

Celery

Planting

Plant treated seed in late April or transplants in mid-May. Avoid early planting that would expose young plants to temperatures below 55°F for a week or more. This can cause “bolting” (seed stalk development). Choose deep, fertile soils and provide adequate drainage. Celery needs abundant available moisture during the growing season. Rotate celery with other vegetable crops but not with carrots.

Direct seedings

Rows: 18–40 inches.

Seeds in row: 2 inches apart, later thinned to 6–8 inches apart. Use 6–8 oz seed/a (1 oz seed produces 10,000 plants).

Transplants

Rows: 18–40 inches.

Plants in row: 6–8 inches. Set 30,000–45,000 plants/a.

Lime and fertilizer

Lime: Use dolomitic limestone to maintain a pH of 5.6 or higher in organic soils and at least 6.0 in other soils.

Fertilizer rates: Apply P₂O₅ and K₂O according to soil test recommendations. Use annual nitrogen, P₂O₅, and K₂O recommendations in table below. Take credits for previous legume crops and manure.

Application: Broadcast and work in lime and fertilizer requirements before planting.

Nitrogen: Apply preplant or sidedress. At higher rates, split recommendations into two or more applications during the season.

Micronutrients: Celery has a high boron requirement and medium requirements for manganese and copper. Use soil and plant analyses to check for deficiencies of these nutrients. Apply 2–3 lb/a of boron with fertilizer each year if boron soil test is very low (VL) or low (L). Omit application if boron test is in the excessively high (EH) range. Apply 1–5 lb Mn/a or 1–12 lb Cu/a, depending on fertilizer source, soil, and method of application.

Annual nitrogen, phosphate, and potash recommendations for celery

Nitrogen		Phosphate and potash		
Organic matter (%)	Amount to apply (lb/a)	Yield goal	Amount P ₂ O ₅ to apply* (lb/a)	Amount K ₂ O to apply* (lb/a)
<2	140	25–35 t/a	100	300
2.0–9.9	120			
10–20	100			
>20	50			

*Amounts shown are for optimum (O) soil test levels. Apply 50% of this rate if soil test is high (H) and omit if soil test is excessively high (EH). If soil test is low (L) or very low (VL), increase rates according to soil test recommendations.

Disease control in celery

Disease	Active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions	
Aster yellows	<i>Control aster leafhopper. See "Aster Yellows Index" on page 16.</i>				
Basal stalk rot (<i>Rhizoctonia</i>)	azoxystrobin + chlorothalonil	2.4–3.7 pt Quadris Opti	7	Quadris Opti contains Group 11 (strobilurin) and M5 fungicides. Do not apply more than two sequential foliar applications of these materials before alternating with a fungicide with a different mode of action. Do not exceed four foliar applications and 3.0 gal/a Quadris Opti per season.	
	chlorothalonil (7-day spray schedule)	2.0–3.0 pt Bravo Weather Stik, Echo 720, Equus 720	7	Spray before infection occurs. Rotate celery with non-susceptible crops.	
		1.8–2.7 lb Bravo Ultrex 82.5WDG, Equus DF	7	Do not exceed 18.0 lb ai/a chlorothalonil per season.	
Bacterial blight (<i>Pseudo-monas</i>)	copper hydroxide	1.3 pt Champ Formula 2 4.6F, Kocide 4.5 LF	0	Use a 2- to 3-year crop rotation and hot water seed treatment (118°F for 30 minutes) to control bacterial diseases. Spray during wet periods and when disease is anticipated.	
		2.3 pt Kocide LF 2.4F	0		
		1.5 lb Kocide 2000 DF	0		
		0.75–1.5 lb Kocide 3000	0		
		2.0 lb Champion 77WP, Kocide 101 77WP, Kocide DF	0		
Cercospora (early blight), Septoria (late blight), Alternaria (<i>Alternaria</i> leaf spot)	<i>Hot water seed treatment will eliminate Septoria spores on the seed.</i>				
Carrot	azoxystrobin	9.0–15.5 fl oz Aframe, AzoxyStar, Quadris Flowable, Satori, Willowood Azoxy 25C	0	Quadris, Satori, Quilt, Cabrio, and Flint are Group 11 (strobilurin) fungicides; Quadris Opti contains Group 11 and M5 fungicides. To prevent disease resistance, do not apply more than 1 application of these products before alternating with a fungicide having a different mode of action. Do not exceed 3 applications of strobilurin fungicides per crop per year. Do not exceed 2.88 qt/a Quadris or Satori, 3.0 gal/a Quadris Opti, 64.0 oz/a Cabrio, or 12.0 oz/a Flint per season.	
	azoxystrobin + chlorothalonil	2.4–3.7 pt Quadris Opti	7		
	azoxystrobin + propiconazole	14.0 fl oz Quilt Xcel	14		
	pyraclostrobin	12.0–16.0 oz Cabrio EG	0		
	trifloxystrobin	2.0–3.0 oz Flint	7		
	azoxystrobin + propiconazole	14.0 fl oz Quilt, Willowood AzoxyProp Xtra	14		Do not apply more than 56.0 fl oz/a per season of Quilt.
	boscalid	<i>Alternaria control:</i> 4.5–9.0 oz Endura	0		Do not make more than 2 applications of Endura per season. Use higher rate when disease pressure is high.
	boscalid + pyraclostrobin	10.0–15.0 oz Pristine	0		Make no more than 2 applications per season. Follow resistance management guidelines.
	chlorothalonil (3- to 5-day spray schedule)	1.5–2.0 pt Bravo Weather Stik, Echo 720, Equus 720	7		Start sprays when transplants are set in the field. Do not exceed 18.0 lb ai/a chlorothalonil per season.
	1.4–1.8 lb Bravo Ultrex 82.5WDG, Equus DF	7			
	0.9–1.25 lb Echo 90DF	7			
Celery		1.5–2.125 pt Echo Zn, Equus 500 Zn	7	Start sprays when transplants are set in the field. Do not exceed 18.0 lb ai/a chlorothalonil per season.	
	chlorothalonil (7-day spray schedule)	2.0–3.0 pt Bravo Weather Stik, Echo 720, Equus 720	7		
		1.8–2.7 lb Bravo Ultrex 82.5WDG, Equus DF	7		
		1.6–2.5 lb Echo 90DF	7		
Cole crops		3.0–4.25 pt Echo Zn, Equus 500 Zn	7		
Cucumber					

