

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.

PARSLEY

Varieties

Flat Leaf	Curly Leaf
Giant of Italy	Banquet (Overwintering)
Italian Flat Leaf	Champion Moss
Italian Plain Leaf	Darki
	Forest Green (Semi-curled)
	Krausa
	Lisette
	Moss Curled II
	Titan

Varieties listed alphabetically. All varieties are open pollinated

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.

Parsley	Pounds N per Acre	Soil Phosphorus Level				Soil Potassium Level				Nutrient Timing and Method
		Low	Med	High (Opt.)	Very High	Low	Med	High (Opt.)	Very High	
	150-175	200	150	100	0	200	150	100	0	Total nutrient recommended.
	50-75	200	150	100	0	200	150	100	0	Broadcast and disk-in.
	25-50	0	0	0	0	0	0	0	0	Sidedress after first cutting.
	25-50	0	0	0	0	0	0	0	0	Sidedress after each additional cutting.

Seeding and Spacing

Seed is sown 1/3 inch deep in a well-prepared seedbed beginning March 25 through mid-May for summer harvest. Later plantings can be sown beginning in mid-July for fall harvest and through mid-August for overwintered production. Spacing between rows is 15 to 18 inches. Parsley seeds are drilled at a rate of 20 to 40 pounds per acre, with plants spaced 1 to 2 inches apart in each row. Seed is slow to germinate. If seeds are more than 1 year old, have germination tested, and increase the sowing rate as is necessary to compensate for reduced germination rate.

Overwintered and the earliest spring and later fall plantings benefit from the use of floating row covers and/or low or high tunnels for protection from freezing. Floating row covers can create conditions favorable for bacterial leaf spot infections to start and spread. Removing row covers on warm or windy days to allow excess moisture to evaporate will help reduce incidence of bacterial leaf diseases.

Harvest and Post Harvest Considerations

Parsley can be harvested by cutting a few leaves at a time from each plant, or entire plants may be cut or dug with roots attached and bunched for sale. If cut above the crown, plants will regrow for a second cutting. Parsley leaves are used most commonly for fresh market, but for dried herb markets, the characteristic flavor and green color can be retained if the leaves are dehydrated. Store fresh parsley at 32°F and 95 to 100% relative humidity. Parsley can keep up to 2 to 2.5 months at 32°F, but high humidity is essential to prevent desiccation. Packaging in perforated polyethylene bags and using top ice are beneficial for longer storage periods and a controlled atmosphere of approximately 10% oxygen and

11% carbon dioxide can help retain green color and salability.

Weed Control

Section 18 Emergency Label requests may be submitted to supplement weed control recommendations in parsley.

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 or Preemergence

Bensulide--5.0 to 6.0 lb/A. Apply 5.0 to 6.0 quarts per acre Prefar 4E before planting and incorporate 1 to 2 inches deep with power-driven rotary cultivators, or apply preemergence and activate with one-half inch of sprinkler irrigation within 36 hours to control most annual grasses. Use the maximum recommended rate preemergence followed by irrigation to suppress certain annual broadleaf weeds including common lambsquarters, smooth pigweed, and common purslane.

Preemergence

Linuron--0.5 to 1.0 lb/A. Apply 1.0 to 2.0 pounds per acre Lorox 50DF or 1.0 to 2.0 pints Lorox 4L immediately after seeding. Follow with irrigation if rainfall does not occur. Primarily controls broadleaf weeds. Annual grasses may only be suppressed

Prometryn--0.5 lb/A. Apply 1.0 pint per acre Caparol 4L after seeding, but before crop emergence. Follow with overhead irrigation if rainfall does not occur. Primarily controls annual broadleaf weeds. Annual grasses may only be suppressed. Additional postemergence and postharvest treatments may be applied, but DO NOT exceed 3 pints per acre per crop cycle. DO NOT use on sand or loamy sand soils, or crop injury may occur.

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 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 14 days.

Prometryn--0.5 lb/A. Apply 1 pint per acre Caparol 4L after the crop has developed 3 true leaves. Primarily controls seedling annual broadleaf weeds less than two inches tall. Annual grasses may only be suppressed. An additional treatment can be applied to regrowth after the first harvest, but do NOT exceed 3 pints per acre per crop cycle. Do NOT use on sand or loamy sand soils, or crop injury may occur. Do NOT tank-mix Caparol with any other pesticide. Do NOT use spray additives such as nonionic surfactant or oil concentrate. Do NOT apply within two weeks of any herbicidal oil such as "carrot oil" or Stoddard Solvent. Observe a minimum preharvest interval of 40 days.

Sethoxydim--0.2 to 0.3 lb/A. Apply 1.0 to 1.5 pints per acre Poast 1.5EC with oil concentrate to be 1 percent of the spray solution (1 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 15 days and apply no more

than 3.0 pints per acre in one season. Labeled for use in Parsley and Cilantro.

