



This is a section from the

2018

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:

<http://njaes.rutgers.edu/pubs/publication.asp?pid=E001>.

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 Chosen Freeholders. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

F. Commodity Recommendations

Pesticide Use Disclaimer

THE LABEL IS THE LAW

Before using a pesticide, check the label for up to date rates and restrictions.

Labels can be downloaded from: <http://www.cdms.net/>, <http://www.greenbook.net/> or <http://www.agrian.com/labelcenter/results.cfm>

Guide to the Recommended Pesticide Tables in the Following Crop Chapters:

1. Pesticides are listed by **group or code number based on chemical structure and mode of action**, as classified by the Weed Science Society of America (WSSA) for herbicides, the Insecticide Resistance Action Committee (IRAC) for insecticides, and the Fungicide Resistance Action Committee (FRAC) for fungicides.
If the number is in bold font, the product may have resistance concerns.
2. For **restricted use pesticides**, the restricted active ingredients are labeled with a *. See the Pesticide Safety chapter for more information.
3. **In addition to the pesticides listed below, other formulations or brands with the same active ingredient(s) may be available. ALWAYS CHECK THE LABEL:**
 - a) to ensure a pesticide is labeled for the same use,
 - b) to ensure the pesticide is labeled for the desired crop, and
 - c) for additional restrictions.
4. All pesticide recommendations are made for spraying a **broadcast area of 1 acre** (43,560 square feet). **Adjust the rate for banded applications** (for more information, see the Pest Management chapter, Calibrating Granular Applicators section).
5. Check the label for the maximum amount of pesticide per application and the maximum number of applications per year.
6. **Bee Toxicity Rating (Bee TR):** N=nontoxic; L=minimum impact on bees; M=moderately toxic, can be used if dosage, timing and method of application are correct, but should NOT be applied directly to crop if bees are present; H=highly toxic, severe losses expected, -- = data not available.

Sweet Potatoes

Recommended Varieties¹

Orange Flesh		White Flesh
Beauregard ² “B-14” and “B-63” (FR)	Covington (FR, RKR)	Bonita (RKR)
Bellevue (FR, RKR)	Evangeline (FR, RKR)	O’ Henry
Burgundy (FR, RKR)	Orleans (FR)	

¹Listed alphabetically; letters in parentheses indicate disease resistance: FR = *Fusarium* wilt resistant; RKR = root-knot nematode resistant.

² Mericlones B-14 and B-63 have compact and extended vines, respectively.

Recommended Nutrients Based on Soil Tests

In addition to using the table below, check the suggestions on rate, timing, and placement of nutrients in your soil test report and the Soil and Nutrient Management chapter. Your state’s soil test report recommendations and/or your farm’s nutrient management plan supersede recommendations found below.

Sweet Potatoes		Soil Phosphorus Level				Soil Potassium Level				Nutrient Timing and Method
		Low	Med	High (Opt)	Very High	Low	Med	High (Opt)	Very High	
	N (lb/A)	P ₂ O ₅ (lb/A)				K ₂ O (lb/A)				
	50-75	200	100	50	0 ¹	300	200	100	0 ¹	Total nutrient recommended.
	25	200	100	50	0 ¹	300	200	100	0 ¹	Broadcast and disk-in
	25-50	0	0	0	0	0	0	0	0	Sidedress when vines start to run.

¹In VA, crop replacement values of 25 lb/A of P₂O₅ and 50 lb/A of K₂O are recommended on soils testing Very High.

Variety Selection

Select variety according to market preferences, local adaptation and specific soil problems. Current varieties require 100 to 140 days to achieve maximum yield, depending on cultural practices, irrigation and environmental conditions. Use certified G1 or G2 (generations), virus tested, disease-free “seeds” (storage root used for transplant/slip production) or slips (sprouts or cuttings for field planting) to maximize yield and quality.

Site selection, soil and fertilization

Well-drained sandy to sandy loam soils are best for sweet potato, either bedding or production. Avoid heavy soils and soils that will stand water for more than 24 hr. Avoid excessive amount of organic matter (fields just broken from pastures). Soils with high levels of organic matter may promote scurf. Use long rotations with grains and soybean to decrease the incidence of soil-borne diseases. Avoid fields with high nematode populations and those that had sweet potato in the past two years. Test the soil for nematodes and fertility. Optimum soil pH is 5.8-6.2. If lime is needed, apply it several months before planting. All P and K can be applied before planting. Apply half of the recommended N before planting (broadcast or band) and apply the rest at layby when vines start to run.

