

Virginia Tech Pesticide Programs

Annual Report – 2021

VTPP



Virginia Tech
Pesticide Programs

Virginia Tech Pesticide Programs (VTPP) provide pesticide safety information, training, and educational resources to pesticide applicators, Extension faculty, and the public. Our mission is to minimize the human health and environmental impacts associated with improper handling and application of pesticides. VTPP works with other state agencies including the Virginia Department of Agriculture and Consumer Services and Virginia Cooperative Extension to advance the quality of pesticide safety education in Virginia and beyond.

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Virginia Tech Pesticide Programs Team

Faculty

Daniel Frank	Director
Rachel Parson	Extension Associate
Stephanie Blevins-Wycoff	Extension Associate
Tim McCoy	Extension Associate (left program Aug. 2021)

Staff

Dana Beegle	Publications Manager & Public Relations
Jacqueline Brown	Education Support Specialist
Gabriela Rivera	Multimedia Technician (joined program Nov. 2021)
Grant Schiermeyer	Live Zoo Curator
Shanan Sessor	Office Manager
Whitney Weaver	Media Specialist & Science Literacy Program Coordinator

Pesticide Applicator Training Manuals and Exams

Manual and Exam Revisions: VTPP produces new and revises existing pesticide applicator training manuals as part of a Memorandum of Agreement with the Virginia Department of Agriculture and Consumer Services, Office of Pesticide Services (VDACS-OPS).

Author/reviewer committees are organized and content is written, edited, and formatted as part of the manual production/revision process. Core and category exams are written/revised as needed to correspond to manual changes. Below is a list of manual and exam revisions in progress or completed during 2021.

Category 10, Demonstration and Research Pest Control (2003 manual and exam in use) – Final manual draft approved by VDACS and exam completed February 2021. Awaiting posting of the revised exam by Department of Motor Vehicle (DMV) testing centers before distribution of the new manual to the public.

Category 6, Right-of-Way Pest Control (2003 manual and exam in use) – Final manual draft approved by VDACS and exam completed May 2021. Awaiting posting of the revised exam by DMV testing centers before distribution of the new manual to the public.

Category 3B, Turf Pest Control (2003 manual and exam in use) – Final manual draft approved by VDACS and exam completed September 2021. Awaiting posting of the revised exam by DMV testing centers before distribution of the new manual to the public.

Category 11, Aerial Pesticide Application (2002 manual and exam in use) – Final manual draft approved by VDACS February 2021. Exam revisions and validation in progress.

Category 4, Seed Treatment (2003 manual and exam in use) – Final manual draft approved by VDACS June 2021. Exam revisions and validation in progress.

Category 1C, Fumigation of Soil and Agricultural Products (2003 manual and exam in use) – Manual revision in progress.

Category 5B, Marine Anti-Foulant Paints (1989 manual and exam in use) – Manual revision in progress.

Category 7C, Fumigation (Non-Agricultural) (2002 manual and exam in use) – Manual revision in progress.

Manual Orders: Pesticide applicator training manuals are ordered and distributed through the Virginia Cooperative Extension (VCE) Storefront and printed through a contract with Office Depot. In total, 2,272 pesticide applicator training manuals were ordered and distributed in 2021. Quarterly order numbers are listed in the following table for each pesticide applicator category and manual title.

