FMC An Agricultural Sciences Company

Industry Insights:

The Endangered Species Act & the Future of Pesticide Use

A Pesticide Registrant & Regulatory Perspective

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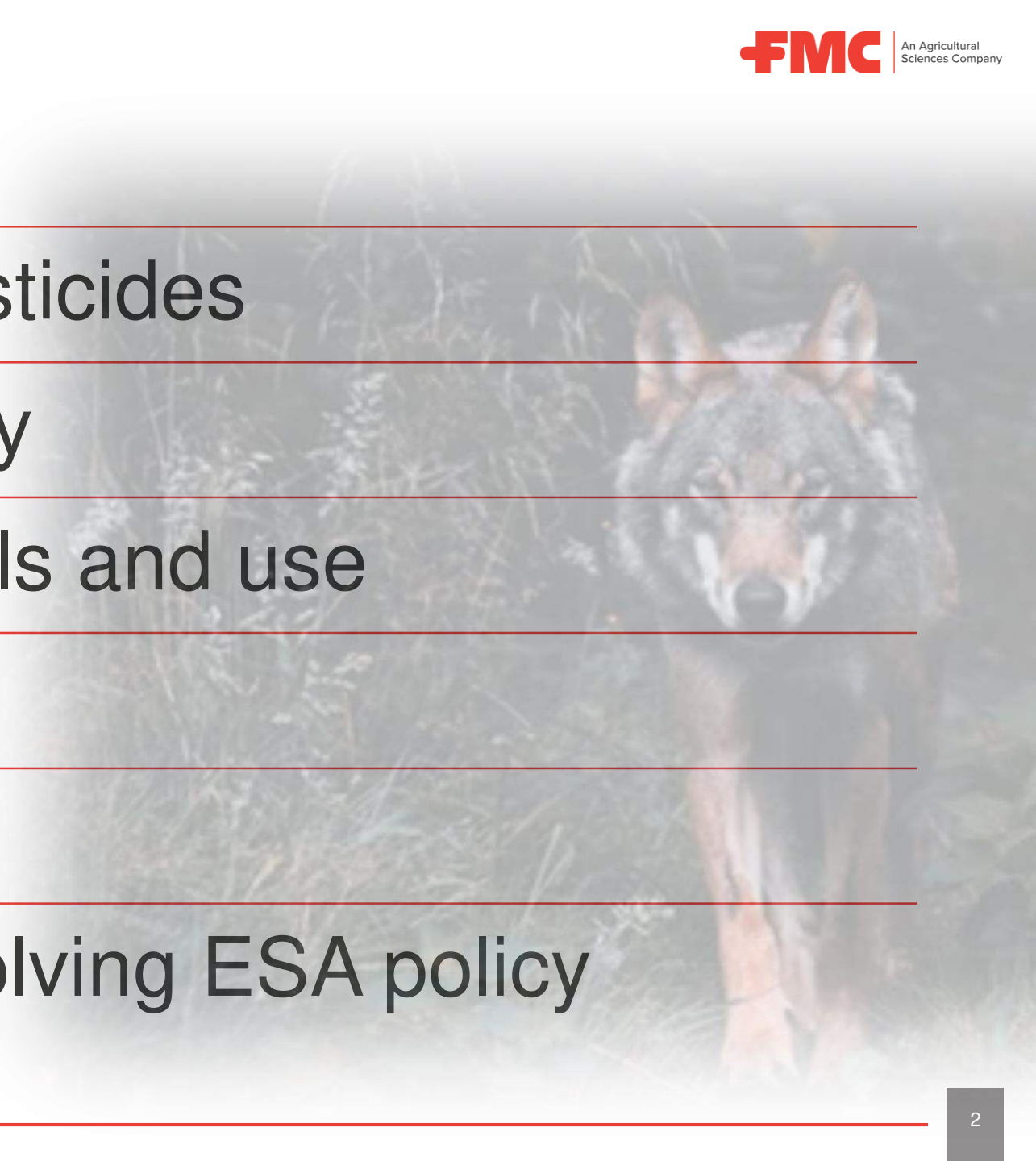
Shannon Cavanaugh

