SEEDTIME

Top 14 Fall Crops Growing Guide

Introduction

The following crops are all excellent choices for a fall garden — and for good reason. In fact, there are two compelling reasons to focus on these particular vegetables for the autumn season.

First, they are **cool-season crops** that thrive in the shortening days and cooler temperatures that come with the changing of the seasons. However, don't be fooled — many of them must be started in the **full heat of summer**, which means they require a bit of extra care and attention during germination and early growth.

Second, and perhaps more exciting, is **the magic of frost**. While these crops can certainly be grown in the spring, spring cannot offer what fall uniquely provides as these crops mature: the sweetening, flavor-enhancing power of cooler nights and early frosts. For many of these vegetables, the first light frosts of fall and early winter act as a natural "secret sauce," transforming their flavor and texture — making them sweeter, more tender, and more delicious.

You may notice that **sweet potatoes, winter squash, and pumpkins** are not included in this guide. Although they are harvested in the fall, they are **warm-season crops** that must be grown through the summer — and therefore fall outside the scope of this cool-season, frost-friendly guide.

Beets

Seeding or Transplanting?

Beet "seeds" are actually what is called a multi-germ seed, a cluster of seeds in a dried fruit. One beet "seed" will usually produce from 2–5 sprouts that become plants.

Direct seeding is the standard recommendation for beets, but many people do transplant. We have had good experience putting two "seeds" in a 2 inch soil block and then thinning it to 4 sprouts.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing	End Sowing
3	Sept 8 – 15	Mid July	Late July
4	Sept 21 – Oct 7	Mid July	Late July
5	Oct 13 – 21	Late July	Mid August
6	Oct 17 – 31	Early August	Mid August
7	Oct 29 – Nov 15	Mid August	Early Sept.
8	Nov 7 – 28	Late August	Mid Sept
9	Nov 25 – Dec 13	Early Sept	Late Sept
10	No Frost / Very Late	Late Sept	Mid Nov

Direct Seeding/Transplanting Spacing Recommendations

- Plant seeds ½ inch deep.
- **Direct seed** – 1" in-row x 10–12" between rows (3 rows on a 30" bed), thin to 1 plant every 3–4 inches.
- **Transplant** blocks with 4 starts each, 1 block every 6 inches in row. 10–12" between rows (3 rows on a 30" bed).

Seeding in the Heat

When direct seeding in a very hot environment, cover seeds with burlap or frost cloth and keep moist. Remove burlap when they sprout, but continue to keep moist and add mulch.

Growing

Soil Preparation

Beets like a well drained soil high in organic matter. Add well rotted manure, compost or worm castings to top 6"–8" of soil.

Fertility Guidelines

- **Nitrogen:** 1–2 lb N / 1000 sq ft. Be careful to not overdo. Excess N will result in many leaves and little root development.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Enhances root development. Use bone meal or soft rock phosphate.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Enhances root quality, storage, flavor and disease tolerance. Use wood ash (in moderation) or kelp meal.
- **Boron:** ½ oz borax / 100 sq ft. or dilute kelp spray. Supports root formation and prevents internal blackspot.

Common Diseases and Pests

- **Cercospora (leaf spot)** – manage with crop rotation, adequate plant spacing for air circulation, and removal of infected leaves. If needed, apply a copper-based fungicide or neem oil as a preventive treatment.

Taking Beets Through the Winter

In places without significant freezing of the ground, if beets have been brought to maturity by or soon after first frost, they can be held in the ground through the winter, especially if given some simple protection such as a frost cloth and/or simple hoophouse. Leaves may be lost with heavy freezes, but roots can be dug at anytime through the winter.

Harvest

Thinning

When direct seeding it is not uncommon to have sections that are seeded too densely, and sections that are seeded too thin. Pulling out extra plants in the densely seeded section will help the remaining beets to grow to size. Thinings, from baby greens stage to small beet stage, can be eaten – added to salads, soups, sandwiches, etc.

What to Look For

Beets are good to eat at any size, but generally it is preferred to harvest them at 2–3 inches. They may start getting a little tough at 4 inches but are still quite edible. Of course, when you harvest a beet, you get the double blessing of the beet and the beet greens.

If you have overwintered beets, they will begin to get fibrous when they start to regrow in the spring.

Carrots

Seeding or Transplanting?