Manual Orders by Quarter in 2021

Applicator Category and Manual Title	Quarter			
	1	2	3	4
Core: Applying Pesticides Correctly	319	316	257	221
1A: Agricultural Plant Pest Control	9	13	6	6
1B: Agricultural Animal Pest Control	1	1	0	1
1C: Fumigation of Soil and Agricultural Products	0	6	0	2
1D: Chemigation	0	4	0	0
2: Forest Pest Control	14	7	13	3
3A: Ornamental Pest Control	67	53	32	44
3B: Turf Pest Control	98	57	36	57
4: Seed Treatment	1	1	2	1
5A: Aquatic Pest Control	21	11	14	2
5B: Marine Anti-Foulant Paint	0	3	0	0
6: Right-of-Way Pest Control	59	41	30	33
7A: General Pest Control	36	48	32	33
7B: Management of Wood Destroying Organisms	24	31	5	21
7C: Fumigation (Non-Agricultural)	1	4	2	1
7D: Vertebrate Pest Control	8	11	9	7
7E: Sewer Root Pest Control	1	1	0	0
8: Public Health Pest Control	29	31	23	13
9: Regulatory Pest Control	0	10	0	0
10: Demonstration and Research Pest Control	3	3	7	1
11: Aerial Pest Control	2	2	2	0
12: Wood Preservation and Wood Products Treatment	2	1	2	3
Predator Management	0	1	0	0
TOTAL	695	656	472	449

Pesticide Certification and Recertification Training

Department of Conservation and Recreation (DCR) Pesticide Training: VTPP offers online training for DCR planners seeking general pesticide safety knowledge for continuing education credit. These individuals are not pursuing pesticide applicator certification. In total, 12 individuals completed the DCR course in 2021.

Online Pesticide Certification Preparation Training: VTPP offers online training courses for pesticide applicators seeking certification. Applicators practice for the certification exam(s) by completing different lessons corresponding to units in the respective pesticide applicator training manual. Courses are open to any prospective Virginia commercial/private applicator, registered technician, educator, or employer seeking to train new pesticide applicators or students. The number of individuals enrolled in online core and category specific courses in 2021 are listed in the following tables.

Online Core Training Enrollment in 2021

Applicator Type	# of individuals enrolled
Commercial	97
Government	35
Registered Technician	338
Private	33
CTE*	33
TOTAL	536

*Continuing or technical education for high school or community college students.

Commercial Category Training Enrollment in 2021

Applicator Category	Applicator Type			Total
	Commercial	Government	CTE	
1A: Agricultural Plant Pest Control	9	4	0	13
1B: Agricultural Animal Pest Control	4	1	0	5
1C: Fumigation of Soil and Agricultural Products	4	1	0	5
1D: Chemigation	3	1	0	4
2: Forest Pest Control	6	2	3	11
3A: Ornamental Pest Control	19	13	3	35
3B: Turf Pest Control	32	15	0	47
4: Seed Treatment	5	0	0	5
5A: Aquatic Pest Control	7	9	0	16
5B: Marine Anti-Foulant Paint	2	0	0	2
6: Right-of-Way Pest Control	22	12	0	34
7A: General Pest Control	32	5	0	37
7B: Management of Wood Destroying Organisms	26	2	0	28
7C: Fumigation (Non-Agricultural)	4	0	0	4
7D: Vertebrate Pest Control	6	0	0	6
7E: Sewer Root Pest Control	2	0	0	2
8: Public Health Pest Control	24	3	0	27
9: Regulatory Pest Control	1	2	0	3
10: Demonstration and Research Pest Control	10	6	0	16
11: Aerial Pest Control	2	1	0	3
12: Wood Preservation and Wood Products Treatment	5	0	0	5
Predator Management	2	0	0	2
TOTAL	227	77	6	310

*Continuing or technical education for high school or community college students.

Private Applicator Recertification Course Approval: VTPP works with VCE agents and specialists to approve, process, and coordinate recertification training courses for private pesticide applicators. In 2021, 96 private applicator recertification course requests were approved and processed by VTPP, which resulted in 1,764 course participants receiving pesticide recertification credit. Overall, 1,570, 102, 92 individuals received pesticide recertification credit through VCE sponsored in-person, on-line, and correspondence training sessions, respectively.

Winter Recertification Training: VTPP conducts two annual commercial and private pesticide applicator recertification courses. Due to COVID-19 concerns, the annual training events were moved online using Virginia Tech Canvas. The first course served Virginia Tech employees and pesticide applicators living in the surrounding area. The training was held January 4-8 and covered commercial applicator categories 1A, 1B, 10, and 60, and private applicator categories 90 and 91. The second course provided recertification training/credit for various commercial pesticide applicator categories. This training was held January 15-25 and covered commercial applicator categories 1A, 2, 5A, 6, 8, 10, 11, and 60. The course was also approved for reciprocal recertification credits by the following states: Pennsylvania, West Virginia, Kentucky, Indiana, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, North Carolina, and Texas. In total, 61 participants attended the trainings, and 56 participants received recertification credit.