Plant Production

Sweet potato is propagated vegetatively by sprouts or slips from storage roots (“seed”). Select good quality, certified G1 or G2 “seeds” that are uniform and free from insects and diseases. Before bedding, “seeds” should be pre-sprouted at 85°F (29°C) and 90% relative humidity for 3-4 weeks until the sprouts are 1-1½ inch long. Make sure “seeds” are well ventilated because the process requires oxygen. For bedding, avoid sites that had sweet potato in the past 3 years to reduce the risk of diseases. Fertilize with 4-5 lb/100 sqft bed area of 8-8-8 or its equivalent. Bed “seed” stock the first week of April and use black or clear plastic mulch to warm up the soil. Minimum soil temperature for sweet potato to grow is 60°F (16°C). Treat “seeds” with appropriate fungicides to reduce decay. Spread “seeds” (one layer) in beds 2-3 ft wide, cover with 2-3 inches of soil or sand and cover with plastic mulch. After 5-7 days, punch holes every 4 ft on each side of the bed to prevent accumulation of carbon dioxide. When clear plastic mulch is used, apply an herbicide (see the Weed Control section). Remove plastic mulch when sprouts begin to emerge and cover with floating row cover to promote growth and protect against cold temperatures. Remove row covers 5-7 days prior to planting to harden the slips. The warmer conditions in greenhouses and high

F Sweet Potatoes

tunnels (hoop houses) promote sprouting and growth for an early production of slips. For optimal growing conditions keep beds moist and temperature between 75-85°F (24-29°C); however, greenhouse or high tunnel slips are less sturdy than slips from field beds for field planting. One 50-lb bushel of “seed” roots produces 500 to 1,000 sprouts in 10-15 sq ft of bed area. For field planting, best slips are 10-12 inches long and they should be cut (not pulled) from the beds at 1 inch above the soil line to minimize transmission of pests and diseases.

Field Planting

Sweet potato is cold sensitive and should be planted after all danger of frost is over and the soil temperature at 4 inch-deep is >65°F (>18°C). The optimum growth temperature is between 70-85°F (21-29°C), although plants can tolerate temperatures between 65-95°F (18-35°C). Plant slips in the field between May 5 and June 15 in warmer, southern areas and between May 20 and June 5 in cooler areas. Slips 12-inch long with 6-8 leaves and well initiated root system are best. Plant slips on moist ridged rows 8-10 inches high. Plant spacing is 12-18 inches along rows and 36-48 inches between rows. Water or starter fertilizer solution (1 oz/gal of 15-30-15 or equivalent) at 4-5 oz/slip applied at planting will benefit establishment. If irrigation is available, water field immediately after planting and then as needed.

Harvest and Postharvest Considerations

Prior to harvest, scout the field to determine storage root size and appropriate proportion of desired market grade. Pre-harvest conditioning and appropriate harvest handling is critical to reduce bruising of the delicate skin. Striking roots with harvesting equipment or dropping them into containers injures the skin resulting in increased susceptibility to disease. Even if the injury heals, the scars render unappealing storage roots with no fresh market value. Kill vines mechanically (devining) with a flail mower of appropriate design 5 -7 d before harvest to improve skin set and facilitate harvest.

Various methods can be used to harvest sweet potato. Growers with small area may harvest by hand using a garden fork. Intermediate sized commercial growers can use a 1 or 2-row modified mold board or disc plow, or middle buster with a notched coulter adjusted just left of the main stems to turn the rows and expose the storage roots. Remove roots from the vines by hand and place them into smooth baskets. Use globes to keep bruises and abrasions to a minimum. Mechanical diggers patterned after a low flat-bed type potato digger or digger-windrower can facilitate harvest in larger areas. These are 1 or 2-row diggers that incorporate a short separating chain behind a wide blade to dig both soil and roots onto the chain. Soil falls through the chain as the storage roots move up with the chain and drop off to the ground in the back of the digger. Care must be taken to bring enough soil up with the chain to minimize bruises. Storage roots are then picked up by hand and placed in smooth sided baskets. With more advanced harvesters, the storage roots continue on the chain through a platform where they are picked up by hand and placed directly into bins. After the roots are harvested, they should be cured in the storage house at 85°F (29°C) and 85-90% relative humidity for 5-7 days. After curing, temperature should be lowered to 55°F (13°C), but relative humidity should be maintained at 85% for long term storage.

Sweet potato is marketed based on the U.S. Standards for Grades of Sweet Potatoes. U.S. No.1 (roots of 1¼ to 3½ inches in diameter and 3 to 9 inches long) is the preferred grade for fresh market and has the highest price. U.S. No.2 includes smaller root (canner) and larger roots (jumbo), and are accepted by the processing industry. Well-shaped small storage roots free of blemishes have been sold also as fingerling or nuggets in specialty markets.

