

# VTPP Quarterly

A Newsletter From Virginia Tech Pesticide Programs

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# Integrated Pest Management for Hemp in Virginia: A Vital New Pest Management Guide for Growers

Tim McCoy, Extension Associate, Virginia Tech Pesticide Programs

The hemp plant, *Cannabis sativa*, has served a variety of roles throughout human history. For centuries, it was cultivated for fiber and seed production, as well as for the medicinal compounds found in both the psychoactive and non-psychoactive strains. Only in the early 20th century did the cultivation, and the reputation, of the crop decline in the U.S. as new fiber sources became available, and the plant became federally illegal to grow as a result of legislation (1937) aimed at curbing the use of psychoactive varieties.

Public attitudes toward the value and utility of hemp changed in the early 2000s. Advocates pushed to bring the non-psychoactive varieties into regular cultivation. The 2014 Federal Farm Bill permitted the growing of hemp on experimental farms (typically university research farms). Due to the success of these experimental projects, and with increased education of law makers regarding the difference between the non-psychoactive and psychoactive varieties of the plant, growing hemp was made federally legal with the passage of the 2018 Farm Bill. However, during that 80-year period when hemp was illegal, vital information of how best to manage hemp pests was either lost or not advanced. This left growers with an enormous knowledge deficit.

Despite the lack of many science-based pest management strategies for hemp, farmers took on hemp cultivation in 2018 and 2019. Many were attracted to the reported high economic returns coupled with, what many assumed was, a crop with very few pests (this was based largely on lore). Neither of these benefits materialized as promised. While some farmers made good money from their hemp fields, the 2018 and 2019 growing seasons were, politely put, “a learning experience.” Growers turned to Virginia Cooperative Extension (VCE) Agents and Virginia Tech (VT) specialists, as well as less reputable sources, for advice on how to make their hemp crop healthy and profitable. While VT researches (some since 2015) were conducting agronomic and pest management research on hemp, the needs of growers far outpaced the knowledge and time commitments agents and specialists could provide.

By the middle of the 2019 growing season, it became clear that a pest management publication was likely the best way to get the current science-based information on hemp cultivation into the hands of growers. Kadie Britt, a PhD candidate in the VT Entomology Department, spearheaded the efforts to assemble a team of experts to compile the first pest management guide dedicated to the unique challenges of growing hemp in Virginia. The result was “Integrated Pest Management (IPM) of Hemp in Virginia” (VCE publication ENTO-349NP) published in March of 2020.

The online guide contains valuable information about the basic soil and atmospheric requirements for growing hemp in Virginia. It also covers the biology of and control recommendations for the insects, weeds, and pathogens that plague the crop.

*Continues on page 3*

# Integrated Pest Management of Hemp in Virginia (Continued)

In addition, “Integrated Pest Management (IPM) of Hemp in Virginia” lists the pesticides that are currently permitted for use on hemp. This last topic presents challenges that limit pest management options. Currently, there are few pesticides that are either federally labeled for use on hemp, or meet the understandably restrictive guidelines set forth by the Virginia Department of Agriculture. As such, most of the pesticides that are permitted for use in Virginia are low-toxicity, often biological, pesticides. Ultimately, the short list of permitted pesticides has required hemp growers to rely more on other IPM tactics. While more pesticides will likely be approved for use on hemp, the knowledge gained about hemp-specific IPM strategies will serve growers well in the years to come.

The 2020 hemp IPM guide was passed out at grower meetings, and the public was encouraged to visit the VCE Publications website to download a free copy. Feedback from growers and VCE Agents was positive, with many praising the rapid response from VT specialists.

The 2021 growing season is fast approaching, and there is already a need to update the guide. We are currently working to update the text with research and regulatory changes that occurred in 2020. We expect to publish the new version of the guide in March 2021 and will continue to update it annually as needed. Long-term, we envision making the guide downloadable and searchable on mobile devices so that growers can access the vital information in the field.

While you wait for the latest version of “Integrated Pest Management of Hemp in Virginia,” feel free to check out the 2020 version [here](#) (ENTO-349).

