RUTGERS
New Jersey Agricultural Experiment Station

This is a section from the

2022/2023
Mid-Atlantic Commercial Vegetable Production Recommendations

The recommendations are **NOT** for home gardener use.

The **full manual**, containing recommendations specific to New Jersey, can be found on the Rutgers NJAES website in the Publications section: *http://njaes.rutgers.edu/pubs/publication.asp?pid=E001*.

This manual will be revised biennially. **In January 2023, a Critical Update** with important updates to the 2022/2023 manual will be communicated through local Extension Agents and Vegetable Specialists.

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

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

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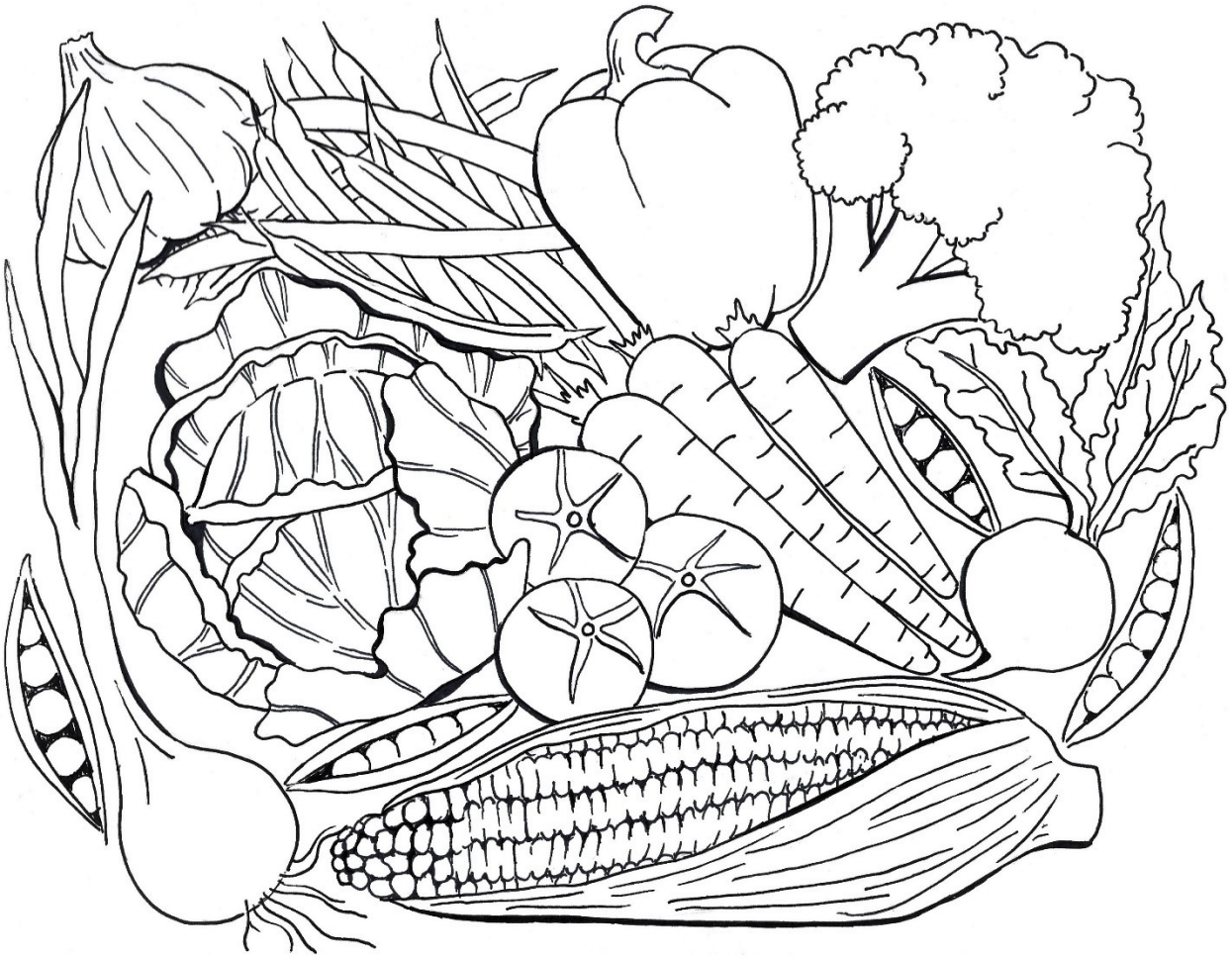
Mid-Atlantic Commercial Vegetable Production Recommendations