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 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:
 acetamiprid--2.0 to 4.0 oz/A Assail 30G (or OLF)
 azadirachtin--15.0 to 30.0 oz/A Ecozin Plus or OLF **OMRI-listed**
 clothianidin--**soil** 9.0 to 12.0 fl oz/A Belay 2.13SC, **foliar** 3.0 to 4.0 fl oz/A Belay 2.13SC
 flonicamid--2.0 to 2.8 oz/A Beleaf 50SG
 imidacloprid--**soil** 4.4 to 10.5 fl oz/A Admire Pro (or OLF), **foliar** 1.3 fl oz/A Admire PRO (or OLF)
 imidacloprid + beta-cyfluthrin--3.0 fl oz/A Leverage 360
 malathion--1.0 to 2.0 pts/A Malathion 57EC (or OLF)
 pymetrozine--2.75 oz/A Fulfill 50WP
 spirotetramat--4.0 to 5.0 fl oz/A Movento
 thiamethoxam--**soil** 1.66 to 3.67 oz/A Platinum 75SG; **foliar** 1.5 to 3.0 oz/A Actara 25WDG

Armyworms

Apply one of the following formulations:
Bacillus thuringiensis--0.5 to 2.0 lbs/A Dipel DF (or OLF) **OMRI-listed**
 cyantraniliprole--soil 5.0 to 10.0 fl oz/A Verimark; foliar 7.0 to 13.5 fl oz/A Exirel
 cyfluthrin--2.4 to 3.2 fl oz/A Tombstone (or OLF)
 emamectin benzoate--2.4 to 4.8 oz/A Proclaim 5SG
 flubendiamide--1.5 fl oz/A Belt SC (or other labelled mixtures containing flubendiamide like Vetica)
 imidacloprid + beta-cyfluthrin--3.0 fl oz/A Leverage 360
 indoxacarb--3.5 to 6.0 oz/A Avaunt 30WDG
 methoxyfenozide--4.0 to 8.0 fl oz/A Intrepid 2F (early season); 8.0 to 10.0 fl oz/A Intrepid 2F (mid to late season)
 spinetoram--5.0 to 10.0 fl oz/A Radiant SC
 spinosad--4.0 to 8.0 fl oz/A Entrust SC **OMRI-listed**
 zeta-cypermethrin--3.2 to 4.0 fl oz/A Mustang Maxx (or OLF)

Flea Beetles, Leafhoppers, Tarnished Plant Bugs

Apply one of the following formulations:

beta-cyfluthrin--2.4 to 3.2 fl oz/A Baythroid XL
 carbaryl--**(FB,LH)** 0.5 to 1.0 qt/A, **(TPB)** 1 to 2 qt/A Sevin XLR Plus (or OLF)

clothianidin--(**FB,LH**) soil 9.0 to 12.0 fl oz/A, **foliar** 3.0 to 4.0 fl oz/A Belay 2.13SC
 cyfluthrin--2.4 to 3.2 fl oz/A Tombstone (or OLF)
 dinotefuran--(**LH**) soil 5.0 to 6.0 oz/A, (**FB,LH**) **foliar** 1.0 to 3.0 oz/A Venom 70SG, or, soil 9.0 to 10.5 fl oz/A, **foliar** 2.0 to 5.25 fl oz/A Scorpion 35SL (or OLF)
 flonicamid--(**TPB only**) 2.0 to 2.8 oz/A Beleaf 50SG
 imidacloprid--soil (**FB, LH**) 4.4 to 10.5 fl oz/A Admire Pro (or OLF); **foliar (FB, LH only)**--1.3 fl oz/A Admire PRO (or OLF)
 imidacloprid + beta-cyfluthrin--(**FB, LH**) 3.0 fl oz/A Leverage 360
 permethrin--(**LH only**) 2.0 to 8.0 fl oz/A Perm-Up 3.2 (or OLF)
 thiamethoxam--(**FB, LH**) soil 1.66 to 3.67 oz/A Platinum 75SG; **foliar** 1.5 to 3.0 oz/A Actara 25WDG
 zeta-cypermethrin--(**FB, LH**) 2.4 to 4.0 fl oz, (**TPB**) 3.2 to 4.0 fl oz/A Mustang Maxx (or OLF)

Pesticide	Use Category ¹	Hours to Reentry	Days to Harvest ²
INSECTICIDE			
acetamiprid	G	12	7
azadirachtin	G	4	0
<i>Bacillus thuringiensis</i>	G	4	0
beta-cyfluthrin	R	12	0
carbaryl	G	12	14
clothianidin (soil/foiar)	G	12	21/7
cyantraniliprole (soil/foiar)	G	4/12	AP/1
cyfluthrin	R	12	0
dinotefuran (soil/foiar)	G	12	21/7
emamectin benzoate	R	12	7
flonicamid	G	12	0
flubendiamide	G	12	1
flubendiamide+buprofezin	G	12	7
imidacloprid (soil/foiar)	G	12	21/7
imidacloprid + beta-cyfluthin	R	12	7
indoxacarb	G	12	3
malathion	G	24	7
methoxyfenozide	G	4	1
permethrin	R	12	1
pymetrozine	G	12	7
spinetoram	G	4	1
spinosad	G	4	1
spirotetromat	G	24	3
thiamethoxam (drip/foiar)	G	12	30/7
zeta-cypermethrin	R	12	1
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	3
Merivon (Groups 7 + 11)	G	12	1
MetaStar (Group 4)	G	48	45
Ridomil Gold (Group 4)	G	48	21
Ultra Flourish (Group 4)	G	48	--
Uniform (Groups 4 + 11)	G	0	AP

See Table D-6.

