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WINTER NDSU EXTENSION MEETINGS

February 19	Nourish Webinar Series 2
February 23	Everybody’s Yard and Garden Guide Series
February 24-25	2026 Eastern Crop, Pest, Identification & Management School
February 24	Private Applicator Training: RECERTIFICATION ONLY VIRTUAL TRAINING
March 5	NDSU Soybean Symposium
March 11-12	2026 Western Crop and Pest Management School
March 17	Oakes Crop Shop Talks



WHAT TO THINK ABOUT ZINC?

Over the past few weeks, I have received several phone calls and emails about the usefulness (or not) of various zinc sources and products in crop production—primarily corn. Recently, there has been interest in various low-rate, seed-applied zinc products for corn; unfortunately, there has been little unbiased university research on these products. As with any new or largely untested product, my recommendation is to be curious but skeptical. If you or one of your farmers is interested in a new product, give it a try on a few acres in replicated strips alongside a proven practice. Aside from the corn-seed-applied zinc products, there has been substantial research on the benefits of zinc for corn production.

Among micronutrients, zinc stands out as one of the few that corn regularly responds to, particularly in fields testing below 1 ppm soil-test zinc. In addition to deficiency occurring in low-zinc soil-test fields, early-season deficiency can also be caused by cool soil conditions, which reduce the mineralization of zinc from organic matter and slow root growth. Additionally, research from the University of Minnesota has shown that high phosphorus application rates (>200 lb P₂O₅/ac) can induce zinc deficiency in high-pH, calcareous soils, especially when soil test zinc is low or very low (<0.50 ppm).

The 4-Rs of Zinc management in corn:

- Right Source
 - Zinc sulfate and chelated zinc are the most commonly used zinc sources in North Dakota crop production.
 - Since zinc sulfate is a granular product, it is easily included in dry fertilizer blends.
 - Zinc chelate can be included in liquid starter blends, but it is relatively expensive per pound of zinc compared to zinc sulfate.
- Right Place and Right Time
 - Higher rates of broadcast zinc sulfate can be used to raise soil test levels over a long term, while banded in lower rates is a useful one-year source of zinc.
 - In-furrow zinc chelate ensures its availability to the crop early season; however, it will not serve to increase soil test levels.
- Right Rate
 - For broadcast applications, 10 lb zinc/acre of zinc sulfate is recommended in a field with <1ppm zinc; if banded, the rate can be reduced to 3 lb/ac.
 - 1 qt/ac of 10% chelated zinc can be mixed with liquid starter and seed applied.



Zinc deficiency symptoms in corn. (NDSU photo)

For more information, check out [Soil Fertility Recommendations for Corn](#) and [North Dakota Fertilizer Recommendation Tables and Equations](#).

[Brady Goettl](#)
Extension Soil Specialist



DICAMBA LABELS FOR XTENDFLEX SOYBEAN IN 2026

On February 6, 2026, the US EPA announced federal registration for the use of 3 dicamba products in XtendFlex soybean for the 2026 and 2027 growing seasons. The three products are Engenia (BASF), Stryax (Bayer), and Tavium (Syngenta). Stryax contains the same amount of active ingredient as the old Xtendimax formulation. Tavium also includes S-metolachlor. These are the only products approved for over-the-top (OTT) use after crop planting on XtendFlex soybean. State registrations are still pending at the time of this writing.

These products will allow only 2 applications per year, totaling 1 pound of dicamba per acre. The single application rate is 0.5 lb of dicamba, which is 12.8 fl oz/A of Engenia, 22 fl oz/A of Stryax, or 3.53 pt/A of Tavium. Engenia and Stryax can be applied from preplant through R1. The label states DO NOT apply after R1, or crop response may occur. Tavium can be applied from preplant through V4. An oil emulsion Drift Reduction Agent (DRA) at 0.3% v/v (5.67 fl oz/A at 15 GPA volume) plus a qualified Volatility Reduction Agent (VRA) at an appropriate rate must be included in every application. A list of approved VRAs and their use rate will be on product label websites. At the time of writing, there are no additional state restrictions for North Dakota (there are additional restrictions for South Dakota and Minnesota; applicators in those states should familiarize themselves with them).