If you are having a medical emergency after using pesticides, call 911 immediately.

If you have any of the following symptoms during or shortly after using pesticides: headache, blurred vision, pinpoint pupils, weakness, nausea, cramps, diarrhea, and discomfort in the chest, call a physician and the National Poison Control Center hotline (1-800-222-1222).

Your call will be routed to your State Poison Control Center.
Anyone with a pesticide exposure poisoning emergency can call the toll-free telephone number for help. Personnel at the Center will give you first-aid information and direct you to local treatment centers if necessary.

For immediate medical attention call 911. Prompt action and treatment may save a life.

In Case of an Accident

- **Remove the person from exposure.**
- **Get away from the treated or contaminated area immediately.**
- **Remove contaminated clothing.**
- **Wash with soap and clean water.**
- **Call a physician and the Poison Control Center (1-800-222-1222) or agency in your state.**
- **Have the pesticide label with you! Follow the First Aid Precautionary Statements.**
- **Be prepared to give the EPA registration number to the responding center/agency.**

Preface

NOT TO BE USED BY HOME GARDENERS

This copy of the 2022/2023 Mid-Atlantic Commercial Vegetable Production Recommendations replaces all previous editions of the Commercial Vegetable Production Recommendations published individually for Delaware, Maryland, New Jersey, Pennsylvania, Virginia, and West Virginia. Information presented in this publication is based on research results from the University of Delaware, the University of Maryland, Rutgers - The State University of New Jersey, 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 publication will be revised biennially. **In January 2023, a Critical Update with important updates for this publication will be communicated through local Extension Agents and Vegetable Specialists.** The editors welcome constructive criticism and suggestions from growers and industry personnel who may wish to help improve future editions of this publication.

These recommendations are 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 administrating crop insurance programs or other support programs should contact local Extension agents and/or vegetable specialists for guidance.

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

Pesticide User Responsibility

Always follow the label and use pesticides safely. For Special Local Needs Label 24(c) registrations or Section 18 exemptions, do not use the material without a copy of the special label or written instructions from your Extension Agent or another recognized authority. **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.

Days Between Last Application and Harvest

The minimum number of days between the last application and harvest (**PHI**, Pre-Harvest Interval, in days) and reentry information (**REI**, Restricted Entry Interval, in hours) are listed in the herbicide, insecticide and fungicide recommendation tables in chapter F Commodity Recommendations. Always follow the label to avoid the occurrence of deleterious chemical residues on harvested crops.

Trade or Brand Names

The trade or brand names given herein are supplied with the understanding that no discrimination is intended, and no endorsement 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.

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2022/2023 Mid-Atlantic Commercial Vegetable Production Recommendations

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Mid-Atlantic Commercial Vegetable Production Recommendations: publication EB137
Vegetable Program Trial Reports, Publications, and Budgets:
https://www.udel.edu/academics/colleges/canr/cooperative-extension/sustainable-production/commercial-crops/vegetable-crops/
Weekly Crop Update Newsletter: *https://sites.udel.edu/weeklycropupdate/*
Delaware Insect Pest Management, Trial Reports, Insect Trapping Program:
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Fact Sheets and Bulletins: *https://njaes.rutgers.edu/pubs/*
Plant & Pest Advisory: *https://plant-pest-advisory.rutgers.edu*
Mid-Atlantic Commercial Vegetable Production Recommendations: publication E001
https://njaes.rutgers.edu/pubs/publication.asp?pid=E001
Rutgers Pest Management Office: *https://pestmanagement.rutgers.edu/*

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https://nj-vegetable-crops-online-resources.rutgers.edu/ and go to "members" section.

