Cilantro and Coriander Production

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CILANTRO (Coriandrum sativum)
Cilantro is a commonly used culinary herb and is also becoming popular as a microgreen. The market for fresh cilantro leaves is strong; they are a popular addition to salsa and dips, and a common ingredient in Asian, Caribbean, East Indian, and Mexican cuisines. The cilantro seed is called coriander. Coriander is used in cooking, as an ingredient in curry powder, and can be distilled into essential oils. Cilantro flowers attract beneficial insects and are also edible.

Cilantro is a short-lived annual with a preference for cool temperatures and a tendency to bolt soon after the plants reach a harvestable stage of growth. Succession planting and use of shade cloth can help you achieve harvests through the heat of summer in many locations.

SOIL REQUIREMENTS & SITE SELECTION
Cilantro prefers rich, well-drained loam in full sun. In most locations, the plants are likely to bolt in the heat of midsummer; if you are planning to grow cilantro through the summer, you may want to select bolt-resistant varieties to grow, use a 30–50% shade cloth, and/or choose a field location that receives partial shade.

GERMINATION:
Germination rates can be naturally below 50%, but Johnny's minimum germination rate for cilantro is 70%. Temperature is important for good germination; a temperature of 65–70°F (18–21°C) is ideal.

Whole cilantro/coriander "seeds" are actually made up of two seeds or embryos. Whole seeds are sometimes split in half, separating the two embryos. These are often called "splits" or monogerm seeds. Monogerm seeds are known for slightly faster germination, which can be important for microgreen production. Monogerm seeds can also aid in precision planting.

CULTURE (FIELD):
Succession planting is necessary for a continual harvest of fresh leaves. Sow every 2–3 weeks from spring through late summer. Cilantro is hardy to

Monogerm seed (left) and regular seed (right).

25°F (-4°C). It can withstand several light frosts and is, therefore, an excellent fall crop. It can also be overwintered in mild climates or with use of tunnels and row covers.

Direct seeding is recommended, as cilantro has a tap root and does not transplant well. Sow 1–2 seeds per inch, ¼–½" deep, in rows 12–18" apart, after danger of last frost.

The appropriate temperature for good germination is 65–70°F (18–21°C). Keep soil consistently moist until plants emerge; normally in 7–10 days.

Do not thin plants if you are growing for fresh leaf production; cilantro continues to grow well even when sown thickly and harvesting goes faster when plants grow in bunches. If growing for coriander production, thin plants to 2–4" apart.

CULTURE (MICROGREENS)
Sow into standard 1020 flats or 20-row seed flats containing 1–1½ inches of a light, sterile, soilless mix. Seed densely enough to cover the flat but not to the point of inhibiting air flow. Gently tamp the seeds into the growing medium to ensure good seed-to-soil contact. Note that seeds need darkness to germinate; cover with a fine layer of vermiculite or the inverted lid of a 1020 tray. If using a cover, ventilate the cover during sunny, warm conditions to keep the growing medium from getting

too hot. Keep the temperature of the growing medium at 75°F (24°C) until germination, then reduce to 60°F (16°C). For more information on growing and harvesting microgreens, see the Johnny's Microgreen Production guide #8079.

FERTILIZER
Cilantro requires good soil fertility; otherwise, the leaves may turn pale or yellow. However, soil that is too rich can cause a diluted flavor. You may need to experiment to find the right balance for your plot.

HARVEST:
Because it is a short-lived annual, you will normally only get two cuts from each plant, and, depending on the variety, you may only get one cut during the heat of midsummer.

Harvest leaves once the plants are established but before they begin to flower; typically, you can make a first cut 6–8 weeks after germination, and a second cut 10–14 days after that. Grasp a bunch-size cluster of stems at the base of the plant and cut with a knife or sharp scissors an inch or two above the soil line. Alternatively, if you are not planning on subsequent cuttings, you can pull the entire plant and rinse and bunch with roots intact for extended shelf life. If washing is required, ensure that the leaves are thoroughly dry before you bunch, package, and refrigerate them. Cool immediately and store at 32°F (0°C). At this temperature, cilantro should have a shelf life of 3–4 weeks.

As the plant matures and begins to flower, the leaves will change from the traditional flat cilantro leaf shape to a feathery leaf shape almost reminiscent of dill. You may not want to harvest the feathery leaves or the leaves from the flower stalk, as they may be bitter.

Cilantro flowers and young green seeds are also edible and have a fresh, bright flavor, making them a desirable garnish.

Mature seeds (for coriander harvest) are ready to harvest about 3 months from planting. Harvest the seeds when about half of them have changed in color from green to gray or when the seeds on the central flower stalk have ripened. Harvest by pulling up the entire plant. Store in a dry, well-ventilated location until seeds are fully dry.

PESTS AND DISEASE
Aphids can be a problem, particularly with indoor cilantro production. Aphids are very small (1-3mm) soft-bodied insects that feed on plant sap, causing leaf damage and stunting plant growth. They secrete excess sugar as a waste product, called "honeydew." The honeydew can build up on leaves, attracting ants and leading to the growth of a black fungus called sooty mold.

Because many species of aphids are not winged, they won't necessarily be trapped by yellow sticky traps. It is therefore important to regularly scout plants for signs of aphids.

The best means of control for indoor growers is the use of beneficial insects, which are available commercially and prey on aphids. Options include ladybugs, lacewings, parasitic wasps, or predaceous midges. Insect-pathogenic fungi are also an option for small infestations. It is important to introduce these beneficial controls early before an infestation is large. Insecticidal soap is another option, but aphids are difficult to control with insecticides because they feed on the underneath of leaves and because they must come in direct contact with the insecticide to be killed by it.

Fungal disease (such as powdery mildew, *Fusarium* wilt, or *Pythium* root rot) can also be a problem and is most prevalent in the greenhouse. To reduce the risk of fungal disease, ensure good air circulation and use drip irrigation rather than overhead irrigation. If you cannot avoid overhead irrigation, shake excess water off the leaves after each watering.

Finally, bacterial leaf spot, caused by the pathogen *Pseudomonas*, is a disease that causes brown spots on the leaves. It is worsened by wet conditions. It can be spread by pollinating insects and can persist in the field on weeds or other crops. Because *Pseudomonas* is often seedborne, Johnny's tests all our cilantro/coriander seed lots for the presence of *Pseudomonas*. We lab test 15,000 seeds from every lot, and we only distribute seeds from lots where no *Pseudomonas* was found.

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