

Part 137 Profits

The drone pilot's guide to getting certified for agricultural spraying
— and getting paid for it

Get certified

The exact FAA sequence: exemption, certificate, tests, and paperwork — in order, with nothing skipped.

Fly legally

Aircraft registration, Remote ID, state pesticide licenses, and insurance, demystified.

Get paid

Real per-acre pricing, real startup costs, and the money math of a spray-drone business.

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Twelve chapters take you from understanding Part 137 and the FAA certification sequence to pricing jobs, finding farm clients, and running the money math. Chapter 11 is your tear-out checklists; Chapter 12 is the official resource list.

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Certification first, equipment second, customers always. Start the FAA clock early — the exemption process takes months — and spend the waiting time studying for your state exams and lining up your first acres. The chapters are arranged in the order you'll actually need them.

START HERE

Before you launch

Disclaimer — read this first

This guide is for educational purposes only. It is not legal advice, and it is not a substitute for the current text of Federal Aviation Administration regulations or your state's pesticide laws. Aviation and pesticide rules change: the FAA updates its policies through notices and rulemakings, and every state runs its own pesticide licensing program with its own exams, fees, and categories. Before you spend money on equipment, file any application, or fly any paid (or even unpaid) dispensing operation, verify every requirement against the official sources listed in Chapter 12. If anything in this guide conflicts with a current FAA regulation or your state's rules, the regulation and the state rules win — every time.

A note before you start

This guide was written for one kind of reader: a drone pilot — Part 107 certificated or on the way there — who wants to get paid to spray crops, spread seed, or apply fertilizer with a drone. You will not find unexplained jargon here. Every acronym is defined the first time it appears, and every chapter ends with an action checklist so you know exactly what to do next.

A spray-drone business sits at the intersection of two regulated worlds: aviation (the FAA) and pesticides (your state, plus federal pesticide law). Most guides cover one or the other. This one covers both, in the order you'll actually encounter them, and then covers the part nobody regulates but everybody needs: finding customers and making the money math work.

A note on numbers. Wherever this guide quotes a price, rate, or timeline, the source is named and the figure is labeled as an *approximate range* or *estimate*. Equipment prices move (especially right now — see Chapter 6), per-acre rates vary by region and season, and the FAA publishes no official processing timelines. Treat every number as a planning input, not a promise. Your state, your market, and your execution will move these numbers.

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Recommended: treat your flight records like the business asset they are. Part 137 operators live or die by their logs — the FAA can require you to produce records on demand, your insurer prices you on them, and your customers judge you by them. Throughout this book, the recommended tool is **DroneLogbook** (drone-logbook.com): the industry leader in automatic flight-log importing, with FAA compliance reports generated in seconds, maintenance tracking, and a dedicated Agriculture solution built for spray operations. New users get a 2-month free trial — set it up before your first paid flight. Chapter 3 shows you exactly what to log.

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CHAPTER 1

What Part 137 Is and Why You Need It

If you already fly drones commercially, you probably hold a Part 107 Remote Pilot Certificate. That certificate lets you fly a drone under 55 pounds for paid work — photos, video, mapping, inspections. Here's the sentence that changes everything: **the moment your drone dispenses anything onto a field — pesticide, herbicide, fungicide, fertilizer, seed — Part 107 is no longer enough.** You've entered the world of 14 CFR Part 137, the federal rule for agricultural aircraft operations. The FAA states plainly that Part 137 "governs the use of aircraft, including drones, to dispense or spray substances (including disinfectants)" ([faa.gov/uas/advanced_operations/dispersing_chemicals](https://www.faa.gov/uas/advanced_operations/dispersing_chemicals)).

What counts as an "agricultural aircraft operation"

Under Part 137, you're conducting an agricultural aircraft operation if you dispense from an aircraft:

- **Any "economic poison"** as defined in §137.3 — this means pesticides, herbicides, and fungicides. The FAA expressly counts chemicals used as disinfectants against viruses in this definition too.
- **Any other substance intended for plant nourishment, soil treatment, propagation of plant life, or pest control** — this covers liquid fertilizer, desiccants and harvest aids, and seed (including cover-crop seeding).
- **Substances for activities directly affecting agriculture, horticulture, or forest preservation.**

One carve-out worth knowing: the §137.3 definition of economic poison **excludes the dispensing of live insects** (for example, releasing beneficial insects). Everything else on the list above puts you under Part 137.

Who needs the certificate

The FAA's current guidance (updated May 2026) states that "the requirement that **all operators conducting agricultural operations hold an Agricultural Aircraft Operator Certificate (AAOC) remains in place.**" That word *all* is doing heavy lifting. It doesn't matter whether you're spraying for hire or spraying your own family's corn — the regulation provides for both **private** (§137.19(b)) and **commercial** (§137.19(c)) operator certificates, and both categories of operator need one. Flying a spray drone on your own land without the certificate is not a loophole; it's a violation.

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Part 107 vs. Part 137: the difference in one page

Think of it this way. **Part 107 is your driver's license. Part 137 is your commercial operating authority for a specific kind of hauling.** Part 107 says *you* are qualified to fly a small drone commercially. Part 137 says *your operation* is authorized to dispense substances from an aircraft.

There's a second, physical reason Part 107 can't cover spray work: **Part 107 applies only to unmanned aircraft weighing less than 55 pounds at takeoff.** Every serious spray drone on the market blows past that limit when loaded. A DJI Agras T50, for example, has a maximum takeoff weight of around 92 kg (about 203 lbs) in spraying configuration. That aircraft cannot operate under Part 107 at all — it operates under Parts 61, 91, and 137, and needs a federal exemption (Chapter 2) from the provisions it can't comply with.

And even a sub-55-pound spray drone needs an exemption from at least one Part 107 rule: **§107.36, which prohibits carrying hazardous material** — and chemicals you spray are hazardous material under the rule. That prohibition is not waivable under Part 107, so the exemption path is mandatory regardless of aircraft weight.

Bottom line: Part 107 qualifies *you* as a pilot. A Section 44807 exemption excuses *your aircraft and operation* from rules written for manned airplanes. The Part 137 Agricultural Aircraft Operator Certificate authorizes *your business* to conduct dispensing operations. You need all three layers. Chapter 2 walks through them in order.

Action checklist:

- ☐ Confirm your operation involves dispensing (spraying, spreading, seeding) — if yes, you're in Part 137 territory
- ☐ Weigh your intended aircraft fully loaded — if 55 lbs or more, Part 107 cannot cover the aircraft itself
- ☐ Read the FAA's Part 137 UAS page once, end to end:
[faa.gov/uas/advanced_operations/dispensing_chemicals](https://www.faa.gov/uas/advanced_operations/dispensing_chemicals)
- ☐ Decide: private (own farm) or commercial (for hire) — both need the certificate, but it shapes your business planning

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CHAPTER 2

The Certification Path, Step by Step

This is the chapter that saves you six months of confusion. The FAA's process for agricultural drone operators is specific, sequential, and — since a 2023 streamlining — no longer runs through your local Flight Standards office. Do the steps in order. Skipping ahead or doing them out of order is the single most common reason applications stall.

