

Celery

Spacing

Typical spacing for celery is rows 2 feet apart with plants 6 inches apart in row. One plant per square foot.

Soils

Traditionally, celery has been grown on muck soils, but it can be grown on coarse-textured mineral soils. Regardless of soil type, high fertility and moisture are necessary for tender succulent stalks.

Use overhead sprinkler or drip irrigation to apply water and fertilizer frequently to the shallow-rooted crop. If the soil gets too dry, physiological disorders such as blackheart (a calcium deficiency), will develop.

Rotate celery with such commodities such as onions or corn whenever possible to avoid building up pests in the soil. At the end of the season, consider planting a winter cover crop of barley or rye to reduce erosion and add active organic matter to the soil.

Transplants

Celery seed is small and difficult to germinate, thus all commercial celery is planted from greenhouse-grown transplants produced in plug trays using peat-based media. Allow 8 to 10 weeks for transplant production.

In early February, seeds are sown in greenhouses and are ready for transplanting to the field in about eight weeks. Transplanting begins in April and ends in late July. Schedule planting so that a uniform quantity of celery is ready to harvest every week. Using transplants as opposed to direct seeding ensures uniform stands and faster maturing crops. Often, succession plantings are started every three weeks.

Harden off transplants by reducing water, not temperatures. Celery is a cool-season crop that produces best at temperatures of 60 to 80°F. Plants can withstand light frosts, but prolonged frosts below 28°F will cause damage. Plants may form seed stalks (bolt) if exposed to temperatures below 55°F for 7 days or longer.

Harvesting

Once celery reaches marketable size, there is a narrow harvest window (about six to eight days) before a quality significantly reduces. Harvest celery by pulling the entire plant. Cut off the roots, chill quickly in cold water, and refrigerate in a plastic bag.

Store boxes in a cool place. Ideal storage conditions are near freezing and high humidity. Fresh market and processing celery are typically harvested mechanically. Fresh market celery is trimmed, sized, washed, and packed into cartons at on-farm packing sheds. Growers transport the packed celery to shippers where it is cooled and placed into cold storage for shipment.

Fertilizing

Maintain the soil pH above 5.5 in muck soils and 6.5 in mineral soils.

P₂O₅: Maintain soil phosphorus at 45 to 80 ppm on mineral soils and 120 to 140 ppm on muck soils. If soil P is in this range, applying 50 to 70 pounds of P₂O₅ per acre per year should be sufficient.

K₂O: Maintain soil potassium at 85 to 115 ppm K on mineral soils with a CEC of 4, and at 100 to 130 ppm K on mineral soils with a CEC of 10. On muck soils maintain soil K at 210 to 260 ppm. If soil K is in this range, applying 290 to 406 pounds of K₂O per acre per year should be sufficient.

N: Most celery crops will require applying 200 pounds of N per acre on mineral soils and 150 pounds of N per acre on muck soils. Since nitrogen demand for celery peaks later in the season, add most nitrogen as a side dressing. Banding fertilizer at transplanting can help when soil is cool. At transplanting, you can apply 40 pounds of N, up to 100 pounds of P₂O₅ and up to 40 pounds of K₂O per acre as a band application. You can apply the remaining N during the season. If additional P and K are needed above what is applied in band, broadcast it before transplanting.

Celery is responsive to boron (B). Apply 2 to 4 pounds of B per acre in banded or broadcast fertilizer to avoid stem cracking.

Pesticide Use in Greenhouses

Before using any pesticide, always read the product label for mention of greenhouse restrictions. See Selected Information About Recommended Fungicides (page 79), Selected Information About Recommended Herbicides (page 69), and Selected Information About Recommended Insecticides (page 54).

Disease Control

Recommended Controls

Anthracnose of Celery - *Colletotrichum Fungus*

Disease and symptom development are favored by periods of warm temperatures (>68 F) combined with high humidity. Symptoms include curled/cupped leaves, sporadic leaf margin discoloration, twisted petioles and small, oval lesions on petioles. Symptoms of anthracnose can be confused with those associated with aster yellows except that the affected foliage remains green.

Cabrio EG® (pyraclostrobin) 12-16 oz. per acre. See label. REI: 12-hour. PHI: 0-day.

Merivon® (fluxapyroxad, pyraclostrobin) 4-11 fl. oz. per acre. See label. REI: 12-hour. PHI: 1-day.

Pristine 38WG® (boscalid, pyraclostrobin) 10-15 oz. per acre. See label. REI: 12-hour. PHI: 0-day.

