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Chapter 24.
Celery Production in Florida

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BOTANY

Nomenclature

Family - Apiaceae (Umbelliferae)
Celery - *Apium graveolens*

Origin

Celery is native to marshy sites that may be somewhat saline in areas of southern Europe and North Africa that border the Mediterrranean Sea (Fig. 24-1).

Related Species

Other common vegetables in the Apiaceae family are carrot and parsnip. A great many herbs, including cilantro, fennel, and parsley are also in this family.

VARIETIES

Celery varieties grown in Florida include the following:

Floribelle - M9
June Belle
Florida 683

SEEDING AND PLANTING

Planting dates and seeding information are given in Table 1.

FERTILIZER AND LIME

On mineral soils, broadcast all P_2O_5, micronutrients, and 20 to 25% N and K_2O before transplanting. Apply the remaining N and K_2O in 40 to 60 lb sidedressings through the early part of the growing season (once at 2 to 3 weeks after planting and the second one at 6 to 8 weeks after planting) (see Table 2).

On organic soils, broadcast and incorporate all P and micronutrient fertilizers (Fig. 24-2). On high-pH soil, there might be benefit from banding P. Potassium should be applied in three applications (at planting and 1 and 2 months after) to reduce soluble salt burn and minimize leaching losses. For crops harvested before Dec. 1, make two applications of 40 lbs N each at 1 and 2 months after transplanting. For crops to be harvested between Dec. 1 and March 31, make two applications of 60 lbs each. For crops to be harvested after Apr. 1, make two applications of 30 lbs each (see Table 3).

Table 1. Seeding and planting information for celery.

Planting dates	
North Florida	Aug - Feb
Central Florida	Sept - Mar
South Florida	Oct - Mar
Seeding information	
Distance between rows (in)	18-40
Distance between plants (in)	6-12
Seeding depth (in)	on surface[1]
Seed per acre of transplants (lb)	1 - 2
Days to maturity from transplant	75 - 90
Plant population[2] (per acre)	58,080

[1] Seed pressed in beds, not buried, and kept moist. Transplant production takes 3 months in seedbed.

[2] Population based on closest between and within row spacing.

Table 2. Soil test results and fertilizer recommendations for mineral soils for celery. [1]

Target pH	N lb/A	P_2O_5 VL	P_2O_5 L	P_2O_5 M	P_2O_5 H	P_2O_5 VH	K_2O VL	K_2O L	K_2O M	K_2O H	K_2O VH
		(lb/A/crop season)					(lb/A/crop season)				
6.5	200	200	150	100	0	0	250	150	100	0	0

[1] See Chapter 2 section on supplemental fertilizer application and best management practices, pg 11.

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PLANT TISSUE ANALYSIS

Plant tissue analysis information for celery is given in Table 4. The analysis was done 6 weeks after planting, using the outer petiole.

IRRIGATION

Celery water requirements (see Chapter 8, *Principles and Practices of Irrigation Management for Vegetables,* Tables 4-6) during rapid growth are similar to carrots (105% of ETo) with a slightly lower demand for water during the final stages of growth and development (95% of ETo). (See also Chapter 8, Table 3.)

WEED MANAGEMENT

Herbicides labeled for weed control in carrot are listd in Table 5.

DISEASE MANAGEMENT

Chemicals approved for use on celery are listed in Table 6.

INSECT MANAGEMENT

Table 7 outlines the insecticides approved for use on insects attacking celery.

Table 3. Soil test and fertilizer recommendations for Histosols for celery, with target pH = 6.0.

P and K index and fertilizer rate							
P index	3	6	9	12	15	18	21
P_2O_5 (lb/A)	260	200	170	100	60	30	0
K index	50	80	110	140	170	200	
K_2O (lb/A)	300	240	180	120	60	0	

Table 4. Plant tissue analysis for celery. Dry wt. basis.

	N	P	K	Ca	Mg	Fe	Mn	Zn	B	Cu
Status	Percent					Parts per million				
Deficient	<1.5	0.3	6.0	1.3	0.3	20	5	20	15	4
Adequate range	1.5-1.7	0.3-0.6	6.0-8.0	1.3-2.0	0.3-0.6	20-30	5-10	20-40	15-25	4-6
High	>1.7	0.6	8.0	2.0	0.6	100	20	60	25	6

Table 5. Chemical weed controls: Celery.