Warning: The order is fixed by the FAA: **exemption first, then the Agricultural Aircraft Operator Certificate**. You cannot apply for the certificate before your exemption is granted, and you cannot conduct dispensing operations until you hold the certificate. Before the certificate is issued, your exemption allows only training, proficiency, experience-building, and maintenance test flights — no spraying.

Step 0 — Get your Part 107 Remote Pilot Certificate (if you don't have one)

The pilot in command (PIC) of a Part 137 drone operation must hold **at least a Remote Pilot Certificate**. You do not need a manned commercial pilot certificate — the FAA specifically exempts UAS ag operators from the §137.19(b)/(c) pilot-certificate requirements that apply to manned ag pilots (FAA Notice N 8900.741 §6.d(1)).

Timing nuance that trips people up: you do **not** need the Part 107 certificate in hand to *file* your exemption petition. But the FAA requires your name and pilot certificate number (or proof of a Temporary Airman Certificate) **before it will issue the exemption**. Since the exemption takes months, most people study for and pass Part 107 while the petition is pending. Either way, no Part 107, no exemption.

The Part 107 path, from the FAA (faa.gov/uas/commercial_operators/become_a_drone_pilot):

1. Be at least 16 years old, able to read, speak, write, and understand English, and in physical and mental condition to fly safely.
2. Get an FAA Tracking Number (FTN) through IACRA, the FAA's airman application system.

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3. Pass the "Unmanned Aircraft General – Small (UAG)" knowledge exam at an FAA-approved Knowledge Testing Center. The exam fee is about **\$175**, paid to the FAA's testing vendor (PSI Services) — the FAA doesn't publish or collect this fee itself (widely reported; FAA confirms PSI as vendor).
4. Complete FAA Form 8710-13 in IACRA, pass the TSA security check, and receive your certificate (a temporary certificate is printable from IACRA; the permanent card arrives by mail).
5. Stay current: complete the free online recurrent training (ALC-677) every **24 calendar months**.

Step 1 — Petition for a Section 44807 exemption

This is the big federal filing. Under 49 U.S.C. §44807 ("Special Authority for Certain Unmanned Aircraft Systems"), the FAA can grant case-by-case exemptions from regulations that your operation can't comply with. Your petition asks for relief from the specific sections that don't fit a spray drone — for a sub-55-lb aircraft, at minimum §107.36 (hazardous material) plus several Part 137 sections; for a 55-lb-plus aircraft like an Agras T50, a longer list spanning Parts 61, 91, and 137 (the FAA publishes sample grants showing exactly which sections).

How to file, per the FAA's current Part 137 UAS page:

- File through **regulations.gov**, following the FAA page's instructions (the FAA directs petitioners to the shell docket FAA-2007-0001-0001; your petition gets its own docket number).
- **File at least 120 days before you need the exemption** (14 CFR §11.63(d)). This is a regulatory requirement, not a suggestion.
- Your petition must include every element 14 CFR Part 11 requires: your name and mailing address; the specific CFR sections you need relief from; the extent of the relief and your reasons; why the exemption is in the public interest; why it won't adversely affect safety (or provides an equal level of safety); and a summary suitable for Federal Register publication.
- Attach the operational specifics the FAA requires before issuance: your full legal name and physical address (no P.O. Box); your designated **Chief Supervisor of Operations** (name, phone, email); the PIC's name and certificate number (or Temporary Airman Certificate); and each aircraft's make, model, and FA- or N-number plus the owner's name.

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Two practical notes. First, the FAA has standardized the conditions for routine agricultural petitions and maintains a list of approved drones on the regulatory docket, so you're referencing established precedent rather than proving your airframe from scratch — this is the "streamlining" you've probably heard about. Second, the FAA now sends **Requests for Information (RFIs)** seeking basic operational details during review, and it states plainly that **failure to respond means your petition is closed** with no decision. Watch your email — including spam — after filing. (The FAA is also conducting "operational validations" of existing exemption holders for compliance, so this scrutiny continues after you're certificated.)

The grant arrives by email from the FAA's exemptions branch and a copy goes in the public docket. The letter contains your exemption/docket number. **Do not contact the FAA about your certificate until the exemption is issued.**

Step 2 — Apply for the Agricultural Aircraft Operator Certificate

Once you hold the exemption, complete **FAA Form 8710-3** (Agricultural Aircraft Operator Certificate Application) and email it **with your exemption number** to **UAS137Certificates@faa.gov** — the Safety Assurance Branch (AFS-760). Two details that matter:

- The applicant name on Form 8710-3 **must match** the exemption holder's name exactly.
- **Do not submit anything to your local FSDO.** Since June 13, 2023, Flight Standards District Offices no longer accept Letters of Intent or Forms 8710-3 from Part 137 UAS applicants. The old "go talk to your FSDO" advice is outdated for drones.

AFS-760 enters your information in the Safety Assurance System and issues the Operating Certificate. Practitioners report roughly 1–2 weeks for issuance by email, but the FAA publishes no official turnaround time — treat that as anecdote, not a commitment.

Step 3 — Satisfy the knowledge, skill, manual, and training requirements

These run in parallel with the paperwork, and they're where UAS operators get a meaningful break compared to manned ag pilots:

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- **Knowledge and skill tests are self-administered.** Under §137.19(e), you (or your designated chief supervisor) must complete the knowledge test — covering pre-operation area surveys, safe handling and disposal of economic poisons, the effects of poisons on plants, animals, and people, poisoning symptoms and emergency measures, aircraft performance capabilities and limitations, and safe flight and application procedures — and the skill test (approaches, flare-outs, swath runs, pull-ups and turnarounds, several of which are among the exempted maneuvers for UAS). You **document** satisfactory completion and show it to the FAA **on request**. The FAA doesn't schedule or proctor these for UAS operators.
- **You must have an operations manual and a training program.** This is required for Part 137 UAS operators certificated after June 13, 2023, even though Part 137 itself doesn't mandate them. The manual covers safety risk management, weather, flight planning, NOTAMs, inspections, pre- and post-flight duties, normal and emergency procedures, crew responsibilities, accident reporting, hazmat handling, and UAS maintenance. The training program covers the §137.19(e)(1) knowledge areas plus initial and recurrent training, testing standards, ground and flight training, emergency and lost-link procedures, your exemption's conditions, and hazmat. You do **not** submit these to the FAA for approval — but they must be in your possession during operations, produced on request, and every crewmember must complete the documented training.
- **Medical certificate:** none required for normal daytime autonomous ag operations. The one exception: the PIC must hold at least a **third-class medical certificate** for night operations when the aircraft is **not** flown in autonomous mode.

Step 4 — Handle airspace (the COA)

Most farm work happens in uncontrolled (Class G) airspace, and §44807 exemption holders are issued a **blanket Certificate of Waiver or Authorization (COA) for flights at or below 400 feet in Class G** as appropriate. If any of your work touches controlled airspace, apply for a COA through the FAA's CAPS system — you'll need your exemption number, aircraft registration number, and a matching petitioner name.

Realistic timelines and fees

Reality check: The FAA publishes no official processing timeline for exemption petitions and no turnaround for certificate issuance. What is official: file your petition **at least 120 days** before you need it. Practically, plan for **several months** from petition to certificate in hand, and start the clock early — ideally in the fall or winter before your first spray season (Chapter 9).