Carrots are always direct seeded due to their long, delicate taproot. Transplanting is **not recommended** as it often leads to forked or stunted roots.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing	End Sowing
3	Sept 8 – 15	Early July	Late July
4	Sept 21 – Oct 7	Early July	Late July
5	Oct 13 – 21	Mid July	Early August
6	Oct 17 – 31	Mid July	Mid August
7	Oct 29 – Nov 15	Late July	Mid August
8	Nov 7 – 28	Early August	Early September
9	Nov 25 – Dec 13	Mid August	Mid September
10	No Frost / Very Late	Late August	Mid October

Direct Seeding/Transplanting Spacing Recommendations

- Plant seeds ¼ inch deep.
- **Direct seed** – Scatter or place seeds ½"–1" apart in row. Thin to 1 plant every 1–2 inches once established.
- **Row spacing** – 10–12" between rows (3 rows on a 30" bed).

Seeding in the Heat

When seeding carrots in hot weather, **keep the seedbed consistently moist**. Cover with **shade cloth, frost cloth, boards, or burlap** to hold moisture until germination. Remove cover as soon as sprouts appear (shade cloth and frost cloth can stay on) and continue to water regularly.

Growing

Soil Preparation

Carrots need **deep, loose, stone-free soil** for proper root formation. Raised beds, double digging, or broadforking to 12" deep is ideal. Mix in aged compost.

Fertility Guidelines

- **Nitrogen:** ½–1 lb N / 1000 sq ft. Too much nitrogen can cause excessive top growth and forked roots.
- **Phosphorus:** 1.5–2 lb / 1000 sq ft. Crucial for root growth—use bone meal or rock phosphate.
- **Potassium:** 1–1.5 lb / 1000 sq ft. Improves flavor and disease resistance—use kelp meal or greensand.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents hollow hearts and cracking.

Common Diseases and Pests

- **Carrot rust fly (larvae)** – Cover with floating row cover or fine insect netting immediately after sowing to prevent the fly from laying eggs at the base of plants. Keep edges sealed throughout the growing season. Crop rotation and interplanting with alliums (onions, chives) can also help reduce pressure by masking the scent that attracts the fly.
- **Alternaria leaf blight** – Avoid overhead watering. Use compost tea or copper sprays if needed.
- **Forked roots** – Caused by rocks, clods, or excessive nitrogen.

Taking Carrots Through the Winter

In mild climates or with mulch, carrots can be **overwintered in the ground**. Sow late summer for a fall crop and cover with straw, leaves, or row cover (frost cloth) once frost arrives. In middle TN, zone 7, we have found that seeding one week to ten days later than the End Sowing date in the chart above, enables carrots to stay in the ground through the winter without overgrowing. Roots can be harvested as needed through winter, but check for rot in wet soils.

Harvest

Thinning

Carrots should be thinned early and often. Crowded carrots will not size up. Thin to 1–2 inches apart once they're about 1–2 inches tall. Use thinnings as tender baby carrots.

What to Look For

Carrots can be harvested at any size. Baby carrots are ready around ½–¾ inch diameter. Full-size roots are typically best between **¾–1½ inches in diameter**. Oversized carrots may become woody or cracked. Taste sweetens and improves after light frosts.

Cabbage

Seeding or Transplanting?

Cabbage can be direct seeded but is most often transplanted for fall harvests. Transplants give better spacing control, earlier harvests, and less pest pressure in early growth stages. Start seeds indoors or in trays 4–6 weeks before transplanting. Harden off before planting out. Direct seeding is possible but less reliable.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Late May – Early June	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early Aug
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

- Plant seeds ¼–½ inch deep.

- **Direct seed** – 12–15" in-row x 18–24" between rows (2 rows on a 30" bed), thin to 1 plant every 12–18 inches.
- **Transplant** – Space 12–18" apart in row, 18–24" between rows (2 rows on a 30" bed), depending on variety size.

Seeding in the Heat

If starting transplants during hot weather, keep trays or soil blocks in a cool, shady location until germination. Then move to a place with shade cloth/partial shade and ensure consistent moisture. Use shade cloth as needed to reduce temperature stress.

Growing

Soil Preparation

Cabbage prefers fertile, well-drained soil with a pH between 6.5–7.5. Work in plenty of compost and loosen soil to 8–12" depth.

Fertility Guidelines

- **Nitrogen:** 2–3 lb N / 1000 sq ft. Cabbage is a heavy feeder—side-dress during growth if needed.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Supports root growth and early establishment. Use bone meal or soft rock phosphate.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Important for head formation and disease resistance. Use kelp meal or greensand.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents hollow stem and internal browning.

Common Diseases and Pests

Cabbage worms (loopers, imported cabbageworms) – Use row cover early on. Apply Bt or spinosad as needed.

Black rot – Rotate crops, avoid overhead watering, and plant resistant varieties.

