



Chemically Speaking

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Chlorpyrifos Should be Available for 2019

Chlorpyrifos – sold under the trade name Lorsban – should be legal to use in fruits and vegetables for 2019. Growers have expressed concern given a recent ruling by the 9th Circuit Court of Appeals that, if it stands, will require the [Environmental Protection Agency](#) (EPA) to begin a [Federal Insecticide Fungicide Rodenticide Act](#) (FIFRA) process to revoke all label uses of this product.

It is, of course, impossible to predict exactly what will happen, but the best indications are that chlorpyrifos purchased this winter and spring will be available to use for 2019. We encourage you to keep updated at [EPA's chlorpyrifos website](#). (Vegetable Growers News, 11/6/18)

EPA Announces Changes to Dicamba Registration

On October 31, 2018, U.S. Environmental Protection Agency (EPA) announced that it is extending the registration of dicamba for two years for “over-the-top” use (application to growing plants) to control weeds in fields for cotton and soybean plants genetically engineered to resist dicamba. This action was informed by input from and extensive collaboration between EPA, state regulators, farmers, academic researchers, pesticide manufacturers, and other stakeholders.

“EPA understands that dicamba is a valuable pest control tool for America’s farmers,” said EPA Acting Administrator Andrew Wheeler. “By extending the registration for another two years with important new label updates that place *additional* restrictions on the product, we are providing certainty to all stakeholders for the upcoming growing season.”

The following label changes were made to ensure that these products can continue to be used effectively while addressing potential concerns to surrounding crops and plants:

- Two-year registration (until December 20, 2020)
- Only certified applicators may apply dicamba over the top (those working under the supervision of a certified applicator may no longer make applications)
- Prohibit over-the-top application of dicamba on soybeans 45 days after planting and cotton 60 days after planting
- For cotton, limit the number of over-the-top applications from 4 to 2 (soybeans remain at 2 over-the-top applications)
- Applications will be allowed only from 1 hour after sunrise to 2 hours before sunset
- In counties where endangered species may exist, the downwind buffer will remain at 110 feet and there will be a new 57-foot buffer around the other sides of the field (the 110-foot downwind buffer applies to all applications, not just in counties where endangered species may exist)
- Clarify training period for 2019 and beyond, ensuring consistency across all three products
- Enhanced tank clean-out instructions for the entire system
- Enhanced label to improve applicator awareness on the impact of low pH's on the potential volatility of dicamba
- Label clean up and consistency to improve compliance and enforceability

The registration for all dicamba products will automatically expire on December 20, 2020, unless EPA further extends it.

EPA has reviewed substantial amounts of new information and concluded that the continued registration of these dicamba products meets FIFRA's registration standards. The Agency has also determined that extending these registrations with the new safety measures will not affect endangered species.

Learn more: <https://www.epa.gov/ingredients-used-pesticide-products/registration-dicamba-use-genetically-engineered-crops>. (EPA Office of Pesticide Programs Update, 11/1/18)

Expect Resistance Ahead

Rootworm Resistance to Bt Pyramids is on the Rise - With No Relief in Sight

Few corn hybrids are fully protected from the western corn rootworm anymore - not even pyramided Bt corn hybrids.

In October, Corteva Agriscience informed EPA that the company has confirmed resistance to Cry34/35Ab1 (Herculex RW) in rootworm populations in the northeastern Iowa county of Delaware.

Although the company called it the "first case" of such resistance, Iowa State University entomologist Aaron Gassmann documented low levels of rootworm resistance to this same trait in Iowa in 2016. At the time, he called it "an early warning" for industry and farmers to improve their stewardship of the technology - or risk losing it soon.

Now, two years later, with no major changes to Bt management by farmers or industry, the problem has deepened.

Cry34/35Ab1 is the underpinning of many popular pyramided Bt corn hybrids, which offer multiple belowground Bt traits targeting the rootworm. Because the other Bt traits in those pyramids, namely Cry3Bb1 and mCry3A, are already compromised by resistant rootworm populations, Cry34/35Ab1 has been the only effective Bt trait remaining in many cornfields in intensive corn-producing states like Iowa for several years now.

