

Chapter 33.

Parsley Production in Florida

G.J. Hochmuth, D.N. Maynard, C.S. Vavrina, W.M. Stall, R.N. Raid, S.E. Webb

BOTANY

Nomenclature

Family - Apiaceae (Umbelliferae)

Parsley - *Petroselinum crispum*

Origin

Parsley is believed to be native to the Mediterranean area. Its early use was medicinal and its present use is as an accessory (garnish) rather than as a primary component of the diet.

Related Species

Carrot and celery are the principal vegetables in the Apiaceae family. Others included in this family are parsnip, celeriac, cilantro, and Florence fennel. This family also contains many important herbs and spices as well as some ornamentals.

VARIETIES

Parsley varieties grown in Florida include:

Curled leaf

Forest Green

Jade (H)

Improved Market Gardeners

Plain leaf

Dark Green Italian

H=hybrid

SEEDING AND PLANTING

Seeding and planting information for parsley is given in Table 1.

FERTILIZER AND LIME

For mineral soils with subsurface or sprinkler irrigation, broadcast all P₂O₅, micronutrients, and 20 to 25% of N and K₂O before seeding. Topdress or band remaining N and K₂O at rate of up to 30 lbs/A each several times during growing season. Amounts of N and K are for single cutting.

For multiple cuttings apply 30 lbs/A each of N and K₂O after each cutting. Soil test and fertilizer recommendations for parsley on mineral soils are given in Table 2.

For Histosols, broadcast all fertilizer prior to seeding. Supplemental N might be needed during cool, winter periods or after leaching rain. For more than one cutting, apply additional 20 to 30 lbs K₂O/A after each cutting. Soil test and fertilizer recommendations for parsley grown on Histosols are given in Table 3.

IRRIGATION

Because parsley is produced for its vegetative growth, initial water requirements (see Chapter 8, *Principles and Practices of Irrigation Management for Vegetables*, Table 4 to 6) will increase from 20% to 30% of ETo to 100% of ETo (see Chapter 8, *Principles and Practices of Irrigation Management for Vegetables*, Table 3) at complete canopy or foliar coverage through harvest. Water stress will reduce leaf growth and development which restricts yields.

Table 1. Seeding and planting information for parsley in Florida.

| Planting dates | |
|--|----------------------|
| North Florida | Sept - Mar |
| Central Florida | Sept - Mar |
| South Florida | All year |
| Seeding information | |
| Distance between rows (in) | 6 - 12 |
| Distance between plants (in) | drilled ¹ |
| Seeding depth (in) | 0.25 |
| Seed per acre (lb) | 6 - 8 |
| Days to maturity from seed | 70 - 80 |
| Plant population ² (acre) | 1 million+ |
| ¹ Cut and bunched via ratoon system. | |
| ² Population based on closest between and within row spacing. | |

WEED MANAGEMENT

Herbicides labeled for weed control in parsley are listed in Table 4.

INSECT MANAGEMENT

Table 6 outlines the insecticides approved for use on insects attacking parsley.

DISEASE MANAGEMENT

Chemicals approved for disease management use on parsley are listed in Table 5.

Table 2. Soil test and fertilizer recommendations for parsley on mineral soils.

| Target pH | N lb/A | P ₂ O ₅ | | | | | K ₂ O | | | | |
|--------------------|--------|-------------------------------|-----|-----|---|----|------------------|-----|-----|---|----|
| | | VL | L | M | H | VH | VL | L | M | H | VH |
| (lb/A/crop season) | | | | | | | | | | | |
| 6.5 | 120 | 150 | 120 | 100 | 0 | 0 | 150 | 120 | 100 | 0 | 0 |

Table 3. Soil test and fertilizer recommendations for parsley on Histosols with target pH at 6.5 and N rate at 0 lb/A.

| P and K index and fertilizer rate | | | | | | |
|--------------------------------------|-----|-----|-----|-----|-----|-----|
| P index | 3 | 6 | 9 | 12 | 15 | 18 |
| P ₂ O ₅ (lb/A) | 200 | 140 | 80 | 20 | 0 | 0 |
| K index | 50 | 80 | 110 | 140 | 170 | 200 |
| K ₂ O (lb/A) | 200 | 140 | 80 | 50 | 0 | 0 |

