

DISCLAIMER

**THE LABEL IS A
LEGALLY-BINDING CONTRACT
BETWEEN THE USER AND THE
MANUFACTURER.
THE USER MUST FOLLOW
ALL RATES AND RESTRICTIONS
AS PER LABEL DIRECTIONS.**

NOT TO BE USED BY HOME GARDENERS

The use of any pesticide inconsistent with the label directions is a violation of Federal law.

Preface

This copy of the *Mid Atlantic Commercial Vegetable Production Recommendations for 2016* replaces all previous editions. Information presented in this publication is based on research results from Rutgers, The State University of New Jersey; University of Delaware; University of Maryland; The Pennsylvania State University; Virginia Polytechnic Institute and State University; West Virginia University; and the U.S. Department of Agriculture, combined with industry and grower knowledge and experience.

This vegetable production guide is intended for the commercial vegetable grower who has to make numerous managerial decisions. Although the proper choices of variety, pesticides, equipment, irrigation, fertilizer, and cultural practices are the individual vegetable grower's responsibility, it is intended that these recommendations will facilitate decision-making. Recommended planting dates will vary across the six-state region. Local weather conditions, grower experience, and variety may facilitate successful harvest on crops planted outside the planting dates listed in this guide. This can be evaluated in consultation with the local agents and state specialists. Government agencies and other organizations administering crop insurance programs or other support programs should contact local Extension agents and/or state vegetable specialists for guidance.

The publication will be revised annually or as is necessary to include new information that evolves in the rapidly changing vegetable industry. Important changes and updates will be posted in real time on the website www.njveg.rutgers.edu.

The Editors welcome constructive criticism and suggestions from growers and industry personnel who may wish to help improve future editions of this publication.

Days Wait between Last Pesticide Application and Harvest

Minimum days between last application and harvest for insecticides and fungicides are listed in tables at the end of the Insect Control section for each crop. The minimum number of days between last application of herbicide and harvest is listed in Table E-4.

To avoid deleterious chemical residues from occurring on harvested crops, heed this warning.

See Table D-6 for Reentry Information Listed under Toxicity of Chemicals

Trade or Brand Names

The trade or brand names given herein are supplied with the understanding that no discrimination is intended and no endorsement by Rutgers Cooperative Extension is implied. Furthermore, in some instances the same compound may be sold under different trade names, which may vary as to label clearances. For the convenience of our users, both product names and active ingredients are provided and any product name omissions are unintended.

Keys to Proper Use of Pesticides

1. Read the label on each pesticide container before each use. Follow instructions to the letter, heed all cautions and warnings, and note precautions about residues.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label.

Pesticide-User Responsibility

Always follow the label and use pesticides safely. For special Local-Needs Label [24(c)] registrations or Section 18 exemption, do not use the material without a copy of the special label or written instructions from your Extension Agent or another recognized authority. Remember, the user is always responsible for the proper use of pesticides, residues on crops, storage and disposal, as well as for damage caused by drift.

State and federal pesticide regulations are constantly under revision. Be sure to determine if such changes apply to your situation. Using pesticides inconsistent with label directions is illegal.

Pesticide Precautionary Statement

The pesticides recommended in this publication are designed to be toxic to target pests. They can be hazardous to human health and the environment if used improperly. Follow all label directions, precautions, and restrictions. Remember, any use of a pesticide that is inconsistent with its label is a violation of federal law, and the user can be liable for injury and damages resulting from misuse. Using a pesticide material inconsistent with label directions is illegal.

SEE YOUR DOCTOR IF SYMPTOMS OF ILLNESS OCCUR DURING OR AFTER USE OF PESTICIDES.

Spills (Accidents and related emergencies)

CHEMTREC - 800/424-9300

Chemical Transportation Emergency Center
Industry assistance with cleanup procedures, etc.

National Response Center - 800/424-8802

Reporting spills to comply with EPA regulations and the Clean Water Act

EPA/RCRA Hotline - 800/438-2474

National Pesticide Information Center - 800/858-7378

For Help in Case of Pesticide Poisoning, Call:

National Pesticide Information Center - 800/858-7378

The procedure to be followed **IN CASE OF SUSPECTED POISONING:**

- (1) To avoid exposure to you and to emergency medical personnel, make sure the container is closed and preferably sealed in a plastic bag. Alert all those involved with the emergency that the patient has been exposed to pesticides and to protect themselves from exposure when handling the patient or container.
- (2) Call a physician immediately. If the family physician is not available, the patient should be taken to the nearest physician or hospital emergency room together with the CONTAINER OF THE POISONING AGENT. If you are the patient, do not drive yourself unless there are extenuating circumstances.
- (3) If necessary, the PHYSICIAN will call the nearest poison control center for further information as to the toxicity of the suspected agent, treatment and prognosis.

