

This is a section from the

2016

Mid-Atlantic

Commercial Vegetable Production Recommendations

The manual, which is published annually, is 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
njaes.rutgers.edu

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.

Ranman--2.75 fl oz 400SC/A

Potassium phosphite salts--(Prophyt--4.0 to 6.0 pts/A)
applied for Downy mildew management may also have
P. capsici activity.

Omega--8.0 fl oz 500F/A (not labeled for aerial applications)
applied for Downy mildew management may also have
P. capsici activity.

White Mold (*Sclerotinia*) and Gray Mold (*Botrytis*)

White mold is caused by *Sclerotinia* spp. fungi with a broad host range that produces structures that can persist in the soil for over 5 years. Avoid excessive irrigation, especially preceding and during during flowering, and poorly drained soils. Rotation to non-hosts (corn or small grains) for at least 3 years may help reduce disease levels but will not eliminate the pathogen. Harvest infested fields later than non-infested fields to minimize spread to other fields.

Preplant: **For white mold only.**

Apply the following:

Contans--2.0 to 4.0 lb 5.3WG/A

Apply 3 to 4 months prior to disease onset to allow the active agent to reduce levels of sclerotia in the soil. Following application, incorporate to a depth of 1 to 2 inches but **do not plow** before seeding beans to avoid untreated sclerotia in lower soil layers from infesting the upper soil layer

Post seeding: Close spacing of snap beans may increase the potential for white mold. **Fungicide sprays are needed only when the soil has been wet for 6 to 10 days before or**

during bloom. This causes sclerotia to germinate and eject spores from apothecia. For snap beans, a fungicide should be applied at 10-20% bloom. A second spray should be made 7-10 days after the first spray if the soil remains wet and blossoms are still present. Check labels for details on fungicide timing. For lima beans, later fungicide applications have been beneficial if favorable environmental conditions persist.

Apply one of the following:

Endura--8.0 to 11.0 oz 70W/A

Endura--5.0 oz 70W/A plus thiophanate-methyl (0.7 to 1.05 lb/A 70WP/A active ingredient) (snap beans only)

iprodione--1.5 to 2.0 pts 4F/A or OLF

Omega--8.0 fl oz 500F/A (not labeled for aerial applications)

thiophanate-methyl--1.5 to 2.0 lb 70WP/A or OLF

Switch--11.0 to 14.0 oz/A 62.5WG

Switch--6.0 to 11.0 oz/A 62.5WG plus thiophanate-methyl (0.7 to 1.05 lb a.i./A)

Fontelis--16.0 to 30.0 fl. oz 1.67SC/A

Southern Blight (*Sclerotium rolfsii*)

Southern blight can be a serious disease of snap and lima beans in the southernmost areas of the region. The disease is favored by high temperatures as well as wet weather and/or irrigation. Rotations do not eliminate the pathogen, but rotations with corn, sorghum, small grains or grasses reduce disease severity.

Apply the following:

azoxystrobin--15.4 fl oz 2.08F/A or OLF

BEETS (Garden)

Beets are frost tolerant and produce the best commercial quality when grown during cool temperatures (50° to 65°F [10° to 18.3°C]). Lighter color and wider zoning occur during rapid growth in warm temperatures. Beets will form seed stalks if exposed to 2 or 3 weeks of temperatures below 50°F (10°C) after several true leaves have formed. Beets have a high boron requirement. See Plant Nutrient Recommendations below and Table B-9.