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On fees: the FAA publishes **no fee** for the exemption petition or for issuance of the Operating Certificate. Your out-of-pocket costs are third-party: the ~\$175 Part 107 exam fee, aircraft registration (\$5), any state license fees (Chapter 4), and whatever you spend on test prep or legal help — not FAA charges.

The one-page sequence (tape this to your wall)

1. Part 107 Remote Pilot Certificate (or in progress — must be complete before exemption issues)
2. Petition for §44807 exemption via regulations.gov (≥120 days out; respond to every RFI)
3. Receive grant of exemption by email
4. Email Form 8710-3 + exemption number to UAS137Certificates@faa.gov (never the FSDO)
5. Receive Agricultural Aircraft Operator Certificate from AFS-760
6. Complete self-administered knowledge/skill tests (documented); finalize ops manual + training program
7. Register aircraft, confirm Remote ID (Chapter 3), hold state license (Chapter 4), bind insurance (Chapter 5)
8. Fly — dispensing operations only after Step 5

Action checklist:

-
- ☐ Part 107 certificate in hand or exam scheduled (needed before exemption issuance)
 - ☐ Draft the §44807 petition with all Part 11 elements; file via regulations.gov at least 120 days before needed
 - ☐ Designate your Chief Supervisor of Operations and gather PIC/aircraft details for the petition
 - ☐ After grant arrives: email Form 8710-3 + exemption number to UAS137Certificates@faa.gov
 - ☐ Build your operations manual and training program; self-administer and document the §137.19(e) knowledge and skill tests
 - ☐ Confirm blanket COA coverage for your operating area; file CAPS COA if working in controlled airspace

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CHAPTER 3

Your Aircraft: Registration, Remote ID, and Record-Keeping

Your spray drone is an aircraft in the eyes of the FAA, and the paperwork treats it like one. This chapter covers the three aircraft-level obligations: registration, Remote ID, and the maintenance and logging discipline that keeps you compliant (and insurable).

Registration: N-number vs. FA-number

Every unmanned aircraft must be registered (the only exception is drones at or under 0.55 lbs flown purely recreationally — irrelevant for spray work). Which process you use depends on weight:

- **55 lbs or more at takeoff (your spray drone, loaded):** register by mail under 14 CFR Part 47 — the traditional aircraft registration process. File **AC Form 8050-1** with the FAA Aircraft Registration Branch and you'll be issued an **N-number**, just like a manned airplane. A random N-number is assigned free; reserving a specific one costs **\$10**. You **cannot** use the online FAADroneZone process for these aircraft.
- **Under 55 lbs:** register online at **FAADroneZone** under Part 48 and receive an **FA-number**.

The registration fee is **\$5.00** per certificate of aircraft registration ([faa.gov aircraft registry](https://faa.gov/aircraft/registry)). Remember that the FAA needs each aircraft's make, model, and FA- or N-number as part of your exemption petition (Chapter 2) — so registration happens early in the sequence, not after you're certificated.

Marking matters too: your registration number must be displayed on the aircraft per FAA marking requirements. On a spray drone, that means legible, on an external surface — chemicals and washdowns will test your labeling method, so use something that survives the season.

Remote ID: the three ways to comply

14 CFR Part 89 requires most unmanned aircraft in U.S. airspace to broadcast Remote ID — essentially a digital license plate identifying the drone and its takeoff location. Operator compliance has been required since September 16, 2023. There are three paths:

1. **Standard Remote ID drone** — Remote ID capability built in, broadcasting from takeoff to shutdown. Most current-generation spray drones ship this way.

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2. **Remote ID broadcast module** — a separate module attached to the drone, for aircraft without built-in capability.
3. **FAA-Recognized Identification Area (FRIA)** — flying only within a designated FRIA. This is a carve-out for specific flying sites, not a practical path for a mobile spraying business.

Two administrative details: your drone or broadcast module should appear on the FAA's **Declaration of Compliance (DOC) list** (uasdoc.faa.gov), and the **Remote ID serial number must be entered in your FAADroneZone registration**. If you buy used equipment, verify both before money changes hands.

Maintenance and logging: the unglamorous part that matters

Part 137 doesn't impose a single FAA-mandated maintenance schedule on UAS the way it does for manned ag aircraft, but three forces make disciplined maintenance and logging non-negotiable:

- **Your operations manual requires it.** Remember Chapter 2: your manual must cover UAS maintenance, inspections, and pre/post-flight duties. Whatever your manual says becomes your standard — write it, then live it.
- **Your exemption's conditions assume an airworthy aircraft.** Flying a spray drone with known deferred maintenance is the fastest way to turn an incident into an enforcement action.
- **Your insurer and your customers care.** A maintenance log is evidence of professionalism; its absence is evidence of the opposite.

What to log, at minimum, per aircraft: flight hours and cycles; battery serial numbers, charge cycles, and any swelling or damage notes; propeller and motor inspections and replacements; nozzle flow-rate checks and replacements (uneven flow means uneven application — and liability); firmware updates; and every hard landing, tip-over, or chemical exposure incident. Batteries deserve special attention: spray-drone batteries typically last around **1,000 charge cycles** before replacement, and operators budget roughly **\$3,000–\$4,000 per year** for battery replacement (The Bullvine, industry reporting — estimate). Track cycles per pack so replacements are planned, not panicked.

Recommended: log every flight with DroneLogbook

You could track all of this in a spreadsheet. Don't. This book recommends **DroneLogbook** (dronelogbook.com) as your logging platform, for one simple reason: it's the industry leader in **automatic flight-log importing** — it supports more log file types than any other drone compliance software, so your hours, cycles, and flight data land in your records without manual entry. What that buys you as a Part 137 operator:

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- **Compliance reporting in seconds.** Regulatory agencies require you to produce records on demand. DroneLogbook tracks all your operations and generates FAA compliance reports — plus custom reports on pilots, flights, and maintenance — in seconds.
- **Maintenance tracking.** Build inspection schedules per manufacturer recommendations, track part serial numbers, lifespan, and replacement history, and get notifications when inspection tasks come due. Your battery cycle counts, nozzle flow checks, and firmware updates all live in one place.
- **Mission planning and an operations calendar.** Plan missions, assign personnel and equipment, check airspace status, and view past and future flights on a single screen.
- **Offline mobile ops.** The mobile app and DLBSync work offline or in poor coverage — critical when you're spraying rural fields — and sync to your cloud account when you're back in range.
- **A dedicated Agriculture solution.** DroneLogbook offers a version tailored for ag operations (dronelogbook.ag), with custom digital forms and checklists you can attach to flights.
- **Enterprise-grade security.** SOC 2 Type II compliant, so your operational data is protected.

New users get a **2-month free trial**. Set it up now — before your first paid flight — connect your flight control app for automatic importing, and build the habit from day one. The operator with clean, complete, instantly producible records is the operator who survives an audit, wins the insurance renewal, and gets the callback from the grower.

Bottom line: register by mail with an N-number if you're at 55 lbs or more (you are), confirm Remote ID compliance with the serial in your registration, and run maintenance and logging like a manned operator would. It's the cheapest insurance you have.