Weed Control

THE LABEL IS THE LAW - See the Pesticide Use Disclaimer on page F 1.

Recommended Herbicides

1. Identify the weeds in each field and select recommended herbicides. More information is available in the “Herbicide Effectiveness on Common Weeds in Vegetables” Table (E-2) in the Pest Management chapter.
2. Minimize herbicide resistance development. Identify the herbicide site mode of action group and follow recommended good management practices. Include non-chemical weed control whenever possible.

1.a. Soil-Applied: Pretransplant						
Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
14	Valor SX 51WDG	2.5 oz/A	flumioxazin	0.078 lb/A	--	12
<p>-Apply 2 to 5 day pre-transplant after all tillage has been completed. Limit disturbance of treated soil with transplant equipment. Tillage or cultivation after applying Valor SX reduces or eliminates weed control. Valor SX controls many broadleaf weeds, but only suppresses annual grasses. Tank mix with Command pretransplant or follow with a residual grass product to improve control of annual grasses.</p> <p>-DO NOT apply postemergence to sweet potatoes.</p> <p>-DO NOT use on any variety other than 'Beauregard', unless user has tested Valor SX and found tolerance to be acceptable.</p> <p>-DO NOT use on greenhouse grown transplants or transplants that have been harvested more than 2 days prior to transplanting.</p> <p>-Valor SX can be difficult to clean out of spray tank and hoses. Follow tank cleaning recommendations on the label.</p> <p>-Maximum for Valor SX 51WDG: 3 oz/A per growing season.</p>						

1.b. Soil-Applied: After Transplanting						
Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
3	Dacthal 6F Dacthal W-75	8.0 to 14.0 pt/A 6.0 to 14 lb/A	DCPA	6.0 to 10.5 lb/A	--	12
<p>-Apply at transplanting or 10-14 days after transplanting. Labeled for applications directly over transplants without injury.</p> <p>-If weeds are present, the crop should be weeded or cultivated prior to application. Dacthal controls annual grasses and certain broadleaf weeds. Maximum application not addressed on label.</p>						
13	Command 3ME	1.33 to 2.66 pt/A	clomazone	0.5 to 1.0 lb/A	95	12
<p>-Apply after transplanting and prior to weed emergence. Use lower rates on coarse-textured soils low in organic matter and higher rates on fine-textured soils and soils with high organic matter. Use the lower rate when used on coarse-textured soils low in organic matter, when weed pressure is light, or to minimize herbicide carryover that could affect subsequent crops.</p> <p>-Controls annual grasses and many broadleaf weeds depending on use rate, except pigweed sp., carpetweed, morningglory sp., and yellow nutsedge.</p> <p>-Some temporary crop injury (partial whitening of leaf or stem tissue) may occur. Complete recovery will occur from minor early injury without affecting yield or delaying maturity.</p> <p>-WARNING: Command spray or vapor drift may injure sensitive crops and other vegetation up to several hundred yards from the point of application (refer to label for restrictions).</p> <p>-Maximum number of applications per season is 1.</p>						
15	Devrinol 2-XT	2.0 to 4.0 qt/A	napropamide	1.0 to 2.0 lb/A	--	24
<p>-Apply immediately after transplanting and prior to weed emergence.</p> <p>-Annual grasses and certain annual broadleaf weeds will be suppressed or controlled. Use lower rate on coarse textured or sandy soil.</p> <p>-Devrinol may reduce stand and yield of fall grains. Moldboard plowing will reduce the risk of injury to a small grain follow crop.</p> <p>-Maximum for Devrinol 2-XT: No more than 4 qt/A per crop cycle.</p>						