National Poison Center - 1-800-222-1222

**Mid Atlantic Commercial Vegetable Production Recommendations
2016 Edition Coordinated by**

Andy Wyenandt, Ph.D.

Extension Specialist in Vegetable Pathology

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Delaware Extension Vegetable Resources

Extension Bulletin 137

2016 University of Delaware Revisions

Delaware contributors to the 2016 Commercial Vegetable Production Recommendations were Gordon Johnson and Emmalea Ernest, horticulture; Nathan Kleczewski and Kathryn Everts plant pathology; Mark VanGessel, weed science; and Joanne Whalen IPM/entomology University of Delaware; in cooperation with the University of Maryland; The Pennsylvania State University; Rutgers, The State University of New Jersey; Virginia Polytechnic Institute and State University, and West Virginia University.

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Plant Diagnostic Clinic

The UD Plant Diagnostic Clinic works to identify potential issues with plant specimens and provide this information to growers. The Clinic accepts plant samples showing signs or symptoms of disease or other disorders. The Clinic is housed in the Department of Plant and Soil Sciences at the University of Delaware in Newark, and operates as a function of Delaware Cooperative Extension. A Sample Submission Form should accompany samples, with information filled in as completely as possible. The sample submission form may be downloaded and printed from the web site at <http://extension.udel.edu/ag/plant-diseases/ud-plant-diagnostic-clinic>. Send or take samples directly to the UD Plant Diagnostic Clinic, 151 Townsend Hall, 531 S. College Ave., Newark, DE 19716, ph. 302-831-1390, or to any Delaware Extension office. The UD Nematode Assay Service operates out of the Applied Field Crop Pathology lab and accepts samples of soil for plant parasitic nematode identification and enumeration within Delaware. All pertinent information, including forms and instructions, can be found <http://extension.udel.edu/ag/plant-diseases/nematology/>.

Insect Pest Management

Guidelines and information about current insect activity are provided in the Weekly Crop Update newsletter. Trap catch information is also reported on the Crop Pest Hotline Report. Toll-free telephone number in Delaware is 1-800/345-7544; out of state, call 302/831-8851.

Delaware Poison Control Center

The state of Delaware's Poison Control Center is in cooperation with The Children's Hospital of Philadelphia. The hospital provides a 24-hour-a-day emergency hotline for poisoning incidents and poison information for Delaware residents. When telephoning a hospital concerning poisoning, ask for the Poison Control Center.



For Help with a Pesticide Spill or Emergency, Call:

Delaware Department of Agriculture.....800/282-8685

For Information on Certification of Pesticide Applicators, Call:

Delaware Department of Agriculture - 800/282-8685



Weekly Vegetable and Agronomic Crops Newsletter

March through September

<http://extension.udel.edu/weeklycropupdate/>

Timely Production Topics

Current Ag Issues

Disease and Insect Outbreaks

Latest Weed, Insect and Disease Control Options

Crop Progress Reports

Pasture and Forage Management

Weather Summary

Upcoming Meetings and Events

Information provided by University of Delaware Cooperative Extension Specialists and Agents.

The Weekly Crop Update is available by:

First Class Mail, Fax, or on the Internet (**FREE**)

The Weekly Crop Update is mailed, faxed and posted on the internet each Friday by 4:30 pm.

To receive FREE weekly email reminders, sign up on the website:

<http://extension.udel.edu/weeklycropupdate/> or email Emmalea Ernest, emmalea@udel.edu

For Fax or mail subscription information contact Emmalea Ernest at 302-856-7303

**COOPERATIVE EXTENSION SERVICE / COLLEGE OF AGRICULTURE AND NATURAL RESOURCES
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Maryland Extension Vegetable Resources

2016 Revisions Prepared by

Gerald E. Brust (Entomology) and Kathyne L. Everts (Plant Pathology) in cooperation with the University of Delaware; The Pennsylvania State University; Rutgers, The State University of New Jersey; Virginia Polytechnic Institute and State University; and West Virginia University.

