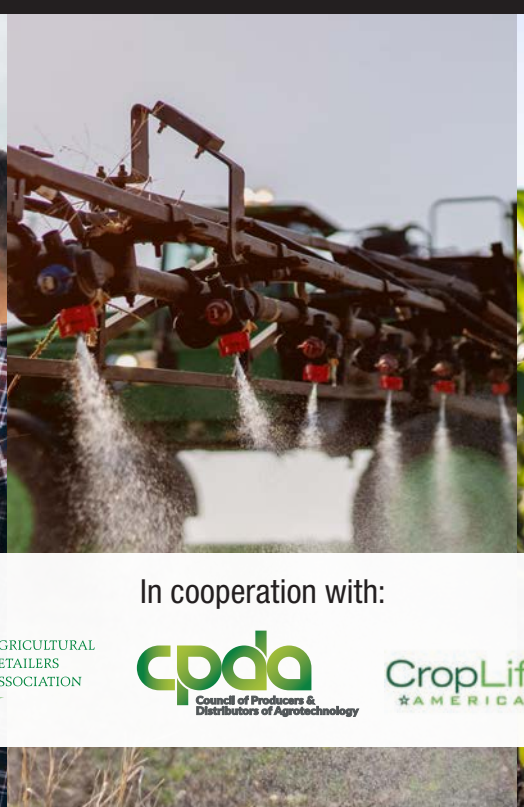
FROM THE EDITORS OF

CropLife®

2026

ESA Technical Guide to Mitigation Options

EPA approves adjuvants as a tool to help the industry navigate changing rules.



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Agricultural Retailers Association

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Still Meeting the Challenge

FOR MORE THAN A YEAR NOW, agriculture has been navigating the complex changes brought on by the renewed emphasis on the Endangered Species Act (ESA). These began to appear in earnest during the middle of 2024, with herbicide strategies first on the docket. This was followed by ESA recommendations for insecticides earlier this year, with fungicides up sometime in 2026.

To help with the strategies outlined in these ESA documents, the agricultural industry has embraced the use of adjuvants to comply. In fact, last December, *CropLife® Magazine,* in partnership with various sponsors and the Council of Producers and Distributors of Agrotechnology (CPDA), published "The ABCs of ESA" as an aid in these efforts.

"Farmers and retailers have made great strides to precisely apply inputs with no off-site movement of either nutrients or crop protection products," said Terry Kippley, President/CEO at CPDA, in a recent interview with **CropLife**. "Before 2025, Drift Reduction and Soil Retention adjuvants showed up as tiny blips on a farm's radar screen. Expect widespread adoption of these exciting new tools moving forward."

As a follow-up to the 2024 report, the editors at **CropLife** are happy to present the ESA Technical Guide to Mitigation Options special report. Within these pages, you will find information on the state of things in agriculture when it comes to ESA, ways the industry can fund its efforts to utilize these products/strategies in the farming world, an overview of the adjuvants marketplace, and helpful sources for finding out more about how to follow ESA requirements moving into the 2026 growing season.

As CPDA's Kippley recently wrote for **CropLife** in an article: "The next 25 years will bring even more change, but along with it comes the opportunity to strengthen the partnership between retailers and farmers. At CPDA, we will continue working to ensure the policies and tools benefitting farmers and retailers are in place to help ag retail lead the way." ◆

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INSIDE

Adjuvants Are Ready For Prime Time

CPDA's Adjuvant Certification Program delivers standards and performance validation that regulators, retailers, and growers have been waiting for.

BY LARA L. SOWINSKI

THE EFFORT TO ESTABLISH ADJUVANTS AND THEIR efficacy to regulators, retailers, and growers continues to make steady progress. It's important work that sometimes happens behind the scenes yet is an essential force propelling the industry forward.

The Council of Producers and Distributors of Agrotechnology's (CPDA) Adjuvant Certification Program, is one such example.

Austin Anderson, Adjuvant Product Manager, Helena Agri-Enterprises, serves as Chair of CPDA's Adjuvant Certification Committee. The committee's goals include informing the industry about the CPDA and its Adjuvant Certification Program, addressing skepticism about adjuvants, and helping basic manufacturers, namely BASF, Syngenta, and Corteva, validate and demonstrate reliable product performance.

Anderson emphasizes that, "The costliest application that a grower can make is one that doesn't work."

For that reason, the committee stays focused on ground-truthing adjuvant efficacy, sharing best practices, and promoting agreed upon expectations across the industry.

The CPDA is the only organization that pursues self-regulation to create standards for adjuvants. Currently, the Adjuvant Certification Program has 220 different agents that are CPDA-certified and 480 EPA-registered products that have CPDA certified adjuvant language on their labels.

The program's Truth in Labeling initiative, started in 1990, adheres to the ASTM International testing organization's functionality descriptors. There are 16 different metrics contained in the Truth in Labeling initiative, all of which are used to determine if a product can be approved as a CPDA-certified adjuvant.

Taming the Wild West

Despite the advancements in credibility that adjuvants have attained in recent years, there is still an element of the "Wild West," acknowledges Anderson.