Online Recertification Training: In 2021, VTPP delivered online training-design and support infrastructure for commercial and private applicator recertification courses in collaboration with VCE agents. Information about these recertification courses are listed in the following table.

Online Recertification Training in 2021

Duration	Sponsor County	Applicator Category	Participants
Feb. 1-12	Nottoway	3A, 3B, 5A, 6, 60	98
Feb. 1-28	Henrico	90, 91	2
Feb. 15-28	Isle of Wight	90	10
Mar. 1-12	Appomattox	3A, 3B, 5A, 6, 60	20
Mar. 1 - Apr. 4	Rockingham	1A, 1B, 3A, 3B, 6, 60	91
Mar. 15-27	Henry	1A, 2, 3A, 3B, 5A, 6, 7A, 7B, 7D, 10, 60, 90, 91	124
Mar. 22 - Apr. 2	Nottoway	7A, 7B, 7D, 10, 60	26
Mar. 22 - May 22	Hanover	1A, 4, 6, 60	6
Apr. 1-15	Isle of Wight	1A, 1B, 6, 60	6
Apr. 1 - May 1	Isle of Wight	3A, 3B, 5A, 6, 60	27
Jun. 28 - Jul. 9	Henry	1A, 2, 3A, 3B, 5A, 6, 7A, 7B, 7D, 10, 60, 90, 91	51
		TOTAL	461

Train-the-Trainer Activities

Pesticide Safety Education Workshop (PSEW): VTPP conducts an annual Virginia Pesticide Safety Educators (train-the-trainer) Workshop for VCE faculty, and VDACS staff. Each year, the workshop highlights several areas of pesticide safety education. PSEW 2021 was held August 11-12 as a hybrid conference to allow people to attend by Zoom or in-person at the Hotel Roanoke. The conference emphasized less common pesticide application techniques (e.g., fumigation, chemigation, spot application, and drone application). Category 10: Demonstration and Research Pest Control testing and new agent orientation also took place during the workshop.

Annual PSEW Participation in 2021

	Online	In-Person
Total # of participants	48	58
Total # of VCE agents participating	30	38
# of participants testing for commercial pesticide certification in Category 10	N/A	3
# of participants receiving recertification credit	25	37

PSEW Canvas Website: The PSEW Canvas website is available year-round to pesticide safety educators in Virginia. It acts as an organizational hub for the yearly PSEW and as a means for sharing educational resources throughout the year. The website received 2,856 total pageviews in 2021.

Other Extension Programs and Projects

VTPP Media Library: In 2021, VTPP created a digital media library (vtechworks.lib.vt.edu/handle/10919/102775) in collaboration with VTechWorks (an open access repository provided by University Libraries at Virginia Tech). The goals of the media library are to support pesticide safety and Integrated Pest Management programming efforts, and provide opportunities for building and broadening information exchange and collaborations with other state programs, agencies, and associations. The library will also complement existing resources on other publicly available platforms (e.g., bugwood.org and ipmimages.org). VTPP plans to add its current collection of high-quality pictures and videos to the library, and work with VCE faculty and other cooperators to add additional content. In 2021, over 90 digital images with appropriate metadata were added to the media library.

Pesticide Safety Education Month: Beginning in 2020, VTPP joined a national effort to bring awareness to Pesticide Safety Education Programs, State Lead Agencies (e.g., VDACS), and pesticide safety education by celebrating National Pesticide Safety Education Month each February. In 2021, VTPP used online tools to highlight consumer pesticide safety issues and resources. VTPP created a National Pesticide Safety Education Month page on the vtp.org website to offer downloadable content focused on various pesticide safety education topics. VTPP also linked this content to its social media page. The posts on social media reached 40 individuals directly, and the public page on the website received 37 unique page visitors.