Bacterial Blight of Celery - *Pseudomonas Bacteria*

Symptoms include leaf blight and extensive leaf death that requires additional trimming at harvest, resulting in yield loss. May be seedborne.

copper formulations (copper hydroxide, copper octanoate, copper oxychloride, copper sulfate, copper diammonium diacetate complex, cuprous oxide) See label. Several formulations of copper products (Badge®, Champ®, Cuprofix®, Copper-Count-N®, Kocide®, Nu-Cop®) are labeled for use and may slow the spread of bacterial blight. See label for directions. REI: see label. PHI: See label.

Crater Rot of Celery - *Rhizoctonia Fungus*

Catamaran® (potassium phosphite, chlorothalonil) 4-5 pts. per acre. See label. REI: 12-hour. PHI: 0-day.

chlorothalonil formulations (chlorothalonil) See label. Several formulations of chlorothalonil (Bravo®, Equus®) are labeled at various rates. See product labels. REI: 12-hour. PHI: See label.

Quadris Flowable® (azoxystrobin) 0.4-0.8 fl. oz. per 1,000 row feet. See label. REI: 4-hour. PHI: 0-day.

Quadris Opti® (azoxystrobin, chlorothalonil) 2.4-3.7 pts. per acre. See label. REI: 12-hour. PHI: 7-day.

Damping-Off Seed and Seedling Rots of Multiple Crops - Multiple Pathogens

Michigan State University research has found *Pythium* spp. causing damping-off of celery in greenhouses can result in poor field establishment. Conditions that favor rapid seedling germination may limit damping-off

severity. Avoid excessive irrigation and poorly drained soils. Good sanitation (including cleaning plug trays and plant containers that are reused) is critical to avoid damping-off.

mefenoxam formulations (mefenoxam) See label.

Apply preplant for greenhouse production. Several formulations of mefenoxam (Ridomil Gold SL®, Ridomil Gold GR®, Ultra Flourish®) are labeled for use. REI: 48-hour. PHI: See label.

Uniform® (mefenoxam, azoxystrobin) 0.34 fl. oz. per 1,000 ft. of row. Make one application per crop per season. REI: 0-hour. PHI: 0-day.

Early Blight of Celery - *Cercospora Fungus*

Early blight (*Cercospora* leaf blight) symptoms include small, yellow spots that rapidly enlarge to tan or gray lesions. All above ground tissues of celery can become infected, resulting in losses of 50% or more when blighted stalks or leaves have to be removed at harvest.

Cabrio EG® (pyraclostrobin) 12-16 oz. per acre. See label. REI: 12-hour. PHI: 0-day.

Catamaran® (potassium phosphite, chlorothalonil) 4-5 pts. per acre. See label. REI: 12-hour. PHI: 0-day.

chlorothalonil formulations (chlorothalonil) See label. Several formulations of chlorothalonil (Bravo®, Equus®) are labeled at various rates. See product labels. REI: 12-hour. PHI: See label.

Flint Extra® (trifloxystrobin) 2.5-2.9 fl. oz. per acre. Maximum application volume: 30-gallons per acre. REI: 12-hour. PHI: 0-day.

Fontelis® (penthioopyrad) 14-24 fl. oz. per acre. See label. REI: 12-hour. PHI: 3-day.

Luna Sensation® (fluopyram, trifloxystrobin) 4-5.8 fl. oz. per acre. See label. REI: 12-hour. PHI: 7-day.

Merivon® (fluxapyroxad, pyraclostrobin) 4-11 fl. oz. per acre. See label. REI: 12-hour. PHI: 1-day.

Pristine 38WG® (boscalid, pyraclostrobin) 10-15 oz. per acre. See label. REI: 12-hour. PHI: 0-day.

Propimax EC® (propiconazole) 4 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Quadris Flowable® (azoxystrobin) 0.4-0.8 fl. oz. per 1,000 row feet. See label. REI: 4-hour. PHI: 0-day.

Quadris Opti® (azoxystrobin, chlorothalonil) 2.4-3.7 pts. per acre. See label. REI: 12-hour. PHI: 7-day.

Quilt® (azoxystrobin, propiconazole) 14 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Quilt Xcel® (azoxystrobin, propiconazole) 14 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Tilt® (propiconazole) 4 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Late Blight of Celery - Septoria Fungus

Late blight (Septoria leaf blight) include irregularly-shaped brown spots on leaves with pycnidia similar in appearance to grains of ground black pepper. Over time, these leaf spots expand and cause the entire leaf to die.

Cabrio EG® (pyraclostrobin) 12-16 oz. per acre. See label. REI: 12-hour. PHI: 0-day.