Table 4. Chemical Weed controls: Parsley.

| Herbicide | Labeled crops | Time of application to crop | Rate (lbs. AI./Acre) | |
|--|-----------------------------------|---|----------------------|-------------------|
| | | | Mineral | Muck |
| Carfentrazone (Aim) | Legume Group (All) | Directed-hooded row-middles | 0.008-0.025 | 0.008-0.025 |
| Remarks: Aim may be applied as a post-directed hooded burn-down application to emerged broadleaf weeds in row middles. Aim is not labeled for grassy weeds. May be tank mixed with other herbicides registered for this treatment pattern. May be applied at 0.33 oz (0.008 lb ai) to 1 oz (0.025 lb ai). Use a quality spray adjuvant such as crop oil concentrate (coc) or non-ionic surfactant (nis) at recommended rates. | | | | |
| Pelargonic Acid (Scythe) | Parsley | Preplant, Preemergence, Directed-shielded | 3-10% v/v | 3-10% v/v |
| Remarks: Product is a contact, non-selective, foliar applied herbicide. There is no residual control. May be tank mixed with soil residual compounds. Consult label for rates and other information. | | | | |
| Prometryne (Caparol 4L) | Parsley Dill (fresh market) | Postemergence | .25 -.5 | .25 - .5 |
| Remarks: Caparol 4L may be applied postemergent as a broadcast application at .5 -1 pint/A to direct seeded parsley or dill. Applications may be made no closer than 30 days prior to harvest. Applications must be made in a minimum of 20 gpa. A maximum of 1 lb a.i./A (2 pts/A) of Caparol 4L may be applied per growing season. Crops treated may be sold for fresh market only. This is a third party registration. Authorization and waiver agreements must be obtained from TPR, Inc. prior to use. The use of the product may result in stunting and delayed maturity. Climatic conditions during the growing season will affect efficacy and phytotoxicity. | | | | |
| Sethoxydim (Poast) | Parsley | Postemergence | 0.188-0.28 | 0.188-0.47 |
| Remarks: Controls actively growing grass weeds. A maximum rate of 2.5 pints product may be made per application. A total of 5 pints product may be applied per season. There is a 30 day PHI (pre harvest interval). Consult label for rates for grass species and growth stages for best control. | | | | |
| Linuron (Lorox DF) | Parsley | Preemergence Postemergence | 0.75 NL | 0.75 - 1.5 0.5 |
| Remarks: Apply a single broadcast application in mineral and muck soils after planting but before plant emergence. In muck soils only, an additional application may be made after parsley emergence when weed are in 1 to 3 leaf stage. Do not apply within 30 days of harvest. | | | | |
| Bensulide (Prefar 4E) | Parsley Cilantro | Preplant, Preemergence | 5-6 | -- |
| Remarks: May be applied preplant and incorporated with power driven cultivations or may be incorporated with irrigation. | | | | |

Table 5. Disease management for parsley.