Extension Bulletin 236

(revised) January 2016

Plant Diagnostic Laboratory

University of Maryland Diagnostic Lab, Dr. Karen Rane, Director, Telephone: 301-405-1611, FAX: 301-314-9290; WEB: <http://www.plantclinic.umd.edu> ; or Email Karen Rane: rane@umd.edu. All Maryland residents may submit samples to the lab. The laboratory provides plant problem diagnosis for all crops.

Extension Specialists - University of Maryland

College Park

Dr. Amy E. Brown, Pesticide Coordinator
Dr. Cerruti R. R. Hooks, IPM and Insect Ecology
Dr. Galen Dively (Emeritus), Entomology and IPM

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Dr. Kathyne L. Everts, Plant Pathologist

Wye Research and Education Center

Mr. Robert J. Rouse (Emeritus), Hort. Specialist

Central Maryland REC-Upper Marlboro

Dr. Gerald E. Brust, IPM Vegetable Specialist

RESOURCE MATERIALS

Listing of additional publications that may be of interest to Maryland vegetable producers. There may be a charge for some of these. Contact your local Extension office for availability and cost. Services and materials from University of Maryland Extension may also be found on-line at www.agnr.umd.edu. Additional publications can be found at: <http://extension.umd.edu/mdvegetables>. The Vegetable and Fruit Headline News, a biweekly vegetable newsletter is available during the growing season at: <http://extension.umd.edu/anne-arundel-county/agriculture/vegetable-fruit-headline-news>

EB 254	<i>Uniform Lime and Fertilizer Spreading</i>	FS 640	<i>Basic Principles of Soil Fertility: Soil Properties</i>
EB 242	<i>Commercial Small Fruit Production Guide</i>	FS 646	<i>An Overview of Successful Produce Wholesaling Opportunities for Local Farmers in the Baltimore-Washington Area</i>
EB 312	<i>Soil Moisture Sensors for Irrigation Management</i>	FS 647	<i>The Importance of Postharvest Handling</i>
EB 351	<i>Greenhouse Heating, Circulation, and Ventilation Systems</i>	FS 648	<i>A Systematic Approach to Produce Handling</i>
EB 356	<i>Trickle Irrigation for Cut Flowers, Vegetables, and Small Fruit</i>	FS 690	<i>Greenhouse Float Systems for Transplant Production</i>
FACTS 171	<i>Water Treatment for Micro Irrigation--Filtration and Chemical Treatment</i>	FS 715	<i>Cleansing and Sanitizing Fresh Produce Handling Equipment, Utensils and Sales Areas</i>
FACTS 172	<i>Safety Devices for Chemigation</i>	L 142	<i>Why Test Your Soil?</i>
FACTS 179	<i>Chemical Proportioners for Irrigation Systems</i>	NR 19	<i>Boom Sprayers</i>
FACTS 182	<i>Troubleshooting Vegetable Transplant Green-houses</i>	PMA 11	<i>Insect Pests of Vegetables (1-11, color photo plates)</i>
FACTS 190	<i>Fertigation Systems--Use Them More Efficiently through Calibration</i>	SFM-3	<i>Descriptions of the Soil Test Interpretive Categories Used by the University of Maryland Soil Testing Laboratory</i>
FS 431	<i>The Economics of Leasing Versus Buying Farm Equipment</i>		
FS 447	<i>Estimating Irrigation Water Requirements</i>		
FS 448	<i>Enterprise Guide for Southern Maryland: Alternative Enterprises--What You Should Know</i>		
FS 449-473, 502,503	<i>Enterprise Guide for Southern Maryland (a series of fact sheets on individual crops)</i>		
FS 513	<i>Soil Phosphorus: Managing It Efficiently</i>		

Guidelines and information about current pest activity in VEGETABLES are provided in bi-weekly pest management reports throughout the spring and summer. These reports furnish accurate information for the timing of pesticide applications, aiding in more effective control.