Catamaran® (potassium phosphite, chlorothalonil) 4-5 pts. per acre. See label. REI: 12-hour. PHI: 0-day.

chlorothalonil formulations (chlorothalonil) See label. Several formulations of chlorothalonil (Bravo®, Equus®) are labeled at various rates. See product labels. REI: 12-hour. PHI: See label.

Flint Extra® (trifloxystrobin) 2.5-2.9 fl. oz. per acre. Maximum application volume: 30-gallons per acre. REI: 12-hour. PHI: 0-day.

Fontelis® (penthiopyrad) 14-24 fl. oz. per acre. See label. REI: 12-hour. PHI: 3-day.

Luna Sensation® (fluopyram, trifloxystrobin) 4-5.8 fl. oz. per acre See label. REI: 12-hour. PHI: 7-day.

Merivon® (fluxapyroxad, pyraclostrobin) 4-11 fl. oz. per acre. See label. REI: 12-hour. PHI: 1-day.

Pristine 38WG® (boscalid, pyraclostrobin) 10-15 oz. per acre. See label. REI: 12-hour. PHI: 0-day.

Propimax EC® (propiconazole) 4 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Quadris Flowable® (azoxystrobin) 0.4-0.8 fl. oz. per 1,000 row feet. See label. REI: 4-hour. PHI: 0-day.

Quadris Opti® (azoxystrobin, chlorothalonil) 2.4-3.7 pts. per acre. See label. REI: 12-hour. PHI: 7-day.

Quilt® (azoxystrobin, propiconazole) 14 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Quilt Xcel® (azoxystrobin, propiconazole) 14 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Reason 500SC® (fenamidone) 8.2 fl. oz. per acre. See label. REI: 12-hour. PHI: 2-day.

Tilt® (propiconazole) 4 fl. oz. per acre. See label. REI: 12-hour. PHI: 14-day.

Rust of Multiple Crops - Puccinia Fungus

Flint Extra® (trifloxystrobin) 2.5-2.9 fl. oz. per acre. Maximum application volume: 30-gallons per acre. REI: 12-hour. PHI: 0-day.

Luna Sensation® (fluopyram, trifloxystrobin) 4-5.8 fl. oz. per acre See label. REI: 12-hour. PHI: 7-day.

Weed Control

Recommended Controls

Burndown

glyphosate formulations (glyphosate) 1.5-2.25 lbs. acid equivalent (ae) per acre. Use formulations containing 3 lbs. ae per gal. (4 lbs. isopropylamine salt per gal.) at 2-3 qts. per acre. Use formulations containing 4.5 lbs. ae per gal. (5 lbs. potassium salt per gal.) at 1.3-2 qts. per acre. Apply to emerged perennials before planting, or after harvest in the fall. See label for suggested application volume and adjuvants and rates for specific weeds. REI: 4-hour. PHI: 14-day.

Preemergence Broadleaf and Grass Weeds

Chateau SW® (flumioxazin) 3 oz. per acre. Apply before transplanting or 3-7 days after transplanting for control of many annual broadleaf weeds and grasses. Do not tank mix with other pesticides. REI: 12-hour.

Dual Magnum® (s-metolachlor) 1-2 pts. per acre. Indiana and Michigan only: applicators must have 24c label. Michigan label expires Dec 31, 2021. Apply before or immediately after transplanting. Will control annual grass and small-seeded broadleaf weeds and nutsedge. Use high rate on muck soils. Follow with 0.25-inch water within 7 days. REI: 24-hour. PHI: 62-day.

trifluralin formulations (trifluralin) 0.5-1 lb. a.i. per acre. Use 4EC formulations at 1-2 pts. per acre. Use 10G formulations at 5-10 lbs. per acre. Apply and incorporate 1-2 inches before, during, or immediately after planting. Use low rate on coarse soils with less than 2% organic matter. Not effective on muck or high organic matter soils. REI: 12-hour.

Zidua (pyroxasulfone) 3.25 fl. oz. per acre of SC formulation. 2.0 oz. per acre of WG formulation. Use only on muck soil with greater than 20% organic matter. Apply to transplanted celery 1-6 days after transplanting. REI: 12-hour.

Postemergence Broadleaf and Grass Weeds

Caparol 4L® (prometryn) 1-2 qts. per acre. Make 1 or 2 applications 2-6 weeks after transplanting but before

weeds are 2 inches tall. Do not exceed 2 qts. per acre per year. REI: 12-hour.

Lorox DF® (linuron) 1.5-2 lbs. per acre. Apply after transplants are established but before celery is 8 inches tall. Do not exceed 40 PSI pressure. Do not apply when temperatures exceed 85°F, and do not mix with wetting agents or other pesticides. REI: see label. PHI: 45-day.