Senior Registration Manager & Endangered Species Focal Point

FMC An Agricultural Sciences Company

Highlights



- Why ESA matters for pesticides
- What's changing and why
- How changes affect labels and use
- Impacts on industry
- Key tools and resources
- Future outlook under evolving ESA policy

Why the Endangered Species Act (ESA) matters for pesticides

Why the Endangered Species Act Matters for Pesticides

- Endangered Species Act (ESA) is reshaping how pesticides are developed and used
- ESA policies are now major regulatory drivers
- More mitigations now appear earlier on labels
- Crop consultants help growers navigate these changes

ESA & FIFRA—What You Need to Know

ESA

- Protects listed species and critical habitats
- Requires federal actions to avoid jeopardizing species

FIFRA

- Governs pesticide registration and review (–15-year cycle)
- Ensures products meet safety and environmental standards

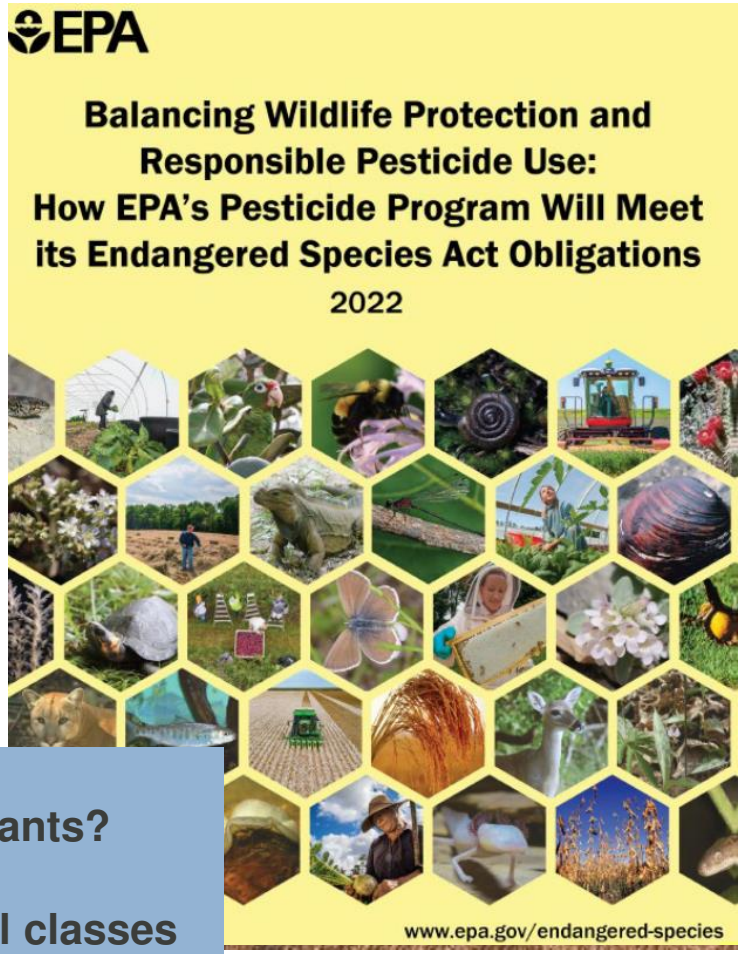
Implication for Labels

ESA-driven mitigations are increasingly appearing on pesticide labels

Compliance now means understanding both ESA and FIFRA requirements

Why ESA Changes are Accelerating

- Litigation & court deadlines pushed EPA to act faster
- EPA created a standardized ESA Workplan
- Active ingredients under review are grouped by pesticide class to streamline decisions
- ESA mitigations now appear earlier in the process



So what does this mean for Crop Consultants?