Fusarium yellows – Select resistant cultivars and avoid infected beds.

Taking Cabbage Through the Winter

In zones 7 and up, fall cabbage may survive winter with row cover or a low tunnel. In colder zones, mature heads can be stored in the garden until temps dip below 20°F. Harvest before deep freeze and store in a root cellar or fridge for several weeks.

Harvest

What to Look For

Harvest cabbage when heads feel firm and dense—typically 3–5 pounds, depending on variety. Overmature heads may split. Use a sharp knife to cut at the base, leaving outer leaves if regrowth is desired. Young heads are also edible and tender.

Broccoli

Seeding or Transplanting?

Broccoli is almost always transplanted for fall harvests. Start seeds indoors or in trays 4–6 weeks before your transplant window. Transplants allow for stronger starts, better pest avoidance, and more consistent harvests. Direct seeding is possible but not commonly practiced for fall crops.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Late May – Early June	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early Aug
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼–½ inch deep.
Transplant – Space plants 12–18" apart in row, 18–24" between rows (2 rows on a 30" bed).
Direct seeding is uncommon but can be done with same spacing. Thin to one plant if more than one germinates in each spot.

Seeding in the Heat

Start seeds in a cool, shaded area. Keep trays consistently moist. If daytime temperatures are high, use shade cloth or germinate indoors in a controlled space. Once germinated, move to a spot with partial shade or shade cloth.

Growing

Soil Preparation

Broccoli thrives in fertile, well-drained soil with high organic matter. Deep composting and loosening soil to 8–12" depth helps establish strong roots.

Fertility Guidelines

- **Nitrogen:** 2–3 lb N / 1000 sq ft. Heavy feeder—side-dress as needed.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Encourages healthy root and early head formation.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Improves head quality and stress tolerance.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents hollow stem and browning.

Common Diseases and Pests

Cabbage worms – Protect with row cover early; treat with Bt or spinosad if needed.
Downy mildew – Improve air circulation and avoid overhead watering.
Black rot – Avoid working in wet fields; rotate crops and remove infected debris.

Taking Broccoli Through the Winter

In zones 7 and warmer, broccoli can overwinter with protection. Use row covers or low tunnels for frost protection. Broccoli may produce side shoots after main head harvest, which can continue into winter if mild.

Harvest

What to Look For

Harvest the main broccoli head when it is fully formed but before individual flower buds begin to loosen or yellow. Cut the head with 6–8 inches of stem. Many varieties will continue producing side shoots for extended harvest.

Cauliflower

Seeding or Transplanting?

Cauliflower is best grown from transplants for fall crops. Start seeds indoors or in trays 4–6 weeks before transplanting. It is sensitive to temperature swings in early stages, so healthy transplants are key to success. Direct seeding is not recommended.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Late May – Early June	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early Aug
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼–½ inch deep.
Transplant – Space 15–18" apart in row, 18–24" between rows (2 rows on a 30" bed).

Direct seeding is not recommended for cauliflower due to its sensitivity to stress during early growth.

Seeding in the Heat

Start seeds in a cool, shaded area. Keep trays consistently moist. If daytime temperatures are high, use shade cloth or germinate indoors in a controlled space. Once germinated, move to a spot with partial shade or shade cloth.

Growing

Soil Preparation

Cauliflower needs rich, moisture-retentive soil. Loosen soil to 8–12" and add compost or aged manure before planting.

Fertility Guidelines

- **Nitrogen:** 2–3 lb N / 1000 sq ft. Essential for leafy growth and curd formation.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Use bone meal or soft rock phosphate.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Improves size, firmness, and resistance to rot.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents browning and hollow stem.

Common Diseases and Pests

Cabbage worms – Control with row cover and Bt.
Buttoning (tiny heads) – Caused by stress from cold or poor fertility. Maintain consistent conditions.
Downy mildew – Promote airflow and avoid overhead watering.

Taking Cauliflower Through the Winter

Cauliflower is less cold hardy than other brassicas. In zones 7–8, it may overwinter under low tunnels or heavy row cover if planted early enough. Best results come from maturing plants before hard freezes.

Harvest

What to Look For

Harvest heads when they are compact, white (or appropriate variety color), and fully formed—typically 6–8 inches across. Do not wait for separation or yellowing. Some varieties benefit from self-blanching leaves; others may need inner leaves tied over the curd to protect from sun.

Kale

Seeding or Transplanting?