Adjuvants are not federally regulated and there are only 11 states that require adjuvants to be registered. They include Arkansas, California, Idaho, Kentucky, Maine, Maryland, Mississippi, Tennessee, Utah, Washington, and Wyoming.

This unchecked environment has contributed to inconsistent results and composition of adjuvants, limited use of standardized definitions, and undefined product functionality claims, explains Anderson, which has left some in the industry with a negative impression of adjuvants.

Turning that around means "making sure every drop does what is says it's going to do … whether that's

Why It's Important to Use Only CPDA Certified Adjuvants

- CPDA Certified adjuvant products are required to adhere to significant, scientifically supported standards (16 Benchmarks) adopted by ASTM International.
- Certified products are evaluated for safety and supported by required toxicological data.
- Adjuvant labels and Safety Data Sheets (SDS) are reviewed by a panel of industry experts.
- Adjuvant claims and ingredients must be validated.
- Products seeking certification must meet certain requirements established by the U.S. EPA, the U.S. Department of Transportation, and the U.S. Occupational Safety and Health Administration.

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drift control, spreading and wetting, or water conditioning," says Anderson.

Next Steps for the Committee

One of the items the Adjuvant Certification Committee is exploring is the potential need for a drift reduction adjuvant (DRA) certification that is industry compliant. The CPDA developed such a program years ago but didn't make it public, however it may be revisited, says Anderson.

At the same time, the committee continues to spread the word to retailers and growers that CPDA-certified adjuvants are a tool for mitigation for the Endangered Species Act (ESA).

Ideally, it would be a real achievement to one day have the EPA support a statement such as, "By using a CPDA-certified drift control adjuvant you automatically get one point towards your mitigation tactics," says Anderson. "That's something that we're working on."

Meanwhile, Anderson remains focused on creating more value for the CPDA Adjuvant Certification Program.

That starts with "making sure that we address all the concerns from our internal stakeholders regarding participation in the program."

One suggestion is to engage a third party to perform the certifications, potentially through the CPDA Adjuvant Centers of Excellence, "to help take the workload off our internal folks," says Anderson, while also alleviating some concerns around IP sensitivities where competitors may review label content. ◆

Retailers Play a Key Role in Adjuvant Education

BY DAN JACOBS

ACCORDING TO TERRY KIPPLEY, PRESIDENT AND CEO of the Council of Producers and Distributors of Agrotechnology (CPDA): "An estimated 25% of all pesticide applications include an adjuvant in the spray mixture."

And it is retailers who play a key role when it comes to "assisting growers in making a safe, beneficial, and efficacious pesticide application by pairing the best adjuvant with each pesticide product," he says.

"This includes grower training on the proper boom height, speed, spray pressure, and weather conditions. Choosing the right adjuvant can impact the performance of the product by up to 50%, so grower education is essential for optimizing every spray application."

Dr. Lucy Marshall, Research Director, Biosorb, concurs.

Retailers "are trained individuals who want their customers, farmers, or applicators, to maximize the performance of their treatments, whether it's nutritional, weed, disease, or insect control," she says.

"Retailers want to ensure that customers have good field results so that they will return as satisfied customers. The retailers' main role is education and outreach for their customers."

Jeff Bunting, Vice President of Crop Protection, GROWMARK, adds that: "Retailers close the gap of the how and why adjuvants are being used. Now with the current herbicide strategies [and subsequent insecticide strategy, released in April 2025], the role of a certified crop advisor will be even more important as we begin to use products that provide the necessary mitigation points."

While growers are embracing regulatory and other changes in the industry, there's a continued need for more education and product awareness of why you are spending money to improve performance or mitigate pesticide challenges, Bunting explains.

That's where retailers can help to "showcase the strength and need for adjuvants, and that they have evolved from what their earlier generation may have used," Bunting says.

Photo: oticki / stock.adobe.com

NAVIGATING THE ESA HERBICIDE STRATEGY:

What Growers and Retailers Need to Know

The Environmental Protection Agency's (EPA) implementation of the Endangered Species Act (ESA) on crop protection product labels is reshaping how growers and retailers approach herbicide use. While the ESA has existed since the 1970s, its integration into product labeling is a recent development, triggered by legal action that pushed the EPA to enforce species protection more directly through agricultural regulation.

As Dr. Eric Spandl, senior manager of product development at WinField United, explains, "The ESA language is now being added to labels as products are newly registered or re-registered. Herbicides and insecticides already have approved final strategies, and fungicides are expected next year."

This shift means growers and commercial applicators must pay closer attention to label language and understand the compliance requirements. "There are really two tracks," Spandl says. "One is runoff mitigation. The other is drift-specific label requirements. It's going to require knowledge, maybe a little more paperwork, and possibly some equipment adjustments."

Retailers play a critical role in helping growers stay ahead of these changes. The rollout isn't happening all at once. Only a few products currently carry ESA language, with more expected over the next few seasons.

Spandl emphasizes the importance of early planning. "You've got up to six months before spraying to do the paperwork. Don't wait until spring. Use winter planning to check if the products you're going to use have ESA language."