"There is so much pressure being put on that trait in Iowa," said Evan Sivesind, program manager for the Iowa Pest Resistance Management Program (IPRMP). "It is really what is being leaned on by anyone who grows Bt corn here."

This latest resistance report is unlikely to be the last, he added. "Evolution is going to proceed," he said. "That's why managing Bt resistance is not about eliminating resistance, it's about minimizing it as much as possible to preserve current management options as long as possible."

For years, industry, government and academic scientists have promoted the same group of resistance prevention strategies to achieve this: crop rotation, trait rotation and rotation to non-Bt hybrids, with use of a soil insecticide.

But there is little evidence that growers are adopting them, Sivesind acknowledged. It is the goal of IPRMP to figure out why and change that dynamic - through education, but also through addressing the economic and emotional hurdles that come with changing a crop production practice, he said.

“It's hard to make people do any long-term management that comes with increased costs upfront,” Sivesind said. “It's like ignoring a roof leak - it will save you money this year, but it will cost you more three years down the road. We need better strategies for making adoption of these best management practices more feasible for growers, especially in tough economic times.”

SAME SONG, DIFFERENT TRAITS

Cry34/35Ab1 showed the first official signs of weakening a few years ago and Gassmann documented partial resistance to it in some Iowa fields in 2016.

“We need to slow this down as much as possible and give industry five to ten years buffer to develop new traits,” he said. “The worst thing will be if Bt pyramids burn out in the next couple of years, and there is a long gap with no new options available on the market.”

“But it's hard to get people to change something that's working,” he added. “And that's what we need to do - fix things before they break. And that has to become the usual decision-making process, to work in diverse practices, rather just pushing on the same one.” (DTN/The Progressive Farmer, 11/15/18)

First Anniversary of Bayer's Transparency Initiative - Bayer Committed to Transparency: Posts More Than 300 Glyphosate Safety Study Summaries Online

Today, Bayer marks the first anniversary of its Transparency Initiative, designed to enhance trust in the science behind crop protection products. As another important milestone in the company's efforts to make science more accessible, Bayer is making available more than 300 study summaries on the safety of glyphosate on its dedicated [transparency platform](#).

“Trust in the integrity of crop protection science is core to us and our business,” said Liam Condon, member of the Board of Management of Bayer AG and President of the Crop Science Division. “The public is interested in knowing more about how their food is grown and what products are involved in the production of food. Crop protection products are used by farmers to protect harvests from disease, pests and weeds. As one of the leaders in agriculture, we have been working diligently to make studies on crop protection substances available beyond regulatory requirements. We want to explain the benefits that science and innovation can deliver in agriculture while championing what's important to people: safe, healthy and affordable food that is produced in an environmentally sustainable manner. Improving access to the science behind our products is a key part of our Transparency Initiative.”

Similar to the other substances included within its Transparency Initiative, Bayer is focusing on safety studies submitted under the European Union (EU) substance authorization process for plant

protection products. On the website you can find the study summaries for studies on residues and metabolism (18), environmental fate (32), toxicology (180), and ecotoxicology (88) on the active substance as well as representative formulations. More information can be found on the [FAQ page](#).

Access to the much more extensive underlying safety study reports will be enabled in 2019; this will include those owned by Bayer and submitted for the review that led to the European substance authorization renewal decision in December 2017.

The science behind the safety of glyphosate

Over the last 40 years, glyphosate and glyphosate-based formulations have been extensively evaluated for human health and safety. Most of this scientific research on glyphosate was conducted by independent researchers.