Postemergence Grass Weeds

clethodim formulations (clethodim) Use 2EC formulations at 6-8 fl. oz. per acre with 1 qt. of COC per 25 gals. of spray solution (1% v/v). Use Select Max® at 9-16 fl. oz. per acre with 8 fl. oz. of NIS per 25 gals. of spray solution (0.25% v/v). Spray on actively growing grass. Wait at least 14 days between applications. Do not exceed 32 fl. oz. of 2EC formulations or 64 fl. oz. of Select Max® per acre per season. REI: 24-hour. PHI: 30-day.

Poast® (sethoxydim) 1-1.5 pts. per acre. Apply to actively growing grasses. Include 1 qt. COC per acre. Do not exceed 3 pts. per acre per season. REI: 12-hour. PHI: 30-day.

Insect Control

Recommended Controls

Aphids

Over-treatment with permethrin may increase aphid problems.

Treat when more than 3% of plants are infested **or** there are more than 6 aphids per 100 sweeps.

Over-treatment with pyrethroids (IRAC 3A) may cause increased aphid problems.

Actara® (thiamethoxam) 1.5-3 oz. per acre. Allow 7 days between applications. Do not exceed 11 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Admire Pro® (imidacloprid) 4.4-10.5 fl. oz. per acre. Do not exceed 10.5 fl. oz. per acre per season. REI: 12-hour. PHI: 45-day.

Assail 30SG® (acetamiprid) 2-4 oz. per acre. Suppression only. Allow 7 days between applications. Do not exceed 20 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Belay 50WDG® (clothianidin) Soil treatment: 4.8-6.4 oz. per acre Foliar treatment: 1.6-2.1 oz. per acre. Allow 10 days between foliar applications. Do not exceed 6.4 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Beleaf 50SG® (flonicamid) 2-2.8 oz. per acre. Allow 7 days between applications. Do not exceed 8.4 oz. per acre per season. REI: 12-hour. PHI: 0-day.

Brigade 2EC® (bifenthrin) 2.1-6.4 fl. oz. per acre. Allow 7 days between applications. Do not exceed 21 fl. oz. per acre per season. REI: 12-hour. PHI: 7-day. *RUP*.

Durivo® (thiamethoxam, chlorantraniliprole) 10-13 fl. oz. per acre. Apply as a soil treatment. Do not exceed 13 fl. oz. per acre per season. REI: 12-hour. PHI: 30-day.

Exirel® (cyantraniliprole) 13.5-20.5 fl. oz. per acre. Use an effective adjuvant. Allow 5 days between applications. Do not exceed 61.7 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day.

Fulfill® (pymetrozine) 2.75 oz. per acre. May require 5-7 days for aphid mortality. Allow 7 days between applications. Do not exceed 5.5 oz. per acre per season. REI: 12-hour. PHI: 0-day.

malathion formulations (malathion) 1.5 pts. per acre for 5E and 57E formulations. Only 2 applications allowed PHI: 7-day.

Movento® (spirotetramat) 4-5 fl. oz. per acre. Must be tank-mixed with an adjuvant with spreading and penetrating properties. Allow 7 days between applications. Do not exceed 10.0 fl. oz. per acre per season. REI: 24-hour. PHI: 3-day.

Mustang Maxx® (zeta-cypermethrin) 2.24-3.2 fl. oz. per acre. Allow 7 days between applications. Do not exceed 24 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP*.

Nuprid 2SC® (imidacloprid) 10-24 fl. oz. per acre. Apply as a soil treatment. Do not exceed 24 fl. oz. per acre per season. REI: 12-hour. PHI: 45-day.

Orthene 97 Soluble® (acephate) 8-16 oz. per acre. Allow 3 days between applications of 8 oz. per acre, and 7 days between applications of over 16 oz. per acre. Do not exceed 34 oz. per acre per season. REI: 24-hour. PHI: 21-day.

Perm-Up 3.2EC® (permethrin) 2-8 fl. oz. per acre. Allow 7 days between applications. Do not exceed 40 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP*.

Sivanto 200SL® (flupyradifurone) 10.5-12.0 fl. oz. per acre. Can be applied as a foliar spray or soil treatment. See label for application methods. REI: 4-hour. PHI: 1-day.

Torac 15EC® (tolfenpyrad) 17-21 fl. oz. per acre. Do not apply until 14 days after transplanting. Do not exceed 2 applications per crop per season. REI: 12-hour. PHI: 1-day.