Retail agronomists can assist growers in assessing their fields for runoff mitigation. This includes evaluating slope, soil type, and management practices like no-till. The EPA provides a website to guide users through this process. For drift mitigation, adjustments may be needed to sprayer settings, such as boom height and spray quality. Additional tools like drift reduction adjuvants (DRAs) and shielded sprayers can also help.

One standout option for drift mitigation is SuperLock™ adjuvant. WinField United has a long history of developing solutions for growers, including DRAs. SuperLock builds on that foundation, leveraging advanced analytical tools and experts deeply versed in drift and spray droplet behavior. The result is a single formulation that combines a high surfactant crop oil concentrate with proprietary drift reduction technology; one of the only products on the market with this concentration.

Spandl notes, "SuperLock is a great example of how WinField United is combining technical expertise with practical tools. It gives growers a reliable option for drift mitigation under the ESA strategy without overcomplicating the tank mix."

Understanding managed areas is also key. If a field is downwind of the field being sprayed, buffer zones may not apply. "It gets a little complex," Spandl admits, "but once you've done a few, you can follow a simple decision tree. Look at the label. Do buffers and ESA mitigations apply? If so, go to the EPA website to see if you're in a pesticide use limitation area (PULA) with endangered species. Then, address mitigations for runoff and drift."

To simplify the process, the EPA has launched the Pesticide App for Label Mitigations (PALM) tool. It walks users through a series of questions to determine which mitigations are required and whether buffer zones apply.

"There are good resources out there," Spandl says. "CPDA, ASA, CLA, and WSSA have all put out training materials. There's a decision tree and other tools available. We just need to start building awareness over winter before sprayers hit the field."

Retailers should act now. Review product labels, use tools like TELUS's in-field app to flag ESA language, and guide growers through field evaluations and equipment adjustments. The goal isn't just compliance. It's protecting endangered species while maintaining effective crop protection.

The ESA herbicide strategy isn't optional. It's here, and it's evolving. Retailers and growers who prepare now will avoid last-minute surprises and ensure they're operating within the law while protecting vulnerable ecosystems.

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Untapped Federal Funding is Waiting for Farmers

Certified crop advisers are positioned to become Technical Service Providers, guiding growers through NRCS programs that fund conservation tillage, nutrient management, and more.

BY BYRON HENDRIX
BYRON.HENDRIX@STEPAN.COM

STARTING IN 2025, I began work on a project with the Council of Producers and Distributors of Agrotechnology (CPDA) to find out how many farmers and/or their retail salespeople knew about potential opportunities for federal funding via the U.S. Department of Agriculture (USDA)/ Natural Resources Conservation Service (NRCS) Conservation Stewardship Program (CSP) or the Environmental Quality Incentives Program (EQIP). This was driven by new regulations for pesticide labels with new language around the Endangered Species Act (ESA) and compliance with these new labels.

I found that information and education around these federal programs is lacking.

Part of the project's goal was to raise awareness throughout the CPDA network that their certified crop advisers (CCAs) can become technical service providers (TSPs) through the American Society of Agronomy (ASA) and USDA to help with conservation planning activities. In short, once a contract is funded and the local office has all its needs, all the follow-up and paperwork can happen through the farmer's CCA/ TSP, who will steward the contract through the next five years.

Ag retailers and consultants know their customers' operations well and can help them access federal funding for practices that farmers already use on the farm or would like to add to their operations. My goal is to get the word out that funding is available through five-year farm bills, extensions of farm bills, or through reconciliation, as we saw in the One Big Beautiful Bill Act.

What is available, and how does this process work?

In my area of Illinois, in corn and soybean production, we have

> "Ag retailers and consultants know their customers' operations well and can help them access federal funding for practices that farmers already use on the farm or would like to add to their operations. "
>
> *– Byron Hendrix*

conservation tillage through practices called NRCS 329 and 345. Conservation tillage, via reduced-till (345) or no-till (329), conserves soil and water and has been a staple practice in our area for controlling soil loss and improving soil quality and health.

We also have producers who cover crop or have considered cover cropping, which is NRCS 340. Cover crops not only provide soil conservation benefits, but they also help control weeds, including waterhemp.

Many farmers are grid sampling their fields for nutrient values. Grid sampling fulfills part of the requirement of NRCS 590 (nutrient management). A lot of these fields have variable rate phosphorus and potassium applied, allowing us to maintain or skip application in areas with high values, while applying maintenance and build-up rates in areas with lower values.

Now for my favorite practice, pest management (NRCS 595). I have watched technology grow in this area since my graduate school days at Southern Illinois University Carbondale. Pest management acres capped out at over 1 million acres in 2007 and have since dropped to around 82,000 acres in 2025. Today's new technology can help get these acres back up again.

When I talk about new technology, I look to the best drift control adjuvants, which continue to improve every year. These products help keep pesticides in place whether applied by ground or air. Combine these great adjuvants with new sprayer technology, like the AIM Command system or the Exact Apply system, and we have a winner! See & Spray technology is also reducing pesticide usage by applying to the target only.

There is no better time to apply for additional funding for this type of practice. For farmers already enrolled in a CSP or EQIP program, this can be a great add-on or enhancement to a current contract, or even a way to qualify for a new one.