For additional research conducted on glyphosate, visit the European Food Safety Authority ([EFSA](#)), the U.S. Environmental Protection Agency ([EPA](#)) and the [glyphosate task force](#). Background information on glyphosate and its history as a safe and efficient weed control tool for farmers around the world is also available [here](#). (SeedQuest, 12/7/18)

Don't Tempt Mother Nature: Avoid Spraying During Temperature Inversion

Every farmer understands that applying pesticides on a windy day is a bad idea but applying on a still day may be just as bad. Lack of wind can turn into a big problem in some circumstances. If you see a thin layer of fog in the calm, cool early morning hours, be cautious. These conditions may favor the surface-level air to move horizontally and with it, any trapped particles – such as pesticides – onto neighboring fields.

What you see may be a temperature inversion. A layer of warm air covers a layer of cooler air and acts like a lid, preventing the cooler air from rising and mixing with the upper atmosphere.

According to the [National Oceanic and Atmospheric Administration \(NOAA\)](#), temperature inversions commonly form when the air near the ground cools at night. Calm winds, clear skies and long nights increase the likelihood of a temperature inversion occurring.

Gases trapped near the surface can't mix with the warmer air above and dissipate naturally, so they hover near the ground and often drift sideways. Pesticides hanging in this layer of air can move into neighboring fields, lawns and gardens with unintended consequences.

“We want a light wind - 3 to 10 miles per hour - when making a herbicide application,” says Haley Nabors, Enlist™ field specialist. Within a temperature inversion, applied products can move great distances. “Furthermore, the direction the trapped air will move is unpredictable.”

WATCH FOR SIGNS OF A TEMPERATURE INVERSION

Nabors urges farmers applying herbicides and other crop protection products to watch for common conditions that create temperature inversions. If these conditions occur, avoid applying any herbicides until the environment is favorable for a successful, on-target application.

“We tend to associate temperature inversions with early mornings or late afternoons, dawn or dusk,” Nabors says. “The traditional expectation is that we’ll see a fog hovering over the field during a temperature inversion.”

However, Nabors says in West Texas, New Mexico and other areas with low humidity, the telltale layer of fog may not develop, and therefore, there’s no visual signal of a temperature inversion.

So, how does a farmer know if there’s a problem? Temperature inversions are most likely when wind speeds are less than 3 mph and/or if the temperature is within 5 degrees of the nighttime low. That’s why spraying in wind conditions of 0-3 mph is never recommended.

TECHNOLOGY HELPS FARMERS IDENTIFY BEST APPLICATION CONDITIONS

Farmers should plan to check local weather conditions before making any herbicide application.

“If you identify a temperature inversion, do not make an application,” Nabors says. “The spray particles may never hit the intended surface, which makes the application less effective for your crop. If it doesn’t reach the weeds, you’re wasting your herbicide dollars.”

In addition, farmers run the risk of damaging susceptible plants in nearby fields, lawns and gardens.

Nabors urges farmers to check conditions before every application and even during applications. Weather apps for smartphones and tablets can be useful tools to monitor changing weather throughout a herbicide application. Always monitor conditions while you are in the field. In addition to weather apps or websites, an inexpensive windsock shows wind direction. An anemometer provides wind speed. A quick check of the temperature also is a good idea.

If farmers prefer a visual sign, releasing smoke or powder can indicate particle movement. The smoke or powder should drift gently with the wind. If it gathers in a stationary, suspended cloud, that indicates a temperature inversion, which may cause an application to move far and wide.

“With Enlist herbicides, we recommend a minimum wind speed of 3 mph,” Nabors says. “This allows some stirring in the atmosphere to dissipate any potential inversion layer.”

Many farmers throughout the South who incorporated the [Enlist weed control system](#) into their acres have seen great success with the technology when applied according to label requirements. Farmers who grew PhytoGen® cottonseed with the Enlist trait have been pleased with how [Enlist herbicides](#) stay where applied. They also attest to the weed control Enlist™ herbicide provides.

Enlist Duo® herbicide contains new 2,4-D choline and glyphosate, while Enlist One™ herbicide is a straight-goods 2,4-D choline that offers greater tank-mix flexibility. Both feature Colex-D® technology, which limits drift and provides near-zero volatility. Like other herbicides, neither Enlist herbicide should be sprayed during a temperature inversion.