| Chemical | Maximum Rate/Acre/ Application Crop | | Minimum Days to Harvest | Pertinent Diseases | Select Remarks |
|--------------------|--|-------|----------------------------|--|--|
| | | | | | |
| Aliette 80WDG | 5 lb | 35 lb | 3 | Downy mildew | Do not mix with copper fungicides. |
| Amistar 80DF | 5 oz | 20 oz | 0 | Alternaria leaf spot, Powdery mildew, Septoria leaf spot | Do not exceed 1 sequential and 4 total applications of Amistar or other QoI fungicides. |
| Apron XL LS | 0.64 fl. oz./ 100 lb seed | | | Pythium seedling blight | Seed treatment only |
| Cabrio EG | 16 oz | 64 oz | 0 | Alternaria leaf spot, Cercospora leaf spot, Downy mildew, Powdery mildew, Septoria leaf spot | Do not exceed 2 sequential and 4 total applications of Cabrio or other QoI fungicides. |
| Champ 77 WP | 2 lb | | 2 | Bacterial blight | Do not apply in a solution with a pH of less than 6.5. |
| Champ DP Dry Prill | 2 lb | | 1 | Bacterial blight | Do not apply in a solution with a pH of less than 6.5. |
| Champ Formula 2 F | 2 pt | | 1 | Bacterial blight | Do not apply in a solution with a pH of less than 6.5. |
| Contans WG | 6 lbs | | | Sclerotinia diseases | Apply to soil surface and incorporate prior to, at planting, or at transplanting. |
| Copper-Count-N | 3 qt | | | Bacterial blight | |
| Cuprofix Disperss | 4 lb | | | Bacterial blight | |
| Flint | 3 oz | 12 oz | 7 | Alternaria leaf spot Cercospora leaf spot | Only for turnip-rooted parsley |
| Fosphite | 3 qt | 18 qt | | Downy mildew, Pythium, Rhizoctonia, Fusarium | Do not exceed 6 applications per crop. Caution should be used when applying in a management program including copper fungicides. |
| Helena Prophyt | 4 pt | 18 qt | 0 | Downy mildew, Pythium | Apply in a minimum spray volume of 30 GPA. Caution should be used when applying in a management program including copper fungicides. |
| Kaligreen | 3 lb | | 1 | Powdery mildew | Apply in a minimum spray volume of 25 GPA. |
| Kocide 101 | 3 lb | | | Bacterial blight | Do not apply in solutions with a pH of less than 6.5. |
| Kocide 2000 | 2.25 lb | | | Bacterial blight | Do not apply in solutions with a pH of less than 6.5. |
| Kocide 4.5 LF | 2 lb | | | Bacterial blight | Do not apply in solutions with a pH of less than 6.5. |
| Kocide DF | 3 lb | | | Bacterial blight | Do not apply in solutions with a pH of less than 6.5. |
| Maxim 4FS | 0.16 fl oz/ 100 lbs of seed | | | Various seedling diseases | Seed treatment only. |
| Nordox | 3 lb | | | Bacterial blight | |
| Nordox 75WG | 2 lb | | | Bacterial blight | |
| Nu-Cop 3L | 4 pt | | | Bacterial blight | |

Table 5. Disease management for parsley.

| Chemical | Maximum Rate/Acre/ Application | Crop | Minimum Days to Harvest | Pertinent Diseases | Select Remarks |
|------------------|-----------------------------------|---------|----------------------------|---|---|
| Nu-Cop 50DF | 3 lb | | | Bacterial blight | |
| Nu-Cop 50WP | 3 lb | | | Bacterial blight | |
| Phostrat | 5 pt | | 35 pt | Downy mildew | Do not exceed 7 applications per season. See label regarding cautions regarding conditions during application to avoid possible phytotoxicity. |
| Quadris Flowable | 15.4 fl oz | 2.88 qt | 0 | Alternaria leaf spot, Cercospora leaf spot, Powdery mildew, Septoria leaf spot | Do not exceed 1 sequential and 4 total applications of Quadris or other QoI fungicides. See label for cautions regarding tank mixtures to avoid possible phytotoxicity. |
| Rhapsody | 6 qt | | 0 | Powdery mildew Sclerotinia drop | For suppression or use as a preventative in a program with other registered fungicides. For Sclerotinia, apply as a banded spray (see label for placement and timings). |
| Ridomil Gold EC | 2 pts | | | Pythium seedling diseases | Apply at seeding in a 7-12" band on soil over seed furrow |
| Ridomil Gold GR | 40 lb | | | Pythium seedling diseases | See label for specifics regarding preplant incorporated applications and surface applications at the time of planting. |
| Serenade Max | 3 lb | | 0 | Powdery mildew Sclerotinia diseases | For suppression or use as a preventative in a program with other registered fungicides. For Sclerotinia, apply as a banded spray (see label for placement and timings). |
| Sonata | 4 qt | | 0 | Powdery mildew | For suppression or use as a preventative in a program with other registered fungicides. |
| Sporan | 1.5 qt | | 0 | Botrytis gray mold Powdery mildew | Sporan is a concentrated oil-based product. It requires the use of an approved adjuvant to improve spreading and sticking. OMRI listed. |
| Stretch | 6 pt | | | Bacterial leaf spot | |
| Sulfur 90W | 6 lb | | | Powdery mildew | Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray. |
| Super-Six | 12 pt | | | Powdery mildew | Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray. |
| Trilogy | 2 gal | | | | Apply at a rate of 0.5% - 1.0% in 25 to 100 gallons of water per acre or at 2 pt in a minimum of 5 GPA for low volume applications. |
| Ultra Flourish | 4 pt | | | Pythium seedling disease | See label for specifics regarding preplant incorporated applications and surface applications at the time of planting. |