Herbicide	Labeled crops	Time of application to crop	Rate (lbs. AI./Acre) Mineral	Muck
Bensulide (Prefar 4E)	Celery, Chinese celery (transplant only) cardoon, Florence fennel	Preplant incorporated	Preemergence	5-6 --
Remarks: Preplant incorporate using power driven rotary cultivations or apply preemergence and incorporate with irrigation. Controls many grass weeds. Provides fair to good control of lambsquarter, purslane, and amaranths. May be applied under polyethylene mulch.				
Carfentrazone (Aim)	Celery	Directed-hooded ro-middles	0.0008-025	0.008-0.025
Remarks: Aim may be applied as a post-directed hooded burn-down app;ication 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.				
Clethodim (Select)	Celery	Postemergence	0.1-0.125	---
Remarks: Use Select for the control of annual and perennial grasses. Use a crop-oil concentrate at 1% v/v in the finished spray volume. Do not apply more than 8 fl. oz. product/A per application. Do not apply within 30 days of harvest.				
Glyphosate (Roundup)	Celery	Preplant	0.5 - 1.0	0.5 - 1.0
Remarks: Apply as directed for "Cropping Systems" under conditions described on label. Does not provide residual weed control.				
Linuron (Lorox DF)	Celery	Posttransplanting	0.75 - 1.5	0.75 - 1.5
Remarks: Controls emerged annuals. Apply following transplanting and establishment of celery, but before crop is 8 inches tall. Annual grasses should not exceed 2 inches and broadleaf weeds 6 inches tall. Avoid application when temperature exceeds 85°F. Do not use a surfactant or mix with other chemicals. Note precautions of planting non-registered crops within 4 months.				
Metolachlor Dual Magnum	Celery	Pre/postransplant	.95-1.26	Dual Magnum
Remarks: Applications must be made prior to/immediately after transplanting. Rates are based on soil texture and percentage of organic matter. On coarse soils apply .95 - 1.26 lbs a.i/A (1.0 -1.33 pints) on medium and fine soils apply 1.25-1.6 lbs a.i. and when organic matter content is greater than 3% apply 1.6-1.9 lbs a.i/A (1.67-2.0 pts/A). This label is a special local need, third party registration. Authorization and waiver agreements must be obtained from T.P.R., Inc. prior to use.				
Pelargonic acid (Scythe)	Celery, fennel, Swiss chard	Preplant, 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 herbicides. Consult label for rates and other information.				
Prometryn (Caparol 4L)	Celery seedbed	Postemergence	0.6 - 0.8	0.6 - 0.8
Remarks: Controls emerged annuals. In seedbed, apply when seedlings have 2 to 5 true leaves after seedbed covers are removed for at least one week.				
Prometryn (Caparol 4L)	Celery field	Posttransplanting	0.8 - 1.6	0.8 - 1.6
Remarks: Controls emerged annuals. Apply one time after celery is established, 2 weeks after transplanting but before 6th week. Weeds should not exceed 2 inches. Note precautions of planting non-registered or sensitive crops within 5 months.				
Sethoxydim (Poast)	Celery	Postemergence	0.188 - 0.28	0.188 - 0.28
Remarks: Controls actively growing grass weeds. A total of 3 pts. product per acre may be applied in one season. Do not apply within 14 days of harvest. Apply in 5 to 20 gallons of water adding 2 pts. of crop oil concentrate per acre. Unsatisfactory results may occur if applied to grasses under stress. Use 0.188 lb ai (1 pt.) on seedling grasses and up to 0.28 lb ai (1.5 pt.) on perennial grasses emerging from rhizomes, etc. Consult label for grass species and growth stage for best control.				
Trifluralin Treflan EC, Treflen 5 Trifluralin 4 EC Trilin	Celery	Preplant Incorporate	0.5	--
Remarks: Apply as a soil incorporated treatment to direct seeded or transplanted celery before planting, at planting or immediately after planting. Apply to mineral soils only. Consult label for application instructions.				