Kale can be either direct seeded or transplanted, but transplanting is often preferred for fall crops due to better control over spacing and early growth. Start seeds indoors or in trays 4–6 weeks before your intended transplanting date. Direct seeding is possible with proper thinning.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Late May – Early June	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early Aug
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼–½ inch deep.
Transplant – 12–18" apart in row, 18–24" between rows (2 rows on a 30" bed).
Direct seed – 1" apart, then thin to one plant every 12–18 inches in row.

Seeding in the Heat

Kale germinates well even in warmer soil, but transplants should be kept shaded and moist during hot summer starts. Consider using shade cloth or planting into mulch.

Growing

Soil Preparation

Kale prefers fertile, well-drained soil rich in organic matter. Loosen the top 8–12" and incorporate compost or worm castings.

Fertility Guidelines

- **Nitrogen:** 2–3 lb N / 1000 sq ft. Promotes leafy green growth.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. For root development—use bone meal or soft rock phosphate.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Enhances flavor, vigor, and stress resistance. Use kelp meal or greensand.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents hollow stems and tip burn.

Common Diseases and Pests

Aphids – Watch for clusters on new leaves; use neem or strong sprays of water.
Cabbage loopers – Use Bt spray or hand pick.
Downy mildew – Reduce leaf wetness and increase airflow.

Taking Kale Through the Winter

Kale is extremely cold hardy and often sweetens after frost. In zones 6 and up, kale will overwinter in the open or under light protection like row cover or a low tunnel. Harvest leaves as needed through the winter.

Harvest

What to Look For

Begin harvesting outer leaves when plants are about 8–10 inches tall. Continual harvest encourages more growth. For baby kale, harvest entire plants at 4–6 inches. Avoid harvesting central bud if regrowth is desired.

Collards

Seeding or Transplanting?

Collards can be direct seeded or transplanted. For fall crops, transplanting is common for consistent spacing and early establishment. Start seeds indoors or in trays 4–6 weeks before transplanting. Direct seeding is possible, especially in zones with long falls.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Late May – Early June	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early Aug
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼–½ inch deep.
Transplant – 12–18" apart in row, 18–24" between rows (2 rows on a 30" bed).
Direct seed – 1" apart, then thin to 12–18" once established.

Seeding in the Heat

Start seeds in partial shade and keep moist. Transplants should be hardened off gradually before being planted into hot soil. Use mulch to retain moisture.

Growing

Soil Preparation

Collards do well in loose, rich soil with high organic matter. Prepare beds with compost and loosen soil to at least 8".

Fertility Guidelines

- **Nitrogen:** 2–3 lb N / 1000 sq ft. Stimulates lush leaf growth.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Use bone meal or soft rock phosphate.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Boosts stress tolerance and flavor. Use greensand or kelp.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Helps prevent internal discoloration.

Common Diseases and Pests

Cabbage worms – Control with row cover and Bt.
Aphids – Especially in cooler weather. Spray with soapy water or neem oil.
Alternaria leaf spot – Use crop rotation and increase airflow.

Taking Collards Through the Winter

Collards are extremely frost tolerant and improve in flavor with cold weather. In zones 6 and warmer, they can be overwintered with minimal protection and harvested all winter. Mature plants may bolt in spring.

Harvest

What to Look For

Harvest lower leaves when they reach full size (10–12 inches) and are still tender. Pick regularly to encourage new growth. Avoid yellowing or overly tough leaves. Baby collards can be harvested earlier for milder flavor.

Kohlrabi

Seeding or Transplanting?

Kohlrabi can be either direct seeded or transplanted. Transplanting is often preferred for fall harvests due to better control of spacing and timing. Start seeds 4–6 weeks before transplanting. Direct seeding is possible with proper thinning.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Late May – Early June	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early Aug
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼–½ inch deep.
Transplant – 6–8" apart in row, 10–12" between rows (3 rows on a 30" bed).
Direct seed – 1" apart, thin to 6–8" spacing once plants are 2–3 inches tall.

Seeding in the Heat

Kohlrabi prefers cooler conditions. For summer starts, keep trays in partial shade and well watered. Mulch heavily after transplanting to reduce soil temperature.

Growing

Soil Preparation

Kohlrabi grows best in fertile, loose soil with consistent moisture. Prepare beds with compost and loosen the top 8–10" of soil.

Fertility Guidelines

- **Nitrogen:** 1.5–2 lb N / 1000 sq ft. Encourages healthy leaf and bulb growth.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Supports root and base development.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Improves flavor and storage. Use kelp or greensand.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents internal browning and cracking.

Common Diseases and Pests

Cabbage worms – Use Bt and row cover early.
Flea beetles – Use row cover and mulch around plants.
Root maggots – Rotate crops and use floating row cover during early growth.