(continued)

Disease control in celery *(continued)*

Disease	Active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
Cercospora, Septoria, Alternaria <i>(cont.)</i>	cyprodinil + fludioxonil	11.0–14.0 oz Switch 62.5WG	0	Do not apply more than 56.0 oz/a product per year. After 2 applications, alternate with another fungicide with a different mode of action.
	chlorothalonil <i>(seedbed)</i>	1.5–2.0 pt/100 gal Bravo Weather Stik, Echo 720, Equus 720 1.4–1.8 lb/100 gal Bravo Ultrex 82.5WDG, Equus DF		For seedbeds, apply 125 gal of spray suspension weekly or as needed for control.
	fenamidone	5.5–8.2 fl oz Reason 500 SC	2	Do not apply more than 24.6 fl oz/a per season. Do not make more than 1 application of Reason without alternating to an effective fungicide with a different mode of action.
	fluoxastrobin	5.7 fl oz Aftershock, Evito 480 SC	3	Alternate every QoI fungicide application with at least 1 application of another effective fungicide with a different mode of action.
	penthiopyrad	14.0–24.0 fl oz Fontelis	3	Do not apply more than 2 sequential applications of Fontelis before alternating to an effective fungicide with a different mode of action. Do not exceed 72.0 fl oz/a per year.
	propiconazole	4.0 fl oz AmTide Propiconazole 41.8% EC, Bumper 41.8 EC, Fitness, Propicure 3.6F, PropiMax EC, Topaz, Willowood Propicon 3.6EC	14	Do not exceed 16.0 fl oz/a per season. Apply when conditions exist for disease development.
		4.0 fl oz Tilt 41.8% EC	14	Do not apply more than 16.0 fl oz/a in 4 applications per season. Consult the label for crop rotation (plantback) restrictions.
trifloxystrobin	2.0–3.0 oz Flint, Gem 500 SC	7	Do not apply more than 12.0 oz/a per season. Do not apply more than four times per season.	
Damping-off	mefenoxam	1.0–2.0 pt Ridomil Gold SL 2.0–4.0 pt Ultra Flourish	— —	Preplant-incorporated application or surface application at planting. Preplant to top 2 inches of soil.
		0.085–0.64 fl oz Apron XL/100 lb seed	—	Follow manufacturer's directions. Do not use treated seed for feed or food.
	mefenoxam + azoxystrobin	0.34 fl oz Uniform/1,000 ft row	—	Preplant application as an in-furrow spray in a minimum of 5 gal of water per acre at planting.
	metalaxyl	4.0–8.0 pt MetaStar 2E AG	—	Preplant-incorporated application or surface application at planting. Preplant to top 2 inches of soil.
		0.7 fl oz/100 lb seed Sebring 2.65 ST	—	Follow manufacturer's directions. Do not use treated seed for feed or food.
		0.75 fl oz/100 lb seed Allegiance FL, Metalaxyl 265 ST	—	
metam-sodium	Vapam HL, Metam, Sectagon 42		Use disease-free soil. Use steam or chemicals to sterilize contaminated soil.	
Rhizoctonia root rot	azoxystrobin	0.4–0.8 fl oz Quadris Flowable/1,000 ft row	0	Use at planting. Follow manufacturer's directions.