Table 6. Disease management for celery.

Chemical	Maximum Rate/Acre Application	Crop	Minimum Days to Harvest	Pertinent Diseases	Select Remarks
Aliette 80WDG	5 lb	35 lb	3		Do not mix with copper fungicides or apply unbuffered to foliage with copper residues.
Amistar 80DF	5 oz or 0.25 oz/1000 row ft	20 oz	0	Various (see label)	Do not exceed 1 sequential and 4 total applications of Amistar or other QoI fungicides. See label for soil applications.
Apron XL LS	0.64 fl. oz./ 100 lb seed			Pythium seedling blight	Seed treatment only
Basic Copper 53	4lb		1	Bacterial blight	
Basicop WP	4lb		1	Bacterial blight	
Botran 75W	2 lb	5.33 lb	7	Pink rot (Sclerotinia)	Direct spray to base of plant
Bravo Ultrex 82.5 WDG	2.7 lb	21.8 lb	7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	
Bravo Weather Stik 6F	3 pt		7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	
Bumper 41.8EC	4 fl oz	16 fl oz	14	Early blight (Cercospora) Late blight (Septoria)	Do not exceed 4 total applications.
Cabrio EG	16 oz	64 oz	0	Various (see label)	Do not exceed 2 sequential and 4 total applications of Cabrio or other QoI fungicides.
Champ 77 WP	2 lb		2	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	Do not apply in a solution with a pH of less than 6.5.
Champ DP Dry Prill	2 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	Do not apply in a solution with a pH of less than 6.5.
Champ Formula 2 F	2 pt		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	Do not apply in a solution with a pH of less than 6.5.
COC DF	6 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
COC WP	6 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
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 Early blight (Cercospora) Late blight (Septoria)	
Copper-Z 4/4				Bacterial blight Early blight (Cercospora) Late blight (Septoria)	

Table 6. Continued.

Chemical	Maximum Rate/Acre Application	Crop	Minimum Days to Harvest	Pertinent Diseases	Select Remarks
Cuprofix Disperss	4 lb			Bacterial blight	
Dusting Sulfur – IAP	12 lb			Early and late blight	Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray.
Echo 720	3 pt		7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	
Echo 90 DF	2.4 lb	20 lb	7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	
Equus 720 SST	3 pt		7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	
Equus-DF	2.4 lb	20 lb	7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	
Flint	3 oz	12 oz	7	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	Do not apply more than 3 sequential or 4 total applications of Flint or another QoI fungicide.
Fosphite	3 qt	18 qt		Pythium, Rhizoctonia, Fusarium	Do not exceed 6 applications per crop. Caution should be used when applying in a management program including copper fungicides. See label for foliar, root dip and irrigation application details.
Kaligreen	3 lb		1	Powdery mildew	Apply in a minimum spray volume of 25 GPA.
Kocide 101	2 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	Do not apply in solutions with a pH of less than 6.5.
Kocide 2000	1.5 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	Do not apply in solutions with a pH of less than 6.5.
Kocide 4.5 LF	1.33 pt		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	Do not apply in solutions with a pH of less than 6.5.
Kocide DF	2 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	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	4 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
Nordox 75WG	2.5 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	

Table 6. Continued.

Chemical	Maximum Rate/Acre Application	Crop	Minimum Days to Harvest	Pertinent Diseases	Select Remarks
Nu-Cop 3L	2.66 pt		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
Nu-Cop 50DF	2 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
Nu-Cop 50WP	2 lb		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
Phostral	5 pt		35 pt		Do not exceed 7 applications per season. See label regarding cautions regarding conditions during application to avoid possible phytotoxicity.
Propimax EC	4 fl oz	16 fl oz	14	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	Do not apply more than 4 applications per season.
Quadris Flowable	15.4 fl oz or 0.8 fl oz/1000 row ft	2.88 qt	0	Various (see label)	Do not exceed 1 sequential and 4 total applications of Quadris or other QoI fungicides. See label for soil applications.
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	Pink rot (Sclerotinia)	Begin application approx. 8 wks prior to harvest and repeat on 14 day interval. Direct spray at base of plants and surrounding soil surface.
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	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	4 pt		1	Bacterial blight Early blight (Cercospora) Late blight (Septoria)	
Sulfur 90W	10 lb			Powdery mildew	Do not apply during periods of warm weather. Do not apply within 2 weeks of an oil spray.