Verimark® (cyantraniliprole) 6.75-13.5 fl. oz. per acre. Apply as a soil treatment. Do not exceed 30.6 fl. oz. per acre per season. REI: 4-hour. PHI: 0-day.

Carrot Weevil Beetle

Vydate L® (oxamyl) 4 pts. per acre. Larvae only. Apply as a soil-directed spray. Start when eggs or larvae are first seen and repeat in 2 to 3 weeks. Allow 14 days between applications. Do not exceed 24 pts. per acre per season. REI: 48-hour. PHI: 21-day. *RUP.*

Caterpillars

There are many caterpillar pests of celery, including cabbageworms, diamond back moth caterpillars, earworms, corn borers, cutworms, loopers, and armyworms. Always check the label for the specific list of caterpillars that the product can be used on.

Apply preventative treatments within 4 weeks of harvest. Treat as needed before that.

Bacillus thuringiensis formulations for Lepidopterans

(Bacillus thuringiensis aizawai strain ABTS-1857, Bacillus thuringiensis aizawai strain GC-91, Bacillus thuringiensis kurstaki strain ABTS-351, Bacillus thuringiensis kurstaki strain EVB-113-19, Bacillus thuringiensis kurstaki strain SA-11) Various Bt products are available for control of young caterpillars (Agree®, Biobit®, Dipel®, Javelin®, etc.) Different Bt subspecies have different control properties. Check labels for rates, timing of application and required safety equipment. REI: 4-hour. PHI: 0-day.

Avaunt 30WDG® (indoxacarb) 3.5 oz. per acre. For loopers and armyworms. Allow 3 days between applications. Do not exceed 56 oz. per acre per season. REI: 12-hour. PHI: 3-day.

Baythroid XL® (beta-cyfluthrin) 0.8-3.2 fl. oz. per acre. For cutworms, loopers and armyworms. Allow 7 days between applications. Do not exceed 12.8 fl. oz. per acre per season. REI: 12-hour. PHI: 0-day. *RUP.*

Brigade 2EC® (bifenthrin) 2.1-6.4 fl. oz. per acre. For cutworms, loopers, and armyworms. Allow 7 days between applications. Do not exceed 21 fl. oz. per acre per season. REI: 12-hour. PHI: 7-day. *RUP.*

Confirm 2F® (tebufenozide) 6-8 fl. oz. per acre. For loopers and armyworms. Allow 10 days between applications. Do not exceed 40 fl. oz. per acre per crop cycle or 120 fl. oz. per calendar year. REI: 4-hour. PHI: 7-day.

Coragen® (chlorantraniliprole) 3.5-5.0 fl. oz. per acre. Check label for specific caterpillars. Can be applied as a foliar spray or soil treatment. See label for application methods. Allow 3 days between foliar applications. Do not exceed 15.4 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day.

Durivo® (thiamethoxam, chlorantraniliprole) 10-13 fl. oz. per acre. Check label for specific caterpillars. Apply as a soil treatment. Do not exceed 13 fl. oz. per acre per season. REI: 12-hour. PHI: 30-day.

Entrust SC® (spinosad) 1.5-8 fl. oz. per acre. Check label for specific caterpillars. Allow 4 days between applications. Do not exceed 29 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day. *OMRI-listed.*

Exirel® (cyantraniliprole) 7.0-17.0 oz. per acre. Check label for specific caterpillars. Allow 5 days between applications. Do not exceed 61.7 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day.

Intrepid 2F® (methoxyfenozide) 4-10 oz. per acre. For loopers and armyworms. Early-season applications to young, small crops: 4-8 fl. oz. per acre. Mid- to late-season applications: 8-10 fl. oz. per acre. Do not exceed 64 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day.

Lannate SP® (methomyl) 0.25-1.0 lb. per acre For cutworms, loopers, and armyworms. Do not exceed 7 lbs. per acre per season. REI: 48-hour. PHI: 7-day. *RUP.*

Movento® (spirotetramat) 4-5 fl. oz. per acre. For diamondback moth caterpillars. Must be tank-mixed with an adjuvant with spreading and penetrating properties. Allow 7 days between applications. Do not exceed 10.0 fl. oz. per acre per season. REI: 24-hour. PHI: 3-day.

Mustang Maxx® (zeta-cypermethrin) 2.24-3.2 fl. oz. per acre. For cutworms, loopers, and armyworms. Allow 7 days between applications. Do not exceed 24 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP.*

Perm-Up 3.2EC® (permethrin) 2-8 fl. oz. per acre. Check label for specific caterpillars. Allow 7 days between applications. Do not exceed 40 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP.*

OMRI-listed indicates that the product is listed by the Organic Materials Review Institute (OMRI.org) and therefore may be acceptable for use in organic production. Check with your certifier before use.