To receive these reports, contact your county Extension agent or state Extension pest management specialist

**State Agency for Pesticide-Use Regulation--
Maryland Department of Agriculture**

Pesticide Regulation Section
50 Harry S. Truman Parkway
Annapolis, MD 21401
410/841-5710

Maryland Poison Control Centers
(Centers operate on a 24-hour basis)

1-800-222-1222
State Coordinator
University of Maryland
School of Pharmacy
Baltimore, Maryland 21201
800/492-2414
410/528-7701 (Local Baltimore)

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MARYLAND

EXTENSION

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UNIVERSITY of MARYLAND EXTENSION

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New Jersey Extension Vegetable Resources

New Jersey contributions and editing done by Dr. Arend-Jan Both (*High Tunnels*), Dr. Joseph R. Heckman (*Soil Fertility*), Michelle Infante-Casella, Peter Nitzsche, and Richard VanVranken (*Vegetable Crops*), Dr. Brooke Maslo (Wildlife Damage Prevention), Dr. Norman Lalancette (*Fruit Pathology*), Dr. Daniel Ward (*Small Fruit Culture*), Dr. Wesley Kline (*Farm and Food Safety*), Meredith Melendez (*Farm and Food Safety*), Patricia Hastings (*pesticides*), Dr. Thomas Orton (*horticulture*), Karen Holton (*Business operations*), and county agents, the research staff of the Mid-Atlantic States Agricultural Experiment Stations, research scientists of the United States Department of Agriculture, and environmental specialists of the Pesticide Control Program of the New Jersey Department of Environmental Protection contributed information to the Commercial Vegetable Production Recommendations.

RESOURCE MATERIALS

The following publications are suggested for agents, growers, agriculture-industry representatives, and others who desire more detailed information on specific crops or production practices.

Rutgers Cooperative Extension Publications

The publications listed below are available from county Extension offices and the Rutgers Cooperative Extension web site: www.rce.rutgers.edu.

- E285 *Soil Nitrate Testing as a Guide to Nitrogen Management for Vegetable Crops*
FS337 *Complying with the NJ Right-to-Know Law*
FS399 *Vole Ecology and Management*
FS603 *Pesticide Storage Facilities*
FS604 *Handling Emergency Situations on the Farm*
FS605 *Accident Proofing Farms and Stables*
FS608 *Fire Prevention and Safety Measures Around the Farm*
FS619 *Farm Machinery and Equipment Safety--Part I-Recognizing and Understanding Hazards*
FS620 *Farm Machinery and Equipment--Part II-Preventing Machinery Accidents During Operation*
FS628 *Cleaning and Storage of Pesticide Sprayers*
FS657 *Irrigation Scheduling with Tensiometers*
FS658 *Irrigation Scheduling with the Feel Method*
FS683 *Organic Certification of Agricultural Products*
FS760 *Presidedress Soil Nitrate Test (PSNT) Recommendations for Sweet Corn*
FS784 *A High-Productivity Strawberry Production System for NJ*
FS793 *Using Irrigation Water Tests to Predict and Prevent Clogging of Drip Irrigation Systems*
FS794 *Preventative Maintenance for Irrigation Equipment*
FS795 *Treating Drip Irrigation Systems with Chlorine*
FS796 *Controlling Bacteria, Algae, and Weeds in Ponds*
FS824 *Plant Nutrients in Municipal Leaf Waste*
FS849 *Cover Crops and Green Manure Crops: Benefits, Selection, and Use*
FS871 *Understanding Fertilizer Labels:*
FS873 *Boron--Evaluating Needs of Soils and Crops in NJ*
Land Application of Sewage Sludge Series:
FS951 *#1: Questions to Ask Before Application*
FS952 *#2: Regulations and Guidelines*
FS953 *#3: Different Types of Sewage Sludge*
FS954 *#4: Guidelines for Land Application in Agriculture*
FS955 *#5: Heavy Metals*
FS956 *#6: Soil Amendments and Heavy Metals*
FS957 *#7: Organic Contaminants*
FS958 *#8: Pathogens*
FS1017 *Regulations Governing the Management of New Jersey Wildlife*
FS1020 *Sweet Corn Crop Nitrogen Status Evaluation by Stalk Testing*
FS1023 *Nutrient Management of Land Applied Grass Clippings*

Natural Resource, Agriculture, and Engineering Service Publications

Available from NRAES, Cooperative Extension, 152 Riley-Robb Hall, Ithaca, NY 14853-5701 (607/255-7654).