Table 6. Continued.

Chemical	Maximum Rate/Acre Application	Crop	Minimum Days to Harvest	Pertinent Diseases	Select Remarks
Tenn-Cop 5E	3 pt		1	Bacterial blight Early blight (Cercospora)	Do not apply in a solution with a pH of less than 6.5.
Tilt 3.6E	4 fl oz	16 fl oz	14	Early blight (Cercospora) Late blight (Septoria) Stalk rot (Rhizoctonia)	Do not apply more than 4 applications per season.
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 7. Insecticides approved for use on insects attacking celery.

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	45	aphids, leafhoppers, whiteflies	4A	Do not apply more than 24 oz per acre per year.
Agree WG (*Bacillus thuringiensis* subspecies *aizawai*)	0.5-2.0 lb	4	0	lepitopteran 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	*Liriomyza* leafminers, spider mites	6	Do not make more than 2 sequential applications after transplanting.
***Ambush 25W** (permethrin)	6.4-12.8 oz	12	1	beet armyworm, cabbage looper, corn earworm, cutworms, fall armyworm, leafminers	3	Do not apply more than 128 oz/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, up to 3.5 pts	4	0	aphids, beetles, caterpillars, leafhoppers, leafminers, mites, stink bugs, thrips, weevils, whiteflies	26	Antifeedant, repellant, 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, repellant, insect growth regulator.
Biobit HP (*Bacillus thuringiensis* subspecies *kurstaki*)	0.5-2.0 lb	4	0	caterpillars (will not control large armyworms)	11	Treat when larvae are young. Good coverage is essential. Can be used in the greenhouse. OMRI-listed[2].
BotaniGard 22 WP, ES (*Beauveria bassiana*)	**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 (*Bacillus thuringiensis* subspecies *kurstaki*)	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)	6.0-8.0 fl oz	4	7	armyworms, cabbage looper, garden webworm	18	Do not exceed 56 ounces of product per acre per season.
Crymax WDG (*Bacillus thuringiensis* subspecies *kurstaki*)	0.5-2.0 lb	4	0	caterpillars	11B2	Use high rate for armyworms. Treat when larvae are young.
Deliver (*Bacillus thuringiensis* subspecies *kurstaki*)	0.25-1.5 lb	4	0	caterpillars	11B2	Use higher rates for armyworms. OMRI-listed[2].
Dimethoate 4EC (dimethoate)	1 pt	48	7	leafminers, mites	1B	Use ground equipment.

Table 7. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
DiPel DF (*Bacillus thuringiensis* subspecies *kurstaki*)	0.5-2.0 lb	4	0	caterpillars	11B2	Treat when larvae are young. Good coverage is essential. OMRI-listed[2].
Endosulfan 3EC (endosulfan)	0.66-1.33 qt	24	4 or 7, depending on rate used	aphids, armyworms, cabbage looper, flea beetles, leafhoppers, whiteflies	2	Do not exceed 1.33 qt per year.
Entrust (spinosad)	0.5-3 oz	4	1	armyworms, cabbage looper, leafminers, thrips	5	See label for resistance management recommendations. Apply no more than 9 oz per acre per year. OMRI-listed[2].
Extinguish ((S)-methoprene)	1-1.5 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 (metroxyfenozide)	4-16 fl oz	4	1	armyworms, cabbage looper, webworms	18	Do not apply more than 64 fl oz per acre per season.
Javelin WG (*Bacillus thuringiensis* subspecies *kurstaki*)	0.12-1.5 lb	4	0	most caterpillars, but not Spodoptera species (armyworms)	11B2	Treat when larvae are young. Thorough coverage is essential. OMRI-listed[2].
***Lannate LV, *SP** (methomyl)	**LV:** 0.75-3 pt **SP:** 0.25-1.0 lb	48	7	armyworms, aster leafhopper, beet armyworm, loopers, variegated cutworm	1A	
***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 fluid ounces of Larvin per acre per season.
Lepinox WDG (*Bacillus thuringiensis* subspecies *kurstaki*)	1.0-2.0 lb	12	0	most caterpillars, including beet armyworm (see label)	11B2	Treat when larvae are small. Thorough coverage is essential.
Malathion 8F (malathion)	1-1.5 pt	12	7	aphids, mites	1B	
M-Pede 49% EC (Soap, insecticidal)	1-2% V/V	12	0	whiteflies	--	
Neemix 4.5 EC (azadirachtin)	4-16 fl oz	12	0	aphids, armyworms, cabbage looper, cutworms, leafminers, webworms, whiteflies	26	IGR and feeding repellant. 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 3 applications.

