

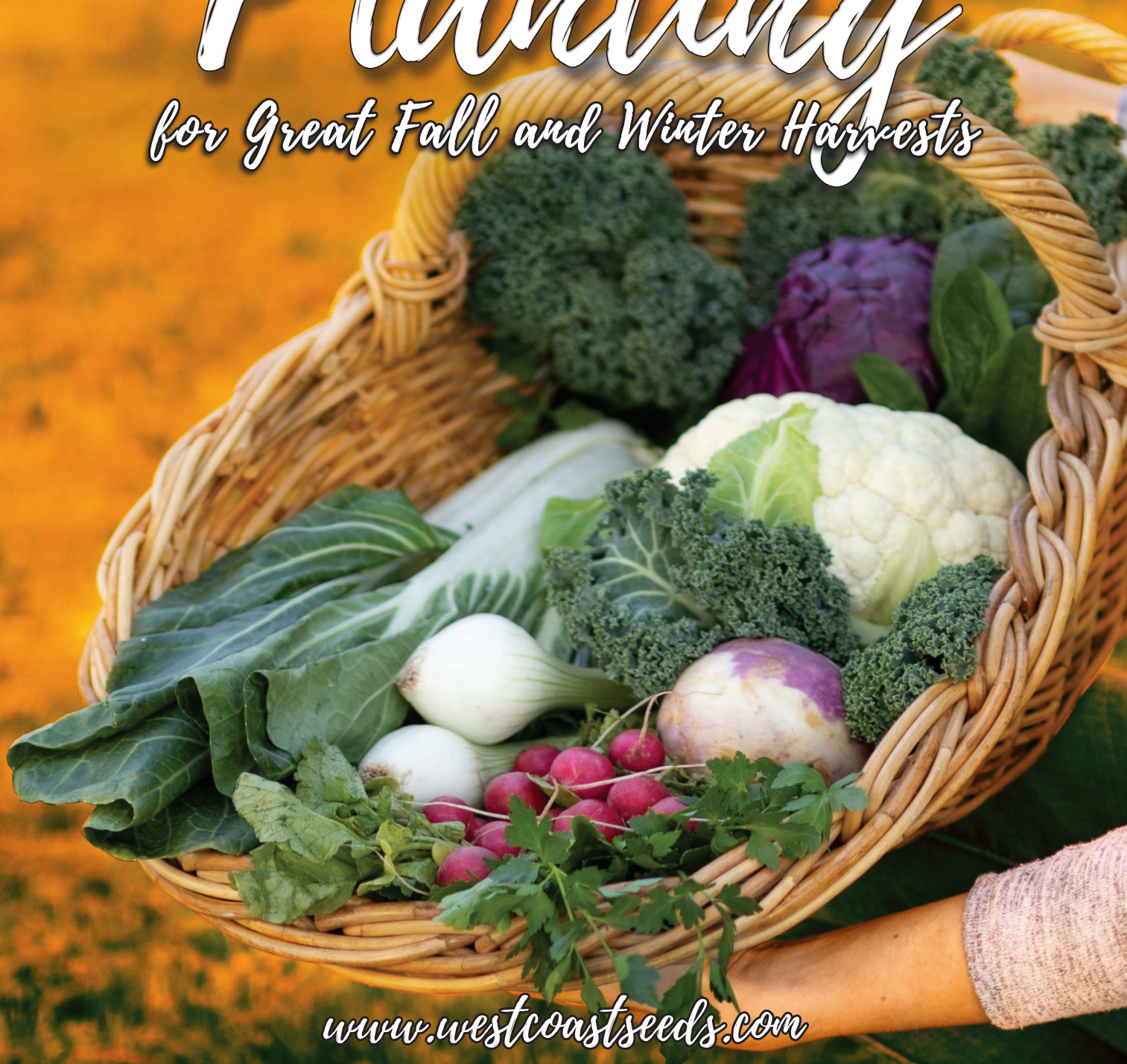


West Coast Seeds

Untreated Seeds for Organic Growing, non-gmo

Planting

for Great Fall and Winter Harvests



www.westcoastseeds.com

Dear Gardening Friends,

Just imagine — fresh carrots picked right from the garden at their pinnacle of sweetness, ready to serve at a Thanksgiving feast. Crisp lettuce and salad greens to accompany a fall dinner, picked right from the back yard. Gigantic sweet onions and perfectly formed cauliflower, ready to harvest as spring weather first appears.