Taking Kohlrabi Through the Winter

Mature kohlrabi can tolerate light freezes and may overwinter in zones 7 and above with row cover. Best quality is achieved when bulbs mature before hard frost. Harvest as needed until growth resumes in spring.

Harvest

What to Look For

Harvest when bulbs reach 2–3 inches in diameter for best tenderness. Larger bulbs may become woody. Use a knife or loppers to cut the stem just above the soil. Leaves are edible and can be used like kale or collards.

Lettuce

Seeding or Transplanting?

Lettuce can be direct seeded or transplanted, though transplanting is often used for head lettuce and spacing efficiency. Start seeds 3–4 weeks before transplanting. Direct seeding is common for cut-and-come-again or baby lettuce mixes.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Early June	Mid July
4	Sept 21 – Oct 7	Mid June	Late July
5	Oct 13 – 21	Late June	Early August
6	Oct 17 – 31	Early July	Mid August
7	Oct 29 – Nov 15	Mid July	Late August
8	Nov 7 – 28	Late July	Early September
9	Nov 25 – Dec 13	Early August	Mid September
10	No Frost / Very Late	Mid August	Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ⅛–¼ inch deep.
Transplant – Space 8–10" apart in-row, 10–12" between rows (3 rows on a 30" bed).

Direct seed – For full heads, 1" apart and thin to 8–10". For baby greens, broadcast or scatter seed in bands.

Seeding in the Heat

Lettuce has poor germination in heat. Start seeds in cool, shady location, then move to a spot with partial sun once germinated. Use refrigeration or a cool water soak for 12–24 hours to encourage sprouting. Transplant during cooler parts of the day and keep well watered.

Growing

Soil Preparation

Lettuce prefers light, well-drained soil rich in compost. Soil should retain moisture without becoming soggy. Loosen top 6–8".

Fertility Guidelines

- **Nitrogen:** 1–2 lb N / 1000 sq ft. Essential for leafy growth.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Helps root structure. Use bone meal or soft phosphate.
- **Potassium:** 1–1.5 lb / 1000 sq ft. Enhances crispness and disease resistance. Use greensand or kelp.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents leaf tip burn and helps uniform growth.

Common Diseases and Pests

Aphids – Use reflective mulch or strong water spray to control.
Downy mildew – Use resistant varieties and improve airflow.
Tip burn – Caused by heat or boron deficiency. Provide consistent moisture and nutrients.

Taking Lettuce Through the Winter

Lettuce can be overwintered in zones 6 and up under protection. Use row cover, low tunnels, or cold frames. Choose cold-hardy varieties like romaine or winter bibb for best results. Succession seeding every other week in August, and then every week in September will give you a continuous supply of head lettuce through the end of the year.

Harvest

What to Look For

Harvest head lettuce when heads are firm and well-formed. For leaf types, harvest outer leaves or cut entire plant when 6–8" tall. Baby lettuce can be harvested anytime after 3–4 inches tall. Lettuce is prone to become bitter and/or bolt in warm conditions.

Leeks

Seeding or Transplanting?

Leeks are typically started indoors and transplanted for fall harvests. They are slow to germinate and grow, so starting early is essential. Start seeds in deep trays or soil blocks 8–10 weeks before transplanting. Direct seeding is uncommon but possible in longer season zones.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant Out
3	Sept 8 – 15	Early May	Late June – Early July
4	Sept 21 – Oct 7	Mid May	Early – Mid July
5	Oct 13 – 21	Late May	Mid – Late July
6	Oct 17 – 31	Early June	Late July – Early August
7	Oct 29 – Nov 15	Mid June	Early – Mid August
8	Nov 7 – 28	Late June	Mid – Late August
9	Nov 25 – Dec 13	Early July	Late August – Early Sept
10	No Frost / Very Late	Mid July	Early – Mid September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼ inch deep.
Transplant – 4–6" apart in-row, 10–12" between rows (3 rows on a 30" bed).

For longer blanched stems, transplant into 6–8" deep furrows and gradually backfill as they grow.
Direct seeding is only recommended in long-season climates; space same as above and thin carefully.

Seeding in the Heat

Leek seeds may germinate slowly in hot conditions. Start indoors in a cool room or shaded greenhouse. Keep trays evenly moist and never let dry out.

Growing

Soil Preparation

Leeks thrive in deeply cultivated, fertile soil with ample organic matter. Prepare beds to 10–12" depth. Loosen soil well for easy blanching and root penetration.