2. Postemergence						
Group	Product Name	Product Rate	Active Ingredient (* = Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
1	Select 2EC	6 to 8 fl oz/A	clethodim	0.07 to 0.12 lb/A	30	24
	Select Max 0.97EC	9.0 to 16.0 fl oz/A				
	Poast 1.5EC	1.0 to 1.5 pt/A	sethoxydim	0.2 to 0.3 lb/A	30	12
	Fusilade DX 2EC	8 to 12 fl oz/A	fluazifop	0.125 to 0.188 lb/A	14	12
<p>-Select 2EC: use crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution).</p> <p>-Select Max: use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal of spray solution).</p> <p>-Poast: Apply with COC at 1.0% v/v. Fusilade DX: Apply with COC at 1.0% v/v or NIS at 0.25% v/v.</p> <p>-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.</p> <p>-Use lower labeled rates for annual grass control and higher labeled rates for perennial grass control. Yellow nutsedge, wild onion, wild garlic, and broadleaf weeds will not be controlled. Controls many annual and certain perennial grasses, including annual bluegrass, but will not consistently control goosegrass. Control may be reduced if grasses are large or under hot or dry weather conditions. If repeat applications are necessary, allow 14 days between applications. Do not tank-mix with or apply within 2 to 3 days of any other pesticide - unless labeled - as this may increase the risk of crop injury or reduce the control of grasses. Rainfastness 1 hr.</p> <p>-Do not apply more than 8 fl oz/A of Select 2EC in a single application and do not exceed 2 pt/A for the season; do not apply more than 16 fl oz/A of Select Max in a single application and do not exceed 4 pt/A for the season.</p> <p>-Do not apply more than 1.5 pt/A Poast in single application and do not exceed 4.5 pt/A for the season.</p> <p>-Do not apply more than 24 fl oz/A of Fusilade DX in a single application and do not exceed 3 pt/A per season.</p>						

3. Postharvest						
Group	Product Name	Product Rate	Active Ingredient (*=Restricted Use)	Active Ingredient Rate	PHI (d)	REI (h)
22	Gramoxone SL 2.0	2.25 to 3 pt/A	paraquat*	0.56 to 0.75 lb/A	--	24
-A Special Local-Needs 24(c) label has been approved for the use of Gramoxone SL 2.0 for postharvest crop desiccation in DE, NJ and VA. Apply after the last harvest. Always include an adjuvant. Spray coverage is essential for optimum effectiveness. See the label for additional information and warnings. Rainfastness 30 minutes. A maximum of 2 applications for crop desiccation are allowed.						

4. Other Labeled Herbicides These products are labeled but limited local data is available; and/or are labeled but not recommended in our region due to potential crop injury concerns.						
Group	Product Name	Active Ingredient (*=Restricted Use)				
14	Aim	carfentrazone				

Insect Control

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Recommended Insecticides

In the Mid-Atlantic U.S., the primary insect pest concerns for sweet potatoes are a complex of soil-inhabiting beetle larvae including white grubs, wireworms, flea beetles, and southern corn rootworms. In general, very little economic damage occurs to this crop from above-ground insect pests. Pest control mostly occurs at planting.

Soil insects: Wireworms, Flea Beetle Larvae, White Grubs, and Rootworms

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1B	Mocap 6EC	5.1 to 6.9 fl oz/ 1000 row ft	ethoprop* - Pre-plant application in a 12-15-inch band on the row 2-3 w before planting.	see label	48/5	H
1B	Lorsban Advanced	4.0 pt/A	chlorpyrifos* - Pre-plant broadcast and incorporate.	125	24	H
3A	Bifenture 2EC, Sniper	19.2 fl oz/A	bifenthrin* - at-planting in-furrow	see label	12	H
3A	Bifenture 2EC, Sniper	3.2 to 9.5 fl oz/A	bifenthrin* - apply to soil prior to lay-by or first cultivation	see label	12	H
3A	Capture LFR	12.75 to 25.5 fl oz/A	bifenthrin* - at-planting in-furrow or to soil prior to lay-by or first cultivation	see label	12	H

Cutworms - See also the Pest Management chapter, Insect Management section.

Various species can cause direct damage to sweet potatoes as well as sever plant stems.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
3A	Baythroid XL	0.8 to 1.6 fl oz/A	beta-cyfluthrin*	0	12	H
3A	Hero EC	4.0 to 10.3 fl oz/A	zeta-cypermethrin* + bifenthrin*	21	12	H
3A	Lambda-Cy, LambdaT	1.92 to 3.20 fl oz/A	lambda-cyhalothrin*	7	24	H
3A	Mustang Maxx	1.28 to 4.00 fl oz/A	zeta-cypermethrin*	1	12	H
3A	Tombstone 2EC	0.8 to 1.6 fl oz/A	cyfluthrin*	0	12	H
3A	Warrior II	0.96 to 1.6 fl oz/A	lambda-cyhalothrin*	7	24	H
3A + 28	Besiege	5.0 to 8.0 fl oz/A	lambda-cyhalothrin*+chlorantraniliprole	14	24	H

Cucumber Beetles, Flea Beetles, Click Beetles and Tortoise Beetle Adults

Well timed foliar applications during the summer months targeting beetle adults can help reduce the number of eggs deposited in fields, which may reduce the amount of larval damage to roots.

