

# Celery

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## Culture

Celery is a cool-season crop that grows best under moderately cool temperatures of 65-80°F, moist soils or muck, and relatively high humidity. Celery withstands light freezes, but if cool weather persists (50-60°F, day temperatures) for 7-10 days, it may initiate seedstalks or bolt, depending on variety.

Transplants are started in early February in greenhouses with temperatures set at 65-75°F. Young transplants are ready in about 8 weeks. Transplanting begins in April and ends in late July.

Field celery seed beds are started in early May. Seeds are first pregerminated in aerated water, 60°F, for 6-8 days. The germinated seed is then mixed in gel and seeded in 4-foot-wide beds, 11 rows/bed, 12-15 plants/foot of row. Transplants then are ready in about 8 weeks. One ounce of seed provides about 15,000 transplants. From 30,000-45,000 transplants are set per acre. Harvest begins in early July and lasts until the first hard frost.

## Varieties

### April to early May transplants

Utah 52-70 HK—tolerant to Fusarium yellows (Race II)

Matador—resistant to Fusarium yellows (Race II)

Picador

### Mid-May to mid-July transplants

Florida 683—susceptible to Fusarium yellows (Race II)

XP166—tolerant to Fusarium yellows (Race II)

Picador—tolerant to Fusarium yellows (Race II)

PSC 285—tolerant to Fusarium yellows (Race II)

XP 85

VTR 1901

VTR 1917—tolerant to Fusarium yellows (Race II)

XP 266—tolerant to Fusarium yellows (Race II)

### Late plantings

Picador—tolerant to Fusarium yellows (Race II)

XP 166—tolerant to Fusarium yellows (Race II)

PSX 285—tolerant to Fusarium yellows (Race II)

XP 85—tolerant to Fusarium yellows (Race II)

VTR 1901—tolerant to Fusarium yellows (Race II)

XP 266—tolerant to Fusarium yellows (Race II)

## Lime and Fertilizer

Maintain pH at 5.5-6.0.

For soils of average fertility, apply per acre 200-250 lb nitrogen, 250-300 lb P<sub>2</sub>O<sub>5</sub>, 450-500 lb K<sub>2</sub>O (total nutrient requirement).

Plow down 40-45 lb N, 100-120 lb P<sub>2</sub>O<sub>5</sub>, 250-300 lb K<sub>2</sub>O. Disk in 100-120 lb N, 100-120 lb P<sub>2</sub>O<sub>5</sub> and 100-120 lb K<sub>2</sub>O.

The first sidedressing should be 30 lb N, 30 lb P<sub>2</sub>O<sub>5</sub> and 30 lb K<sub>2</sub>O. A second sidedressing should consist of 40 lb N/A.

# Spacing and Seeding

## Field transplants

### Spring

Rows: 30-32 inches.

In-row: 5-6 inches between plants.

### Summer and fall

Rows: 30 inches.

In-row: 5-6 inches between plants.

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## Disease Control

### Cercospora (Early) and Septoria (Late) Blights

These fungi often are introduced on 1-year-old seed. For this reason, use seed 2 years old or older. Soak newer seed at 118°F for 30 minutes; then dry at room temperature. Spray plants with one of the following fungicides on a 7-day schedule in the field, and if the label permits, at shorter intervals in seedbeds. Tank mix \***Topsin** with 2-3 pt/A of Bravo 500 or 1.5-2 pt/A Bravo 720. Do not use \***Topsin** alone. \***Quadris** may be applied up to three times sequentially before alternating with a fungicide with a different mode of action. Do not apply **Quadris** or other strobilurin fungicides more than six times per season.

**Quadris** 9.2-15.4 fl oz/A, 7-14 day intervals (0 days-PHI). Follow label recommendations for fungicide resistance management.

\***Quadris Opti** 2.4-3.7 pt/A (7 days-PHI).

**Bravo Ultrex** 0.9-1.4 lb/A, 3-5 day spray schedule or 1.8-2.7 lb/A, 7-day schedule (7 days-PHI).

**Bravo Weather Stik 6F** 1-1.5 pt/A, 3-5 day spray schedule or 2-3 pt/A, 7-day schedule (7 days-PHI).

**Equus 720** 2-3 pt/A (7 days-PHI).

\***Tilt** 4 oz/A (14 days-PHI).

\***Quilt** 14 fl oz/A on a 7-10 day schedule (14 days-PHI).

**Kocide 3000** 0.75 lb/A (0 days-PHI). Apply at 5-7 day intervals as soon as plants are established in the field.

**Cuprofix Ultra 40 D** 1.25 lb/A. Apply at 5-7 day intervals when conditions favor disease.

### Bacterial Blight

If conditions are favorable for disease, apply fixed copper (Kocide, Cuprofix, etc., formulations) at 5-7 day intervals to reduce spread (0 days-PHI).