Action checklist:

- ☐ Register each spray aircraft: AC Form 8050-1 by mail for 55-lb-plus aircraft (\$5; N-number)
- ☐ Confirm Remote ID path (built-in, module, or FRIA) and enter the serial in FAADroneZone
- ☐ Verify DOC listing for the drone or broadcast module (uasdoc.faa.gov)
- ☐ Mark the registration number legibly on each aircraft
- ☐ Set up per-aircraft logs in DroneLogbook (dronelogbook.com): hours, batteries/cycles, props, nozzles, firmware, incidents — connect automatic flight-log importing

04

CHAPTER 4

State Pesticide Licenses: The Other Half of Legal

Here's the part that surprises new operators: the FAA certificate is only half the license you need.

Pesticide regulation is primarily a state function. The FAA authorizes you to dispense substances from an aircraft; your state authorizes you to apply pesticides at all. You need both, and they're issued by completely different agencies that don't talk to each other.

The general pattern (all states)

While every state runs its own program, the scaffolding is consistent nationwide:

- **Commercial vs. private applicator.** A *private* applicator license typically covers a farmer applying on their own land. A *commercial* applicator license covers applying for hire — custom work for other people's fields. A spray-drone **business** needs the commercial tier. (Some states go further: Ohio, for example, requires a commercial license with an aerial category even for drone spraying on your *own* land — Ohio State Extension. Never assume the private license covers drone work.)
- **Core exam plus category exams.** Every state requires a "core" (general standards) exam covering pesticide safety, labels, environmental protection, and handling — plus at least one **category** exam for the type of application. Drone operators typically need an **aerial application category or endorsement** in addition to a pest category (e.g., agricultural field crops). Illinois, for instance, has a distinct "Aerial General Standards" exam (Morning Ag Clips, industry reporting).
- **Fees, insurance proof, and renewal.** Expect license fees, and several states require proof of liability insurance as a licensing condition (Colorado requires a minimum of \$400,000 for commercial applicators, per the Colorado Department of Agriculture). Renewal usually runs through continuing education units (CEUs) or periodic re-examination — Illinois, for example, is shifting first-time and renewal applicators toward continuing education requirements under 2025 legislation.

Illustrated examples — not universal rules

These are real examples to show you what state programs look like. **They are not national rules.** Your state will differ in details:

CHAPTER 4 · CONTINUED

- **Minnesota:** Commercial applicators pass Core (Category A) plus at least one category; aerial applicators must pass **Core (A) + Aerial (Category B) + one additional category** (MN Department of Agriculture).
- **Colorado:** Commercial applicator business license around **\$350/year**, minimum **\$400,000** liability insurance — and drone-specific: "aerial applicators using a UAV/drone must submit their FAA Part 107 certificate" alongside the application (Colorado Department of Agriculture).
- **Ohio:** Drone spraying requires a **commercial** license with **Category 1, Aerial Pest Control** — private-license holders may not use drones, even on their own land (Ohio State Extension).
- **Illinois:** First-time applicators pass a 100-question exam through the IL Department of Agriculture; online proctored exams run about **\$12 per attempt**; renewal is moving to continuing education (The Scoop / IL Fertilizer & Chemical Association; Morning Ag Clips).

Exactly where to check your state

Don't Google "pesticide license" and trust the first ad. Go to the authoritative sources in this order:

1. **Your state's Department of Agriculture** — the licensing agency in most states. (In a few states, such as California and New York, pesticide regulation sits with a different agency — the EPA's list below will point you correctly.)
2. **EPA's State and Territorial Pesticide Agencies list** — "Learn how to become a certified pesticide applicator": epa.gov/pesticide-advisory-committees-and-regulatory-partners/state-and-territorial-pesticide-agencies
3. **National Pesticide Information Center (NPIC)** state regulatory agency list: npic.orst.edu/reg/state_agencies.html

Warning: If you plan to spray across state lines, you need a license in **each** state where you operate. Reciprocity is patchy — North Carolina, for example, grants no aerial-applicator reciprocity to out-of-state licensees (NC State Extension). Budget the extra exams and fees before you take an out-of-state job, not after.

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The label is the law

One more legal layer that isn't a license but functions like one: **the pesticide label**. Federal law (FIFRA) makes it a violation to use a pesticide in a manner inconsistent with its labeling. Many herbicide labels specify minimum carrier volumes (gallons per acre) that ultra-low-volume drone applications can't meet — applying anyway isn't a gray area, it's non-compliant. **Always verify the label supports your planned application rate and method before you quote the job** (Farmonaut, industry reporting). When in doubt, the label — and your state's pesticide agency — outrank any advice in this book.

Action checklist:

- ☐ Identify your state's pesticide licensing agency (Dept. of Agriculture in most states; EPA list if unsure)
- ☐ Determine whether you need commercial + aerial category (you almost certainly do for a spray business)
- ☐ Schedule and study for core + category exams; budget fees and any insurance-proof requirements
- ☐ If operating across state lines: check each additional state's licensing and reciprocity rules
- ☐ Build a habit: verify the pesticide label supports drone application rates before quoting any job

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CHAPTER 5

Insurance: What Coverage You Actually Need

Nobody buys insurance for fun, but in this business it's load-bearing: some states require proof of liability coverage to license you (Chapter 4), serious farm clients will ask for your certificate of insurance before you fly their fields, and one drift incident onto a neighbor's specialty crop can erase a year of profit. Here's what ag-drone operators actually carry.

The coverage stack

- **Aviation / UAV liability** — third-party bodily injury and property damage arising from the aircraft's operation. For spray work, **\$1M–\$2M limits** are the typical range (BWI Fly, aviation insurance broker specializing in drones: "most spraying operations are covered well at \$1M to \$2M limits"). Larger enterprise clients sometimes demand more — national provider Fair Lifts advertises \$5,000,000 in aircraft liability, which tells you what the upper end of client expectations looks like.
- **Chemical drift / pesticide / pollution liability** — often sold as a **separate endorsement**, and it's the coverage most likely to save you. Standard aviation liability can exclude pollution events; drift onto a neighboring field is exactly a pollution event. Do not assume your base liability policy covers it — ask explicitly and get the answer in writing.
- **Hull coverage** — physical damage to the aircraft itself. With \$20,000–\$30,000 of drone in the air, hull is worth pricing; some operators self-insure older airframes and insure new ones.
- **Commercial general liability (CGL)** — covers non-aviation business liability (someone trips over your generator at the field edge).
- **Commercial auto** — for the truck and trailer once they're dedicated business vehicles.
- **Workers' compensation** — required in most states once you have W-2 employees; rated by payroll class code and quoted locally (no reliable national premium figure exists for ag-drone businesses specifically — get a local quote).

What it costs (approximate, with sources)

Real numbers, all labeled as reported ranges:

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- A published real-world quote for a single spray-drone operation (DJI Agras T40-class, ~\$40,000 insured value, licensed Part 107 + Part 137): **~\$10,457/year total** — hull \$5,000 + liability \$1,350 + chemical liability \$3,500 + terrorism/war ~\$607 (BWI Fly, published quote — your aircraft value, region, and claims history will move this).
- Chemical liability alone in that quote: **\$3,500/year** for \$100,000 per-occurrence / \$100,000 aggregate limits.
- University of Kentucky Extension's economic model: **~\$2,500/year** for a farmer-operator; **~\$4,000/year** for a service provider (UKY publication AEN-174 — estimate).
- Broader market estimates for ag-UAV liability: **\$1,200–\$4,500/year** depending on aircraft value, population density, and chemical-application scope (Dataintelo drone-insurance market report — estimate).