Apply one of the following formulations:						
Group	Product Name	Product Rate	Active Ingredient(s) (*=Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Sevin XLR Plus	1.0 to 2.0 qt/A	carbaryl	7	12	H
3A	Baythroid XL	1.6 to 2.8 fl oz/A	beta-cyfluthrin*	0	12	H

Cucumber Beetles, Flea Beetles, Click Beetles and Tortoise Beetle Adults continued on next page

Cucumber Beetles, Flea Beetles, Click Beetles and Tortoise Beetle Adults - continued

3A	Bifenture 2EC, Sniper	2.1 to 6.4 fl oz/A	bifenthrin*	see label	12	H
3A	Hero EC	2.6 to 6.1 fl oz/A	zeta-cypermethrin* + bifenthrin*	21	12	H
3A	Lambda-Cy, LambdaT	2.56 to 3.84 fl oz/A	lambda-cyhalothrin*	7	24	H
3A	Mustang Maxx	1.28 to 4.00 fl oz/A	zeta-cypermethrin*	1	12	H
3A	Tombstone 2EC	1.6 to 2.8 fl oz/A	cyfluthrin*	0	12	H
3A	Warrior II	1.28 to 1.92 fl oz/A	lambda-cyhalothrin*	7	24	H
3A + 4A	Brigadier	5.1 to 7.7 fl oz/A	bifenthrin* + imidacloprid	7	12	H
3A + 4A	Endigo ZC	3.5 to 4.5 fl oz/A	lambda-cyhalothrin* + thiamethoxam	14	24	H
3A + 4A	Leverage 360	2.4 to 2.8 fl oz/A	imidacloprid + beta-cyfluthrin*	7	12	H
3A + 28	Besiege	5.0 to 8.0 fl oz/A	lambda-cyhalothrin* + chlorantraniliprole	14	24	H
4A	Actara 25WDG	1.5 to 3.0 oz/A	thiamethoxam	14	12	H
4A	Admire PRO	1.2 fl oz/A	imidacloprid	7	12	H
4A	Assail 30SG	1.5 to 2.5 oz/A	acetamiprid	7	12	M
4A	Belay 2.13SC	2.0 to 3.0 fl oz/A	clothianidin	14	24	H

Disease Control

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Recommended Fungicides

Nematodes

See also the Nematodes and Soil Fumigation sections in the Pest Management chapter. Use fumigants listed under Soil Fumigation or listed below. Consult the label.

Code	Product Name	Product Rate	Active Ingredient(s) (* = Restricted Use)	PHI (d)	REI (h)	Bee TR
1A	Vydate L	see label	oxamyl*	AP	48	H
1B	Mocap 15G	see label (not for use in WV)	ethoprop*	AP	48	H

Damping Off caused by *Pythium* and *Rhizoctonia*

Code	Product Name	Product Rate	Active Ingredient(s) (* = Restricted Use)	PHI (d)	REI (h)	Bee TR
4	Ridomil Gold 4SL	1.0 to 2.0 pt/A	mefenoxam	AP	48	N
4 + 11	Uniform 3.66SE	0.34 fl oz/1,000 ft row	mefenoxam + azoxystrobin	AP	12	--
11	Quadris 2.08F	0.4 to 0.8 fl oz/1,000 ft row	azoxystrobin	AP	4	N

Bacterial and Fungal Diseases

Black Rot and Scurf

Code	Product Name	Product Rate	Active Ingredient(s) (* = Restricted Use)	PHI (d)	REI (h)	Bee TR
1	Mertect 340-F - see label for application methods ¹	107 fl oz/100 gal	thiabendazole	0.5	12	N

Fusarium Wilt Use resistant varieties.

Pox (Soil Rot) Use resistant varieties. Maintain a pH between 4.8-5.2 to assist in control. Use crop rotation, clean seed, and lean beds. Fumigation prior to planting may also help.

Surface Rot Minimize injury during harvest. Cure as soon as possible under proper storage conditions. Use clean seed for bedding.

Postharvest Soft Rot (*Rhizopus*)

Code	Product Name	Product Rate	Active Ingredient(s) (* = Restricted Use)	PHI (d)	REI (h)	Bee TR
12	Scholar 1.9SC - see label for application methods	16 to 32 fl oz/100 gal	fludioxonil	--	12	--

For Immediate Medical Attention

Call 911

**For a Pesticide Exposure Poisoning
Emergency Call**



For All States

This number will automatically connect you to the poison center nearest you.

Anyone with a 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 Pesticide Spills

Small Spills: See the product label for cleanup advice.

Large spills: Call the National Response Center at 1-800-424-8802 or CHEMTREC at 800-424-9300 (24 hours) - Industry assistance with emergency response cleanup procedures for large, dangerous spills.

Be aware of your responsibility to report spills to the proper state agency.