What are the steps?

Farmers routinely visit their Farm Service Agency (FSA). I encourage farmers to seek out the NRCS in that same building and talk with the NRCS conservationist on the next visit. The Illinois Soybean Association created this guide (**scan QR code**) for what farmers need to know before talking with the NRCS conservationist.

Farmers are eligible if they can answer "yes" to four questions:

1. Do you own or rent and actively manage the acres you want to enroll?
2. Is your land in compliance with wetland and highly erodible land requirements?
3. Is your adjusted gross income (AGI) less than $900,000?
4. Are your records with the FSA up to date?

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The NRCS will review the entire farm operations and identify resource concerns. Additional concerns specific to a farmer's area may also be eligible for funding. An NRCS-CPA-1200 application form will be filled out, which can be completed prior to the next office visit.

Farmers should expect additional conversations with the NRCS staff or TSP to create a plan suitable for their operation. Keep in mind that only a certain amount of financial assistance applications will be funded, and it can be a competitive process. Priority for funding typically goes to plans that address the greatest number of resource concerns. Applications are accepted year-round, but NRCS deadlines vary by geography, so farmers should check locally.

If a farmer's conservation plan is selected, it will move into an implementation phase, where the farmer can either hand off the plan to the local TSP or continue working with the local NRCS office. Farmers will pay expenses up front but will receive the financial assistance payments after completion each year. Payment rates vary by state for each practice.

Payments can be as high as $40,000 per year or up to $200,000 over a five-year contract, depending on the size of the operation and the practices selected. NRCS has identified 17 primary resource concerns, and by law each state must focus on at least five of these each year. As mentioned earlier for western Illinois, a farmer must address two concerns on their farm and agree to add one more. The more a farmer addresses, the better the chances for a successful application. ◆

Byron Hendrix has been a Certified Crop Advisor since 2003 and is a Senior Sales Agronomist with Stepan Co. In 2025, he served as the Illinois Soy Envoy for the Illinois Soybean Association.

UNIFIED VOICES, SMARTER SOLUTIONS: Tackling ESA Challenges Together

Endangered Species Act (ESA) regulations are transforming how growers approach crop protection. For Patrick Ewan, General Manager of Helena Products Group and newly appointed CPDA Chairman, the path is clear: simplify complexity, educate stakeholders, and provide practical tools that protect both yield and the environment.

"ESA continues to evolve," Ewan says. "There's been clear progress on herbicides, but insecticides and fungicides still need work. The industry is in learning mode. We know education is critical."

That education spans growers, retailers, and Helena's own teams. Ewan points to collaborative efforts among groups like CPDA, CropLife, and ARA to unify messaging and reduce confusion. "We need collective voices to simplify the complexity," he explains. "Our goal is to ensure growers and retailers understand what ESA means and how to comply without sacrificing productivity."

The Helena Products Group Innovation Center houses a state-of-the-art formulation development and technical support laboratory.

Compliance Starts with Practical Tools

One area where Helena is leading is adjuvant technology. These products, often overlooked outside agronomy circles, play a critical role in ESA compliance. Drift reduction agents, for example, help minimize pesticide movement beyond target areas, a key requirement under buffer zone regulations.

"We've been at the forefront of adjuvant development for more than 50 years," Ewan says. "This isn't new for us. We've invested heavily in research and have a dedicated farm where we test new concepts. ESA has been on our radar for years."

Helena's portfolio includes drift reduction adjuvants formally recognized as mitigation tools; a milestone Ewan credits to rigorous data and persistent advocacy. "That recognition didn't happen overnight," he notes. "It took a lot of effort to show lawmakers the science behind these products. They reduce drift, deliver more active ingredient to the target, and improve overall spray performance."

The benefits go beyond compliance. By reducing drift, growers keep more acres productive and avoid costly setbacks. "Taking productive acreage out of use hurts," Ewan says. "These tools help protect that land while meeting environmental standards."

Advocacy with a Purpose

CPDA is the business council for crop protection. As Chairman, Ewan amplifies his commitment to science-based regulation. His priorities center on strengthening the voice of adjuvants, inerts and post-patent manufacturers and ensuring policy decisions support innovation.

"We've worked hard to earn a seat at the table," he says. "Our members bring decades of experience and common-sense practices. Policymakers see that we provide solid, logical information."

CPDA's advocacy has already produced tangible results. In 2025, non-PRIA registration backlogs decreased by 40 percent, and PRIA delays dropped by 9 percent; Ewan credits this progress to consistent engagement with EPA and lawmakers. "Efficiencies and accountability are key," he stresses. "We need well-funded, functioning pesticide registration systems and clear pathways for new and post-patent chemistries."

Funding remains a challenge. While EPA's Office of Pesticide Programs (OPP) avoided major cuts, overall budgets remain tight. "Companies are paying more in fees while appropriations lag," Ewan says. "We consider it a win that OPP stayed flat, but it's not enough."

State-Level Consistency and Innovation

Beyond federal advocacy, CPDA is advocating for consistent state-level regulations. Fragmented rules cause inefficiencies that impact the supply chain. "If every state rewrites labels differently, it's chaos," Ewan warns. "We're working to ensure risk-based approaches that maintain a unified marketplace."