Reality check: if a quote seems to cover your spray operation for a few hundred dollars a year, it's almost certainly basic liability without chemical-drift coverage. The drift endorsement is where the real risk lives, and it's priced accordingly. Underinsuring here doesn't save money — it just moves the cost to the incident you can't afford.

Brokers who know this niche

Generalist insurance agents often can't place aviation risk. Brokers verifiably serving the drone/ag-drone niche include **BWI Fly / BWI Aviation Insurance** (published ag-drone guidance and quotes), **SkyWatch.ai** (app-based drone liability + hull), and **Verifly** (on-demand drone insurance). Get at least two quotes, confirm the drift endorsement explicitly, and ask each broker what happens — in writing — if spray drifts onto an adjacent organic field.

Action checklist:

- ☐ Get quotes from at least two aviation/drone-specialist brokers (not just your farm agent)
- ☐ Confirm \$1M–\$2M aviation liability and a separate chemical drift/pollution endorsement — in writing
- ☐ Price hull coverage against your aircraft's insured value
- ☐ Add commercial auto once truck/trailer are dedicated; workers' comp when hiring W-2
- ☐ Keep your certificate of insurance ready to send — clients will ask

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CHAPTER 6

Equipment: Spray Drones and the Real Cost Breakdown

Equipment is where most new operators either overspend (buying the biggest drone before they have customers) or underspend (one battery, no generator, dead in the field by 10 a.m.). This chapter gives you the realistic cost picture so you can size your purchase to your plan.

Warning: Drone hardware prices are volatile right now. U.S. Customs began holding DJI imports in late 2024, tariffs pushed prices up, and in December 2025 the FCC stopped authorizing new Chinese-built drone models (ainvest, Aug 2026). Treat every price below as an approximate 2025–2026 U.S. dealer range, verify before you buy, and seriously evaluate US-built alternatives and dealer support before committing.

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The spray drones

Model	Tank / payload	What to know	Approx. price (US, 2025–26)
DJI Agras T50	40 L spray / 50 kg spread	The current workhorse; ~52 acres/flight-hour claimed; 36-ft swath; MTOW ~92–103 kg	Drone-only ~\$17,000–\$19,000; full kits with batteries, charger, spreader \$16,400–\$28,700 depending on bundle (FlyingAg; AmericanDrone; DSLRPros)
DJI Agras T40	40 L spray / 50 kg spread	Previous generation, still widely flown; up to 40 acres/hr claimed at 2 GPA	Drone-only ~\$19,999; ready-to-fly kits ~\$26,500 (Farmonaut 2026 guide; BuyDirect)
DJI Agras T25	20 L spray / 25 kg spread	Compact, single-operator class; ~30 acres/hr claimed	Ready-to-fly ~\$19,000 certified used/demo; new kits typically \$25,000+ (Drone Spray Pro)
DJI Agras T100	~75 L class	Newest (2025), largest	\$25,000–\$29,000 ready-to-fly bundles, gray-market/global listings (Accio)
XAG P150	70 L spray	Non-DJI option via US dealers; up to 78 acres/hr claimed	"Spray All Day Kit" ~\$30,000 (Raptor Dynamic)
Hylío	~13 gal liquid	Built in Texas (US-made — relevant given import constraints)	Pricing not published — check hyl.io directly

Manufacturer coverage claims (acres per hour) are best-case figures. Real-world throughput depends on GPA rate, ferry distance, battery swaps, and field shape — Chapter 8 uses conservative real-world numbers for the money math.

Batteries, charging, and positioning

The drone is only one line item. A field-ready setup needs:

CHAPTER 6 · CONTINUED

- **Batteries:** plan on **3–4 flight batteries** minimum so one set charges while you fly. Agras-class batteries run roughly **\$1,000–\$1,500+ each** depending on generation and source (older-gen AUD pricing via SkyMedia; newer DB1560 packs listed ~\$3,399 CAD via DrDrone.ca — verify current USD pricing with your dealer). Budget **\$2,000–\$5,000** for a battery set (Accio buying guide — estimate).
- **Charging:** fast-charge stations run **\$800–\$1,800** (Accio — estimate); DJI's C-series charge stations ~\$1,699 CAD (DrDrone.ca).
- **Generator:** field charging eats serious power — DJI's D12000iE generator lists ~\$7,699 CAD (DrDrone.ca); operators report \$3,000–\$10,000 depending on new vs. used (one operator scored a used diesel unit for ~\$10,000 on Facebook Marketplace, via FarmProgress).
- **RTK positioning:** centimeter-level positioning for straight swaths. T50/T25 include RTK standard per dealer specs; the DJI RTK dongle for the RC Plus controller runs ~\$299 (Drone Nerds).

The ground rig: trailer, mixing, and transport

You can't run a spray business out of a pickup bed. Operators need a way to transport the drone, mix and load chemical safely, and charge in the field:

- **DIY/used route:** used trailer plus mixing tanks, plumbing, and PPE/tools — **\$5,000–\$20,000** all-in is achievable sourcing used (Indiana CCA panel guidance; operator reports via FarmProgress).
- **Purpose-built route:** NuWay Ag's "Innovator" pickup-truck spray unit ~\$42,000; their "Platinum" gooseneck spray trailer **\$87,500** (trailer, tanks, and plumbing only — excludes generators, drones, batteries, chargers).
- **Research benchmarks:** University of Missouri's program ran ~\$30,000 drones plus **~\$100,000 in truck, trailer, and generator** (FarmProgress); an Indiana panel put support gear at **\$35,000–\$50,000** on top of a ~\$30,000 drone.

Realistic equipment budgets

- **Lean single-drone startup (you own a truck):** drone kit with batteries and charger **\$20,000–\$30,000** + generator **\$3,000–\$10,000** + used trailer and mixing gear **\$5,000–\$15,000** ≈ **\$28,000–\$55,000** in equipment.
- **Two-drone professional setup with new trailer rig:** **\$80,000–\$150,000+.**

Don't forget the small stuff that adds up: PPE (respirator, chemical-resistant suit, gloves, eyewash), spill kit, calibrated measuring gear, nozzle sets and spares, a weather station or handheld anemometer (wind calls are go/no-go decisions — Chapter 10), and software (flight planning is usually included; record-keeping tools vary).

CHAPTER 6 · CONTINUED

Bottom line: buy the drone last, not first. Get your certification path started (Chapter 2), line up your first customers (Chapter 7), and size the equipment to committed acres — not to the biggest machine in the catalog.

Action checklist:

- ☐ Choose your aircraft class (T25 compact vs. T40/T50 workhorse vs. XAG/Hyllo alternative) based on your target market
- ☐ Price the full kit — drone, 3–4 batteries, charger, spreader if needed — from at least two dealers
- ☐ Budget generator + trailer + mixing gear; decide DIY/used vs. purpose-built
- ☐ Verify Remote ID compliance and DOC listing before buying (especially used)
- ☐ Add PPE, spill kit, anemometer, and spares to the budget — not afterthoughts

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CHAPTER 7

Starting the Business: Pricing, Quoting, and Finding Clients

Certification makes you legal. Customers make you a business. This chapter covers how spray-drone operators actually price work, quote jobs, and find their first farm clients.

