon one of the regulations, a drone pilot can apply for a waiver. In the application it should be identified how the activity will be structured to make it as safe as possible while working outside the regulation. To apply for a waiver: https://www.faa.gov/uas/commercial_operators/part_107_waivers/

Pre-flight inspection: A pre-flight inspection is required before every flight. If the aircraft manufacturer does not provide one, an inspection checklist should be created by the operator that is detailed enough to ensure safe flight.

Injury or property damage: If a drone causes a serious injury or an individual loses consciousness or if it causes at least \$500 in property damage, an accident report must be made to the FAA within 10 days. To report an accident: <https://faadronezone.faa.gov/>

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