Web site: www.NRAES.org

- NRAES-3 *Energy Conservation for Commercial Greenhouses.* (\$17)
NRAES-4 *Trickle Irrigation in the Eastern United States.* (\$6)
NRAES-10 *Farm Accident Rescue.* (\$12)
NRAES-22 *Refrigeration and Controlled Atmosphere Storage for Horticultural Crops.* 42 pages. (\$8)
NRAES-104 *Sustainable Vegetable Production From Start-up to Market* (\$38)

Electronic Information

Rutgers Cooperative Extension maintains a worldwide web site on the internet. Information available at the site includes:

- Rutgers Cooperative Extension Calendar of Events
- County Office Information--telephone numbers and travel directions
- Employment Opportunities
- Fact Sheets--more than 250 fact sheets related to agriculture, family and consumer science, and 4-H
- Newsletters--Plant and Pest Advisory Newsletters
- Pesticides for New Jersey
- Marketing Information--Farmers markets, organic farms, and pick-your-own farms
- Fruit and Vegetable Guides
- Weed Images and Descriptions

The address for the Rutgers Cooperative Extension web site is:
njaes.rutgers.edu/extension/

For the Disposal of Pesticides, Call:
Bureau of Hazardous Waste Regulation
Department of Environmental Protection
Trenton, NJ 08625 - 609/292-7081

For Help in a Pesticide Emergency, Call:
New Jersey Poison Information & Education System - 800/222-1222
or
DEP, Trenton - 877/927-6337

In Case of a Pesticide Spill, Call:
DEP NJ Hotline - 877/927-6337

**For Information on Pesticide Applicator Certification and
Pesticide Laws and Regulations, Call:**
Pesticide Control Program - 609/530-4070
or
Rutgers Cooperative Extension Pesticide Office –
732/932-9801

The Plant Diagnostic Laboratory is a full-service plant health diagnostic facility of Rutgers New Jersey Agricultural Experiment Station (NJAES). Located on the Cook Campus, the Plant Diagnostic Laboratory provides plant health diagnostic services in cooperation with Rutgers NJAES Cooperative Extension faculty and staff. Sample submission forms can be obtained from your local county Rutgers New Jersey Agricultural Experiment Station (NJAES) Cooperative Extension office or directly from the laboratory via phone request (732-932-9140) or fax request (732-932-1270). The laboratory will fax back the appropriate form. Completely fill out the submission form. Collect the appropriate sample. Carefully follow the directions on the submission form. Whole plants work best. Properly package the sample, form, and payment. Mail the sample to the appropriate address.

Mailing Address:

Plant Diagnostic Laboratory
Rutgers NJAES
P.O. Box 550
Milltown, NJ 08850-0550

Telephone: 732-932-9140

Fax: 732-932-1270

Email: clinic@njaes.rutgers.edu

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.



Pennsylvania Extension Vegetable Resources

This copy of the *Mid Atlantic Commercial Vegetable Production Recommendations for 2016* was prepared by:

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Ms. Kathy Demchak	<i>Horticulture</i>	Dr. Luke LaBorde	<i>Food Science</i>
Dr. Kerry Hoffman-Richards	<i>Pesticide Safety</i>		

Resource Materials

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

This publication is available from the Publications Distribution Center, The Pennsylvania State University, 112 Agricultural Administration Building, University Park, PA 16802. For information telephone 814-865-6713.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

Penn State Extension Publications

Various production guides, fact sheets, and other publications are available from county extension offices and the Publications Distribution Center, located at 112 Agricultural Administration Building, University Park, PA 16802. Call 814-865-6713, email AgPubsDist@psu.edu, or visit extension.psu.edu/publications/ordering for more information. Some publications that may be of interest are listed below.

Free Publications, Information, and Other Resources

The following are a few examples of free publications and information available from Penn State Extension:

Agricultural Alternatives. This series of fact sheets was developed to help users evaluate new enterprises for their operations. They are available at extension.psu.edu/business/ag-alternatives or through the Publications Distribution Center.

Curran, W. 2004. Weed Management in Organic Cropping Systems.
extension.psu.edu/pests/weeds/organic/weed-management-in-organic-cropping-systems.

Fleischer, S. 2001. Entomological Notes: Pests of Vegetables.
ento.psu.edu/extension/factsheets/pests-of-vegetables.