Recommended Beet Varieties

Market	Hybrid	Days	Color	Shape	Use
Boro	Yes	51	Red	Globe	Roots, tops, bunching, baby beets
Cylindra	No	54	Red	Cylindrical	Roots, bunching
Chioggia Guardsmark	No	60	Purple & White Zones	Globe	Roots
Eagle	Yes	50	Red	Globe	Roots, bunching
Early Wonder	No	52	Red	Globe	Greens, bunching
Greentop Bunching	No	58	Red	Round	Greens, bunching
Kestrel	Yes	53	Red	Globe	Roots, Bunching
Merlin	Yes	55	Red	Globe	Roots
Pacemaker III	Yes	53	Red	Globe	Roots, bunching
Red Ace	Yes	53	Red	Globe	Roots, bunching
Red Cloud	Yes	53	Red	Round	Roots, bunching
Ruby Queen	No	55	Red	Round	Roots, bunching
Soldier	Yes	30-55	Red	Top shaped	Dark red leaf for greens
Touchstone Gold	No	60	Gold	Round	Roots, bunching
Zeppo	Yes	50	Red	Round	Roots, bunching

Recommended Nutrients Based on Soil Tests

Before using the table below, refer to important notes in the Soil and Nutrient Management chapter in Section B and your soil test report. These notes and soil test reports provide additional suggestions to adjust rate, timing, and placement of nutrients. Your state's soil test report recommendations and/or your farm's nutrient management plan supercede recommendations found below.

Beets	Pounds N per Acre	Soil Phosphorus Level				Soil Potassium Level				Nutrient Timing and Method
		Low	Med	High	Very High	Low	Med	High	Very High	
				(Opt.)	(Opt.)			(Opt.)	(Opt.)	
		Pounds P ₂ O ₅ per Acre				Pounds K ₂ O per Acre				
	75-100	150	100	50	0	150	100	50	0	Total nutrient recommended.
	50	150	100	50	0	150	100	50	0	Broadcast and disk-in.
	25-50	0	0	0	0	0	0	0	0	Sidedress 4-6 weeks after planting.

Apply 1.5 to 3.0 pounds of boron (B) per acre. See Table B-9 for more specific boron recommendations.

Seed Treatment

Use treated seed to prevent disease, see the Disease Section for more information.

Seeding and Spacing

The crop is seeded from early April to mid-August. Optimum germination temperatures range between 50° to 85°F (10° to 29.4°C). Sow seed ½ inch deep at the rate of 15 to 18 seeds per foot of row. Space rows 15 to 20 inches apart; thin plants to 3 inches apart. For Fall seeding, rows should be spaced 4-6 inches apart.

Harvest and Post Harvest Considerations

Market beets are harvested when they reach a size of 1.5-3 inches in diameter. Beet tops for greens may be cut and handled similar to spinach or chard. For bunching beets, roots are undercut and pulled by the tops taking care not to damage them. For larger acreages, beets for roots may be topped and machine dug using a modified potato digger.

Store beets at 32° F and relative humidity of 98 to 100%. Like other root crops, beets are well adapted to storage. Topped beets stored at 32° F can be expected to keep 4 to 6 months. Either cold storage or cool-cellar storage is suitable, provided the humidity is kept sufficiently high to prevent dehydration.

Before beets are stored, they should be topped and sorted to remove all those with disease or mechanical injury. Beets should not be stored in large bulk; and they should be stored in well-ventilated containers such as ventilated bin boxes or slatted crates to help dissipate respiratory heat. Increasing the carbon dioxide level in beet storages to 5 to 10 % increased fungal spoilage.

Bunched beets are much more perishable than topped beets, but they can be stored at 32° F for 10 to 14 days. Use of crushed ice is helpful in keeping the bunched beets cold, especially if refrigeration is not available.

Beet greens and other greens are handled like spinach. Because of the perishability of beet greens, they should be held as close to 32° F as possible. At this temperature, they can be held for 10 to 14 days. Relative humidity of at least 95% is desirable to prevent wilting. Air circulation should be adequate to remove respiration heat but not so rapid that air circulation speeds transpiration and wilting. Satisfactory precooling is accomplished by vacuum cooling or hydrocooling. These leafy greens are commonly shipped with package and top ice to maintain freshness.

Weed Control

Identify the weeds in each field and select recommended herbicides that control those weeds. See Tables E-3 and E-4.

Match preplant incorporated and preemergence herbicide rates to soil type and percent organic matter in each field.