Collaboration is essential. "We're stronger together," Ewan says. "Whether it's EPA, USDA, or allied organizations like CLA and ARA, we need one voice on critical issues."

The Bottom Line

Ewan's message to growers and industry partners is straightforward: ESA compliance is here to stay, and success depends on education, practical tools, and unified advocacy.

"Our goal is simple. We want to protect the acre, while protecting the environment," he concludes. "Ensure farmers have access to safe, effective tools and keep innovation moving. That means reducing bottlenecks, improving labels, and delivering solutions that work in the field."

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EPA Greenlights PAM as Pesticide Mitigation Tool

Anionic polyacrylamide's ability to stabilize soil particles and reduce runoff earns federal approval, offering growers a new tool for keeping crop protection products on target.

BY LARA L. SOWINSKI

IN APRIL 2025, THE EPA APPROVED ANIONIC POLYACRYLAMIDE (PAM), a soil conditioner, as a mitigation measure for its ability to stabilize soil particles and reduce pesticide movement through sediment erosion and liquid runoff.

According to the USDA's Agriculture Research Service (ARS), PAM has been used to improve soil structure since the 1940s. The early PAMs had lower molecular weights than today's PAMs and were applied to soil at high rates (>450 pounds per acre) and were tilled into the topsoil.

The new generation of agricultural PAMs have ultra-high molecular weights and are moderately (18%) anionic (referring to its negative charge). They are applied via irrigation water to the specific part of the soil that is active in erosion, sealing, and crust formation.

Marcos Amaro, Senior Sales Representative — Agricultural Chemicals, SNF, says high-molecular weight polymers like those the company manufactures essentially bind soil particles together to keep them from eroding away. This feature is critical when spraying pesticides and a significant rain or wind event develops and threatens to carry the crop protection product off the field.

"By binding the soil particles together, you're keeping the soil bound in place and keeping the chemicals that were applied bound to the soil, and preventing erosion," he says.

There are many polymers and anionic PAM is just one type.

Dr. Connor Ferguson, Senior Adjuvant Portfolio Manager, Wilbur-Ellis, and Co-Chair for CPDA's ESA Committee, says the EPA is still reviewing polymer data that was submitted to the agency in September 2024.

The EPA raised concerns over pump shearing and its potential for degrading polymers and reducing viscosity.

However, Ferguson says the new generation of polymers used in today's formulations do not have this problem, and many CPDA members have data to support that, and he's hoping the committee can address EPA's concerns with the latest polymer science.

In the meantime, Ferguson is optimistic about guar gum-based drift reduction adjuvants, which he thinks are "very likely" to be added to the approved drift reduction adjuvant section in the near future, perhaps with the release of EPA's final Fungicide Strategy in April 2026.

If guars are approved by the EPA, "It would be the first mitigation addition since the summer of 2024 when we got the oil emulsion drift reduction adjuvant approved," he says. ◆

Anionic Polyacrylamide (PAM)

- **Anionic Polyacrylamide (PAM)** is used as a soil conditioner in some agricultural and urban settings to reduce soil erosion. This is a new mitigation measure added in 2025. PAM stabilizes soil particles and would reduce pesticide movement through sediment erosion and liquid run-off.
- This mitigation measure is worth two points. To qualify, water-soluble formulations of anionic PAM must be used. This is because of toxicity concerns associated with oil-based formulations of anionic PAM.
- Apply anionic PAM according to the manufacturer's recommended application rate, which may need adjustments for soil properties, slope, and type of irrigation used.
- Applications of anionic PAM should be made during the first irrigation event and after any soil disturbing activities, e.g., tillage.
- Growers may also achieve mitigation credit for this measure when anionic PAM is applied in a manner consistent with NRCS Conservation Practice 450.

Source: EPA.gov

Industry Resources for ESA Compliance

A quick start guide to help retailers get started with the Environmental Species Act.

FOR ILL OR GOOD, WHENEVER THE GOVERNMENT inserts itself into business things get complicated. When it comes to EPA's tinkering with the Environmental Species Act, understanding the rules is challenging and getting it wrong could be costly. Fortunately, EPA has a website (**epa.gov/endangered-species**) devoted to resources to help understand and implement new rules. Here are a few good places to start:

The Pesticide and Endangered Species Educational Resources Toolbox

The Pesticide and Endangered Species Educational Resources Toolbox includes catalogs educational resources including guidance documents, handouts, presentations, informational webinars, and other resources relating to EPA's endangered species work.

Endangered Species Protection Bulletins: Quick Start Guide

Endangered Species Protection Bulletins are a part of EPA's Endangered Species Protection Program. Bulletins set forth geographically specific pesticide use limitations for the protection of threatened and endangered (listed) species and their designated critical habitat.

Assessing Pesticides under the ESA

When registering a pesticide or reassessing the potential ecological risks from use of a currently registered pesticide, EPA evaluates extensive environmental fate and toxicity data to determine how a pesticide will move through and break down in the environment and whether potential exposure to the pesticide will result in adverse effects to wildlife and vegetation.