Fertility Guidelines

- **Nitrogen:** 1.5–2 lb N / 1000 sq ft. Encourages leaf and stem growth. Side-dress midseason if needed.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. For healthy roots—use bone meal or soft phosphate.
- **Potassium:** 1–1.5 lb / 1000 sq ft. Strengthens stems and improves storage—use greensand or kelp.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents internal splitting and hollow centers.

Common Diseases and Pests

Thrips – Encourage beneficial insects and spray neem or insecticidal soap if needed.
Rust – Increase spacing and airflow; remove infected leaves.
Downy mildew – Minimize overhead watering and rotate crops.

Taking Leeks Through the Winter

Choose leek varieties that are cold hardy and can overwinter in the ground in zones 5 and warmer. Mulch heavily to protect roots and extend harvest. In colder zones, harvest before deep freeze and store in a root cellar.

Harvest

What to Look For

Harvest leeks when stems are at least 1 inch thick. Pull carefully or loosen with a digging fork. For baby leeks, harvest earlier when stems are pencil-thick. Trim roots and outer leaves before storing.

Radishes

Seeding or Transplanting?

Radishes are always direct seeded. Their fast-growing taproot resents disturbance, and transplanting almost always leads to forked roots, stunted bulbs, or premature bolting.

It helps to think of radishes in two groups. **Salad radishes** (round reds, French breakfast, Easter egg types) mature in just 25–35 days and are the quick, beginner-friendly crop that keeps a fall garden producing. **Winter radishes** (daikon, watermelon, Black Spanish, China Rose) take 50–70 days, size up much larger, store for months, and — like their cousins the turnips — turn sweeter and milder after cold weather. For a frost-friendly fall garden, the winter types are the real prize, while salad radishes are perfect for filling gaps and succession sowing.

Timing – Best Seeding Window by USDA Growing Zones

The window below is set for winter/storage radishes, which need the most lead time before frost. Fast salad radishes can be succession-sown later — see the note under "Seeding in the Heat."

Zone	Av 1st Frost	Begin Sowing	End Sowing
3	Sept 8 – 15	Late July	Early August
4	Sept 21 – Oct 7	Late July	Mid August
5	Oct 13 – 21	Early August	Mid August
6	Oct 17 – 31	Mid August	Late August
7	Oct 29 – Nov 15	Mid August	Early September
8	Nov 7 – 28	Late August	Mid September
9	Nov 25 – Dec 13	Early September	Late September
10	No Frost / Very Late	Late September	Mid October

Direct Seeding/Transplanting Spacing Recommendations

- Plant seeds ¼–½ inch deep.
- **Salad radishes** – Sow 1" apart in row, thin to 1–2" apart. 4–6" between rows (5–6 rows on a 30" bed).
- **Winter radishes** – Sow 1" apart in row, thin to 4–6" apart to allow the larger roots to size up. 10–12" between rows (3 rows on a 30" bed). Long daikon types benefit from the wider spacing and deep, loose soil.

Seeding in the Heat

Radishes germinate quickly even in warm soil — often in 3–7 days — but heat is hard on the roots themselves. Warm conditions make salad radishes pithy, overly pungent, and quick to bolt before a good bulb forms. Sow into the coolest soil you can, keep the seedbed evenly moist, and use shade cloth or a light burlap cover over late-summer sowings until the plants are established. Consistent moisture is the single biggest factor in tender, mild, crack-free roots.

For a steady supply, succession sow salad radishes every 7–10 days from late summer right up to about 3–4 weeks before your first frost — and even later under a low tunnel or row cover.

Growing

Soil Preparation

Radishes need loose, well-drained, stone-free soil for straight, unforked roots. Loosen the top 8–10" for salad types, and 12" or more for long daikon varieties. Work in a moderate amount of finished compost — avoid heavy, freshly manured, or high-nitrogen beds, which push leafy tops at the expense of the root.

Fertility Guidelines

- **Nitrogen:** ½–1 lb N / 1000 sq ft. Keep it low. Excess nitrogen produces lush foliage and small, hot, poorly formed roots.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Supports root development. Use bone meal or soft rock phosphate.
- **Potassium:** 1–1.5 lb / 1000 sq ft. Improves root quality, flavor, and storage life. Use kelp meal or greensand.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Helps prevent internal browning and hollow or pithy centers.

Common Diseases and Pests

- **Flea beetles** – The most common radish pest, chewing tiny shot-holes in the leaves. Use floating row cover from the day of sowing.
- **Root maggots** – Tunnel into the roots and ruin them. Rotate crops away from other brassicas and use floating row cover during early growth.
- **Downy mildew / white rust** – Improve airflow and avoid overhead watering.