Pest management
Asparagus
Bean
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Celery
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Cucumber

Insect control in celery

Insect	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
Aphids	acetamiprid	0.8–1.2 oz Assail 70WP 2.0–4.0 oz Assail 30 SG	7	Begin treatment when thresholds are reached. Apply every 7 days as needed. Do not exceed 5 applications or 0.375 lb ai/a per season.
	0.062–0.089 lb flonicamid	2.0–2.8 oz Beleaf SG	0	Begin applications before aphid populations build. Do not exceed 2.8 oz/a Beleaf per application and do not apply more than 8.4 oz/a (0.267 lb ai/a) per season.
	flupyradifurone	10.5–12.0 fl oz Sivanto	1	Foliar application. Apply when pests reach or exceed established thresholds. Do not apply more than 28.0 fl oz of Sivanto per acre per crop season.
	0.25–0.37 lb imidacloprid	7.0–10.5 fl oz AdmirePro 4.6F 16.0–24.0 fl oz (several formulations) 2F	21	Apply via chemigation into the root zone, as an in-furrow spray at-planting on or below the seed, or as a post-seeding or transplant drench.
Bean	0.06–0.08 lb spirotetramat	4.0–5.0 fl oz Movento	1	Do not apply more than 10.0 fl oz/a Movento (0.16 lb ai/a) per season.
	0.198–0.257 lb thiamethoxam + chlorantraniliprole	10.0–13.0 fl oz Durivo	30	Do not exceed a total of 13.0 fl oz/a Durivo (0.257 lb ai/a) per growing season. Do not exceed 0.172 lb ai/a of thiamethoxam-containing products or 0.2 lb ai/a of chlorantraniliprole-containing products per season.
	0.014–0.025 lb zeta-cypermethrin	2.24–4.0 oz *Mustang Maxx	1	Apply at thresholds and do not exceed 24.0 oz/a Mustang Maxx per season.
Aster leafhopper	<i>Treat celery when the aster yellows index reaches 35. (See "Aster Yellows Index" on page 16 for calculations.)</i>			
	0.25–0.37 lb imidacloprid	7.0–10.5 fl oz AdmirePro 4.6F 16.0–24.0 fl oz (several formulations) 2F	21	Apply via chemigation into the root zone, as an in-furrow spray at-planting on or below the seed, or as a post-seeding or transplant drench.
	0.225–0.9 lb methomyl	0.75–3.0 pt *Lannate LV	7	Do not apply more than 9.0 lb ai/a per season.
	0.05–0.2 lb permethrin	*Ambush, *Pounce	1	Several formulations; see label for rate. Apply at 3- to 5-day intervals. Do not exceed 2.0 lb ai/a per season.
Celery	0.198–0.257 lb thiamethoxam + chlorantraniliprole	10.0–13.0 fl oz Durivo	30	Do not exceed a total of 13.0 fl oz/a Durivo (0.257 lb ai/a) per growing season. Do not exceed 0.172 lb ai/a of thiamethoxam-containing products or 0.2 lb ai/a of chlorantraniliprole-containing products per season.
	0.014–0.025 lb zeta-cypermethrin	2.24–4.0 oz *Mustang Maxx	1	Do not exceed 0.15 lb ai/a. Apply every 7 days as needed. Use higher rate for heavy infestations.
	Cutworms	<i>If more than 4 weeks before harvest, treat if you see eggs or larvae. Within 4 weeks of harvest, preventively treat approximately weekly.</i>		
0.03–0.045 lb flubendiamide		2.0–3.0 oz Synapse WG	1	Do not apply more than 3.0 oz/a (0.045 lb ai/a) in a 7-day period or exceed 9.0 oz/a per season.
0.05–0.2 lb permethrin		*Ambush, *Pounce	1	Apply at 3- to 5-day intervals. Do not exceed 2.0 lb ai/a per season.
0.014–0.025 lb zeta-cypermethrin		2.24–4.0 oz *Mustang Maxx	1	Do not exceed 0.15 lb ai/a. Apply every 7 days as needed. Use higher rate for heavy infestations.
Leafminers	0.009–0.019 lb abamectin	8.0–16.0 fl oz *Agri-Mek 0.15EC	7	
	chlorantraniliprole	3.5–7.5 fl oz Coragen	1	Do not make more than 4 applications per crop season and allow at least 3 days between applications. Do not apply more than 15.4 fl oz/a Coragen per season.