Proclaim® (emamectin benzoate) 2.4-4.8 oz. per acre. For loopers and armyworms. Allow 7 days between applications. Do not exceed 28.8 oz. per acre per season. REI: 12-hour. PHI: 7-day. *RUP*.

Radiant 1SC® (spinetoram) 5-10 fl. oz. per acre. Check label for specific caterpillars. Allow 4 days between applications. Do not exceed 34 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day.

Sevin XLR Plus® (carbaryl) 1-2 qts. per acre. For armyworms. Do not exceed 6 qts. per acre per season. REI: 12-hour. PHI: 14-day.

Verimark® (cyantraniliprole) 6.75-13.5 fl. oz. per acre. Apply as a soil treatment. Do not exceed 30.6 fl. oz. per acre per season. REI: 4-hour. PHI: 0-day.

Leafhoppers

Treat when there are more than 14 leafhoppers per 100 sweeps.

Repeat as needed, depending on number of leafhoppers.

Actara® (thiamethoxam) 1.5-3 oz. per acre. Allow 7 days between applications. Do not exceed 11 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Admire Pro® (imidacloprid) 4.4-10.5 fl. oz. per acre. Do not exceed 10.5 fl. oz. per acre per season. REI: 12-hour. PHI: 45-day.

Belay 50WDG® (clothianidin) Soil treatment: 4.8-6.4 oz. per acre Foliar treatment: 1.6-2.1 oz. per acre. Allow 10 days between foliar applications. Do not exceed 6.4 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Brigade 2EC® (bifenthrin) 2.1-6.4 fl. oz. per acre. Allow 7 days between applications. Do not exceed 21 fl. oz. per acre per season. REI: 12-hour. PHI: 7-day. *RUP*.

Durivo® (thiamethoxam, chlorantraniliprole) 10-13 fl. oz. per acre. Apply as a soil treatment. Do not exceed 13 fl. oz. per acre per season. REI: 12-hour. PHI: 30-day.

Lannate SP® (methomyl) 0.25-1.0 lb. per acre. Do not exceed 7 lbs. per acre per season. REI: 48-hour. PHI: 7-day. *RUP*.

Mustang Maxx® (zeta-cypermethrin) 2.24-3.2 fl. oz. per acre. Allow 7 days between applications. Do not exceed 24 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP*.

Nuprid 2SC® (imidacloprid) 10-24 fl. oz. per acre. Apply as a soil treatment. Do not exceed 24 fl. oz. per acre per season. REI: 12-hour. PHI: 45-day.

Perm-Up 3.2EC® (permethrin) 2-8 fl. oz. per acre. Allow 7 days between applications. Do not exceed 40 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP*.

Platinum 75SG® (thiamethoxam) 1.66-3.67 oz. per acre. Apply as a soil treatment. Do not exceed 3.7 oz. per acre per season. REI: 12-hour. PHI: 30-day.

Scorpion 35SL® (dinotefuran) 2.0-5.25 fl. oz. per acre. Soil treatment: 9-10.5 oz. per acre Foliar treatment: 2-5.25 oz. per acre. Allow 7 days between applications. Do not exceed 21 fl. oz. per acre per season soil applied or 10.5 fl. oz. per acre per season foliar applied. REI: 12-hour. PHI: 21-day as foliar applied, 7-day as soil applied.

Sevin XLR Plus® (carbaryl) 0.5-2 qts. per acre. Do not exceed 6 qts. per acre per season. REI: 12-hour. PHI: 14-day.

Sivanto 200SL® (flupyradifurone) 7.0-10.5 fl. oz. per acre. Can be applied as a foliar spray or soil treatment. See label for application methods. REI: 4-hour. PHI: 1-day.

Torac 15EC® (tolfenpyrad) 14-21 fl. oz. per acre. Do not apply until 14 days after transplanting. Do not exceed 2 applications per crop per season. REI: 12-hour. PHI: 1-day.

Venom 70SG® (dinotefuran) Soil treatment: 5-6 oz. per acre Foliar treatment: 1-3 oz. per acre. Allow 7 days between applications. Do not exceed 12 fl. oz. per acre per season soil applied or 6 fl. oz. per acre per season foliar applied. REI: 12-hour. PHI: 21-day as soil treatment, 7-day as foliar treatment.

Leafminers

Treat as soon as visible mines appear and repeat every 7 days as needed.