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Rutgers NJAES Pesticide Safety Education Program
https://pestmanagement.rutgers.edu/PAT (pesticide manuals, record forms, regulations, and safety)
*https://pestmanagement.rutgers.edu/worker-protection (*WPS training videos and regulations),
phone 848-932-9802

Rutgers NJAES OCPE Pesticide Applicator Certification Exam Registration (PACER)
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PENNSYLVANIA

The Pennsylvania State University
Penn State Extension, including publications, fact sheets, and more: *http://extension.psu.edu*
Mid-Atlantic Commercial Vegetable Production Recommendations: publication AGRS-028
Penn State Vegetable Production: *https://extension.psu.edu/forage-and-food-crops/vegetables* (click on the "News" button to see recent articles related to vegetable and small fruit production)

Penn State Vegetable Team Directory
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Plant Disease Clinic: *http://plantpath.psu.edu/facilities/plant-disease-clinic*
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Mid-Atlantic Commercial Vegetable Production Recommendations: publication 456-420
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Figures

Tables

Abbreviations and Acronyms

Units of Measurement

/A	per acre
bu	bushel(s)
°C	degrees Celsius
cc	cubic centimeter(s)
cu ft	cubic foot (feet)
cu yd	cubic yard(s)
cwt	hundredweight
d	day(s)
°F	degrees Fahrenheit
ft	foot (feet)
fl oz	fluid ounce(s)
g	gram(s)
gal	gallon(s)
gpm	gallons per minute
h	hour(s)
in	inch(es)
lb	pound(s)
min	minute(s)
mph	miles per hour
oz	ounce(s)
ppm	parts per million
psi	pounds per square inch
pt	pint(s)
qt	quart(s)
sq ft	square foot (feet)
tbs	tablespoon(s)
tsp	teaspoon(s)
wk	week(s)
yr	year(s)

Product Formulations

A	acid
CS	capsulated suspension
D	dust
DF	dry flowable
DP	dry prill
DS	dry salt
E	emulsion
EC	emulsifiable concentrate
ES	emulsifiable suspension
EW	emulsion in water
F	flowable
FC	flowable concentrate
FL	fluid
FM	flowable micro-encapsulated
G	granule

Product Formulations *(continued)*

L	liquid
LC	liquid concentrate
LF	liquid flowable
LFR	liquid fertilizer ready
LV	low volatile
ME	micro-encapsulated
OF	oil formulation
SC	spray concentrate, soluble concentrate
SE	suspoemulsion
SG	soluble granules
SL	soluble liquid
SP	soluble powder
W	wettable
WBE	water-based emulsion
WDG	water-dispersible granules
WDL	water-dispersible liquid
WP	wettable powder
WS	water soluble
WSB	water-soluble bag
WSP	water-soluble packet
ZC	CS and SC mixture

Other

ae	acid equivalent
ai	active ingredient
AMS	ammonium sulfate
AP	at planting
COC	crop oil concentrate
FRAC	Fungicide Resistance Action Committee
HRAC	Herbicide Resistance Action Committee
IRAC	Insecticide Resistance Action Committee
K	potassium
K_2O	available potash
MoA	mode of action
MSO	methylated seed oil
N	nitrogen
NIS	non-ionic surfactant
OLF	other labeled formulations
OMRI	Organic Materials Research Institute
P	phosphorus
P_2O_5	available phosphoric acid
PHI	Pre-Harvest Interval (in days)
REI	Restricted Entry Interval (in hours)
TR	Toxicity Rating
WSSA	Weed Science Society of America