Table 6. Selected insecticides approved for use on insects attacking parsley.

| Trade Name (Common Name) | Rate (product/acre) | REI (hours) | Days to Harvest | Insects | MOA Code ¹ | Notes |
|--|---|----------------|--------------------|--|--------------------------|--|
| Admire 2F (imidacloprid) | 10-24 fl oz | 12 | 21 | aphids, whiteflies | 4A | Limited to 24 fl oz per season. |
| Agree WG (<i>Bacillus thuringiensis</i> subspecies <i>aizawai</i>) | 0.5-2.0 lb | 4 | 0 | lepidopteran larvae (caterpillar pests) | 11B1 | Apply when larvae are small for best control. OMRI-listed ² . |
| *Agri-mek 0.15 EC (abamectin) | 8-16 fl oz | 12 | 7 | <i>Liriomyza</i> leafminers, spider mites | 6 | No more than 2 sequential applications. Maximum of 48 oz per acre per season. |
| *Ambush 25W (permethrin) | 6.4-12.8 oz | 12 | 1 | aphids, beet armyworm, cabbage looper, corn earworm, cutworms, fall armyworm, leafhoppers, vegetable leafminer | 3 | Do not apply more than 2 lb ai/acre per season. |
| Assail 70WP (acetamiprid) | 0.8-1.7 oz | 12 | 7 | aphids, whiteflies | 4A | Begin applications for whiteflies when first adults are noticed. Do not apply more than 5 times per season or apply more often than every 7 days. |
| Aza-Direct (azadirachtin) | 1-2 pts, to 3.5 pts if needed | 4 | 0 | aphids, beetles, caterpillars, leafhoppers, leafminers, mites, stink bugs, thrips, weevils, whiteflies | 26 | Antifeedant, repellent, insect growth regulator. OMRI-listed ² . |
| Azatin XL (azadirachtin) | 5-21 fl oz | 4 | 0 | aphids, beetles, caterpillars, leafhoppers, leafminers, mites, stink bugs, thrips, weevils, whiteflies | 26 | Antifeedant, repellent, insect growth regulator. |
| Biobit HP (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 0.5-2.0 lb | 4 | 0 | caterpillars (will not control large armyworms) | 11B2 | Treat when larvae are young. Good coverage is essential. Can be used in the greenhouse. OMRI-listed ² . |
| BotaniGard 22 WP, ES (<i>Beauveria bassiana</i>) | WP: 0.5-2 lb/100 gal ES: 0.5-2 qts/100 gal | 4 | 0 | aphids, thrips, whiteflies | -- | May be used in greenhouses. Contact dealer for recommendations if an adjuvant must be used. Not compatible in tank mix with fungicides. |
| Condor (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 0.67-1.67 qts | 4 | 0 | caterpillars | 11B2 | Do not use in combination with any chlorothalonil-based fungicides. Use caution when mixing with other oil-based products or surfactants. Treat when larvae are young. Good coverage is essential. |
| Confirm 2F (tebufenozide) | 6-8 fl oz | 4 | 7 | armyworms, cabbage looper, garden webworm | 18 | Do not exceed 56 ounces of product per acre per season. |
| Crymax WDG (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 0.5-2.0 lb | 4 | 0 | caterpillars | 11B2 | Use high rate for armyworms. Treat when larvae are young. |
| Deliver (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 0.25-1.5 lb | 4 | 0 | caterpillars | 11B2 | Use higher rates for armyworms. OMRI-listed ² . |
| DiPel DF (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 0.5-2.0 lb | 4 | 0 | caterpillars | 11B2 | Treat when larvae are young. Good coverage is essential. |
| Entrust (spinosad) | 0.5-3 oz | 4 | 1 | armyworms, cabbage looper, leafminers, thrips | 5 | Use no more than 9 oz per acre per crop. OMRI-listed ² . |