### Aster Yellows

Control leafhoppers with recommended insecticide. Control weeds adjacent to production areas.

### Fusarium Yellows

Control of Fusarium yellows always has been based on the use of resistant varieties. A few new cultivars with resistance to Fusarium yellows are becoming available and should be used if the disease is present. Consult seed suppliers about resistant cultivars that may be useful in your area. Avoid moving infested soil to uninfested fields. Soil fumigation has not been effective for control.

### Pink Rot

**Bravo Weather Stik** 3 pt/A, 7-day schedule, for suppression only (7 days-PHI).

**Equus 720** 3 pt/A, suppression only (7 days-PHI).

**Botran 75-W** 2 lb/A, suppression only (7 days-PHI).

\*Follow guidelines for fungicide resistance management on the product label (see pages 59-60).

# Insect Control

See the table below for overview of insecticides used to control celery pests.

<b>Insecticides for Use on Celery in Ohio</b>										
(E = excellent; G = good; F = fair; P = poor; ✓ = pest listed on label but efficacy uncertain; - = pest not on label; rating in parentheses = pest not on label but product known to provide some control)										
Pest>>	Pre-harvest interval (days)	Cut-worms	Aster leaf-hopper	Loopers	Aphids	Carrot Weevil	Plant bugs	Spider mites	Leaf-miners	Impact on beneficial insects
<i>How often an insecticide has been needed on Ohio farms for this pest in the past&gt;&gt;</i>		occasional	most years but only if carrying aster yellows	occasional in late summer	occasional in late summer	occasional	rare	rare	rare	
<b>ORGANOPHOSPHATES</b>										
Dibrom (naled)	1	-	-	✓	✓	-	-	-	✓	moderate/disruptive
malathion (Cythion)	7	-	-	-	F	-	-	F	-	low/moderate
Orthene (acephate)	21	-	-	G	G	-	-	-	-	moderate/disruptive
<b>CARBAMATES</b>										
Lannate (methomyl)	7	✓	F	F	-	-	-	-	-	disruptive
Larvin (thiodicarb)	14	-	-	G	-	-	-	-	-	moderate
Sevin (carbaryl)	14	-	G	-	-	-	✓	-	-	disruptive
Vydate (oxamyl)	21	-	-	-	-	✓	-	-	-	disruptive
<b>PYRETHROIDS</b>										
Baythroid (cyfluthrin)	0	✓	-	✓	-	-	✓	-	-	disruptive
Mustang (z-cypermethrin)	1	✓	✓	✓	-	-	✓	-	-	disruptive
Pounce (permethrin)	1	G	F	G	F	-	-	-	✓	disruptive
<b>NEONICOTINOIDS</b>										
Actara (thiamethoxam)	7	-	✓	-	✓	-	-	-	-	low/moderate
Assail (acetamiprid)	7	-	F	-	G	-	-	-	-	low/moderate
Platinum (thiamethoxam)	30	-	✓	-	✓	-	-	-	-	low/moderate
Venom (dinotefuran)	7, 21	-	✓	-	✓	-	-	-	✓	low/moderate
<b>OTHER INSECT NERVE POISONS</b>										
Agri-Mek (abamectin)	7	-	-	-	-	-	-	G	✓	low/moderate
Avaunt (indoxacarb)	3	-	-	✓	-	-	-	-	-	low/moderate
Beleaf (flonicamid)	0	-	-	-	✓	-	-	-	-	
Fulfill (pymetrozine)	7	-	-	-	G	-	-	-	-	low
Proclaim (emamectin benzoate)	7	-	-	G	-	-	-	-	-	low/moderate
PyGanic (pyrethrins)	0	✓	✓	✓	✓	✓	✓	-	✓	moderate
SpinTor (spinosad)	1	-	-	G	-	-	-	-	✓	low
Thionex (endosulfan)	4, 7	-	F	F	G	-	-	-	-	moderate
<b>INSECT GROWTH REGULATORS</b>										
Confirm (tebufenozide)	7	-	-	G	-	-	-	-	-	low
Intrepid (methoxyfenozide)	1	-	-	G	-	-	-	-	-	low
Neemix (azadirachtin)	0	✓	-	✓	✓	-	-	-	✓	low/moderate
Trigard (cyromazine)	7	-	-	-	-	-	-	-	✓	low/moderate
<b>MISCELLANEOUS</b>										
<i>Bacillus thuringiensis</i> (B.t.)	0	F	-	F	-	-	-	-	-	very low
Coragen (chlorantraniliprole)	1	-	-	✓	-	-	-	-	-	low
Movento (spirotetramat)	3	-	-	-	✓	-	-	-	-	low
soap (M-Pede)	0	-	F	-	F	-	✓	F	-	low
Synapse (flubendiamide)	1	-	-	✓	-	-	-	-	-	low

## • At-planting treatment

### **Dinotefuran** (21 days-PHI)

For whiteflies, aphids (suppression), leafhoppers, leafminers, stink bugs.  
Venom 70SG: 5-6 oz/A. Limit 12 oz/A per season.