- **Expect more consistency across chemical classes**
- **Help growers prepare during pre-season planning**

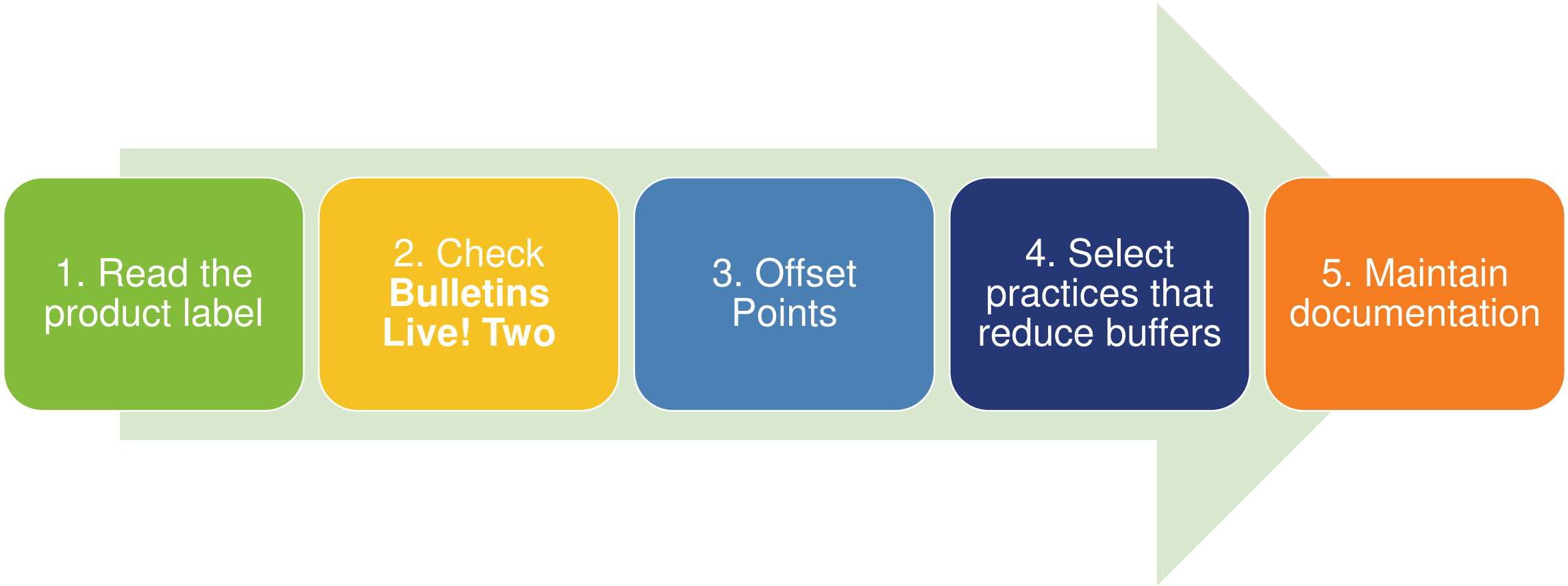
EPA Label Focus: Runoff/Erosion and Spray Drift

- Runoff & erosion: mitigation point system
- Spray drift: downwind buffers required on label
- Possible additional geographic restrictions via Bulletins Live! Two (BLT)

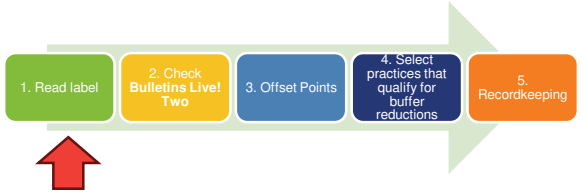
So what does this mean for Crop Consultants?

- **Helping growers understand and comply with ESA requirements**
- **Supporting proactive planning to reduce impacts**

Simple 5-Step Compliance Workflow Example



1. Read the product label



DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements, specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS: Before using this product, you must obtain any applicable Endangered Species Protection Bulletins ('Bulletins') within six months prior to or on the day of application. To obtain Bulletins, go to Bulletins Live! Two (BLT) at https://www.epa.gov/pesticides/bulletins. When using this product, you must follow all directions and restrictions contained in any applicable Bulletin(s) for the area where you are applying the product, including any restrictions on application timing if applicable. It is a violation of Federal law to use this product in a manner inconsistent with its labeling, including this labeling instruction to follow all directions and restrictions contained in any applicable Bulletin(s). For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov.