Pricing per acre: the going rates

Custom drone application is typically priced **per acre**, application only — in most custom work, **the farmer supplies the chemical** and you charge for putting it on the field. Confirm this on every quote; some operators bundle chemical sales as an upsell (Illinois operators, for example, package cover-crop seeding with fungicide sales — FarmProgress), but the base rate is application.

Approximate U.S. ranges (all reported, all estimates — your region and season will vary):

- **Industry survey average, 2025: ~\$13/acre** — down from ~\$21/acre in 2024, a 38% drop as new entrants flooded in (ainvest industry survey, Aug 2026). That price compression is the single biggest business risk in this market right now — see Chapter 10.
- **Iowa Farm Custom Rate Survey 2026: \$12.50/acre average** for drone spraying, with a reported range of **\$8–\$16**; aerial cover-crop seeding \$14.70 average (\$10–\$18) (Iowa State Extension).
- **Ohio State 2026 custom rates: drone seeding \$15.64/acre; drone fertilizer \$17.15/acre** (FarmProgress).
- **Operator self-reports (Illinois): \$12–\$15/acre** for fungicide work (FarmProgress operator interviews).
- **Specialty/rescue work: \$18–\$35/acre** — tall-corn fungicide, hillside orchards, wet fields where ground rigs can't go, or time-critical rescue sprays (ainvest). This is where margins survive price compression: jobs airplanes and ground rigs *can't* do.

Price on value and difficulty, not just acres. A flat 160-acre rectangle next to your trailer is a different job than 40 acres of terraced hillside an hour away. Many operators set a **minimum job fee** (e.g., equivalent of 20–40 acres) so small jobs don't lose money to drive time and setup.

CHAPTER 7 · CONTINUED

Quoting a job

A professional quote covers five things:

1. **Acres and field map** — get the field boundaries (ask the farmer for their precision-ag shapefiles or pull them from public sources) and confirm acreage yourself. Disputes over "how many acres was that" are the most common billing fight.
2. **Product and rate** — what chemical, at what GPA (gallons per acre), and confirmation that the **label supports drone application** at that rate (Chapter 4). If the label doesn't support it, you don't fly it — no exceptions.
3. **Timing window** — spray windows are weather- and growth-stage-dependent. Quote the window, not a guaranteed day.
4. **What's included** — application only (farmer supplies chemical) vs. bundled; travel fees beyond a radius; minimum fee.
5. **Terms** — payment terms (net 15/30 is common in ag), weather-delay policy, and a liability limitation consistent with your insurance.

Put it in writing. A one-page service agreement beats a handshake when a drift complaint or a billing dispute appears.

Finding your first farm clients

Spray-drone work is a trust business sold face to face. The channels that actually produce clients, per operator interviews and industry reporting:

- **Start with growers you know.** Your first 500 acres will almost certainly come from personal relationships. Tell every farmer you know what you're doing before the season starts.
- **Farm co-ops and agronomists/crop consultants.** These are the warm-intro machines of agriculture. A co-op agronomist who trusts you can put you in front of dozens of growers — and co-ops are also a chemical supply relationship (FarmProgress operator interviews).
- **Demonstration flights.** Widely cited as the highest-converting tactic — invite skeptical growers to watch you spray a test strip. Seeing a drone lay a clean swath converts faster than any brochure.
- **County Extension programs and farm trade shows.** Show up where growers gather; Extension field days are built for exactly this.
- **Seed and equipment dealers.** They talk to every grower in the county and hear who's frustrated with their current applicator.

CHAPTER 7 · CONTINUED

- **Targeted local advertising.** Google and Facebook ads geo-targeted to your service counties work — you're selling to a small, well-defined audience.
- **Referrals.** Do excellent work on the first three jobs and ask directly. In farm country, one happy grower at the coffee shop is worth a month of ads.

Reality check: your first season is a *reputation* season as much as a revenue season. Price fairly, show up when you say you will, document everything, and the second season's phone calls get much easier.

Action checklist:

- ☐ Set your per-acre rate card (base rate, specialty rate, minimum job fee, travel radius)
- ☐ Build a one-page quote/service agreement template (acres, product, GPA, label verification, timing, terms)
- ☐ List 20 growers/co-ops/agronomists to contact before the season — start with people you know
- ☐ Plan at least two demonstration flights for the pre-season
- ☐ Set up basic business presence: LLC, business bank account, simple website or Facebook page with your certificate of insurance ready to send

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CHAPTER 8

The Money Math: Startup Costs vs. Revenue

This chapter puts the whole picture on one page: what it costs to start, what a season can produce, and how to think about breakeven. Every figure here is an **illustrative example with stated assumptions** — not a promise, not a projection for your operation.

Total startup cost: the two scenarios

A. Lean solo custom operator (one drone, you own a truck):

Item	Approx. range
Part 107 exam + study materials	\$175–\$475
§44807 exemption paperwork	\$0–\$500 DIY (legal help costs vary — get quotes)
State applicator license + exams	\$50–\$400 (varies by state)
Insurance, Year 1 (liability + hull + chemical drift)	\$4,000–\$11,000
Drone kit (batteries, charger, spreader)	\$19,000–\$29,000
Generator	\$3,000–\$10,000
Trailer + mixing tanks + plumbing + PPE	\$5,000–\$20,000 DIY
Business setup (LLC, agreements, software)	\$1,000–\$3,000
Total — lean	~\$33,000–\$75,000

B. Two-drone professional outfit (new trailer rig, hired help): **~\$90,000–\$160,000+** (University of Missouri's ~\$30k/drone + ~\$100k truck/trailer/generator model, via FarmProgress).

(Sources for component ranges: Chapters 5–6 and the research behind them.)

CHAPTER 8 · CONTINUED

Worked example: one season, stated assumptions

Assumptions: you fly a T50-class drone, charge **\$13/acre** (the 2025 industry average), cover **120 acres per flying day** (conservative real-world figure — see below), and get **50 flying days** in the season (weather, crop windows, and scheduling will decide the real number).

- **Gross revenue:** 120 acres × 50 days = 6,000 acres × \$13 = **\$78,000**
- **Annual operating costs:** insurance ~\$6,000 + battery replacement/maintenance ~\$4,000 + fuel and generator upkeep ~\$2,500 + licensing/fees ~\$500 + travel and misc ~\$3,000 ≈ **\$16,000**
- **Operating profit before equipment:** ~\$62,000
- Against a ~\$45,000 lean equipment investment, this scenario pays back the equipment in year one — **if** you hit 6,000 acres.

Now the downside version: same costs, but a slow first season of **3,000 acres** (common while you're building a client base):

- **Gross revenue:** 3,000 × \$13 = **\$39,000**
- Minus ~\$16,000 operating = **\$23,000** before equipment — the equipment is not paid back, and you're carrying the capital cost into year two.

The math: at \$13/acre with ~\$16,000 in annual fixed operating costs, you need roughly **1,230 acres just to cover fixed costs** — before the equipment earns a dollar. Every acre after that is contribution toward the machine. This is why client acquisition (Chapter 7) matters more than equipment selection (Chapter 6).