Actara® (thiamethoxam) 1.5-3 oz. per acre. Allow 7 days between applications. Do not exceed 11 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Admire Pro® (imidacloprid) 4.4-10.5 fl. oz. per acre. Do not exceed 10.5 fl. oz. per acre per season. REI: 12-hour. PHI: 45-day.

Agri-Mek SC® (abamectin) 1.75-3.5 fl. oz. per acre. Use with a nonionic surfactant. Allow 7 days between applications. Do not exceed 10.5 fl. oz. per acre. REI: 12-hour. PHI: 7-day. *RUP*.

Baythroid XL® (beta-cyfluthrin) 0.8-3.2 fl. oz. per acre. Allow 7 days between applications. Do not exceed 12.8 fl. oz. per acre per season. REI: 12-hour. PHI: 0-day. *RUP*.

Coragen® (chlorantraniliprole) 5.0-7.5 fl. oz. per acre. Can be applied as a foliar spray or soil treatment. See label for application methods. Allow 3 days between foliar applications. Do not exceed 15.4 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day.

Dimethoate 4EC® (dimethoate) 1 pt. per acre. Allow 7 days between applications. Do not exceed 3 pts. per acre per season. REI: 48-hour. PHI: 7-day.

Durivo® (thiamethoxam, chlorantraniliprole) 10-13 fl. oz. per acre. Apply as a soil treatment. Do not exceed 13 fl. oz. per acre per season. REI: 12-hour. PHI: 30-day.

Entrust SC® (spinosad) 6-10 fl. oz. per acre Allow 4 days between applications. Do not exceed 29 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day. *OMRI-listed.*

Exirel® (cyantraniliprole) 13.5-20.5 fl. oz. per acre. Use an effective adjuvant. Allow 5 days between applications. Do not exceed 61.7 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day.

Platinum 75SG® (thiamethoxam) 1.66-3.67 oz. per acre. Apply as a soil treatment. Do not exceed 3.7 oz. per acre per season. REI: 12-hour. PHI: 30-day.

Radiant 1SC® (spinetoram) 5-10 fl. oz. per acre. Allow 4 days between applications. Do not exceed 34 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day.

Scorpion 35SL® (dinotefuran) 2.0-5.25 fl. oz. per acre. Soil treatment: 9-10.5 oz. per acre Foliar treatment: 2-5.25 oz. per acre. Allow 7 days between applications. Do not exceed 21 fl. oz. per acre per season soil applied or 10.5 fl. oz. per acre per season foliar applied. REI: 12-hour. PHI: 21-day as foliar applied, 7-day as soil applied.

Trigard® (cyromazine) 2.66 oz. per acre. Allow 7 days between applications. Do not exceed 6 applications per crop. REI: 12-hour. PHI: 7-day.

Venom 70SG® (dinotefuran) Soil treatment: 5-6 oz. per acre Foliar treatment: 1-3 oz. per acre. Allow 7 days between applications. Do not exceed 12 fl. oz. per acre per season soil applied or 6 fl. oz. per acre per season foliar applied. REI: 12-hour. PHI: 21-day as soil treatment, 7-day as foliar treatment.

Verimark® (cyantraniliprole) 6.75-13.5 fl. oz. per acre. Apply as a soil treatment. Do not exceed 30.6 fl. oz. per acre per season. REI: 4-hour. PHI: 0-day.

Mites

Actara® (thiamethoxam) 1.5-3 oz. per acre. Allow 7 days between applications. Do not exceed 11 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Admire Pro® (imidacloprid) 4.4-10.5 fl. oz. per acre. Do not exceed 10.5 fl. oz. per acre per season. REI: 12-hour. PHI: 45-day.

Agri-Mek SC® (abamectin) 1.75-3.5 fl. oz. per acre. Use with a nonionic surfactant. Allow 7 days between applications. Do not exceed 10.5 fl. oz. per acre. REI: 12-hour. PHI: 7-day. *RUP.*

Dimethoate 4EC® (dimethoate) 1 pt. per acre. Allow 7 days between applications. Do not exceed 3 pts. per acre per season. REI: 48-hour. PHI: 7-day.

malathion formulations (malathion) 1.5 pts. per acre for 5E and 57E formulations. Only 2 applications allowed PHI: 7-day.

Oberon 2SC® (spiromesifen) 7.0-8.5 fl. oz. per acre. For the treatment of Two-Spotted Spider Mites in Michigan only - applicators must have 24c label. Michigan label expires August 23, 2022. Allow 7 days between applications. Do not exceed 25.5 fl. oz. per acre per season. REI: 12-hour. PHI: 7-day.