Use of each product will require mandatory dicamba training in addition to the applicator holding a valid pesticide applicator license. At the time of writing, no training opportunities are available, but manufacturer-led training will be expected in the near future. All three labels have similar label language and layouts. These labels include mitigation measures to comply with the EPA's Herbicide Strategy, as well as additional information to reduce off-target movement of these products. These measures address drift, runoff, and volatility concerns:

Spray Drift (Section 9.0 on product labels):

- Applications cannot occur if adjacent sensitive plants are downwind. See product labels for a list of sensitive plants.
- Buffer distance (Section 9.1): A 240-foot downwind buffer must be maintained between the last treated row and the nearest downwind field edge.
- Buffer reductions (Section 9.2): There are several drift buffer reduction options available on each product label. Several options can reduce the buffer distance by 15-75%, and these options are additive. For example, if an option offers a 50% (120-foot) reduction and is combined with one that offers a 15% (36-foot) reduction, the total reduction would be 65% (156-foot). Refer to product labels for a complete list of options.
- Spray drift management (Section 9.3): There is similar language to the labels we last used in 2024 regarding applications:
 - Wind speed: must be between 3 and 10 MPH
 - Do not apply from 2 hours prior to sunset until 1 hour after sunrise.
 - Do not apply during temperature inversion.
 - Boom height must be no higher than 24 inches above the crop canopy.
 - Spray droplet size must be coarse or coarser (this replaces a list of approved nozzles found on previous labels).
 - An oil-emulsion drift reduction agent (DRA) must be tank-mixed at 0.3% v/v (5.76 fluid ounces per acre at 15 GPA spray volume).

Runoff and Erosion mitigation (Section 10.0 on product labels):

- Do not apply during rain or when the soil is saturated.
- A minimum of 3 mitigation points is required for runoff protection. A full list of mitigation measures and their associated points can be found here: <https://www.epa.gov/pesticides/mitigation-menu>
- A total of 6 mitigation points is required if a field is located within a Pesticide Use Limitation Area (PULA). Applicators must visit Bulletins Live! TWO (<https://www.epa.gov/endangered-species/bulletins-live-two-view-bulletins>) within six months prior to application to determine if their fields are within a PULA. We are currently aware of some PULA areas within Richland and Ransom counties (Figure 1).