- **Cracked, pithy, or hot roots** – Caused by inconsistent moisture or leaving roots in the ground past maturity. Harvest promptly and water evenly.

Taking Radishes Through the Winter

Salad radishes are too perishable to overwinter — succession sowing is the better strategy for a continuous fall supply. Winter radishes, however, are excellent keepers. In zones 6 and up, mature daikon, Black Spanish, and watermelon radishes can be held in the ground under a good layer of mulch or a row cover and dug as needed through winter. In colder zones, harvest before a hard freeze and store in a root cellar or the fridge, where they'll keep for several months. Their flavor mellows and sweetens with cold, and Black Spanish in particular is one of the best-storing roots you can grow.

Harvest

What to Look For

Salad radishes are best pulled young, usually 3–4 weeks after sowing, at about ¾–1" in diameter. Left too long, they turn woody, pithy, hot, and prone to splitting, so harvest promptly and often. Winter radishes are ready when firm and full-sized — roughly 3–4" across for round types, or 10–14" long and 2" thick for daikon. Pull carefully or loosen with a fork in firm soil. The young greens of any radish are edible and make a peppery addition to salads and sautés.

Scallions

Seeding or Transplanting?

Scallions (also called bunching onions or green onions) can be either direct seeded or transplanted. Transplanting allows for dense multi-seed clumps and is often preferred for fall crops. Start seeds 4–6 weeks before transplanting or seed directly in early to mid-summer.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing (indoors)	Transplant/Direct Sow
3	Sept 8 – 15	Late May	Early – Mid July
4	Sept 21 – Oct 7	Early June	Mid July
5	Oct 13 – 21	Mid June	Late July – Early August
6	Oct 17 – 31	Late June	Early – Mid August
7	Oct 29 – Nov 15	Early July	Mid – Late August
8	Nov 7 – 28	Mid July	Late August – Early Sept
9	Nov 25 – Dec 13	Late July	Early – Mid September
10	No Frost / Very Late	Early August	Mid – Late September

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼ inch deep.
Transplant – Sow 4–6 seeds per soil block or cell, transplant clusters 1.5–2" apart in-row, 8–

10” between rows (4–5 rows on a 30” bed).
Direct seed – Scatter thinly in bands ½–¾ inch wide, or space 1” apart and do not thin.

Seeding in the Heat

Germination can be inconsistent in high heat. Keep beds or trays well moistened and shaded until emergence. Use a light mulch or burlap to retain surface moisture.

Growing

Soil Preparation

Scallions prefer light, fertile soil with good drainage. Incorporate compost or worm castings and prepare beds to a depth of 6–8”.

Fertility Guidelines

- **Nitrogen:** 1–2 lb N / 1000 sq ft. Essential for vigorous green top growth.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Supports root development—use bone meal.
- **Potassium:** 1.5 lb / 1000 sq ft. Improves flavor, color, and pest resistance. Use kelp meal.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Supports tissue health and prevents deformities.

Common Diseases and Pests

Thrips – Control with neem or spinosad if damage appears.
Onion maggot – Use row cover in early stages.
Purple blotch – Avoid wet leaves; provide airflow and rotate crops.

Taking Scallions Through the Winter

Scallions can overwinter in zones 6 and up with mulch or row cover. In colder climates, late plantings may survive under a low tunnel. Regrowth resumes in spring. They can be harvested throughout winter in mild zones.

Harvest

What to Look For

Harvest anytime after plants reach pencil thickness. Pull entire clusters or individual scallions as needed. Use a knife to cut at soil level or loosen gently if soil is firm. Store cool and moist for best shelf life.

Spinach

Seeding or Transplanting?

Spinach is best direct seeded for fall crops. It does not transplant well and tends to bolt when stressed. Choose bolt-resistant varieties for warm climates. Sow seeds directly in prepared beds 6–8 weeks before your average first frost.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing	End Sowing
3	Sept 8 – 15	Late July	Early August
4	Sept 21 – Oct 7	Late July	Early – Mid August
5	Oct 13 – 21	Early August	Mid August
6	Oct 17 – 31	Mid August	Late August
7	Oct 29 – Nov 15	Late August	Early September
8	Nov 7 – 28	Early September	Mid September
9	Nov 25 – Dec 13	Mid September	Late September
10	No Frost / Very Late	Late September	Mid October

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ½ inch deep.
Direct seed – 1" apart in row, 10–12" between rows (3 rows on a 30" bed). Thin to 3–4" apart if growing to full size. For baby spinach, no thinning needed.