Lingenfelter, D.D., and N.L. Hartwig. 2007. Introduction to Weeds and Herbicides.
extension.psu.edu/pests/weeds/control/introducti-on-to-weeds-and-herbicides.

Sánchez, E.S., and Richard, T.L. 2009. Using Organic Nutrient Sources.
extension.psu.edu/publications/uj256/view.

More resources and information are available from the Penn State Vegetable, Small Fruit, and Mushroom Production website at extension.psu.edu/plants/vegetable-fruit.

The following titles are available by contacting Dr. Bill Lamont, Department of Plant Science, 206 Tyson Building, University Park, PA 16802; email: wjlamont@psu.edu:

- *High Tunnel Production Manual.* 2003.
- *Implementing a Biocontrol Program for Managing Insect Pests in High Tunnels.* 2011.

For-Sale Publications

Below are some for-sale publications that may be of interest to vegetable growers:

Christ, B. 1998. *Identifying Potato Diseases in Pennsylvania* (Publication AGRS-075).
extension.psu.edu/publications/agrs-075/view.

Demchak, K. (Coordinator). *The Mid-Atlantic Berry Guide, 2013–2014* (Publication AGRS-097).
extension.psu.edu/publications/agrs-097/view.

MacNab, A.A. 1994. *Identifying Diseases of Vegetables* (Publication AGRS-021).
extension.psu.edu/publications/agrs-021/view.

PA IPM. *Vegetable Integrated Pest Management with an Emphasis on Biocontrol: A Guide for Growers in the Mid-Atlantic* (2015).
extension.psu.edu/publications/agrs-128.

White, C., et al. *Penn State Organic Crop Production Guide*.
extension.psu.edu/publications/agrs-124.

Plant Diagnostic Clinic

The Penn State Plant Disease Clinic accepts in-state samples for disease diagnosis. For more information about how to collect and submit a sample along with the specimen information form, visit plantpath.psu.edu/facilities/plant-disease-clinic.

This publication is available in alternative media on request.

**PENN STATE EXTENSION
PENNSYLVANIA AGRICULTURAL EXPERIMENT STATION
THE PENNSYLVANIA STATE UNIVERSITY,
UNIVERSITY PARK, PA**



PennState Extension

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Virginia Extension Vegetable Resources

Contributors from Virginia

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David B. Langston, Jr., Professor, Plant Pathology
R. Allen Straw, Area Specialist, Horticulture
Jayesh Samtani, Area Specialist, Small Fruit

Poison Control Centers and Emergency Facilities (Partial List)

IN CASE OF SUSPECTED POISONING CONTACT:

Charlottesville: 434-982-3196
Leesburg: 800-451-1428
Newport News: 800-552-6337
Richmond: 804-828-9123

In Virginia, you must report spills that threaten the environment or public health to:

**Virginia Department of Agriculture & Consumer Services
Office of Pesticide Services.....804/371-6560**

**For Help with a Pesticide Spill or Emergency, Call:
State Emergency Operations Center.....804/323-2300**

For Information on Certification of Pesticide Applicators, Contact:

**Pesticide Regulation
Virginia Department of Agriculture and Consumer Services
P.O. Box 1163
Richmond, VA 23209
Call...804/786-3798**

Plant Disease Clinic

Virginia Tech's Plant Disease Clinic processes plant disease diagnostic requests from in-state producers. The clinic also can conduct nematode assays on soil samples (a nominal charge applies to nematode assays). It is recommended that growers contact their local county/city extension agent to aid in sample submission. Visit the following web site to locate the extension agent in your locality: <http://www.ext.vt.edu/offices/>

**VIRGINIA COOPERATIVE EXTENSION
VIRGINIA TECH AND VIRGINIA STATE
VIRGINIA'S LAND-GRANT UNIVERSITIES
Publication 456-420**

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WVU Extension Vegetable Resources

WVU Extension Commercial Horticulture:

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Extension Horticulture Specialist
West Virginia University
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WVU Plant Diagnostic Clinic