New River Valley Home Expo: In 2020, VTPP partnered with the New River Valley Home Builders Association to provide an online pesticide safety booth for their Virtual Home Expo. The booth provided information about VTPP and showcased resources to educate homeowners on various consumer pesticide safety topics. The Virtual Home Expo was open to the public from September 2020 to September 2021.

Hokie BugZoo: VTPP currently maintains an insect zoo containing a diversity of insects and other arthropods from around the world (over 3,000 specimens belonging to over 75 species), many of which are unknown to the average person. The insect zoo is used for a number of VTPP sponsored public outreach and science literacy education programs, and various K-12 and organizational youth activities. It is also the basis for several labs in the entomology curriculum at Virginia Tech. In 2021, VTPP exhibited zoo specimens at 11 area elementary schools and two area youth outreach events that reached over 800 individuals. In addition, several online insect zoo tours were recorded and made available for K-12 educators and participants of Hokie BugFest (a virtual event for 2021) via the Department of Entomology, Hokie BugFest website. The zoo tours received 83 total pageviews (76% were unique visitors).

Hokie BugCamp: Each year, VTPP and the Virginia Tech Department of Entomology hosts an entomologically themed camp for youth ages 6-13 called Hokie BugCamp. In 2021, three 2-hour camp sessions were held at Blacksburg Heritage Community Park and Natural Area during July 30-31. Youth participants and their families were provided instruction and demonstration of insect collecting and pinning techniques. Youth participants were then provided hands-on opportunities to collect insects from a variety of habitats and pin their specimens. An optional “camp box” that participants could purchase (at cost) was also

available. Contents of the camp box included a collection box, collecting supplies, insect identification books, and other materials to extend insect study at home. Overall, Hokie BugCamp reached 65 youth and their parents/guardians.

Hokie BugFest: VTPP and the Virginia Tech Department of Entomology annually hosts a science literacy event called Hokie BugFest, which is open to the general public. The event promotes the understanding and appreciation of insects and other arthropods by offering an array of STEAM (science, technology, engineering, art, and math) enrichment experiences tailored for youth, families, and K-12 educators. Educational experiences offered during the event include entomological research displays, insect themed arts and crafts, live arthropod specimens, curated insect displays, and other special events and activities. Due to COVID-19 concerns, Hokie BugFest was organized as a virtual event in 2021. The event featured videos, photos, and downloadable at-home activities from 27 virtual exhibit booths, which were hosted on the Department of Entomology, Hokie BugFest website. Exhibitors included Virginia Tech faculty labs, Virginia 4-H, Virginia Master Naturalist Program, Virginia Pest Management Association, and other local and state partners. In addition, a Hokie BugFest Educators' Guide was developed in 2021 to help K-12 educators navigate the Hokie BugFest website. The guide categorized online content according to age, Virginia Standards of Learning (SOLs), and topic of interest, so content could be easily used in the classroom. A link to the Educators' Guide was distributed to K-12 educators throughout Virginia. The Hokie BugFest website and its resources were made available to the public on October 2, and will remain available until May 31, 2022. The Hokie BugFest website received 5,453 total pageviews (73% were unique visitors) in 2021. The Hokie BugFest Educators' Guide received over 681 pageviews (87 unique visitors) in 2021.

Hokie BugFest-on-the-Go Traveling Field Trips: Because the 2021 Hokie BugFest was organized as a virtual event due to COVID-19 concerns, VTPP developed and implemented a new program this year called Hokie BugFest-on-the-Go. The program consisted of traveling field trips where live arthropods were brought into area classrooms for a one-hour, hands-on, interactive session. Sessions included an Introduction to Entomology presentation, discussion of the habitats and adaptations of arthropod specimens, handling of selected arthropod specimens, and a general question and answer period. Hokie BugFest-on-the-Go visited 11 local schools (located in Floyd County and Montgomery County) during a two-week period in September 2021. In total, 45 classes were visited, reaching over 750 students and 60 teachers and administrators.