Endangered Species: Information for Pesticide Users

This page offers tips for reducing pesticide impacts on wildlife along with information about anticoagulant rodenticide and tips for reducing the impact on threatened and endangered species.

Endangered Species Litigation and Associated Pesticide Limitations

Among other things, the Endangered Species Act requires federal agencies to ensure that actions taken or permitted by the federal government will not jeopardize the continued existence of a listed species or result in adverse modification of its designed critical habitat.

Process EPA Uses to Develop Core Maps for Pesticide Use Limitation Areas

The Environmental Protection Agency (EPA) identifies geographically specific mitigations to protect federally listed endangered and threatened ("listed") species and/or designated critical habitat from the use of a pesticide (or group of pesticides) and communicates those mitigations and where they apply using a web-based system called Bulletins Live! Two (**epa.gov/endangered-species/bulletins-live-two-view-bulletins**).

Additional Resources

EPA will continue adding new materials to the toolbox as they are developed. Resources include the following:

ESA

- Endangered Species Litigation and Associated Pesticide Limitations
- Endangered Species: Information For Pesticide Users
- Balancing Wildlife Protection and Responsible Pesticide Use: How EPA's Pesticide Program Will Meet its Endangered Species Act Obligations
- ESA Workplan Update: Nontarget Species Mitigation for Registration Review and Other FIFRA Actions

Herbicide/Insecticide Strategies

- Herbicide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides
- Draft Strategy to Better Protect Listed Species from Insecticides (Webinar)

Mitigation Measures

- Crosswalk of EPA's Ecological Mitigation Measures with USDA NRCS Conservation Practices in Support of EPA's Endangered Species Strategies
- Application of EPA's Runoff and Erosion and Spray Drift Mitigations Through Scenarios that Represent Crop Production Systems in Support of Endangered Species Strategies
- How do I know if Runoff/Erosion Mitigation is Required?

Runoff/Erosion Mitigation Options

- EPA's Runoff Points Calculator (xlsm)
- NASDA Decision Tree: Application of EPA Runoff and Erosion and Spray Drift Mitigations Through Scenarios ◆

Choosing the Right Adjuvant for ESA Compliance

Choosing the right adjuvant for herbicide applications involves more than just checking a box on the label. It directly affects compliance, effectiveness, and sustainability. Justin Hoeppner, Product Portfolio & Technical Services Manager at Precision Laboratories, explains what growers should keep in mind.

Understanding ESA Requirements

The Endangered Species Act (ESA) restrictions are reshaping herbicide application strategies. Labels now include specific requirements to protect sensitive habitats and species. These often mandate drift reduction technologies to minimize off-target movement. Hoeppner notes, "Products like Ripara™ and Salia™ are built with drift reduction technology, which helps boost overall herbicide performance." These formulations combine a surfactant with oil, improving coverage and penetration while meeting ESA compliance.

Ignoring these requirements can lead to risks and ineffective weed control. Selecting adjuvants that follow these specifications ensures applicators stay compliant and achieve the intended efficacy.

Why APE/NPE-Free Matters

Environmental and crop safety concerns are accelerating the move away from adjuvants containing alkylphenol ethoxylates (APEs) and nonylphenol ethoxylates (NPEs). Hoeppner explains, "These compounds are known to cause crop injury and can negatively affect the environment." Choosing APE/NPE-free adjuvants eliminates these hazards and supports sustainable practices without sacrificing performance. It also reduces potential health risks for applicators and communities.

Adjuvants and Spray Quality

Adjuvants do more than enhance herbicide effectiveness; they influence spray droplet size and deposition. "Optimizing droplet size helps eliminate large droplets that bounce off leaves and fine droplets that evaporate or drift off target," Hoeppner says. Precision Laboratories partners with CPDA through its Application Enhancement Certification program to help applicators match the right nozzle and adjuvant to specific herbicide formulations. This alignment improves on-target deposition and reduces drift, protecting neighboring crops and sensitive areas.

Droplet size matters because herbicide efficacy depends on coverage. Large droplets can reduce control, while fine droplets increase drift risk and environmental exposure. The right adjuvant helps optimize the spray droplet size, ensuring that more active ingredient reaches the target.

Building an Herbicide Strategy

Adjuvant choice should be part of a broader herbicide strategy. Start by reviewing label requirements for ESA compliance. Then consider environmental stewardship; selecting APE/NPE-free products reduces liability and supports sustainability goals. Finally, integrate application technology. Matching adjuvants with nozzle type helps improve coverage and reduces drift, which is critical under ESA guidelines.

Hoeppner emphasizes that this is not guesswork. "Our partnership with CPDA is designed to help growers and applicators understand how adjuvants, nozzles, and herbicides work together to deliver the best efficacy and reduce drift risk."

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ESA's Adjuvant Advantage

Their addition to ESA's Herbicide Strategy raises the profile among end users.

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BY DAN JACOBS
SENIOR EDITOR

DRIFT AND RUNOFF OF PESTICIDES are among the many reasons blamed for damaging and diminishing populations of bees and any number of animal habitats. As such, many in the ag industry pushed for the adoption of adjuvants to EPAs Herbicide Strategy.