# Dicamba Herbicide Update for the 2021 Growing Season

Daniel Frank, Director, Virginia Tech Pesticide Programs

Dicamba is a selective herbicide used for post-emergent control of broadleaf weeds in certain food and feed crops. Since 2017, these herbicides have been in the news and under review by state and federal pesticide regulators because of numerous crop damage and off-target movement (volatilization and drift) enforcement issues. On June 3, 2020, the U.S. Court of Appeals for the Ninth Circuit ruled to vacate the registrations for all dicamba products registered for over-the-top (OTT) use on cotton and soybeans genetically engineered to be dicamba tolerant. Shortly thereafter, the Environmental Protection Agency (EPA) issued a final cancellation order for the dicamba containing products XtendiMax (Bayer), Engenia (BASF), and FeXapan (Corteva Agriscience). This cancellation order prohibited the sale of these products while permitting use of existing stocks under certain circumstances through the end of July 2020.

On October 27, 2020, the EPA approved new five-year registrations for two dicamba products (XtendiMax and Engenia) and extended the registration of an additional dicamba product (Tavium; Syngenta) for OTT use on dicamba-tolerant cotton and soybeans. All three registrations include new control measures to ensure that the products can be used effectively while protecting the environment, including nontarget plants and crops not tolerant to dicamba. Important control measures include:

- Requiring an approved pH-buffering agent (also called a volatility reduction agent or VRA) be tank mixed with OTT dicamba products prior to all applications to control volatility.
- Requiring a downwind buffer of 240 feet and 310 feet in areas where listed endangered species are located.
- Prohibiting OTT application of dicamba on soybeans after June 30 and cotton after July 30 in a given year.
- Simplifying the label and use directions so that applicators can more easily determine when and how to properly apply dicamba.

In Virginia, only certified commercial and private pesticide applicators may apply dicamba OTT. Certified registered technicians and individuals working under the supervision of a commercial or private applicator may no longer make these applications. Prior to applying registered dicamba products, pesticide applicators must complete dicamba-specific training on an annual basis. Manufacturers (Bayer, BASF, and Syngenta) will continue to provide the training in Virginia. Both in person and online training is acceptable, and applicators may take any of the three manufacturer provided trainings to meet the requirement. Registration and event information for trainings is available through the manufacturers.



# Spray Water Quality Affects Pesticide Performance

Rachel Parson, Extension Associate, Virginia Tech Pesticide Programs

Water is the most common carrier used to apply pesticides. Pesticide applicators draw water from a variety of sources for their sprays. These include wells, creeks, cisterns, and municipal water supplies. However, water is not simply a carrier. It interacts with pesticide products to form a spray mixture or solution. The properties of that water will affect a pesticide's performance. Applicators should test the water from all of their spray water sources to determine if the waters' properties are acceptable for the products they want to use.

Which factors can reduce pesticide efficacy? The most important factors include:

- Water pH – Acidic or Alkaline? Most pesticide products work best with slightly acidic water with a pH of 4 to 6.5. The pH of the water can greatly affect the half-life of pesticides.
- Hardness – The amount of specific dissolved minerals such as calcium, magnesium, potassium, sodium, sulfate, chloride, and iron.
- Total dissolved solids (TDS) – The amount of inorganic salts in the water. The accumulative effect of all the compounds present.

While it might be easy to purchase do-it-yourself water test kits for pH and hardness, the Department of Biological Systems Engineering Water Quality Lab at Virginia Tech is starting a spray water testing program. This program offers spray water tests that are more accurate and have a complete analysis of the factors above. Their test report will also include information for irrigation and recommendations for water conditioning or pH buffers. Water conditioning adjuvants are added to the pesticide spray tank to correct water hardness, and pH buffers raise or lower the pH depending on the desired range.

Where can applicators get information once they have the water test results and recommendations? Pesticide labels are the first place to look for instructions BEFORE purchasing the product. Once an applicator has decided to chemically control a pest (fungus, weed, and/or insect) with a pesticide, they should do some research and read the labels of several products to determine which product will work best. Some products may already be formulated to handle a range of pH and hardness, or the label may suggest adding an adjuvant to condition the water.