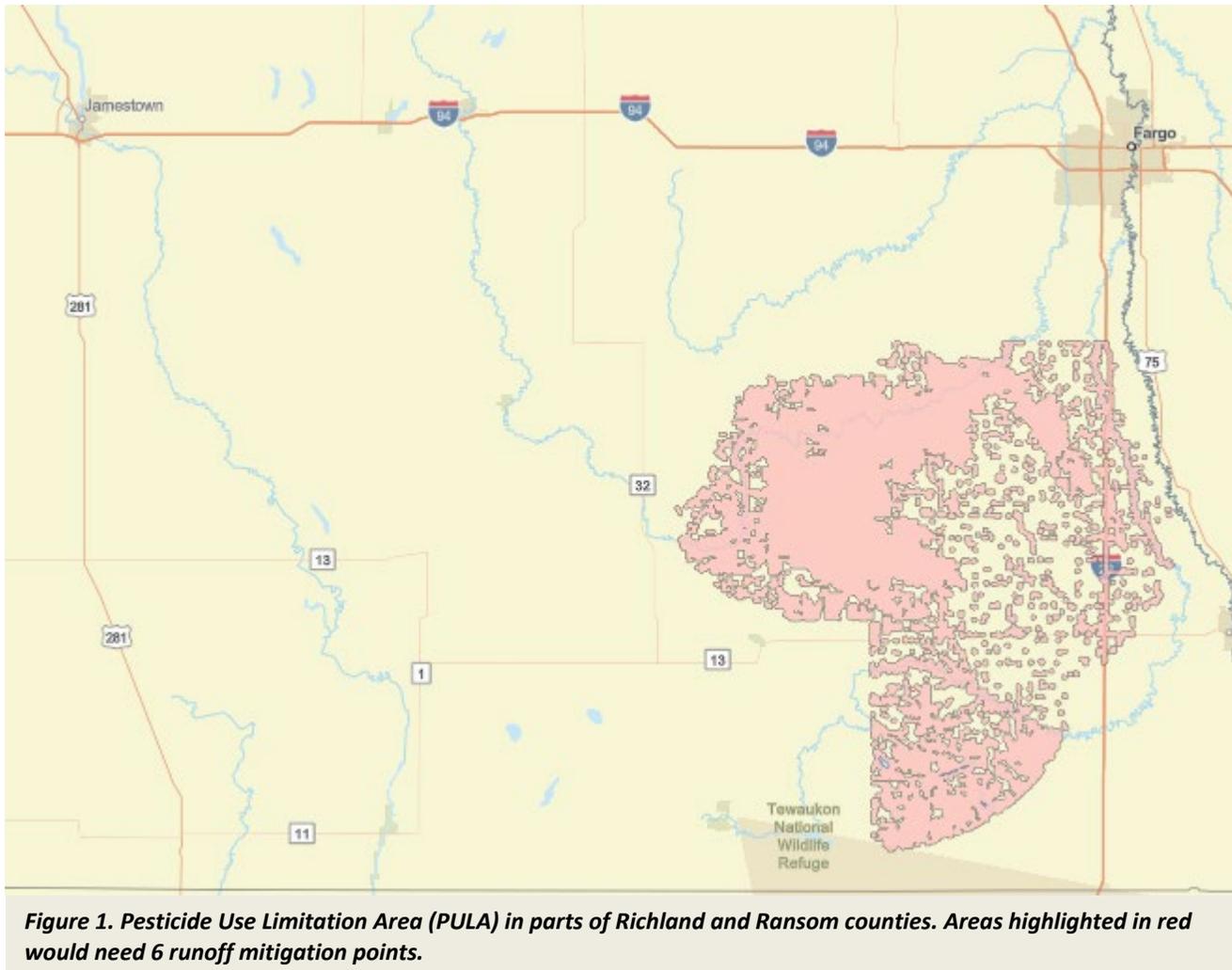


Figure 1. Pesticide Use Limitation Area (PULA) in parts of Richland and Ransom counties. Areas highlighted in red would need 6 runoff mitigation points.

Volatility mitigation measures (Section 11.0 on product labels):

- Do not tank-mix ammonium sulfate (AMS).
- Applicators must check product websites for a list of qualified Volatility Reduction Agent (VRA). At the time of this writing, the websites do not include approved VRAs. The EPA note indicated that all applications must contain a VRA equivalent to VaporGrip at 40 fl oz/A. It is not clear at this time if other products will be added at a different use rate, but applicators should monitor the websites for updates:
 - Stryax: <https://www.stryaxapplicationrequirements.com/>
 - Engenia: <https://www.engeniaherbicide.com/VRA>
 - Tavium: <https://www.engeniaherbicide.com/VRA>

- Temperature: Applicators must check the forecast high temperature on the day of and the day following the application. The forecast is predicted by NOAA/National Weather Service (www.weather.gov):
 - Applications are prohibited when the temperature is forecasted to be 95°F or above on the day of or the day after application.
 - Applications below 85°F may proceed with approved DRA and VRA.
 - If the temperature is forecast to be between 85°F and 95°F, applications may proceed with approved DRA and VRA, BUT no more than 50% of XtendFlex soybean acres managed by a grower within a county can be treated. The remaining 50% of the untreated acres may be treated at least 2 days after the first application, provided all other label requirements are met.

Joe Ikley (joseph.ikley@ndsu.edu)
Associate Professor/Extension Weed Specialist

Madeleine Smith (madeleine.smith@ndsu.edu)
Pesticide Specialist



STRESS MANAGEMENT FOR COUPLES WORKING ON THE FARM

Working together under pressure, shifting roles and holding down more than one job add up to one thing—high stress levels for farm or ranch couples. However, by being thoughtful, communicating clearly and relaxing together, spouses can ease pressures on their relationship. To relieve the strain of stress on the farm, here are six tips you can pursue in your relationships.