Apply postemergence herbicides when crop and weeds are within the recommended size and/or leaf stage.

Determine the preharvest interval (PHI) for the crop. See Table E-4 and consult the herbicide label.

Find the herbicides you plan to use in the Herbicide Resistance Action Committee's (HRAC) **Herbicide Site of Action Table E-8** and follow the recommended good management practices to minimize the risk of herbicide resistance development by weeds in your fields.

Preplant Incorporated

Cycloate--2.5 to 3 lb/A. Apply 1.67 to 2.00 quarts Ro-Neet 6E.

Incorporate into 3 to 4 inches of soil immediately after application. Plant anytime after treatment.

Postemergence

Clethodim--0.094 to 0.125 lb/A. Apply 12.0 to 16.0 fluid ounces of Select Max 0.97EC with nonionic surfactant to be 0.25% of the spray solution (1.0 quart per 100 gallons of spray solution) postemergence to control many annual and certain perennial grasses, including annual bluegrass. Select will not consistently control goosegrass. Control may be reduced if grasses are large or if hot, dry weather or drought conditions occur. For best results, treat annual grasses when they are actively growing and before tillers are present. Repeated applications may be needed to control certain perennial grasses. Yellow nutsedge, wild onion, or broadleaf weeds will not be controlled. Do not tank-mix with or apply within 2 to 3 days of any other pesticide unless labeled, as the risk of crop injury may be increased, or reduced control of grasses may result. Observe a minimum preharvest interval of 30 days.

Clopyralid--0.047 to 0.188 lb/A. Apply 2.0 to 8.0 fluid ounces of Stinger 3A or OLF per acre in a single application to control certain annual and perennial broadleaf weeds. Stinger or OLF controls weeds in the Composite and Legume plant families. Common annuals controlled include galinsoga, ragweed species, common cocklebur, groundsel, pineappleweed, clover, and vetch. Perennials controlled include Canada thistle, goldenrod species, aster species, and

mugwort (wild chrysanthemum). Stinger or OLF is very effective on small seedling annual and emerging perennial weeds less than 2 to 4 inches tall, but is less effective and takes longer to work when weeds are larger. Use 2 to 4 fluid ounces to control annual weeds less than 2 inches tall. Increase the rate to 4.0 to 8.0 fluid ounces to control larger annual weeds. Apply the maximum rate of 8.0 fluid ounces to suppress or control perennial weeds. Spray additives are not needed or required by the label, and are not recommended. Observe a minimum preharvest interval (PHI) of 30 days. Stinger or OLF is a postemergence herbicide with residual soil activity. Observe follow-crop restrictions, or injury may occur from herbicide carryover.

Phenmedipham--0.5 to 0.67 lb/A. Apply 3.0 to 4.0 pints per acre.

Spin-Aid--1.3EC. For use in Maryland only. See label for application restrictions, mixing instructions, and weather restriction to prevent crop injury or herbicide failure.

Sethoxydim--0.2 to 0.5 lb/A. Apply 1.0 to 2.5 pints per acre Poast 1.5EC with oil concentrate to be 1 percent of the spray solution (1.0 gallon per 100 gallons of spray solution) postemergence to control annual grasses and certain perennial grasses. **The use of oil concentrate may increase the risk of crop injury when hot or humid conditions prevail.** To reduce the risk of crop injury, omit additives or switch to nonionic surfactant when grasses are small and soil moisture is adequate. Control may be reduced if grasses are large or if hot, dry weather or drought conditions occur. For best results, treat annual grasses when they are actively growing and before tillers are present. Repeated applications may be needed to control certain perennial grasses. Yellow nutsedge, wild onion, and broadleaf weeds will not be controlled. Do not tank-mix with or apply within 2 to 3 days of any other pesticide unless labeled, as the risk of crop injury may be increased, or reduced control of grasses may result. Observe a minimum preharvest interval of 60 days and apply no more than 5 pints per acre in one season.