Remember, a complete lack of wind is a warning. Do not apply herbicides. Wait until later in the day and check again for a more favorable application environment. (Successful Farming, 6/6/18)

Measuring the Taste of a Tomato With an iPhone

Measure the taste without tasting. For tomatoes this has been possible for decades with the taste model developed by Wageningen University & Research (WUR). This model makes judging the taste much easier than with a panel, but it is still fairly cumbersome. For a current taste measurement with the model, a minimum of 3 kilograms of tomatoes must be turned inside out in a laboratory. The latest sensors offer opportunities to make this a lot faster and easier. And maybe even with an iPhone!

The taste panels of WUR are well known: a consumer panel and product-specific sensory panels that assess the taste of different products. Based on the knowledge of these panels, WUR developed taste models for a number of products. Those models work, but wouldn't it be nice to do a measurement yourself in the greenhouse or shed on a single fruit?

The soon to be launched Fresh on Demand project is working on improving quality in the fruit and vegetable chain, for a better alignment with the wishes of consumers. Taste is an important part of this. That is why within Fresh on Demand it is being investigated whether taste can also be measured with non-invasive sensors. In practice, only the brix content (the amount of dissolved sugars) is often measured as 'fast' taste measurement. But taste is more than just the sweetness of a tomato.

That is why WUR is looking into a selection of non-invasive sensors this year, including VIS / NIR Hyperspectral Imaging & Transmission Spectroscopy, various handheld sensors and TeraHertz. The aim is to develop a new taste model with the help of these sensors to measure the taste. That is simpler and therefore cheaper than with the current taste model and faster and more complete than with just a brix measurement.

The user-friendliness follows from the fact that the sensors are 'non-invasive': the tomatoes are tested from the outside, so they do not have to be destroyed. This makes it possible to perform taste research already in the greenhouse of, for example, a breeder. In addition, a number of the sensors to be investigated are already built into some smartphones.

Fresh on Demand is a public-private partnership of, among others, breeders, technical companies, trading companies and growing companies and is co-financed by Topsector Tuinbouw & Uitgangsmaterialen. The goal of Fresh on Demand is to optimally align fruit and vegetable chains to consumer wishes and requirements so that the consumption of fruit and vegetables increases. (SeedQuest, 12/7/18)

Pesticide Registrations and Actions

- The United States Environmental Protection Agency (EPA), under the provisions of section 18 of FIFRA, has issued a specific exemption for the use of Belay[®] Insecticide (clothianidin), EPA Registration Number 59639-150, to manage the transmission of Huanglongbing disease in citrus trees. This disease is vectored by the Asian citrus psyllid, a non-native insect species. This emergency exemption (File Symbol 19FL01) will expire October 31, 2019. (FDACS letter, 11/12/18)

- The revised Special Local Need label for ADMIRE® PRO, EPA Reg. No. 264-827 EPA SLN NO. FL-120008 has been revised and accepted for basal tree applications to suppress the transmission of Huanglongbing disease (citrus greening) by Asian Citrus Psyllid in young citrus groves and replants. The biennial expiration date of this existing SLN has been updated to December 31, 2020. (FDACS letter, 11/28/18)
- The revised label for IMIDAN® 70-W, EPA Reg. No.10163-169 EPA, SLN No. FL-010006 for the Special Local Need under FIFRA Section 24(c) has been accepted by the FDACS for control of scale, mealybug, rust mite (suppression), snails, slugs, citrus weevil complex (including Apopka {Diaprepes} weevil, blue-green weevil, and little leaf notcher), and citrus psyllid in oranges and grapefruit. The expiration date has been updated to December 31, 2023. (FDACS letter, 10/22/18)
- The revised SLN label for SPINOSAD FRUIT FLY BAIT, EPA Reg. No. 62719-498 for control of exotic (non-established, quarantinable) fruit fly members of the family Tephritidae was accepted Nov. 6. (FDACS letter, 11/6/18)