Six Tips for Managing Couple Stress on the Farm

Relationship stress for couples is not unusual considering the close working relationship and varied pressures that occur in farming and ranching. Consider the following tips as you work together.

- **Plan ahead.** Set measurable goals together for a year from now, five years from now and your lifetime together. Make decisions about time together in farming/ranching, other jobs or retirement. Then, focus on enjoying what you have decided to do. Remain flexible.
- **Check in with each other daily.** Take a moment to inquire how your spouse is feeling. Look for and give attention to early indications of stress, such as a furrowed brow or a tense voice. Respond with love and attention as needed.
- **Communicate realistic expectations clearly.** In talking, use “I statements” more than “you statements.” Your parent will likely not change if you argue, “You’re always wanting to buy something else! We can’t afford it!” Instead, try using an “I statement”: “I get worried and angry when I hear you wanting to buy a new _____. What I’d like is for the two of us to sit down and decide together which major purchases we can afford.”
- **Schedule regular “talk time” and negotiate solutions.** When problems arise, schedule time for the two of you to brainstorm and discuss ideas. Weigh the costs and benefits of each solution. Arrive at a plan that enables both of you to get something you want.
- **Schedule an evening a week to play together – whether a date, a walk or something else.** To keep your marriage or partnership growing, take a break from work or the children or other distractions. If it helps, make it a rule to talk only about yourselves as a couple, not about the farm or ranch operation.
- **Celebrate small and big moments together.** Celebrate your anniversary, birthday, the arrival of a new foal or calf, getting the field planted before the rain and other milestones. Take joy in your lives together.

Access Helpful Resources

To learn more specifically about tips and tools in managing stress as a couple on the farm, read the NDSU Extension publication FS285, "Stress Management for Farm/Ranch Couples" – link: [Stress Management for Farm/Ranch Couples | NDSU Agriculture](#)

If you or someone you know is in need of mental health or substance abuse resources, call or text the **9-8-8 Suicide and Crisis Lifeline**, or chat at <https://988lifeline.org>.

Contact your NDSU Extension county office or search the Web for *NDSU Extension farm stress* for more resources on wellness in agriculture.

[Sean Brotherson](#)

Extension Family Science Specialist

Stress Management for Farm and Ranch Couples

www.ag.ndsu.edu/farmranchstress

Working together on the farm helps reduce your stress and strengthen your relationship.

Adriana Drusini (adriana.drusini@ndsu.edu)

Extension Farm and Ranch Stress Program Coordinator



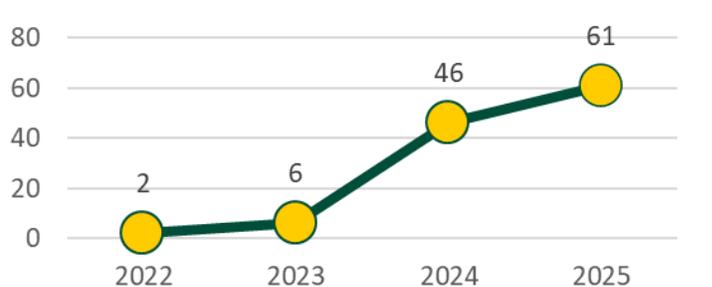
ND SPRAY DRONE INDUSTRY SHOWED CONTINUED GROWTH AND SHIFTING USE CASES IN 2025

Statistics from the North Dakota Aeronautics Commission (NDAC) show continued growth in spray-drone activity in 2025. From 2024 to 2025, the number of fully certified unmanned aerial application owner-operators increased by 57%, from 21 to 33, while the number of licensed airmen for unmanned aerial application increased by 33%, from 46 to 61.