*Restricted-use pesticide.

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Insect control in celery (continued)

Insect	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
Leafminers (cont.)	0.12 lb cyromazine	2.66 oz Trigard 75WP	7	
	0.045–0.268 lb dinotefuran	foliar: 1.0–3.0 oz Venom 70SG	7	Use only one application method. See product label for application directions. Foliar applications: Do not exceed 4.5 oz/a per year. Soil applications: Do not follow soil application with foliar treatment of any other neonicotinoid insecticide. Do not exceed 6.0 oz/a per season.
		soil: 5.0–6.0 oz Venom 70SG	—	
	0.05–0.13 lb dinotefuran (foliar)	2.0–5.25 oz Scorpion 35SL	1	Can repeat at 7-day intervals. Do not apply more than 10.5 oz per year. Use only one application method.
	0.23–0.27 lb dinotefuran (soil)	9.0–10.5 oz Scorpion 35SL	21	Do not apply more than 21.0 oz per year. Use only one application method.
0.198–0.257 lb thiamethoxam + chlorantraniliprole	10.0–13.0 fl oz Durivo	30	Do not exceed a total of 13.0 fl oz/a Durivo (0.257 lb ai/a) per growing season. Do not exceed 0.172 lb ai/a of thiamethoxam-containing products or 0.2 lb ai/a of chlorantraniliprole-containing products per season.	
Loopers	<i>If more than 4 weeks before harvest, treat if you find two or more larvae per 100 plants; within 4 weeks of harvest, preventative cutworm treatments should provide control.</i>			
	0.5–1.0 lb acephate	0.5–1.0 lb Orthene 97S	21	Do not use tops for food or feed. Do not apply more than 2.0 lb ai/a per season.
	<i>Bacillus thuringiensis</i> subsp. <i>kurstaki</i>	1.0–2.0 lb Lepinox WDG	0	Treat early instar larvae before noticeable feeding damage occurs. Repeat treatment as needed.
		Biobit, Cutlass WP, DiPel DF, Javelin WG	0	See label for rate.
	beta-cyfluthrin	2.4–3.2 fl oz *Baythroid XL	0	Maximum Baythroid XL allowed per 7-day interval is 3.2 fl oz/a and season total allowed per crop season is 12.8 fl oz/a.
	chlorantraniliprole	3.5–7.5 fl oz Coragen	1	Do not make more than 4 applications per crop season and allow at least 3 days between applications. Do not apply more than 15.4 fl oz/a Coragen per season.
	0.0075–0.015 lb emamectin benzoate	3.2–4.8 oz *Proclaim	7	Apply when larvae first appear. Use higher rate for larger larvae or severe outbreaks. Do not exceed 28.8 oz/a per season. Highly toxic to bees.
	0.03–0.045 lb flubendiamide	2.0–3.0 oz Synapse WG	1	Do not apply more than 3.0 oz/a (0.045 lb ai/a) in a 7-day period or exceed 9.0 oz/a per season.
	0.225–0.9 lb methomyl	0.75–3.0 pt *Lannate LV 0.25–1.0 lb *Lannate SP	7	Do not exceed 9.0 lb ai/a per season.
	0.06–0.16 lb methoxyfenozide	10.0 oz Intrepid 2F	1	Apply 4.0–8.0 oz only for early applications use higher rates for heavy infestations. Do not exceed 64.0 oz/a.
	0.05–0.2 lb permethrin	*Ambush, *Pounce	1	Several formulations; see label for rate. Apply when needed, but no more than 2.0 lb ai/a per season.
	0.039–0.078 lb spinetoram	5.0–10.0 fl oz Radiant SC	1	Do not apply more than 34.0 fl oz/a or make more than 6 applications per year. Do not exceed 2 consecutive applications.
	spinosad	3.0–6.0 fl oz Entrust SC	1	Use higher rate for larger larvae. Apply in adequate spray volume to get good coverage for best control. Do not exceed 0.45 lb ai/a per season. Do not apply to seedlings grown for transplant.