The Plant Diagnostic Clinic diagnoses all kinds of plant problems for homeowners, gardeners, landscapers, growers and farmers. In consultation with expert faculty, we recommend ways to treat or prevent the problems we diagnose. Plant Diagnostic service is provided at no cost to West Virginia residents. Plant specimens should be placed in a plastic bag (sealed or zip-locked) and shipped immediately in a mailing tube or strong carton. Do not add moist paper or toweling in the plastic bag. Collect the whole diseased plants, that are showing symptoms but not fully dead (plants having diseased and healthy tissues with progression of diseased areas make the best sample for diagnosing the problem), if possible, include the roots. Collect more than one plant if they show various stages of decline. For plant identification, collect the whole plant, if possible, including flowers and fruits. Digital sample submission is available through county extension office by using Plant Diagnostic Information System. Sample submission form is available online at <http://anr.ext.wvu.edu/r/download/108612>. Please provide as much information as possible on the form. If you have any question about how to collect sample and ship, please contact the lab at 304-293-8838.

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WVU Soil Testing Lab

The mission of the WVU Soil Testing Lab is to provide basic soil fertility analysis for farmers, landowners, and homeowners. This service is provided at no cost to West Virginia residents. Currently, the lab processes approximately 10,000 soil samples each year. Even though soil testing is offered as a free service for WV landowners, it is not cheap. Current overall costs for analysis run approximately \$10 per sample. For this reason, we reserve the right to charge fees to private businesses, government agencies, and out-of-state samples. We also reserve the right to limit the number of samples processed for individuals. Any resident sending more than 40 samples should contact the lab at (304) 293-6023 ext. 4312 to get approval prior to shipping. Contact information:

Dr. Jim Gorman, Lab Supervisor

WVU Soil Testing Lab

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Poison Control Center for West Virginia:

**West Virginia Poison Center
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Emergency: (800) 222-1222
Administration: (304) 347-1212**



To contact a
WVU Extension
Service Agent in your county: www.ext.wvu.edu

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ABBREVIATIONS

A	- acre(s)	°F	- degrees Fahrenheit
/A	- per acre	F ₁	- hybrid
AFR	- anthracnose and <i>Fusarium</i> wilt resistant	FAW	- fall armyworm
ai	- active ingredient	FB	- flea beetle
ALS	- acetolactate synthase	FC	- flowable concentrate
ALS	- angular leaf spot resistant	fl	- fluid
AMS	- ammonium sulfate	FM	- flowable microencapsulated
AMV	- alfalfa mosaic virus	FR	- <i>Fusarium</i> wilt resistant
AR	- anthracnose resistant	FRAC	- Fungicide Resistance Action Committee
ASCR	- <i>Alternaria</i> stem canker resistant	FR 0,1,2	- <i>Fusarium</i> wilt resistance to race 0,1,2
BAW	- beet armyworm	FR 2	- <i>Fusarium</i> wilt resistance to race 2
BLSR	- bacterial leaf spot resistance	FS	- <i>Fusarium</i> and <i>Stemphylium</i> wilt resistant
BLT	black light trap	ft	- foot (feet)
BRR	- black rot resistant	FT	- <i>Fusarium</i> tolerant
BRT	- black rot tolerant	g	- gram
BSR	- bacterial speck resistant	G	- granule(s)
<i>Bt</i> or <i>B.t.</i>	- <i>Bacillus thuringiensis</i>	gal	- gallon(s)
Btu	- British thermal unit	GMO	- genetically modified organism
bu	- bushel(s)	GPA	- green peach aphid
BV-1	- bean common mosaic virus resistant or tolerant	gpm	- gallons per minute
BV-2	- bean yellow mosaic virus resistant or tolerant	GS	- green stem
BWMS	- bacterial wilt moderately susceptible	HAACP	- Hazard Analysis and Critical Control Point
BWR	- bacterial wilt resistant	HW	- Hornworm
BWS	- bacterial wilt susceptible	ICW	- imported cabbageworm
°C	- degrees Celsius	in	- inch(es)
CB	- cucumber beetles	IDLH	- immediately dangerous to life or health
cc	- cubic centimeter(s)	INSV	- impatiens necrotic spot virus
CEC	- cation exchange capacity	IRAC	- Insecticide Resistance Action Committee
CEW	- corn earworm	K	- potassium
CL	- cabbage looper	K ₂ O	- available potash
CLS	- <i>Cercospora</i> Leaf Spot	L	- liquid
CMS	- cucumber mosaic susceptible	lb	- pound(s)
CMV	- cucumber mosaic virus	LBR	- leaf blight resistant
COC	- crop oil concentrate	LBT	- leaf blight tolerant
CPB	- Colorado potato beetle	LC	- liquid concentrate
CRR	- corky root resistant	LF	- liquid flowable
cu ft	- cubic foot (feet)	LM	- Leafminers
cu yd	- cubic yard(s)	LMV	- lettuce mosaic virus
cwt	- hundredweight	LR	- leaf roll resistant
D	- dust	MA	- melon aphid
DBM	- diamondback moth	MDMR	- maize dwarf mosaic resistant
DF	- dry flowable	ME	- microencapsulated
DMR	- downy mildew resistant	min	- minimum
DMMR	- downy mildew moderate resistance	MMR	- mildew and mosaic resistant
DP	- dry prill	mph	- miles per hour
DS	- dry salt	MoA	- mode of action
E	- emulsion	MR	- mosaic resistant
EBDC	- early blight disease control	MSDS	- Manufacturers Safety Data Sheet
EBR	- early blight resistant	MSO	- methylated seed oil
EC	- emulsifiable concentrate	MT	- mosaic tested
ECB	- European corn borer	N	- nitrogen
ELB	- Eggplant Lacebug	NIOSH	- National Institute for Occupational Safety & Health
ES	- emulsifiable suspension	NTL	- no time limitation
ESLI	- End-of-service life indicators	NY-15	- resistant or tolerant to NY-15 strain of bean common mosaic virus
EVR	- enation virus resistant or tolerant	OF	- oil formulation
EW	- emulsion in water	OLF	- other labeled formulations
F	- flowable	OMRI	- Organic Materials Review Institute
		opt	- optimum
		OS	- ozone sensitive