1. **FOR CROPS UNDER CONTRACTED POLLINATION SERVICES**

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete

- If an application must be
  notified no less than 48-h
  prior to spraying.

2. **FOR FOOD CROPS AN**
   ARE ATTRACTIVE TO F

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- The application is made i
  than 48-hours prior to the
- The application is made
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11.0 MANDATORY RUNOFF MITIGATION:

- **DO NOT** apply when soils are saturated or above field capacity.
- **DO NOT** apply during rain.

You must achieve a minimum of three points for the crop uses listed on this label unless otherwise stipulated below. Applicators must access and search Bulletins Live! Two (BLT) at https://www.epa.gov/pesticides/bulletins within six months of the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. If you are located inside a PULA, follow the instructions in the bulletin.

If the application site is located outside a PULA, runoff/erosion mitigation is required for this product unless certain field/application parameters are present at the time of application (i.e., subsurface or tile drains with controlled outlet, perimeter berm systems, irrigation tailwater return systems, spot treatment, etc). Access EPA's Mitigation Menu Website at www.epa.gov/pesticides/mitigation-menu for a full list of field/application parameters to evaluate whether your field is subject to runoff/erosion mitigation.

If the application does not meet the specified field/application parameters, a minimum of three points for the crop uses listed on this label must be achieved. The applicator must choose among the mitigation and/or mitigation relief measures on EPA's Mitigation Menu Website to meet or exceed these points before applying this product. The website includes the full menu of runo
examples:

- Location in a very low, low, or medi
- Field slope
- Soil incorporation
- Conservation tillage
- Vegetative strips
- Cover crop or continuous ground c
- Irrigation water management
- Mulching
- Grassed waterway
- Vegetated ditch
- Constructed and natural wetlands
- Water retention systems
- Following recommendations from a
  (see the www.epa.gov/pesticides/m

SPRAY DRIFT MANAGEMENT

The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions. Avoiding spray drift is the responsibility of the applicator.

IMPORTANCE OF DROPLET SIZE

The most effective drift management strategy is to apply the largest droplets which are consistent with pest control objectives. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly or under unfavorable environmental conditions.

A droplet size classification system describes the range of droplet sizes produced by spray nozzles. The American Society of Agricultural and Biological Engineers (ASABE) provide a Standard that describes droplet size spectrum categories defined by a number of reference nozzles (fine, coarse, etc.). Droplet spectra resulting from the use of a specific nozzle may also be described in terms of volume mean diameter (VMD). Coarser droplet size spectra have larger VMD's and lower drift potential.

CONTROLLING DROPLET SIZE - GROUND APPLICATION

- For broadcast applications made at planting or prior to the emergence of crops, applicators are required to use a coarse or coarser droplet size (ASABE S572.1). For all other broadcast applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Pressure - The lowest spray pressures recommended for the nozzle produce the largest droplets. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, using a higher-capacity nozzle instead of increasing pressure results in the coarsest droplet spectrum.
- Flow Rate/Orifice Size - Using the highest flow rate nozzles (largest orifice) that are consistent with pest control objectives reduces the potential for spray drift. Nozzles with higher rated flows produce coarser droplet spectra.

RESTRICTIONS

- Do not make ground applications within 25' or aerial applications within 50' of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, permanent streams, wetlands or natural ponds, estuaries, and commercial fish farm ponds). Do not cultivate within 30' of these aquatic areas to allow growth of a vegetative filter strip.
- For foliar uses, do not apply during rain.
- When making air blast applications to orchard crops, including citrus, with sparse canopies a 25 foot buffer is required between the application site and all adjacent areas except for roads (and other paved or gravel surfaces), agricultural areas (fields that have been planted into or prepared for planting), and structural areas (buildings or other man-made structures with walls and/or a roof). A sparse canopy occurs during the period of dormancy starting from first leaf drop at the end of the season until vegetation is fully leafed out in the spring, and on young orchard crops, including citrus, that are not yet bearing.
- Do not treat plants grown for transplanting. Not for use in nurseries, plant propagation houses, or greenhouses by commercial transplant producers on plants being grown for transplanting.
- Do not use on crops grown to harvest in greenhouses unless specified in the crop section of this label.
- Do not apply EX
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- Do not apply EX
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  products per cal