4-H Insect Collection Contest: VTPP coordinated a 4-H Insect Collection Contest in partnership with the Seek Education Explore DiDiscover (SEEDS) nature museum. In total, eight collections were submitted from three counties (Montgomery, Scott, and Wythe) during August and September. Photos were taken of each entry, and the winners were announced online on the Department of Entomology, Hokie BugFest website.

Science Museum of Western Virginia Spooktacular: VTPP partnered with the Science Museum of Western Virginia to provide an activity table on entomophagy (the practice of eating insects) at their annual Science Spooktacular on October 30. Attendees were invited to sample food-grade insects while learning about the future prospects of edible insects for food and feed. In total, 152 people visited the table, and approximately 33% sampled the insects provided.

Publications, Presentations, and Interviews

VCE fact sheets:

- Blevins, S. 2021. Reading Pesticide Product Labels (VCE Publication ENTO-390NP).
- Revell, J., and T. McCoy. 2021. Spiders: An Undeserved Bad Reputation (VCE Publication ENTO-393NP).
- Blevins, S., and M. Weaver. 2021. Pesticide Drift Series: Using Buffers to Reduce the Impact of Spray Drift (VCE Publication ENTO-454NP).
- McCoy, T. 2021. Pesticide Drift Series: Understanding and Controlling Pesticide Drift (VCE Publication ENTO-452NP).
- Parson, R. 2021. Pesticide Drift Series: Protecting Sensitive Areas from Pesticide Drift (VCE Publication ENTO-453NP).

VCE Pest Management Guides (updated sections on pesticide safety and application):

- Flessner, M., S. V. Taylor, et al. including D. L. Frank. 2021. Pest Management Guide: Field Crops (VCE Publication 456-016).
- Hong, C., E. Day, et al. including R. Parson and D. L. Frank. 2021. Pest Management Guide: Horticultural and Forest Crops (VCE Publication 456-017).
- Latimer, J. G., D. Close, et al. including S. Blevins and D. L. Frank. 2021. Pest Management Guide: Home Grounds and Animals (VCE Publication 456-018).
- Pfeiffer, D. G., et al. including D. L. Frank. 2021. Spray Bulletin for Commercial Tree Fruit Growers (VCE Publication 456-419).

VTPP Quarterly Newsletter: Beginning in May 2020, VTPP released the first issue of its new quarterly newsletter, VTPP Quarterly. Goals of the newsletter are threefold: distribute timely and informative pesticide safety information to a broad audience, create and maintain relationships with VCE personnel, and promote VTPP programs and activities. In its second year, the newsletter was published in the winter (January), spring (April), summer (July), and fall (October) of 2021. We used VCE email listservs and the VTPP website for distribution.

Conference Presentations:

- Beegle, D., S. Blevins, W. Weaver, and D. L. Frank. 2021. Hokie BugFest: Transitioning an in-person festival to an online event. Entomological Society of America Annual Meeting. Denver, CO.

Extension and Outreach Presentations:

- Frank, D. L. 2021. Virginia pesticide regulatory update. Southside and Central Virginia Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. IPM for forest insect pests. Southside and Central Virginia Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Isle of Wight Commercial Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Virginia Department of Corrections Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Central Virginia Landscape Commercial Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Northern Shenandoah Valley Commercial Pesticide Applicator Recertification Training. Virtual event.