*Restricted-use pesticide.

(continued)

Pest management

Asparagus

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Cucumber

Insect control in celery (continued)

Insect	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
Loopers (cont.)	0.6–0.75 lb thiodicarb	24.0–30.0 fl oz Larvin F	14	Do not exceed 1.5 lb ai/a per season.
	0.02–0.025 lb zeta-cypermethrin	3.2–4.0 oz *Mustang Maxx	1	Do not exceed 0.15 lb ai/a. Apply every 7 days as needed. Use higher rate for heavy infestations.
Tarnished plant bug	<i>For plants shorter than 4 inches, treat if you find at least 20 insects per 20 plants. For plants taller than 4 inches, treat if you find four or more plant bugs per 20 plants if there are more than 3 weeks until harvest; within 3 weeks of harvest, treat if you find two insects per 20 plants.</i>			
	0.5–2.0 lb carbaryl	Sevin	14	Apply every 5–7 days as needed.
	0.062–0.089 lb flonicamid	2.0–2.8 oz Beleaf SG	0	Begin applications before aphid populations build. Do not exceed 2.8 oz/a Beleaf per application and do not apply more than 8.4 oz/a (0.267 lb ai/a) per season.

*Restricted-use pesticide.

Weed control in celery

Weed	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
Annual weeds	0.095 lb flumioxazin	3.0 oz Chateau SW		May be applied pretransplant or between 3 and 7 days following transplanting. Do not use an adjuvant or apply as part of a tank mix. Do not apply more than 3.0 oz/a per application or growing season.
	linuron	Lorox DF (use and rate vary by soil type—see label)	45	Make a single post-transplant application after celery is established but less than 8 inches tall. Apply before broadleaf weeds are 6 inches tall or grassy weeds exceed 2 inches. Do not tank mix with surfactants, fertilizer, or other pesticide. Do not use on sand or loamy sand. Do not use on soils with less than 1% organic matter.
	prometryn	Caparol 4L or Vegetable Pro (use and rate vary—see label)	40	May be applied to direct-seeded or transplanted celery in a single or split application not to exceed a seasonal maximum of 4.0 pt/a. When applying postemergence, do not tank mix with other pesticides. Apply before weeds are 2 inches tall. Use only on fine-textured soils. Do not disturb the soil following treatment.
	trifluralin	several manufacturers		May be applied before, during, or immediately after direct-seeding or transplanting celery. Controls annual grasses and some broadleaves, but is weak on wild mustard, smartweed, common ragweed, velvetleaf, and black nightshade. Rate varies with soil texture and organic matter. Follow recommended soil preparation, application, and incorporation procedures. Must be incorporated within 24 hours. See label for plantback restrictions. Ineffective on peat or muck soils.
Annual grasses	5.0–6.0 lb bensulide	5.0–6.0 qt Prefar 4E		Apply before planting and incorporate 1–2 inches deep to avoid loss due to volatilization. Use on mineral soils only.

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Weed control in celery *(continued)*

Weed	Rate/a of active ingredient	Rate/a of commercial product	Days to harvest	Remarks and suggestions
Emerged weeds	glyphosate	several manufacturers and formulations		See manufacturer's label to assure that the formulation is labeled for this crop and for specific instructions. Glyphosate may be applied any time before crop emerges. Apply before crop seed germination in coarse sandy soils. If weeds have been mowed or tilled, do not treat until they have resumed active growth and reached the recommended stage on the label. Unless otherwise stated, allow 7 or more days before tilling treated fields. Do not tank mix with soil-residual herbicides unless otherwise specified.
Emerged grasses	0.068–0.12 lb clethodim	9.0–16.0 oz Select Max	30	Apply to actively growing grasses. Repeat treatments may be made at 14-day intervals up to the maximum annual use rate. Do not cultivate grasses within 7 days before or after application. Include appropriate surfactant as required by label. Do not apply if rain is expected within 1 hour.
	0.094–0.125 lb clethodim	6.0–8.0 oz Select 2EC	30	
	0.094–0.28 lb sethoxydim	0.5–1.5 pt Poast	30	

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