12.0 ENDANGERED AND THREATENED SPECIES PROTECTION REQUIREMENTS

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2. Check Bulletins Live! Two

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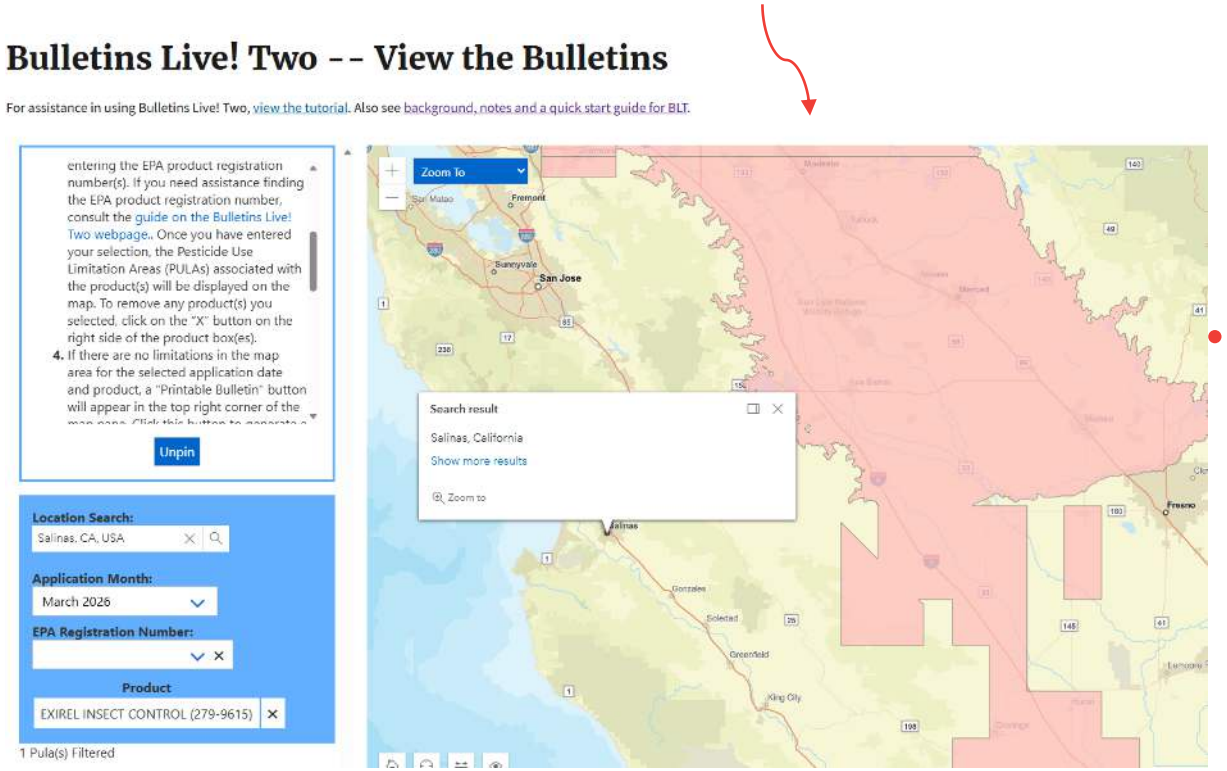
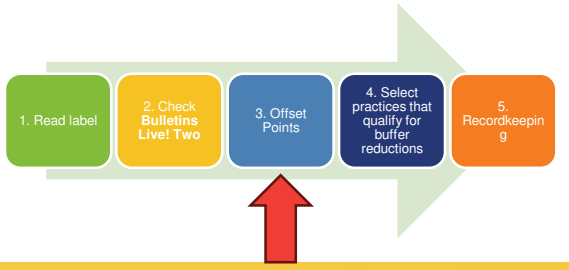