Context: what the industry actually sprays

For calibration: U.S. drones treated about **16.4 million acres in 2025** (+58.7% year over year), with roughly **1,710 FAA-licensed spray-drone operators** — averaging **~9,584 acres per operator per year** (ainvest industry survey, 2026 — estimates). About 69% of operators run two or fewer drones. The University of Missouri's break-even model put the threshold at roughly **980–1,000 acres per year** against a \$16/acre custom rate (via Farmonaut). Real-world daily throughput ranges **~100–500 acres per drone per day** depending on tank size, GPA, batteries, field layout, and ground crew (operator reports via FarmProgress; fleet operators at the high end).

CHAPTER 8 · CONTINUED

Bottom line: the business works on volume and utilization. A \$45,000 rig spraying 2,000 acres a year is an expensive hobby; the same rig spraying 8,000 acres is a real business. Size your equipment to the acres you can actually book, and spend your first season's energy on customers, not upgrades.

Action checklist:

- ☐ Build your own startup budget using the table above with your state's actual fees
- ☐ Run the worked example with YOUR rate and YOUR realistic flying days — write down your breakeven acreage
- ☐ Set an acres-booked target before buying equipment (don't buy the drone on hope)
- ☐ Price a specialty premium (\$18–\$35/acre work) into your plan — it's your margin buffer against price compression

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CHAPTER 9

Seasonality and Off-Season Work

Spray drones eat what the growing season feeds them. Your revenue will arrive in intense bursts with long quiet stretches between — plan for it financially and operationally, or the off-season will eat your business.

The spray calendar (approximate windows — verify locally)

- **Midwest corn and soybeans:** the prime drone window is fungicide at tassel for corn (VT–R1) and bloom-to-pod for soybeans (R2–R3) — roughly **July–August**. Drones shine here because ground rigs can't get through tall corn and airplanes can't match the precision. Add rescue insecticide/herbicide passes and **fall cover-crop seeding (September–October)**.
- **Southern cotton (Delta, Mid-South, Southeast):** insecticide and plant-growth-regulator work mid-summer, with the signature drone job being **defoliation and harvest-aid application roughly late September–October**, timed 10–14 days ahead of harvest.
- **California and specialty crops:** orchards and vineyards run frequent spray programs through a long season — one industry source notes vineyard/orchard programs running every 7–10 days, up to 20 applications per season (ABZ Innovation). Timing is crop- and region-specific; check **UC Cooperative Extension** crop schedules rather than any national calendar. (No reliable month-level national calendar exists for specialty crops — don't trust one.)

Your county Extension office publishes local spray timing guidance every year. Get on their mailing list; it's free market intelligence.

Surviving the off-season

A Midwest operator might have 8–12 intense weeks and 40 quiet ones. The operators who last treat the off-season as a second business season:

- **Maintenance and upgrades:** deep-clean the aircraft, replace nozzles and worn props, cycle-test every battery, update firmware, and review your ops manual while there's no pressure.
- **Certification and training:** knock out recurrent training, add state license categories, and train any new crew before spring.
- **Sales season:** winter is when growers plan. This is when you book next season's acres — farm shows, co-op meetings, and one-on-one visits happen December through February.

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- **Diversification:** some operators add mapping/surveying, livestock monitoring, or seeding work in shoulder seasons. Others do equipment service for other operators. A few run snow-free southern contracts — but remember the multi-state licensing problem from Chapter 4.
- **Cash reserves:** the worked example in Chapter 8 assumed a season's revenue. Budget like the season is shorter than you hope — because some years, weather makes it so.

Bottom line: the season is short, the off-season is long, and the operators who win are the ones who sell in winter, maintain in spring, and execute flawlessly in the 8 weeks that matter.

Action checklist:

- ☐ Map your region's spray windows from Extension guidance — put them on a calendar
- ☐ Build an off-season plan: maintenance schedule, training, and a winter sales campaign
- ☐ Set aside cash reserves from season revenue — don't spend August money in October
- ☐ Evaluate one diversification service for shoulder seasons (mapping, seeding, monitoring)

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CHAPTER 10

Costly Mistakes and Compliance Pitfalls

This chapter is the expensive one — every item below has cost real operators real money. Read it twice.

Regulatory pitfalls

1. **Flying dispensing operations before your AAOC is issued.** Your exemption alone doesn't authorize spraying — its first condition requires the certificate first. Training flights only until AFS-760 issues the Operating Certificate.
2. **Ignoring FAA RFIs during exemption review.** The FAA closes petitions when applicants don't respond to Requests for Information. Watch your email after filing — including the spam folder.
3. **Skipping the state license.** The FAA certificate doesn't replace state pesticide licensing, and enforcement is real. Some states require proof of insurance to license you; all of them can fine you for unlicensed application.
4. **Violating the pesticide label.** Applying at rates or volumes the label doesn't support — especially ultra-low-volume drone rates under labels written for ground rigs — is a federal violation (FIFRA), not a technicality. Verify every product's label before quoting.
5. **No operations manual or training program.** Required for UAS operators certificated after June 2023. The FAA doesn't collect them — but "produce on request" means exactly that, and not having one during an operational validation is a fast track to enforcement.
6. **Crossing state lines on one license.** No universal reciprocity for aerial applicators. Each state, each license.

Business pitfalls

7. **Racing to the bottom on price.** The industry average fell 38% in a single year (\$21 to \$13/acre, 2024–2025) as entrants undercut each other — and one industry survey estimated roughly four in five spray drones may be operating outside the licensed system (ainvest, 2026 — survey estimate, treat as directional). You cannot win a price war against unlicensed operators with no insurance and no overhead. Compete on legality, documentation, reliability, and specialty work (\$18–\$35/acre) — not on being the cheapest.

CHAPTER 10 · CONTINUED

8. **Buying equipment before booking acres.** Chapter 8's math only works with volume. A \$45,000 rig doing 2,000 acres a year is a depreciating asset; the same rig doing 8,000 is a business. Customers first, hardware second.
9. **Forgetting batteries are consumables.** ~1,000 charge cycles, then replacement — budget \$3,000–\$4,000/year (The Bullvine — estimate). Operators who don't track cycles get surprised mid-season.
10. **No minimum job fee.** Drive time, setup, mixing, and cleanup don't scale down for a 10-acre job. Set a floor or small jobs will quietly lose money.
11. **Weak weather discipline.** Wind, temperature inversions, and rain don't negotiate. Every drift incident starts with a pilot who flew when they shouldn't have. Your anemometer readings go in the job log, and "no-go" calls are a sign of professionalism, not weakness.
12. **handshake agreements.** Put acres, product, rate, label verification, timing, and terms in writing before the first flight. The job you'll wish you'd documented is the one that goes wrong.
13. **Sloppy record-keeping.** When the FAA asks for your records, "I have them somewhere" is not an answer — and when a drift claim lands, your flight and maintenance logs are your defense. Scattered spreadsheets and paper notebooks fail exactly when you need them most. The fix is a dedicated logging platform: DroneLogbook (dronelogbook.com) auto-imports your flight logs and generates FAA compliance reports in seconds, so your paper stack is always audit-ready.

Warning: The single most expensive mistake is the unglamorous one: operating without the full paper stack — exemption, AAOC, state license, insurance — because "it's just one small job for a neighbor." Enforcement doesn't grade on a curve, and neither does a drift lawsuit.