Table 6. Continued.

| Trade Name (Common Name) | Rate (product/acre) | REI (hours) | Days to Harvest | Insects | MOA Code ¹ | Notes |
|--|---|----------------|--------------------|--|--------------------------|--|
| Extinguish (S)-methoprene) | 1.0-1.5 lb | 4 | 0 | fire ants | 7A | Slow-acting IGR (insect growth regulator). Best applied early spring and fall where crop will be grown. Colonies will be reduced after three weeks and eliminated after 8 to 10 weeks. May be applied by ground equipment or aerially. |
| Fulfill (pymetrozine) | 2.75 oz | 12 | 7 | aphids, suppression of whiteflies | 9B | Apply when aphids first appear, before populations build to damaging levels. Two applications may be needed to control persistent aphid populations. |
| Intrepid 2F (methoxyfenozide) | 4-16 fl oz | 4 | 1 | armyworms, cabbage looper, webworms | 18 | Do not apply more than 64 fl oz acre per season. |
| Javelin WG (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 0.12-1.5 lb | 4 | 0 | most caterpillars, but not <i>Spodoptera</i> species (armyworms) | 11B2 | Treat when larvae are young. Thorough coverage is essential. OMRI-listed ² . |
| *Lannate LV; *SP (methomyl) | LV: 1.5-3.0 pts SP: 0.5-1.0 lb | 48 | 10 | beet armyworm, cabbage looper, diamondback moth, imported cabbageworm | 1A | Do not use more than 4 lb of SP, or 12 pt of LV per acre/season. |
| *Larvin 3.2 (thiodicarb) | 16-30 fl oz | 48 | 14 | armyworms, beet armyworm, cabbage looper, corn earworm, fall armyworm, southern armyworm | 1A | Do not exceed 60 fl oz per acre per season. |
| Lepinox WDG (<i>Bacillus thuringiensis</i> subspecies <i>kurstaki</i>) | 1.0-2.0 lb | 12 | 0 | for most caterpillars, including beet armyworm (see label) | 11B2 | Treat when larvae are small. Thorough coverage is essential. |
| Malathion 8 F (malathion) | 1-2 pt | 12 | 21 | aphids | 1B | |
| M-Pede 49% EC Soap, insecticidal | 1-2% V/V | 12 | 0 | aphids, leafhoppers, mites, plant bugs, whiteflies | -- | |
| Neemix 4.5 (azadirachtin) | 4-16 fl oz | 12 | 0 | aphids, armyworms, leafhoppers, leafminers, loopers, whiteflies | 26 | IGR and feeding repellent. OMRI-listed ² . |
| Oberon 2SC (spiromesifen) | 7.0-8.5 fl oz | 12 | 7 | whiteflies | 23 | Maximum amount per crop: 25.5 fl oz/acre. No more than three applications. |
| *Pounce 3.2 EC (permethrin) | 2-8 oz | 12 | 1 | aphids, armyworms, beet armyworm, cabbage looper, corn earworm, cutworms, fall armyworm, leafhoppers, loopers, southern armyworm, tobacco budworm, vegetable leafminer | 3 | |
| *Proclaim (emamectin benzoate) | 2.4-4.8 oz | 48 | 7 | beet armyworm, corn earworm, fall armyworm, loopers, tobacco budworm, suppression of leafminers | 6 | Do not apply more than 28.8 oz/A per season. |
| Provado 1.6 F (imidacloprid) | 3.8 oz | 12 | 7 | aphids, flea beetles, whiteflies | 4A | |
| Pyrellin EC (pyrethrin + rotenone) | 1-2 pt | 12 | 0 | aphids, cabbage looper, <i>Lygus</i> bug, mites, plant bugs, whiteflies | 3, 21 | |

Table 6. Continued.