- If limitations on pesticide use are necessary to protect listed species in a certain area, the information is relayed through Endangered Species Protection Bulletins via **Bulletins Live! Two**
  - Paragraph and link to BLT on packaging labels
  - Pesticide Use Limitation Areas “PULAs”
  - 6-month window
- Accessibility
  - Computer browser (Google Chrome, Microsoft Edge, Mozilla Firefox, or Safari)
  - Mobile phone
  - Printable bulletins

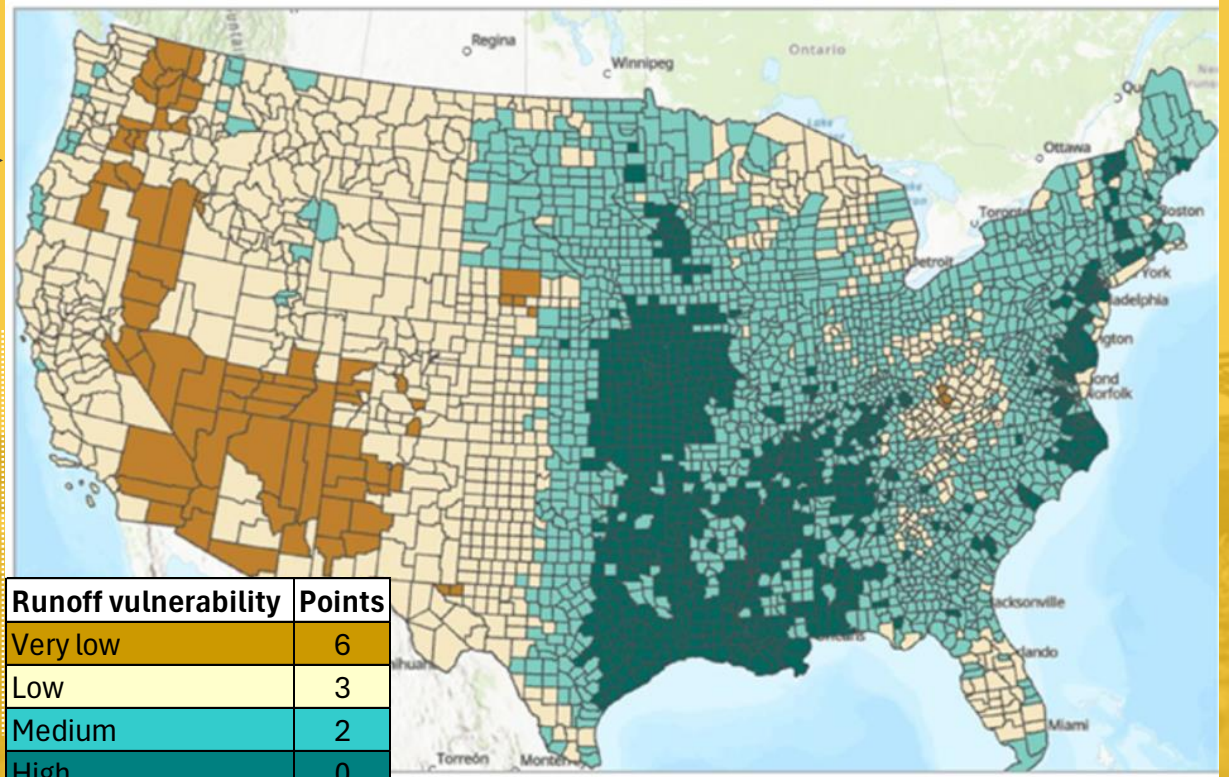
3. Offset Points



EPA Mitigation Menu Example

Mitigation	Points
County based mitigation relief	0-6
Field slope <3%	2
Predominantly sandy soils	2
Mitigation tracking	1
Working with and following recommendations from a technical specialist or participating in a conservation program	1
Vegetative Strips - in field	2
Grassed waterway	2
Water retention systems	2
Using mitigation measures from multiple categories	1

EPA Runoff Vulnerability Map



Runoff vulnerability	Points
Very low	6
Low	3
Medium	2
High	0

Figure 1. Runoff vulnerability map by county.