Action checklist:

- ☐ Never fly a dispensing job before holding the AAOC — no exceptions, no "small jobs"
- ☐ Verify every product label supports your planned drone rate before quoting
- ☐ Set your minimum job fee and weather no-go criteria in writing before the season
- ☐ Track battery cycles from day one; budget annual replacement
- ☐ Compete on compliance and reliability, not price — hold your rate on specialty work

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CHAPTER 11

Checklists: Pre-Application, Pre-Season, Per-Job

Tear these out (metaphorically) and use them. Each checklist is designed to be run in order, top to bottom.

Pre-application checklist (before you file anything with the FAA):

- ☐ Part 107 Remote Pilot Certificate in hand, or exam scheduled with a study plan
- ☐ Aircraft selected; make, model, and registration path confirmed (N-number via Part 47 for 55-lb-plus)
- ☐ Aircraft registered; FA- or N-number in hand
- ☐ Remote ID compliance confirmed; serial entered in FAADroneZone; DOC listing verified
- ☐ Chief Supervisor of Operations designated (name, phone, email)
- ☐ PIC identified with certificate number (or Temporary Airman Certificate)
- ☐ §44807 petition drafted with all 14 CFR Part 11 elements; filed via regulations.gov at least 120 days before needed
- ☐ State pesticide licensing path identified; exams scheduled
- ☐ Insurance broker engaged; quotes in progress

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Pre-season checklist (every year, before the first job):

- ☐ FAA exemption and AAOC current and in your possession (digital + printed)
- ☐ State applicator license(s) current for every state you'll operate in
- ☐ Insurance bound; certificate of insurance ready to send
- ☐ Operations manual reviewed and updated; training program current; all crew trained and documented
- ☐ DroneLogbook account active; last season's logs reviewed; maintenance schedules current
- ☐ Self-administered §137.19(e) knowledge and skill refreshers completed and logged
- ☐ Aircraft deep maintenance: props, motors, nozzles flow-tested, firmware current
- ☐ Batteries cycle-tested; weak packs retired; spares on hand
- ☐ Generator serviced; trailer, tanks, and plumbing inspected; spill kit stocked
- ☐ PPE inspected and replaced as needed (respirator cartridges expire)
- ☐ Client list confirmed; quotes and service agreements signed; field maps collected
- ☐ Product labels verified for every chemical you plan to apply by drone
- ☐ Weather tools ready (anemometer, forecast apps, inversion awareness)

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Per-job checklist (every flight day):

- ☐ Written agreement signed: acres, product, GPA, rate, terms
- ☐ Label re-verified for this product at this rate by drone
- ☐ Field surveyed: boundaries, obstacles (power lines, towers, trees), sensitive areas (homes, livestock, water, neighboring specialty/organic crops), bystander plan
- ☐ Weather check: wind speed and direction, temperature, inversion risk — go/no-go decision recorded
- ☐ Airspace check: Class G confirmed or COA in hand; NOTAMs checked
- ☐ Aircraft pre-flight: props, motors, tank, nozzles, battery levels, Remote ID broadcasting, registration marking legible
- ☐ Calibration: flow rate verified; swath width confirmed for this product and GPA
- ☐ Mixing and loading per label, with PPE; spill kit at the trailer
- ☐ Exemption, AAOC, state license, and insurance docs accessible (digital is fine)
- ☐ Post-flight: acres covered logged, weather conditions logged, any incidents or drift observations recorded, equipment rinsed per label
- ☐ Flight logged in DroneLogbook: auto-imported or entered manually, with acres, product, and weather attached

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CHAPTER 12

Resources: FAA Links and Where to Check Your State

Primary sources first. Regulations change — when in doubt, these pages outrank this book.

FAA — Part 137 for drones (start here)

- **FAA: Dispensing Chemicals and Agricultural Products (Part 137 UAS)** — the master page: application process, exemption-first order, Form 8710-3 instructions, RFI policy: https://www.faa.gov/uas/advanced_operations/dispensing_chemicals
- **FAA: Section 44807 certification** — the exemption authority, approved-drone list, blanket COA information: https://www.faa.gov/uas/advanced_operations/certification/section_44807
- **FAA: Become a Drone Pilot (Part 107)** — eligibility, testing, IACRA, recurrent training: https://www.faa.gov/uas/commercial_operators/become_a_drone_pilot
- **FAA: Aircraft Registry — Unmanned Aircraft** — registration requirements, Part 47 vs. Part 48: https://www.faa.gov/licenses_certificates/aircraft_certification/aircraft_registry/UA/index.cfm
- **FAADroneZone** — online registration (sub-55-lb), Remote ID serial entry: <https://faadronezone.faa.gov>
- **FAA UAS Declaration of Compliance (DOC) list** — Remote ID compliance: <https://uasdoc.faa.gov>
- **Regulations.gov** — where §44807 petitions are filed: <https://www.regulations.gov>
- **Notice N 8900.741** (June 2025) — the FAA's detailed Part 137 UAS certification policy (knowledge/skill tests, ops manual, medical, AFS-760 process). Note: cancelled by N 8900.773 (May 2026); if the newer notice is publicly available, read it instead: https://www.faa.gov/documentLibrary/media/Notice/N_8900.741.pdf
- **Advisory Circular AC 137-1A** — Part 137 certification guidance: https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC137-1A.pdf
- **14 CFR Part 137** — the regulation itself (eCFR): <https://www.law.cornell.edu/cfr/text/14/part-137>
- **FAA UAS Support Center** — when you need an authoritative answer: <https://www.faa.gov/uas/contact>

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State pesticide licensing

- **EPA: State and Territorial Pesticide Agencies** — find your state's licensing agency and applicator certification info: <https://www.epa.gov/pesticide-advisory-committees-and-regulatory-partners/state-and-territorial-pesticide-agencies>
- **NPIC: State regulatory agency list** (Oregon State): https://npic.orst.edu/reg/state_agencies.html
- **Your state Department of Agriculture** — the licensing authority in most states (a few states assign it elsewhere — the EPA list above will redirect you correctly)

Industry and business

- **Iowa Farm Custom Rate Survey** (Iowa State Extension) — annual custom-rate benchmarks including drone spraying: <https://www.extension.iastate.edu/agdm/crops/pdf/a3-10.pdf>
- **Your county Extension office** — local spray timing, field days, and grower connections
- **BWI Fly** — ag-drone insurance guidance and quotes: <https://bwifly.com/agricultural-drone-insurance-breakdown/>
- **SkyWatch.ai / Verify** — app-based and on-demand drone insurance options
- **DroneLogbook** — the flight-logging and compliance platform recommended in this book: automatic flight-log importing, FAA compliance reports in seconds, maintenance tracking, mission planning, offline mobile ops, and a dedicated Agriculture solution. 2-month free trial for new users: <https://dronelogbook.com>

A final word

Nobody hands you a spray-drone business. You earn it in this order: the certificate that makes you legal, the license that makes you legitimate, the equipment that makes you capable, and the customers that make you profitable. Most people who fail in this business fail at step four, not step one — they get certified, buy the drone, and wait for the phone to ring. Don't be most people. Start the certification clock now, and spend the waiting months selling. By the time AFS-760 emails your certificate, you want a calendar full of acres — not an empty trailer and a hope.

Fly safe, spray legal, and get paid.