Table 7. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
Orthene 75S, 97 (acephate)	**75S:** 0.67-1.33 lb **97:** 0.5-1.0 lb	24	21	cabbage looper, fall armyworm, green peach aphid	1B	Do not use more than 2 lb active ingredient per acre per season.
***Pounce 3.2EC** (permethrin)	2-8 oz	12	1	aphids, beet armyworm, cabbage looper, corn earworm, cutworms, fall armyworm, leafhoppers, leafminers, loopers, southern armyworm, tobacco budworm	3	Do not apply more than 2.0 lb active ingredient per acre per season.
***Proclaim** (emamectin benzoate)	2.4-4.8 oz	48	7	beet armyworm, corn earworm, fall armyworm, *Liriomyza* leafminers, loopers, tobacco budworm	6	Provides suppression of leafminers. Rotate with other products with different modes of action.
Pyrellin EC (pyrethrins + rotenone)	1-2 pt	12	12 hours	aphids, leafhoppers, leafminers, leaftiers, loopers, lygus bug, mites, plant bugs, stink bugs, whiteflies	3, 21	
Pyronyl Crop Spray (pyrethrins + piperonyl butoxide)	1-12 fl oz	12	0	ants, aphids, armyworms, cabbage looper, corn earworm, flea beetles, leafhoppers, leaftiers, webworms, whiteflies	3	
Sevin XLR; 4F; 80S (carbaryl)	**XLR; 4F:** 0.5-2 qt **80S:** 0.03-2.5	12	14	armyworms, aster leafhopper, corn earworm, fall armyworm, flea beetles, leafhoppers, lygus bug, spittlebugs, stink bugs, tarnished plant bug	1A	Repeat, as needed, up to 5 times, with at least 7 days between applications.
SpinTor 2 SC (spinosad)	1.5-10 fl oz	4	1	armyworms, cabbage looper, leafminers (*Liriomyza* spp.), thrips	5	Control of leafminers and thrips may be improved by use of an adjuvant.
Spod-X LC (insect virus)	1.7-3.4 fl oz	4	0	beet armyworm	--	Treat when larvae are young. OMRI-listed[2].
SunSpray 98.8%, others **JMS Stylet-Oil** (Oils, insecticidal)	3-6 qt/100 gal (JMS)	4	0	aphids, beetle larvae, leafhoppers, leafminers, mites, thrips, whiteflies (pests controlled vary by product)	--	See label for cautions on tank mixes. Organic Stylet-Oil is OMRI-listed[2].
***Telone C-35** (dichloropropene + chloropicrin)	See label	5 days - See label	preplant	symphylans, wireworms	--	See supplemental label for use restrictions in south or central Florida.
Trigard (cyromazine)	2.66 oz	12	7	leafminers	17	Do not make more than six 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	7	green peach aphid, leafhoppers, leafminers, potato aphid, whiteflies	4A	Do not apply more than 1.34 lb per acre per season (foliar) or 2.68 lb per acre per season (soil). Do not use both methods of application.

Table 7. Continued.

Trade Name (Common Name)	Rate (product/acre)	REI (hours)	Days to Harvest	Insects	MOA Code[1]	Notes
***Vydate L** (oxamyl)	2-4 pt	48	21	leafminers (except *Liriomyza trifolii*)	1A	

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 Pesticide