4. Select Practices that Qualify for Buffer Reduction

Ecological Spray Drift Buffer Reduction Options

You may use the buffer reduction options in Tables 3, 4, and 5 for wind-directional ecological spray drift buffers unless you see more restrictive limitations on individual labels or bulletins. If you use these tables and the label/bulletin requires an ecological drift buffer **between >25 and 400 feet**, you may add the percentages for each qualifying practice used for the application to reduce the buffer. After determining your total % reduction in the buffer distance, determine the distance reduced in feet, subtract that distance from the buffer distance required on the label, then round to the nearest 5-foot increment for your final buffer distance.

No ecological drift buffer is required if:

- use of the buffer reduction options results in a buffer reduction ≥100%.
- use of the buffer reduction options results in a buffer <10 feet, after rounding to the nearest 5 ft increment

Examples of practices from the Spray Drift Options menu for reducing buffer distance

- Drift Reducing Agents
- Pesticide Rate Reductions
- Treated Area Reduction
- Increased Droplet Size
- Lowered Boom Height
- Windbreaks

5. Recordkeeping

Workflow Example: Using a Herbicide via Ground in Illinois Corn Field

1. Read the product label	2. Check **Bulletins Live! Two**	3. Offset Points	4. Select practices that reduce buffers	5. Maintain documentation
At least 6 months prior to application •Corn assigned 3 points •Nationwide buffer of 10 ft •BLT paragraph	•No additional points •Buffer increased to 20 ft •Do not use during bloom	Consult EPA mitigation menu and applies: •Grassed waterway (2 points) •Tracking mitigations (1 point)	Consult EPA spray drift buffer reduction list and applies: •Coarse droplets and uses DRA (100% reduction)	Recordkeeping: •Bulletin from BLT, points and offsets, and application parameters

What ESA Changes Mean for Registrants

- Registration timelines are longer and less predictable
- Label mitigations now shape development much earlier
- Labels are becoming more prescriptive across classes
- Earlier cross-functional planning is now essential
- EPA workplans provide better visibility into what's coming

How Registrants are Responding

- Engaging earlier and more often with EPA to improve the ESA assessment process
- Evaluating whether providing additional data to EPA could reduce duplication and improve timeline
- Improving species-location data for more accurate Pesticide Use Limitation Areas (PULAs)
- Assessing feasibility and real-world impacts of potential mitigation options with stakeholders
- Exploring region-specific solutions

How FMC Is Responding to ESA Changes

- Dedicating internal and external resources
- Reviewing and refining label language
- Providing data to refine risk assessments
- Training FMC teams to better support growers and consultants
- Exploring precision agriculture technologies
- Staying actively engaged with Agencies and stakeholders


Kemp's ridley sea turtle


Seabeach amaranth


Black-footed ferret

Strengthening FMC's ESA Strategy

- Embedding ESA as a core business priority
- Evaluating the portfolio through an ESA lens
- Aligning earlier with new active ingredient teams
- Evaluating higher tier assessment opportunities
- Maintaining partnerships & industry engagement

Future of Pesticide Use Under an Evolving ESA Landscape

- More pesticide labels will contain ESA language
- Refinements in tools and process
- Additional strategy development
- Staying current is essential

Northern Spotted Owl

Your Role in Shaping What Comes Next

- Your field insights inform more workable ESA mitigations
- Early adoption helps growers avoid costly disruptions
- Stay connected for tools & training
- Your leadership helps growers succeed under evolving ESA requirements

Useful tools & resources

Tools

Runoff Mitigation Calculator

PALM (Spray Drift + Runoff Calculators)

Spray Drift Calculator

Spray Drift Buffer Calculation Worksheet

Resources

EPA Spray Drift Buffer Reduction Options

EPA Mitigation Menu

EPA ESA Toolbox

Bulletins Live! Two

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Thank you

Disclaimer: These remarks reflect my professional experience as a pesticide registrant and the current labeling and ESA workflow. They are not legal advice and do not create obligations or commitments on behalf of any agency or company. Always follow the product label and consult Bulletins Live! Two within six months of application and check applicable state requirements. For legal questions, consult counsel or your state lead agency.

Let's chat:
Shannon.Cavanaugh@FMC.com