Unmanned aerial application owner-operators (with Part 137 certification)

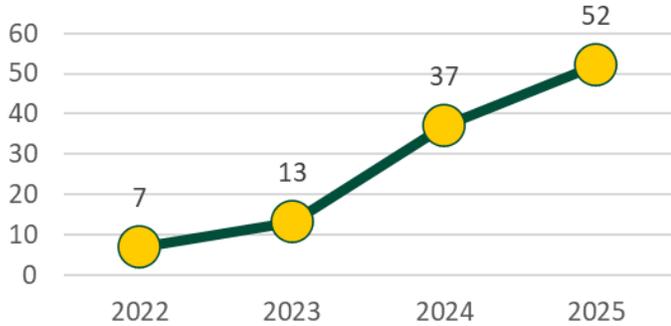


Licensed airmen (pilots) for unmanned aerial application

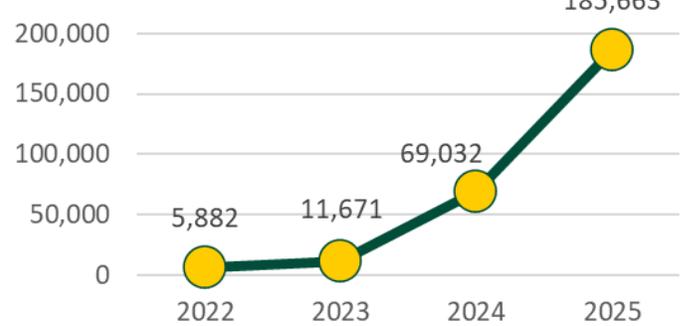


Collectively, unmanned aerial applicators registered 52 unmanned aircraft and treated 185,663 acres in 2025. This represents a 41% increase in registered aircraft and a 169% increase in treated acres from the year prior.

Registered unmanned aircraft



Unmanned aerial application acres

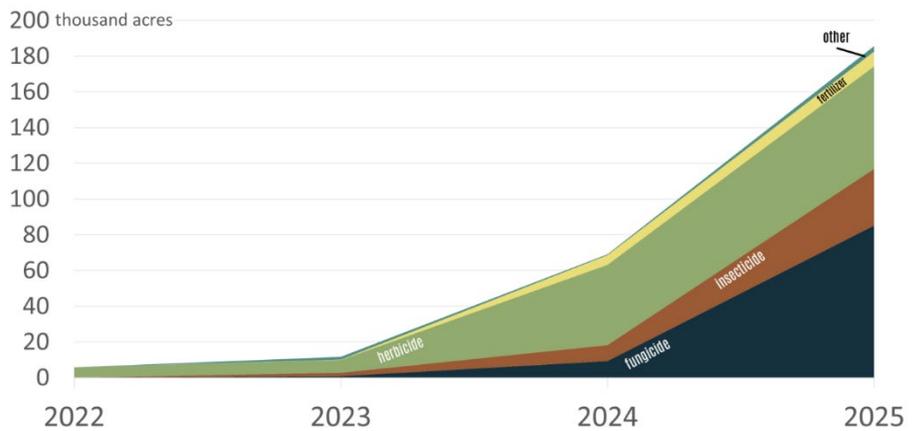


The use cases for unmanned aerial applications also shifted in 2025. Of the 116,631-acre increase in unmanned aerial application from 2024 to 2025, 65% was attributable to fungicide application (+75,874 ac), and 20% was attributable to insecticide application (+22,800 ac). Fungicide and insecticide applications accounted for substantial portions of all 2025 uses, whereas herbicide applications were dominant from 2022 through 2024.