Verimark® (cyantraniliprole) 6.75-13.5 fl. oz. per acre. Apply as a soil treatment. Do not exceed 30.6 fl. oz. per acre per season. REI: 4-hour. PHI: 0-day.

Nematodes

Plant nematode-free transplants to prevent serious losses. Root-knot, pin, needle, and root-lesion nematodes can reduce celery yields. If your fields have indeterminate root problems, test for nematodes. If the plant-parasitic nematodes are present above the economic thresholds, rotate crops or apply a nematicide.

Trained diagnostic service providers tally nematodes from each class within 100 cubic centimeters of soil, and assign a risk index to guide management.

Telone II® (1,3-dichloropropene) Muck soils: 25 gals. per acre. Mineral soils: 9-18 gals. per acre. Fumigate in the fall when soil temperatures at 6 inches are above 50 F. Inject fumigant to a soil depth of 8 inches and lightly seal the soil immediately after application. Use fumigants only as directed on the label. In some limited situations fumigants can be applied in the spring. Allow dissipation for 1 week for every 10 gals. per acre plus 1 more week. REI: see label. *RUP*.

Vydate L® (oxamyl) Preplant: 2 gals. per acre in 20 gals. of water in an 8- to 16-inch band. Incorporate to a depth of 4 inches. At planting: 0.5-1 gal. per acre in at least 100 gals. of water immediately after transplanting seedlings. After planting: 1 gal. per acre in at least 100 gals. of water as a foliar spray. Apply two sprays 3 weeks apart beginning 3 weeks after transplanting. Allow 14 days between applications. Do not exceed 3 gals. per acre per season. REI: 48-hour. PHI: 21-day. *RUP*.

Slugs

Deadline Bullets 4B® (metaldehyde) 25 lbs. per acre. Apply between rows. Avoid contact with edible product. Allow 21 days between applications. Do not exceed 100 lbs. per acre per season. REI: 12-hour. PHI: 1-day.

Tarnished Plant Bug

Treat if there are 2-4 tarnished plant bugs per 20 plants.

Baythroid XL® (beta-cyfluthrin) 0.8-3.2 fl. oz. per acre. Allow 7 days between applications. Do not exceed 12.8 fl. oz. per acre per season. REI: 12-hour. PHI: 0-day. *RUP*.

Beleaf 50SG® (flonicamid) 2-2.8 oz. per acre. Allow 7 days between applications. Do not exceed 8.4 oz. per acre per season. REI: 12-hour. PHI: 0-day.

Mustang Maxx® (zeta-cypermethrin) 2.24-3.2 fl. oz. per acre. Allow 7 days between applications. Do not exceed 24 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day. *RUP*.

Sevin XLR Plus® (carbaryl) 0.5-2 qts. per acre. Do not exceed 6 qts. per acre per season. REI: 12-hour. PHI: 14-day.

Torac 15EC® (tolfenpyrad) 17-21 fl. oz. per acre. Do not apply until 14 days after transplanting. Do not exceed 2 applications per crop per season. REI: 12-hour. PHI: 1-day.

Thrips

Exirel® (cyantraniliprole) 13.5-20.5 fl. oz. per acre. Use an effective adjuvant. Allow 5 days between applications. Do not exceed 61.7 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day.

Radiant 1SC® (spinetoram) 5-10 fl. oz. per acre. Allow 4 days between applications. Do not exceed 34 fl. oz. per acre per season. REI: 4-hour. PHI: 1-day.

Torac 15EC® (tolfenpyrad) 21 fl. oz. per acre. Do not apply until 14 days after transplanting. Do not exceed 2 applications per crop per season. REI: 12-hour. PHI: 1-day.

Whiteflies

Assail 30SG® (acetamiprid) 2-4 oz. per acre. Suppression only. Allow 7 days between applications. Do not exceed 20 oz. per acre per season. REI: 12-hour. PHI: 7-day.

Exirel® (cyantraniliprole) 13.5-20.5 fl. oz. per acre. Use an effective adjuvant. Allow 5 days between applications. Do not exceed 61.7 fl. oz. per acre per season. REI: 12-hour. PHI: 1-day.

Movento® (spirotetramat) 4-5 fl. oz. per acre. Must be tank-mixed with an adjuvant with spreading and penetrating properties. Allow 7 days between applications. Do not exceed 10.0 fl. oz. per acre per season. REI: 24-hour. PHI: 3-day.

Sivanto 200SL® (flupyradifurone) 10.5-14.0 fl. oz. per acre. Can be applied as a foliar spray or soil treatment. See label for application methods. REI: 4-hour. PHI: 1-day.