Often, applicators mix two or more pesticide products together in the spray tank. If the spray water requirements of two or more products are not compatible, do not mix them together. It will most likely diminish the effectiveness of the pesticides. Also, the order in which applicators mix and load the products and adjuvants into the spray tank can be extremely important. Be sure to follow any specific label directions for mixing order. When in doubt, use a "jar" test to make sure that the products are compatible. For instructions on how to do a jar test, look on pages 4 through 19 in the Virginia Core Manual, Applying Pesticides Correctly (Virginia Cooperative Extension publication 456-210).

There are other physical factors to consider that will not be tested at the water quality lab, such as water temperature, total suspended solids (soil particles), and the presence of debris. These factors can be examined by the applicator using tools like a thermometer and secchi disc or visually inspecting the water. Muddy water or water with debris should not be used for pesticide applications. Contact Erin Ling at [ejling@vt.edu](mailto:ejling@vt.edu) for more info about spray water testing.

# »Blast From the Past«

Stephanie Blevins Wycoff, Extension Associate, Virginia Tech Pesticide Programs

## Daisy Fly Killer

This tightly sealed metal box contained arsenic, which was used to control common fly pests. Six daisies adorned the top of the box: five with yellow felt wicks, and one with a yellow cork. The cork was removed to fill the box with water, and then replaced. The water mixed with the chemical inside and was absorbed by the felt wicks. The moistened, sweet-smelling wicks then attracted flies, which soon met their demise. With proper care, the Daisy Fly Killer could be effectively used for an entire season.



Figure 1. Daisy Fly Killer (patented in 1888).



# Updates From the Virginia Department of Agriculture and Consumer Services

The expiration dates for all authorization letters for prospective applicators (including commercial applicators and registered technicians) to take the exam(s) to become certified issued on or after December 20, 2019, have been extended to June 30, 2021 or the current date of expiration, whichever is greater. It is imperative that prospective pesticide applicators who were issued an authorization letter to take the exam(s) for certification do so before the expiration date. Prospective applicators that do not take the exam(s) by June 30, 2021 or the current date of expiration, whichever is greater, will be required to submit a new application with appropriate fees to take the exam(s). There will be no additional extensions to the expiration date. Opportunities for testing include the following options:

(Note: All requirements of the Governor's Executive Order are required to be followed including wearing of facial masks, social distancing, and disinfection.)

- Department of Motor Vehicles (DMV) – Prospective applicators (commercial applicators, private applicators, and registered technicians) can take their exams at DMV customer service centers. All services are by appointment only including pesticide applicator certification testing. Appointments can be scheduled on the DMV website. Select “Appointments” from their home page. When scheduling an appointment, prospective applicators should select the “Learner’s Permit and Other Testing” service type, and the location where they will be testing. Applicators will next select the category “Knowledge Testing” and indicate they would like to take the knowledge test for “Dealer Operators, Salesperson, or Pesticide Applicator Certification.” According to the website, three months of appointment slots are available at any time on the calendar. Each day, a new day of appointments is added to the end of the available period. New appointment slots will be posted multiple times every hour. Cancellations can also create earlier availability in the calendar. If you do not see availability, all the posted appointment slots are currently booked. Individuals wanting to take a certification exam(s) at DMV should check the site frequently for availability and are encouraged to look outside their geographical area. Should you need additional information regarding DMV reopening or services available, please contact DMV directly.
- Virginia Pest Management Association (VPMA) – VPMA is offering limited in person testing opportunities to prospective pesticide applicators. Information regarding testing locations and event registration through VPMA is available at: [vpmaonline.com](http://vpmaonline.com).
- Proctored Testing by Virginia Department Agriculture and Consumer Services (VDACS) Pesticide Investigators – The VDACS-Office of Pesticide Services Pesticide Investigators can also be available to proctor testing of prospective applicators. Contact information for Pesticide Investigators is available at: [vdacs.virginia.gov/about-division-of-consumer-protection.shtml#pesticides](http://vdacs.virginia.gov/about-division-of-consumer-protection.shtml#pesticides).