"Drift reduction adjuvants (DRA) are among the most practical, affordable, and efficient ways to reduce off-target pesticide movement and can thus greatly help to protect endangered species," Greg Dahl, Retired Senior Research Manager at WinField United and Past President of the Weed Science Society of America (WSSA), said on its website. "Pesticide applicators already use DRAs on more than 100 million acres annually in the United States, and their performance and environmental protection benefits have been well demonstrated, documented, and realized."

Late last year EPA agreed and included drift reduction adjuvants as a mitigation option for the Endangered Species Act taking a cue from WSSA, the Council of Producers & Distributors of Agrotechnology (CPDA), CropLife America, and the National Alliance of Independent Crop Consultants, among others.

John Blackford, who was the Branded Technology Portfolio Manager, Wilbur-Ellis told *CropLife®* *Magazine* in January, EPA's addition of adjuvants as a mitigation tool for drift is: "The most significant regulatory change is the application of the Endangered Species Act (ESA) to herbicide, fungicide, and insecticide applications. This could impact every farm, in every county, in every state, with every crop applied."

Before EPAs rule changes, adjuvants were viewed more as a luxury than a necessity. Their usage was directly tied to the roller coaster-like price growers could get for their crops.

"We see increases in use as crop prices rise and decreases as prices drop," Brian Anderson, Kop-Coat, Regional Sales Manager — Agriculture, told **CropLife** earlier this year. "Growers tend to eliminate adjuvants first when costs seem high, although studies have shown that adjuvants increase pesticide effectiveness, which boosts yields by reducing weed competition."

Now that adjuvants are included as a mitigation strategy, providers hope that these products will become less luxury and more necessity. Retailers can play a key role in that process.

"Retailers have been pivotal in increasing adjuvant usage," Anderson says. "They have educated growers about the correlation between adjuvant usage and significantly increased pesticide effectiveness, decreased callbacks, and increased income at the grower level."

Austin Anderson, Brand Manager of Adjuvants with Helena Products Group, agreed with that sentiment.

"Retailers are crucial links in the agricultural value chain, acting as educators, advisors, and distributors of adjuvants," he said. "Our expertise and relationships with farmers enable us to promote the proper use of adjuvants, foster adoption of innovative solutions, and ensure compliance with regulations, ultimately contributing to more effective and sustainable farming practices."

That education, along with the addition of adjuvants to EPA's Herbicide Strategy, seems to be working.

"Our market research shows interest and usage of spray adjuvants continues to grow," Joe Vaillancourt, Adjuvants Marketing Manager,

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>
> *– Greg Dahl, WinField United (Retired)*

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WinField United, explained in response to a question from **CropLife**. "The validation of consistent performance of adjuvant solutions has been paramount to their growth over the years. Today, it feels like there are more farmers who 'won't spray without them' than the skeptics.

New Offerings

"Growers have known for years the benefits of surfactants and stickers because they demonstrably and clearly improve herbicide efficacy" CPDA President and CEO Terry Kippley told **CropLife** in January. "Now, growers are discovering the benefits, both environmental and economic, of utilizing DRA to make precise applications with little or no offsite movement.

"Over the next several years, (we) expect even greater adoption of adjuvants," Kippley continued, "especially DRAs, as the Endangered Species Act pesticide no-spray buffer restrictions appear on more and more pesticide labels. DRAs will play a key role in reducing or eliminating these buffers."

Kippley lauds providers for delivering better and safer solutions.

"Improvements include new chemistries such as polymers that are less sensitive to shear and building formulations with sustainable and lower toxicity components," he said. "Plus, formulations have expanded to include many products with multiple functions providing convenience for retailers and growers. We have also seen increasing research and use of adjuvants in new markets with fungicides and soil applied herbicides.

"All these factors have resulted in the ability to better match adjuvants with specific nozzles, products, and application methods to optimize performance and minimize driftable fines," Kippley continued. "These (factors) address one other factor: Applicators have more focus on ROI. They want products with data to prove performance and return."

Of course, as products become more advanced and more technically cutting edge, understanding how they work requires deeper learning.

"We are starting to see a lot of universities and adjuvant manufacturers spend money to innovate and specialize their offerings," said Jeff Bunting, Vice President of Crop Protection, GROWMARK, in an interview earlier this year. "The new products are more sophisticated and that will continue to require experts to understand the chemical reaction that is happening in the tank, during the application process, what happens to the droplet that lands on the intended plant, and how that pesticide maintains its effectiveness to control the target weed. Now (users must) figure in the environmental challenges and the increasing regulatory requirements of making that application without harming the environment."

Changing Attitudes

"The adjuvant business is continuing to grow," Eileen Bernard, former Senior Adjuvant Manager for Loveland Products told **CropLife**. "As growers face more challenges and tighter markets, it is critical that they are getting the most out of every application they make. Adjuvants work by reducing the potential fail-factors in applications, ensuring you get it right the first time."

While the inclusion of adjuvants in EPA's final Herbicide Strategy is good news for the industry and while a number of effective adjuvants are already on the market, delivering new adjuvants presents some challenges.