ABBREVIATIONS *(continued)*

OT - ozone tolerant	SR - scab resistant
oz - ounce(s)	St - <i>Stemphylium</i> resistance
% - percent	SWV - spotted wilt virus resistant
P - phosphorus	T - trial
PGR - plant growth regulator	TAW - true armyworm
PHI - preharvest interval	TBR - tipburn resistant
POA - potato aphid	tbs - tablespoon(s)
pl - plant(s)	TEV - tobacco etch virus
PMR - powdery mildew resistant	TMV - tobacco mosaic virus
PMT - powdery mildew tolerant	tsp - teaspoon(s)
ppi - preplant incorporated	TSSM - two-spotted spider mite
ppm - parts per million	TSWV - tomato spotted wilt virus
Pr - processing	TuMV - turnip mosaic virus
PR - <i>Phytophthora</i> resistant	VF - <i>Verticillium</i> and <i>Fusarium</i> wilt resistant
PRR - pink root resistant	VFN - <i>Verticillium</i> , <i>Fusarium</i> , and nematode resistant
PRSV - papaya ring spot virus	VFFN - <i>Verticillium</i> , <i>Fusarium</i> race, 0, 1, nematodes
PRT - pink rot tolerant	VFS - <i>Verticillium</i> , <i>Fusarium</i> , and <i>Stemphylium</i> wilt resistant
psi - pounds per square inch	VR - <i>Verticillium</i> wilt resistant
pt - pint(s)	VS - <i>Verticillium</i> wilt susceptible
PT - <i>Phytophthora</i> tolerant	W - wettable
P ₂ O ₅ - available phosphoric acid	WBE - water-based emulsion
PVX - potato virus X	WDG - water dispersible granules
PVY - potato virus Y	WDL - water-dispersible liquid
Py - premature yellow	wk - week(s)
PYO - pick-your-own	WMV - watermelon mosaic virus
qt - quart(s)	WMV2 - watermelon mosaic virus race 2
RKR - root-knot nematode resistant	WP - wettable powder
RR - rust resistant	WRR - white rust resistant
RSR - red stele resistant	WRT - white rust tolerant
S - sprayable	WSB - water-soluble bag
SB - sap beetle	WSP - water-soluble packet
SC - spray concentrate, soluble concentrate	yr - year(s)
SCN - soybean cyst nematode	YR - yellows resistant
SG - soluble granules	ZYMV - zucchini yellow mosaic virus
SMR - scab and mosaic resistant	ZYMVR - zucchini yellow mosaic virus resistant
SmR - smut resistant	
SMV - squash mosaic virus	
SP - soluble powder	
SpR - split resistance	
sq ft - square foot (feet)	