# Updates From the Environmental Protection Agency

## **Compliance Advisory: What You Need to Know Regarding Products Making Claims to Kill the Coronavirus Causing COVID-19**

The Environmental Protection Agency has released an updated Compliance Advisory regarding products claiming to kill or inactivate SARS-CoV-2, the pathogen causing COVID-19, or more broadly human coronaviruses. The purpose of the document is to address concerns related to products being used to disinfect surfaces which include claims to kill and/or be effective against SARS-CoV-2. For some of these products, those claims have not been reviewed or accepted by EPA and, therefore, may present a risk to consumers, and healthcare providers in particular. The document can be found at: [epa.gov/sites/production/files/2020-05/documents/coronavirus-compliance-advisory.pdf](https://epa.gov/sites/production/files/2020-05/documents/coronavirus-compliance-advisory.pdf).

## **EPA Proposes New Safety Measures for Chlorpyrifos**

On December 7, 2020, the EPA issued a Proposed Interim Registration Review Decision to require new risk mitigation measures for the insecticide chlorpyrifos. Chlorpyrifos poses potential dietary and aggregate risks associated with drinking water exposure for currently labeled uses, with and without a 10X Food Quality Protection Act (FQPA) safety factor in place for risk assessment analyses. Mitigations are being proposed to address the range of potential risks. With the exception of seed-treatment uses, both occupational handler and post-application risks of concern were identified. Potential ecological risks of concern were also identified for mammals, birds, fish and terrestrial/freshwater invertebrates. To address risks of concern, EPA is proposing additional personal protective equipment (PPE), use cancelations, use prohibitions, application method restrictions, rate reductions, and extensions of restricted entry intervals (REI). The agency is also proposing spray drift management label language and other labeling updates consistent with those being required for other pesticides in registration review. Details of the proposed label changes can be found at [regulations.gov/docket?D=EPA-HQ-OPP-2008-0850](https://www.regulations.gov/docket?D=EPA-HQ-OPP-2008-0850). After a thorough review of the best available science and carefully considering scientific peer review and public comments, EPA will then determine next steps in the registration review process for chlorpyrifos.



# NATIONAL PESTICIDE SAFETY EDUCATION MONTH

## Celebrate National Pesticide Safety Education Month during February!

Organized by the National Stakeholder Team for Pesticide Safety Education Program Funding, this month aims to reinforce safe pesticide use with a wide variety of audiences.

### DID YOU KNOW?\*

- There are about 1 million certified pesticide applicators in the U.S.
- 11,000-15,000 pesticide products are registered for use in each state
- Common consumer products that contain pesticides include flea collars, ant and roach traps, and some lawn care products like weed and feed
- Pesticide Safety Education Programs (PSEPs) are housed at land-grant universities

*\*Facts provided by National Stakeholder Team for PSEP Funding*

> Visit [vttp.org](http://vttp.org) for more information and resources  
> [4th Annual NPSE Month - Pesticide Stewardship](#)

# Pesticide Safety Tips

Virginia Tech Pesticide Programs

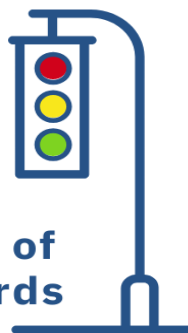
**NATIONAL  
PESTICIDE  
SAFETY  
EDUCATION  
MONTH**



## Read the Label

Always read the pesticide product label before you purchase, use, store, or dispose of a pesticide or its container.

**DANGER  
WARNING  
CAUTION**



## Take Note of Signal Words

Pesticide product labels display signal words (as shown above), which indicate the product's acute toxicity.



## Wear Proper PPE

**Personal Protective Equipment**

PPE is the clothing and devices you should wear to protect yourself while working with pesticides (see pesticide label).



## Store in Original Container(s)

Always store pesticides in their original containers complete with labels.



## Keep Out of Reach of Children and Pets

To prevent accidental spills and poisonings, keep pesticides away from children and pets.



## Consider IPM

**Integrated Pest Management**

IPM is an ecological approach to controlling pests that can help reduce pesticide use.

For More Information, Please Visit: <https://sites.google.com/vt.edu/vtppconsumerpse>