"Developing new adjuvant 'ingredients' is fraught with difficulty — development and registration costs can be very high and market acceptance can take years to occur, Dan Karlik, Vice President, Adjuvants Unlimited, told **CropLife** earlier this year.

It's not just advancements in the adjuvants themselves. Spraying equipment has also improved, allowing retailers and their grower-customers to more precisely deliver products.

"Retailers are now utilizing very sophisticated sprayers," Kop-Coat's Anderson said. "This new generation of sprayers has controls that allow them to either spot treat fields or spray entire fields. Other technologies, like drones, allow for precise treatment in fields, and the new adjuvant technology allows for drift control in areas that were previously off-limits."

Just like other crop inputs, there are variations in the quality and efficacy of adjuvants.

"Many in the industry — basic manufacturers, distributors, retailers and grower applicators — recognize the difference a high-quality adjuvant makes when used in a spray application," said Matt Faletti, Business Development and Marketing Manager, Precision Laboratories LLC, in an interview earlier this year. "The impact of adjuvant selection can mean the difference between a clean field, and a satisfied customer or a real problem that ultimately could result in yield loss." ◆

Adjuvants and the Final Herbicide Strategy

EPA's website provides an overview of the inclusion of adjuvants in the final Herbicide Strategy.

"THE FINAL STRATEGY INCLUDES more options for mitigation measures compared to the draft, while still protecting listed species. The strategy also reduces the level of mitigation needed for applicators who have already implemented measures identified in the strategy to reduce pesticide movement from treated fields into habitats through pesticide spray drift and runoff from a field. The measures include cover crops, conservation tillage, windbreaks, and adjuvants. Further, some measures, such as berms, are enough to fully address runoff concerns. Growers who already use those measures will not need any other runoff measures. EPA identified these options for growers through its collaborations with USDA under its February 2024 interagency memorandum of understanding and through over two dozen meetings and workshops with agricultural groups in 2024 alone."

PRECISION SPRAYING: How TeeJet® Technologies Is Driving Smarter Application

As environmental regulations tighten and growers face mounting pressure to reduce chemical use, precision spraying has moved from a nice-to-have to a necessity. TeeJet Technologies, with nearly 90 years of expertise in spray tip design, is at the forefront of this shift. Debora Latorre, Application Training Lead and Industry Liaison at TeeJet, explains why nozzle technology is central to meeting these demands.

"New farming technologies demand greater precision, and we have evolved our methods to deliver that," says Latorre. "Our goal is to provide uniform spray patterns and optimal droplet sizes so growers can reduce chemical use, improve efficiency, and minimize drift."

Why Precision Matters

The Endangered Species Act (ESA) underscores the need for application technologies that limit off-target movement. Drift doesn't just waste product; it can harm sensitive habitats. High-precision systems like Pulse Width Modulation (PWM) and targeted spraying are designed to solve this problem.

PWM acts like cruise control for a sprayer. "It maintains droplet size and application rate regardless of speed or terrain by maintaining system pressure," Latorre explains. Conventional systems rely on pressure changes to adjust flow, which shrinks droplets and increases drift risk. PWM uses solenoids to pulse each nozzle, controlling flow without altering pressure. The result: consistent coverage and reduced drift.

Engineering for PWM Compatibility

Not every spray tip can handle PWM's rapid cycling. "When we approve a nozzle for PWM, it means it can operate reliably across a 30 to 100 percent duty cycle," says Latorre. "It must instantly form a full spray pattern and shut off crisply to avoid unwanted application."

TeeJet's lab testing identified four premium tips that excel under PWM conditions: Turbo TeeJet® (TT), Turbo TwinJet® (TTJ60), Air Induction Turbo TwinJet® (AITTJ60), and AccuPulse® TwinJet® (APTJ). These tips maintain droplet integrity across a wide pressure range—15/20 to 90 PSI—giving operators flexibility without sacrificing precision.

Targeted Spraying: The Next Frontier

Targeted spray systems take precision further by applying herbicide only where weeds are detected. Using cameras and AI algorithms, these systems can cut chemical use by up to 90 percent. "The technology has been around for decades, but now the market is ready," says Latorre. "AI and imaging have made real-time decisions possible."

For nozzle design, this means meeting even stricter performance standards. "Tips must respond instantly, achieve rapid pattern formation, and shut off cleanly," Latorre notes. "They also need to maintain uniform coverage even when spraying for fractions of a second."

TeeJet's portfolio for targeted spraying includes TeeJet® VisiFlo® Flat Spray Tips (TP), Drift Guard TeeJet® (DG) and Drift Guard X Series (DGX). These tips deliver droplet sizes from fine to ultra-coarse, ensuring reliable performance under fast cycling conditions.

What's at Stake

Precision spraying isn't just about efficiency; it's about compliance and sustainability. Technologies like PWM and targeted spraying help growers stay within label requirements, reduce environmental impact, and make high-cost herbicides economically viable by limiting application to problem areas.

For growers looking to upgrade, Latorre's advice is clear: "Choose spray tips validated for your system. Not all tips perform under PWM or targeted spraying. The right nozzle is the difference between hitting your target or wasting product."

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