Postharvest

Paraquat--0.6 lb/A. **A Special Local-Needs 24(c) label has been approved for the use of Gramoxone SL 2.0 or OLF for postharvest desiccation of the crop in Delaware, New Jersey and Virginia.** Apply 2.4 pints per acre Gramoxone SL 2.0 or OLF as a broadcast spray after the last harvest. Add nonionic surfactant according to the labeled instructions. See the label for additional information and warnings.

Insect Control

THE LABEL IS THE LAW. PLEASE REFER TO THE LABEL FOR UP TO DATE RATES AND RESTRICTIONS.

NOTE: Copies of specific insecticide product labels can be downloaded by visiting the websites www.CDMS.net or www.greenbook.net. Also, specific labels can be obtained via web search engines.

Aphids

Apply one of the following formulations:
bifenthrin--5.12 to 6.40 fl oz/A Bifenture 2EC (Sniper or OLF)
flupyradifurone--**foliar** 7.0 to 10.50 fl oz/A Sivanto 200SL

imidacloprid--**soil** 4.4 to 10.5 fl oz/A Admire PRO (or OLF), **foliar** 1.2 fl oz/A Admire PRO (or OLF)
thiamethoxam--**soil** 1.70 to 4.01 oz/A Platinum 75SG, **foliar** 1.5 to 3.0 oz/A Actara 25WDG

Beet Armyworm

Apply one of the following formulations:
chlorantraniliprole--3.5 to 5.0 fl oz/A Coragen 1.67SC
indoxacarb--3.5 to 6.0 oz Avaunt 30WDG
methoxyfenozide--8.0 to 16.0 fl oz/A Intrepid 2F
spinetoram--6.0 to 8.0 fl oz/A Radiant SC
spinosad--2.25 to 3.5 oz/A Blackhawk 36WG

Flea Beetles

Apply one of the following formulations:
bifenthrin--5.12 to 6.40 fl oz/A Bifenture 2EC (Sniper or OLF)
carbaryl--0.5 to 1.0 qt/A Sevin XLR Plus (or OLF)
imidacloprid--**soil** 4.4 to 10.5 fl oz/A Admire PRO (or OLF), **foliar** 1.2 fl oz/A Admire PRO (or OLF)
thiamethoxam--**soil** 1.70 to 4.01 oz/A Platinum 75SG **foliar** 1.5 to 3.0 oz/A Actara 25WDG
zeta-cypermethrin--1.76 to 4.0 fl oz/A Mustang Maxx (or OLF)
zeta-cypermethrin+bifenthrin--2.6 to 6.1 fl oz/A Hero EC

Garden Webworms

Apply one of the following formulations:
Bacillus thuringiensis--0.5 to 2.0 lb/A Dipel DF (or OLF)
methoxyfenozide--8.0 to 16.0 fl oz/A Intrepid 2F

Leafminers

Apply one of the following formulations:
spinetoram--6.0 to 8.0 fl oz/A Radiant SC
spinosad--2.25 to 3.5 oz/A Blackhawk 36WG

Disease Control

Seed Treatment

Use seed treated with Apron XL (0.085 to 0.64 fl oz/100 lb) or Allegiance FL (0.75 fl oz/100 lb) for *Pythium* damping-off protection *plus* Maxim 4FS (0.08 to 0.16 fl oz/100 lb) for *Rhizoctonia* and *Fusarium* protection. Seed treatments are not a substitute for high quality seed.