### **Imidacloprid** (45 days-PHI)

For aphids, leafhoppers.

Admire 2F, Alias 2F: 10-24 fl oz/A.

Admire Pro (4.6F): 4.4-10.5 fl oz/A.

### **Thiamethoxam** (30 days-PHI)

For aphids, leafhoppers.

Platinum 2SC: 5-11 fl oz/A.

## • Via drip (trickle) irrigation

### **Thiamethoxam + chlorantraniliprole** (30 days-PHI)

For aphids, leafhoppers, loopers and other caterpillars.

Durivo 1.67SC: 10-13 fl oz/A.

## • Foliar treatment

### **Abamectin** (7 days-PHI)

For spider mites, leafminers.

Agri-mek 0.15EC, Abba 0.15EC: 8-16 fl oz/A. Limit 48 oz/A per year.

### **Acephate** (21 days-PHI)

For aphids, loopers.

Orthene 75SP: 0.7-1.3 lb/A for aphids; 1.3 lb/A for loopers. Limit 2.7 lb/A per season.

Orthene 97S: 8-16 oz/A. Limit 2.12 lb/A per season.

Bracket 90S: 0.5-1.1 lb/A.

### **Acetamiprid** (7 days-PHI)

For aphids, whiteflies.

Assail 30SG: 1.8-4.0 oz/A.

### **Bacillus thuringiensis (B.t.)** (0 days-PHI)

For loopers, cutworms.

Agree WG (3.8% a.i.): 0.5-2 lb/A.

Biobit HP WP (6.4% a.i.): 0.5-2 lb/A.

CryMax WDG (15% a.i.): 0.5-1.5 lb/A.

DiPel DF (10.3% a.i.): 0.25-1 lb/A.

Javelin WG (6.4% a.i.): 0.5-1 lb/A.

XenTari WDG: 0.25-1 lb/A.

### **Carbaryl** (14 days-PHI)

For leafhoppers, tarnished plant bug.

Carbaryl 4L; Sevin 4F; Sevin XLR Plus (4EC): 0.5-1.5 qt/A for leafhoppers; 1-2 qt/A for bugs.

Sevin 50WP: 1-3 lb/A for leafhoppers; 2-4 lb/A for bugs.

Sevin 80S: 0.67-1.88 lb/A for leafhoppers; 1.25-2.5 lb/A for bugs.

### **Chlorantraniliprole (Rynaxypyr)** (1 day-PHI)

For loopers and other caterpillars.

Coragen 1.67SC: 3.5-7.5 fl oz/A. Apply as a foliar spray or via drip irrigation.

### **Cyfluthrin and beta-cyfluthrin** (0 days-PHI)

For cutworms, loopers, plant bugs.

Baythroid 2EC: 0.8-3.2 fl oz/A. Limit 4 applications per year.

Baythroid XL 1EC: 0.8-3.2 fl oz/A.

### **Cyromazine** (7 days-PHI)

For leafminers.

Trigard 75WP: 1/6 lb (1 packet)/A. Limit 6 applications per crop.

**Dinotefuran** (7 days-PHI)

For whiteflies, aphids (suppression), leafhoppers, leafminers, stink bugs.

Venom 70SG: 1-3 oz/A. Limit 6 oz/A per season.

**Emamectin benzoate** (7 days-PHI)

For caterpillars.

Proclaim (5WDG): 2.4-4.8 oz/A for corn earworm and fall armyworm; 3.2-4.8 oz/A for cabbage looper. Limit 28.8 oz/A per season.

**Endosulfan** (4 or 7 days-PHI)

For aphids, loopers, leafhoppers.

Limit 2 applications per season at low end of rate, with 7-day preharvest interval; limit 1 application per year at higher rates, with 4-day preharvest interval.

Thionex 3EC; Endosulfan 3EC: 0.67-1.33 qt/A.

Thionex 50WP: 1-2 lb/A.

**Flonicamid** (0 days-PHI)

For aphids.