¹ G = general, R - restricted ² AP – At Planting

Nematode Control

Nematode control is essential for satisfactory parsley production. See Chapter E "Nematodes" section of Soil Pests-Their Detection and Control. Before planting, soil

should be fumigated with metam-sodium (Busan or Vapam HL) according to directions in the "Soil Fumigation" section.

Disease Control Seed treatment Disease Control

Seed treatment prior to seeding

For Pythium and Phytophthora control use a seed treatment such as Apron XL LS (mefenoxam)--0.085 to 0.64 fl oz/100 lb seed

For control of other root rots apply Maxim 4FS (fludioxonil)--0.08 to 0.16 fl oz/100 lb seed

Apron XL LS and Maxim 4FS can be combined.

Damping-off control after seeding

For Pythium root rot control apply as banded spray; mefenoxam--0.5 to 1.0 pt Ridomil Gold 4SL/A metalaxyl--2.0 to 4.0 pt MetaStar 2E AG/A

For Rhizoctonia root rot control apply as in-furrow application:

azoxystrobin--0.40-0.80 fl oz 2.08F/A (see label)

For Pythium and Rhizoctonia root rot control apply as banded spray:

mefenoxam+azoxystrobin (Uniform--0.34 fl. oz 3.66SC/1000 ft. row). See label for restrictions

Bacterial leaf blight and Septoria leaf spot

To help reduce disease pressure from bacterial and fungal diseases, do not plant parsley continually in the same field. Rotate with non-related crops for at least 2 years. Space successive plantings in the same year as far apart as possible. Heavy winds and rain may damage leaves and predispose leaves to bacterial infections.

Bacterial leaf blight: Prevention is key to reducing spread of the pathogen. Avoid working in the fields while the foliage is wet to help reduce spread. Scout fields on a regular basis for early symptoms, apply the following and repeat every 7 days:

Apply fixed copper at labeled rates.

Septoria leaf spot: The disease causes serious problems in fields where parsley has been grown extensively. Severe losses will occur if not controlled properly, especially if field or farm has a history of the disease. Grow parsley in areas of farm without history of disease. Plant blocks as far apart as possible. **Early detection and prevention are keys to controlling septoria leaf spot.** Scout daily, and apply fungicides preventatively before first leaf spots appear. Tank-mix or rotate the following every 7 days. Early season infections (i.e., prior to first cutting) will severely reduce subsequent harvests.

Rotate the following every 7 days prior to the onset of the disease

Fontelis--14.0 to 24.0 fl oz 1.67SC/A

with one of the following fungicides:

Merivon--4.0 to 11.0 fl oz 2.09SC/A

or with a FRAC code 11 fungicide where resistance is not present*:

azoxystrobin--6.0 to 15.5 fl oz 2.08F/A or OLF plus fixed copper at labeled rates

(continued on next page)

Cabrio--12.0 to 16.0 oz 20WG/A fixed copper at labeled rates

*Resistance to FRAC code 11 fungicides are present in areas of southern New Jersey where FRAC code 11 fungicides have been used extensively to control Septoria leaf spot.

Tank-mixing Fontelis or Merivon with a fixed copper may also help suppress bacterial infections.

PARSNIPS

Varieties

Andover
Harris Model
Javelin*

Varieties listed alphabetically. * Denotes hybrid variety

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.

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

Apply 1.0 to 2.0 pounds of boron (B) per acre with broadcast fertilizer. See Table B-9 for more specific boron recommendations.

Seeding and Spacing

Seed in March and April. The seeds germinate slowly. Never use seed that is more than 1 year old.

Seed 3 to 5 pounds per acre at a depth of 1/4 to 3/8 inch in rows 18 to 30 inches apart. Adjust seeder to give 8 to 10 plants per foot of row. Thin seedlings to 2 to 4 inches in the row.

Harvest and Postharvest Considerations

Parsnips may be dug, topped, and stored at 32°F and 90 to 95% relative humidity. They can be stored for up to 6 months. Storage conditions for parsnips are similar to those for carrots. Good market quality is the result of starch changing to sugar which occurs after 2 to 3 weeks in storage below 35°F. It is not necessary to leave parsnips out over winter or to freeze them to achieve acceptable quality. Because parsnips are susceptible to wilting, storage humidity must be kept high. Ventilated plastic crate liners help to prevent moisture loss. Parsnips left in the ground over winter should be removed before growth starts in the spring and flower stalk formation begins.

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.

Preemergence

Linuron--0.75 to 1.5 lb/A. Apply 1.5 to 3.0 pounds per acre Lorox 50DF or 1.5 to 3.0 pints per acre of Lorox 4L right after seeding. Plant seed at least 1/2 inch deep.

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 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