Damping-Off (*Pythium* or *Phytophthora*)

Apply one of the following preplant incorporated or as a soil-surface spray after planting.

mefenoxam--(Ridomil Gold 1.0 to 2.0 pt 4SL/A or Ultra Flourish 2.0 to 4.0 pt 2E/A)
metalaxyl--(MetaStar--4.0 to 8.0 pt 2E/A) (see label for specific details)

Apply the following as an in-furrow spray only:

Uniform--0.34 fl oz 3.66SE/1000 ft of row (see label for specific details) for *Pythium* and *Rhizoctonia*

Pocket Rot, Wirestem, Stem Canker and Crown Rot (*Rhizoctonia solani*)

Pocket rot and other diseases caused by *Rhizoctonia* are most prevalent in cool, wet soils and especially in plantings showing poor plant vigor. Rotate between fields each year and scout on a regular basis. Applications of Quadris will also help manage foliar diseases of beet such as *Cercospora* and *Alternaria* leaf spots, and powdery mildew.

azoxystrobin--0.40 to 0.80 fl oz 2.08F/1000 ft row either banded or in-furrow or OLF (see label for specific details)
 Uniform--0.34 fl oz 3.66SE/1000 ft of row (see label for specific details; also for *Pythium* damping-off)

Leaf Spots (*Cercospora* and *Alternaria*) and other foliar diseases.

Allow 2 or 3 years between beet plantings. Thoroughly disc under beet refuse at end of season since leaf spot pathogens can overwinter on plant residues. Warm, wet weather and rainfall favor leaf spot development. Scout plantings on a regular basis, especially if wet weather persists.

Apply one of the following on a preventative basis and/or when weather conditions are favorable for disease development. Repeat every 7 to 10 days.

Rotate one of the following FRAC code 11 fungicides plus fixed copper at labeled rates:

azoxystrobin--6.0 to 15.5 fl oz 2.08F/A (9.0 to 15.5 fl oz 2.08F/A for *Cercospora*) or OLF
 Cabrio--8.0 to 12.0 oz 20EG/A
 Gem--1.9 to 2.9 fl oz 500SC/A
 Reason--8.2 fl oz 500SC/A (*Alternaria* suppression only)

With one of the following:

tebuconazole--4.0 to 6.0 fl oz 3.6F/A or OLF
 Fontelis--16.0 to 30.0 fl oz 1.67SC/A
 Tilt--3.0 to 4.0 fl oz 3.6EC/A (*Cercospora* leaf spot only)

Do not make more than two sequential applications of Cabrio, or one application of Quadris, Reason, Gem before alternating to a non-FRAC code 11 fungicide. Tank mix fungicides with fixed copper to help reduce potential fungicide resistance development.

Black Spot

Boron deficiency can cause black spots inside beet roots and large black dry rots on root surfaces. Boron deficiency is most likely to occur in alkaline soils high in calcium and is exacerbated by dry conditions. Apply boron at planting according to soil test results.

Pesticide	Use Category ¹	Hours to Reentry ²	Days to Harvest
FUNGICIDE (FRAC code)			
azoxystrobin (Group 11)	G	4	0
Cabrio (Group 11)	G	12	0
copper, fixed (Group M1)	G	see label	0
Fontelis (Group 7)	G	12	0
Gem (Group 11)	G	12	7
MetaStar (Group 4)	G	48	14
Reason (Group 11)	G	12	14
Ridomil Gold (Group 4)	G	48	0
tebuconazole (Group 3)	G	12	7
Tilt (Group 3)	G	12	14
Ultra Flourish (Group 4)	G	48	0
Uniform (Groups 4 + 11)	G	0	AP

See Table 3.

¹ G = general, R = restricted, AP = At planting

² Chemicals with multiple designations are based on product and/or formulation differences. CONSULT LABEL.

Pesticide	Use Category ¹	Hours to Reentry ²	Days to Harvest
INSECTICIDE			
<i>Bacillus thuringiensis</i>	G	4	0
bifenthrin	R	12	1
carbaryl	G	12	7
chlorantraniliprole	G	4	1
flupyradifurone	G	4	7
imidacloprid (soil/foliar)	G	12	21/7
indoxacarb	G	12	7
methoxyfenozide	G	4	1
spinetoram	G	4	7
spinosad	G	4	3
thiamethoxam (soil/foliar)	G	12	see label/7
zeta-cypermethrin	R	12	1
zeta-cypermethrin+bifenthrin	R	12	1

(table continued next column)