| Trade Name (Common Name) | Rate (product/acre) | REI (hours) | Days to Harvest | Insects | MOA Code ¹ | Notes |
|--|---|-----------------------|-----------------------|--|--------------------------|---|
| Sevin 80S; XLR; 4F (carbaryl) | 80S: 0.63-2.5 lb XLR; 4F: 0.5-2.0 qt | 12 | 14 | armyworms, aster leafhopper, corn earworm, fall armyworm, flea beetles, leafhoppers, <i>Lygus</i> bug, spittlebugs, stink bug, tarnished plant bug | 1A | Do not apply more than a total of 7.5 lb or 6 qt per acre per crop. |
| SpinTor 2 SC (spinosad) | 1.5-10 fl oz | 4 | 1 | armyworms, cabbage looper, leafminers (<i>Liriomyza</i> spp.) | 5 | Do not apply more than 29 fl oz per acre per season. |
| *Telone C-35 (dichloro-propene) | See label | 5 days - See label | preplant | symphylans, wireworms | -- | See supplemental label for use restrictions in south and central Florida. |
| Trigard (cyromazine) | 2.66 oz | 12 | 7 | leafminers | 17 | No more than 5 applications per crop. |
| Trilogy (extract of neem oil) | 0.5-2.0% V/V | 4 | 0 | aphids, mites, suppression of thrips and whiteflies | 26 | Apply morning or evening to reduce potential for leaf burn. Toxic to bees exposed to direct treatment. OMRI-listed ² . |
| Venom 20SG (dinotefuran) | foliar: 0.44-0.67 lb soil: 1.13-1.34 lb | 12 | foliar: 7 soil: 21 | green peach aphid, leafhoppers, leafminers, potato aphid, whiteflies | 4A | Use only one application method (soil or foliar, not both). Do not apply more than 1.34 lb/acre (foliar) or 2.68 lb/acre (soil) per season. |
| Xentari DF (<i>Bacillus thuringiensis</i> subspecies <i>aizawai</i>) | 0.5-2 lb | 4 | 0 | caterpillars | 11B1 | Treat when larvae are young. Thorough coverage is essential. May be used in the greenhouse. Can be used in organic production. |

The pesticide information presented in this table was current with federal and state regulations at the time of revision. The user is responsible for determining the intended use is consistent with the label of the product being used. Use pesticides safely. Read and follow label instructions.

¹ Mode of Action codes for vegetable pest insecticides from the Insecticide Resistance Action Committee (IRAC) Mode of Action Classification v.3.3 October 2003. 1A. Acetylcholine esterase inhibitors, Carbamates 1B. Acetylcholine esterase inhibitors, Organophosphates

2A. GABA-gated chloride channel antagonists
3. Sodium channel modulators
4A. Nicotinic Acetylcholine receptor agonists/antagonists, Neonicotinoids
5. Nicotinic Acetylcholine receptor agonists (not group 4)
6. Chloride channel activators
7A. Juvenile hormone mimics, Juvenile hormone analogues
7C. Juvenile hormone mimics, Pyriproxifen
9A. Compounds of unknown or non-specific mode of action (selective feeding blockers), Cryolite
9B. Compounds of unknown or non-specific mode of action (selective feeding blockers), Pymetrozine
11B1. Microbial disruptors of insect midgut membranes, *B.t.* var *aizawai*
11B2. Microbial disruptors of insect midgut membranes, *B.t.* var *kurstaki*
12B. Inhibitors of oxidative phosphorylation, disruptors of ATP formation, Organotin miticide
15. Inhibitors of chitin biosynthesis, type 0, Lepidopteran
16. Inhibitors of chitin biosynthesis, type 1, Homopteran
17. Inhibitors of chitin biosynthesis, type 2, Dipteran
18. Ecdysone agonist/disruptor
20. Site II electron transport inhibitors
21. Site I electron transport inhibitors
22. Voltage-dependent sodium channel blocker
23. Inhibitors of lipid biosynthesis
25. Neuroactive (unknown mode of action)
26. Unknown mode of action, Azadirachtin

² OMRI listed: Listed by the Organic Materials Review Institute for use in organic production.

* Restricted Use Only