- Frank, D. L. 2021. Virginia pesticide regulatory update. Essex, Hanover, Lancaster, Middlesex, Spotsylvania, and Westmoreland County Commercial Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Central Virginia General Pest Commercial Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Virginia Peanut and Cotton Production Meeting. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Summit Helicopter Commercial Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. IPM for forest insect pests. Summit Helicopter Commercial Pesticide Applicator Recertification Training. Virtual event.
- Frank, D. L. 2021. Virginia pesticide regulatory update. Virginia Tech, College of Agriculture and Life Sciences Pesticide Recertification Training. Virtual event.
- Frank, D. L. 2021. Introduction to entomology. Hokie BugFest-on-the-Go Traveling Field Trips.
 - Gilbert Linkous Elementary, Blacksburg, VA.
 - Harding Avenue Elementary, Blacksburg, VA.
 - Kipps Elementary, Blacksburg, VA.
 - Margaret Beeks Elementary, Blacksburg, VA.
 - Prices Fork Elementary, Blacksburg, VA.
 - Christiansburg Elementary, Christiansburg, VA.
 - Falling Branch Elementary, Christiansburg, VA.
 - Check Elementary, Copper Hill, VA.
 - Floyd Elementary, Floyd, VA.
 - Indian Valley Elementary, Radford, VA.
 - Willis Elementary, Willis, VA.
- Blevins, S. 2021. Pesticide safety training for Master Gardeners. VCE Master Gardener Program. Christiansburg, VA.
- Blevins, S., and R. Parson. 2021. Category 10: Demonstration and research review. VTPP new agent orientation. Virtual event.
- Parson, R., and S. Blevins. 2021. Category 10: Demonstration and research commercial applicator exam review. Vocational Agriculture Instructor Training. Virtual event.
- Seekford, S., and S. Blevins. 2021. Pesticide safety overview for Master Gardeners. VCE Master Gardener Program. Chesterfield, VA.
- Gregg, C., R. Parson, S. Blevins, and M. Barrow. 2021. New agent orientation. Pesticide Safety Educator’s Workshop. Roanoke, VA.
- Edwards, A., S. Pottorff, R. Parson, and A. Byington. 2021. Understanding pesticide application. Southwest Women in Agriculture Gathering. Wytheville, VA.

Interviews:

- Blevins, S., and D. L. Frank. 2021. Hokie BugFest. WFXR News – Living Local. Roanoke, VA.
- Blevins, S., and D. L. Frank. 2021. Pesticide Safety for the public. WFXR News – Living Local. Roanoke, VA.
- Blevins, S., and W. Weaver. 2021. Hokie BugCamp. WFXR News – Living Local. Roanoke, VA.

Website and Social Media Statistics

VTPP Website: As a “front door” for information about pesticide safety education and applicator certification, VTPP redesigned its website (vttp.ento.vt.edu/ or vttp.org) in 2020 to be more user friendly, intuitive, and aesthetically pleasing. The website provides greater ease of navigation and site accessibility for its users, and it offers a wealth of information for its major client groups. The site provides a platform to keep pesticide applicators up to date on any changes to state and federal regulations, as well as provide information on the wide range of topics that its clientele request on a daily basis. The website menu provides links to specific resources for Extension agents, pesticide applicators, pesticide businesses, and the public. Resources include general information about certification and recertification requirements in Virginia, relevant forms, available training opportunities, pesticide laws and regulations, and frequently asked questions. The website provides information for potential pesticide applicators on how to purchase training manuals and register for online certification preparation courses. In addition, the website provides links to IPM and pesticide safety resources developed by Virginia Tech, VCE, VDACS, and other national IPM and pesticide safety information resource groups. The website received 26,744 total pageviews (75% were unique visitors) in 2021.

VTPP Consumer Pesticide Safety Website: In August 2019, VTPP launched its Consumer Pesticide Safety Website (sites.google.com/vt.edu/vttpconsumerpse), which delivers pesticide safety information to the general public. The site employs an easy-to-use navigation scheme and a wealth of graphics to cover topics such as the safe and proper use of pesticide products, personal protective equipment, proper storage and disposal of pesticides, what to do in a pesticide emergency, pesticide resistance, and integrated pest management. The website is regularly updated with new resources added. The website received 83 total pageviews (90% were unique visitors) in 2021.

VTPP Social Media: VTPP maintains two social media accounts on Facebook: a Larry the Label account that focuses on providing pesticide safety updates and information, and a Hokie BugFest account that focuses on providing information about outreach opportunities provided by VTPP as well as general entomology related information. The Larry the Label account had 203 total daily users with a daily total reach of 3,151 in 2021. The Hokie Bugfest account had 3,603 total daily users with a daily total reach of 55,918 in 2021.