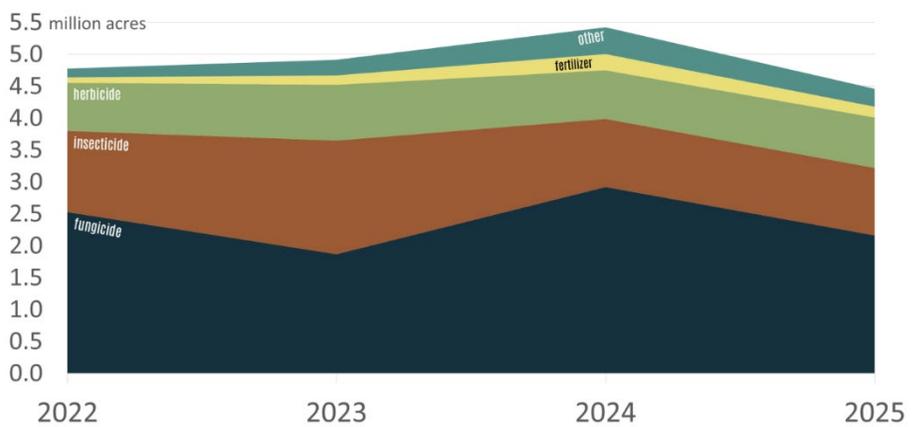
With these shifts, use cases for the unmanned aerial application industry more closely resemble those for the manned aerial application industry, where fungicide application has been dominant over the last four years. Still, the use of herbicides in unmanned applications remains widespread. Herbicides represented 31% of overall unmanned application acreage in 2025, compared to just 18% of overall manned application acreage.

Despite this continued growth, unmanned application still represents a small fraction of overall aerial applications. Manned aerial applicators treated 4.5 million acres in North Dakota in 2025, which is 24 times the acreage treated by unmanned applicators during that time.

Unmanned aerial application of **fungicide** and **insecticide** in North Dakota greatly increased in 2025. **Herbicide** acres were dominant from 2022 to 2024.



Fungicide acres were consistently the top use for manned aerial application in North Dakota from 2022 to 2025, followed by **insecticide** and **herbicide** acres.



[Rob Proulx](#)

Ag Technology and Grain Systems Specialist

SPRAYING BY DRONE IN 2026? NOW IS THE TIME TO PREPARE

The North Dakota spray drone industry continues to grow. If you are seeking to spray by drone, hire a spray drone applicator, or build your knowledge base, now is a great time to prepare.

Become a licensed applicator

Time is running out! Before applying chemicals with a drone in North Dakota, *even on your own farm*, operators need:

1. a Remote Pilot Certificate from the FAA (Part 107)
2. an Agricultural Aircraft Operator certificate from the FAA (Part 137 and exemptions)
3. a North Dakota Pesticide Certificate (NDSU Extension)
4. finally, an Unmanned Aerial Applicator License from the North Dakota Aeronautics Commission



The FAA requires that the petition for exemption be sent at least 120 days before you need the exemption to take effect. Therefore, the soonest a new applicator could begin operations is mid-June or later.

For more information on becoming a licensed unmanned aerial applicator, go to the [aerial applicators licensing](#) section of the ND Aeronautics Commission website.

Find a licensed applicator

I encourage anyone seeking unmanned aerial application services in 2026 to ensure that they hire a licensed applicator. The North Dakota Aeronautics Commission maintains a [directory of all licensed applicators](#), both manned and unmanned. The directory will continue to populate as applicants secure their North Dakota applicator licenses for the 2026 season.

Build your knowledge base

The Agricultural Autonomy Institute at Mississippi State University recently released a [series of spray-drone videos](#). This is an excellent resource comprising 13 professionally produced videos. Most videos are 2 to 4 minutes long, totaling 57 minutes. Topics include:

- spray pattern uniformity and testing
- swath width estimation
- the spray droplet spectrum, nozzle types and nozzle selection
- swath offset
- calibration and troubleshooting
- yielding right-of-way to manned aircraft

For additional information, I recommend the drone spraying resources on the [Sprayers101](#) website. See also the slide deck and handout from my presentation alongside Devin Nohl, titled "*Pesticide Applications the Drone Way*," for the [2025 Advanced Crop Advisers Workshop](#).

[Rob Proulx](#)

Ag Technology and Grain Systems Specialist

North Dakota State University
CROP & PEST REPORT
NDSU Dept. 7660; PO Box 6050
Fargo, ND 58108-6050

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*Janet Knodel
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Co-Editors*

Entomology
701-231-7915

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*Marcia McMullen
Eric Branch
Co-Editors*

Plant Pathology
701-231-8363

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701-231-7261

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