Seeding in the Heat

Spinach struggles to germinate in hot soil. Pre-soak seeds in cold water 12–24 hours and chill in fridge for 1–2 days. Water beds deeply before sowing and keep shaded with burlap or shade cloth until emergence.

Growing

Soil Preparation

Spinach prefers rich, moist, well-drained soil. Work compost into top 6–8" and ensure good tilth to support root development.

Fertility Guidelines

- **Nitrogen:** 1–1.5 lb N / 1000 sq ft. Supports leafy growth—apply more if harvesting multiple cuttings.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Promotes root anchoring and uptake.
- **Potassium:** 1–1.5 lb / 1000 sq ft. Boosts resilience and flavor—use kelp or greensand.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Helps prevent leaf deformities and tip burn.

Common Diseases and Pests

Downy mildew – Use resistant varieties and avoid wetting leaves.
Leaf miners – Protect young plants with row cover. Remove affected leaves quickly.
Bolting – Prevent by sowing in cooler weather and keeping soil evenly moist.

Taking Spinach Through the Winter

Spinach is one of the best overwintering crops. Sow in late summer to early fall and protect with low tunnels or row cover once frost arrives. In zones 6 and up, overwintered spinach resumes growth in spring and is extra sweet.

Harvest

What to Look For

Begin harvesting baby leaves at 3–4" tall. For full-size spinach, pick outer leaves as they mature or harvest entire plants when leaves are 6–8" tall. Avoid yellowing or overly mature leaves. Spinach becomes bitter when bolting begins.

Turnips

Seeding or Transplanting?

Turnips are almost always direct seeded. Transplanting is not recommended as it disrupts root formation. Sow seeds directly into beds 6–8 weeks before first frost for both roots and greens.

Timing – Best Seeding Window by USDA Growing Zones

Zone	Av 1st Frost	Begin Sowing	End Sowing
3	Sept 8 – 15	Late July	Early August
4	Sept 21 – Oct 7	Late July	Mid August
5	Oct 13 – 21	Early August	Late August
6	Oct 17 – 31	Mid August	Late August
7	Oct 29 – Nov 15	Late August	Early September
8	Nov 7 – 28	Early September	Mid September
9	Nov 25 – Dec 13	Mid September	Late September
10	No Frost / Very Late	Late September	Mid October

Direct Seeding/Transplanting Spacing Recommendations

Plant seeds ¼–½ inch deep.
Direct seed – 1" apart in row, 10–12" between rows (3 rows on a 30" bed). Thin to 3–4" apart for root development. For baby greens, sow thicker and cut early.

Seeding in the Heat

Keep seedbed consistently moist during germination. Use burlap or shade cloth to hold moisture in hot weather. Remove covers once sprouts appear.

Growing

Soil Preparation

Turnips grow best in loose, fertile soil with even moisture. Avoid heavy clay. Amend with compost and loosen top 8–10" to promote root expansion.

Fertility Guidelines

- **Nitrogen:** 1–2 lb N / 1000 sq ft. Moderate levels encourage both greens and root development.
- **Phosphorus:** 1–1.5 lb / 1000 sq ft. Supports early root formation.
- **Potassium:** 1.5–2 lb / 1000 sq ft. Enhances root density, flavor, and storage—use wood ash or kelp.
- **Boron:** ½ oz borax / 100 sq ft. or diluted kelp spray. Prevents internal browning and cracking.

Common Diseases and Pests

Flea beetles – Use row cover until plants are well established.
Root maggots – Rotate crops and use floating row covers during early stages.
Downy mildew – Minimize leaf wetness and increase airflow.

Taking Turnips Through the Winter

In zones 6 and up, mature turnips can overwinter in the ground under mulch or row cover. Harvest anytime the ground is not frozen. Greens may die back, but roots will store in soil until spring regrowth begins. Once regrowth begins, bulbs will become fibrous and inedible.

Harvest

What to Look For

Harvest roots at 2–3" diameter for best flavor and texture. Larger roots may become woody. Cut tops to 1" for storage. Young turnip greens can be harvested early and often before roots mature.

Conclusion

A well-timed fall garden is one of the most rewarding seasons a grower can enjoy. With the right planning, you'll be harvesting crisp greens, tender roots, and vibrant heads long after most summer crops have faded. By learning how to work with the rhythm of cooling temperatures and embracing the gift of frost, you're setting yourself up for rich, flavorful harvests when most gardens are shutting down.

Whether you're planting for fresh eating, long-term storage, or winter resilience, these cool-weather crops will serve you well. May your fall garden be abundant, sweetened by frost, and full of nourishment and joy.