Beleaf 50SG: 1.2-2.8 oz/A. Limit 3 applications per year.

**Flubendiamide** (1 day-PHI)

For loopers and other caterpillars.

Synapse 24WG: 2-3 oz/A. Limit 9 oz/A per crop season.

**Indoxacarb** (3 days-PHI)

For caterpillars.

Avaunt 30WG: 3.5 oz/A. Limit 14 oz/A per year.

**Malathion** (7 days-PHI)

For aphids, spider mites.

Malathion 5EC; Malathion 57EC: 1.5 pt/A.

Malathion 8 Aquamul; Malathion 8EC: 1-1.5 pt/A.

**Methomyl** (7 days-PHI)

For leafhoppers, loopers, cutworms.

Limit 10 applications/crop.

Lannate 90SP: 0.5-1 lb/A for leafhoppers; 0.5 lb/A for cutworms; 1 lb/A for loopers.

Lannate LV (2.4WSL): 1.5-3 pt/A for leafhoppers; 1.5 pt/A for cutworms; 3 pt/A for loopers.

**Methoxyfenozide** (1 day-PHI)

For caterpillars.

Intrepid 2F: 4-10 fl oz/A. Limit 64 oz/A per year.

**Naled** (1 day-PHI)

For aphids, loopers, leafminers.

Dibrom 8EC: 1-1.5 pt/A.

**Oxamyl** (21 days-PHI)

For carrot weevil.

Vydate L (2EC): 2-4 pt/A.

**Permethrin** (1 day-PHI)

For leafhoppers, loopers, cutworms.

Pounce 3.2EC, Arctic 3.2EC, Permethrin 3.2EC: 2-8 fl oz/A for leafhoppers, loopers; 4-8 fl oz/A for cutworms. Limit 80 fl oz/A per season.

Ambush 25WP: 6.4-12.8 fl oz/A. Limit 128 oz/A per season.

Pounce 25WP: 3.2-12.8 fl oz/A for leafhoppers, loopers; 6.4-12.8 fl oz/A for cutworms. Limit 128 oz/A per season.

**Pymetrozine** (7 days-PHI)

For aphids, whiteflies.

Fulfill 50WDG: 2.75 oz/A.

**Spinetoram** (1 day-PHI)

For loopers, leafminers.

Radiant 1SC: 5-10 fl oz/A. Limit 6 applications per crop.

**Spinosad** (1 day-PHI)

For looper, armyworms, leafminers.

Spintor 2SC: 4-10 oz/A. Limit 29 oz/A/year.

Entrust (80WP): 0.5-3 oz/A.

**Spiromesifen** (7 days-PHI)

For whiteflies.

Oberon 2SC: 7.0-8.5 fl oz/A. Limit 3 applications per crop season.

**Spirotetramat** (3 days-PHI)

For aphids, whiteflies.

Movento 2SC: 4-5 fl oz/A. Limit 10 fl oz/A per crop season.

**Tebufenozide** (7 days-PHI)

For caterpillars.

Confirm 2F: 6-8 oz/A for small plants; 8 oz/A for larger plants and heavy infestation. Limit 56 fl oz/A per year.

**Thiamethoxam** (7 days-PHI)

For aphids, leafhoppers.

Actara 25WDG: 1.5-3 oz/A.

**Thiodicarb** (14 days-PHI)

For armyworms, loopers.

Larvin 3.2F: 16-30 fl oz/A. Limit 60 fl oz/A per season.

**Zeta-cypermethrin** (1 day-PHI)

For leafhoppers, caterpillars, Lygus bugs.

Mustang 1.5EW: 2.4-4.3 fl oz/A.

Mustang Max 0.8EC: 2.24-4.0 fl oz/A.

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## Weed Control

### Preemergence

**Caparol 4 L:** Controls annual broadleaf weeds and some grasses. Apply 1.6-4.0 pt/A Caparol 4 L, 2 to 6 weeks after transplanting and before weeds are 2 inches tall.

**Lorox 50 DF:** Controls annual broadleaf weeds and some grasses. Apply Lorox 50DF at 2-3 lb/A after plants are established but before plants are 8 inches tall. Under adverse weather conditions plants may be injured.

### Postemergence

**Poast:** Controls emerged annual and perennial grasses. Apply 1-1.5 pt/A (30 days-PHI). Do not exceed 3 pt/A/season. Add 1 qt/A nonphytotoxic oil concentrate. Rate is dependent on grass species and stage of development.

**Select:** Controls emerged annual and perennial grasses. Apply 8 fl oz/A (30 days-PHI). Do not exceed 32 fl oz/A/season. Add a crop oil concentrate at 1% on a volume basis (v/v).