With good timing and the right crop varieties, fresh organic garden vegetables and herbs can be harvested throughout the cooler months in the ultimate expression of eating local. This guide will provide the tools and tricks needed to keep the garden productive long after the summer crops have been enjoyed.

- Happy growing from all of us at West Coast Seeds



Grow food for fall & winter harvests

Summer Planting Fall Harvest

Summer	Fall	Winter	Spring
J	J	A	S
O	N	D	J
F	M	A	M

Plant in summer or fall and harvest in the fall and winter

This icon indicates good choices for fall and winter harvests.

Overwintering

Fall	Winter	Spring	Summer
A	S	O	N
D	J	F	M
A	M	J	J

Plant Over Winter and Harvest

This icon indicates varieties for Overwintering.

What is Winter Gardening?

With planning and choosing the right varieties, a host of vegetables can be harvested right through the fall and winter. These plants want to be full size before frost starts in November. Until mid-February these plants grow very slowly and will not re-grow after harvest as some do in the summer. Some winter vegetables will lie dormant in the ground, ready to be dug up for winter eating. Others will continue to grow if given some protection. Understanding the needs of each variety is key.

What is Overwintering?

Overwintering is different from winter gardening. These plants want to enter winter as “teenagers,” waiting for the lengthening days of spring to finish growing. Certain varieties of onions, garlic, cauliflower, and broccoli need this extra season to fully develop. Overwintered vegetables do not require protection from the elements. In early spring their growth rates speed up and they are ready to harvest around the time most spring crops are first going in.

Fall & Winter Harvest Planting Chart

COASTAL BRITISH COLUMBIA

For other regions see our website

Families	LEGEND		SPRING				SUMMER				FALL				WINTER			SPRING	
	Start Indoors	Direct-sow for fall and winter harvest	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	current year	next year			
Fall and Winter Harvest																			
Arugula																			
Beets																			
Broccoli			••••		***														
Brussels sprouts			•••		**											••			
Cabbage			••	**												••			
Carrots				—*															
Cauliflower				•••	*														
Chervil																			
Chicory																			
Cilantro																			
Corn salad																			
Kale & Collards																			
Kohlrabi																			
Leeks																			
Lettuce																			
Mescluns																			
Mustards																			
Pac Choi																			
Parsley																			
Parsnips																			
Peas																			
Radish																			
Rutabaga																			
Scallions																			
Sorrel																			
Spinach																			
Swiss chard																			
Turnips																			
Winter Harvest and next Spring/Summer Harvest																			
Broad Beans																			
Broccoli, sprouting																			
Cabbage, overwinter																			
Cauliflower, overwinter																			
Celeriac																			
Garlic																			
Onions, overwinter																			

First average frost date: November 2nd. Last average frost date: March 28th (Lower Mainland BC)

ANNUAL

A Plant that completes its whole life cycle in only one year, from germination to foliar growth to flowering and seed formation. Many vegetables are annuals, and will "bolt" or produce flowers and seeds in a short period, usually triggered by heat or length of daylight hours.

PERENNIAL

Perennials are plants that last for more than two years. Perennial plants overwinter by storing food either in their trunks or roots. Unlike annuals, they do not need to attempt to self-sow each summer. Some perennial plants may only last three years, or will benefit from being lifted and separated at that time by root division. An example includes Sorrel.

BIENNIAL

A Plant that matures in the second year of growth. The first season is spent growing leaves, and storing energy for the second season's flowering and seed production. Examples include parsley, parsnips and beets.

SYMBOLS LEGEND



Overwinter



Fall and Winter Harvest



All American Selection Winner



Heirloom



West Coast Seeds Classic (proven performer for over 20 years)

ARUGULA

Eruca sativa

Arugula always does best in cooler weather, and can tolerate cold temperatures, making it one of the best winter gardening crops. With frost protection, it will grow all winter long. Loved for the mild peppery flavour of its leaves, it's productive, fast, and easy to grow. Unlike summer plantings, winter arugula is slower to bolt, has milder flavour, and a more pleasing texture. Arugula makes delicious microgreens.

Growing Winter Arugula: Timing: Direct sow every 2 weeks starting 6-8 weeks before the first average frost date for the area. If September is warm, sow more seeds into early October. If using a cold frame, sow 3-4 weeks before first frost. Optimal soil temperature for germination: 4-12°C (40-50°F). **Starting:** Sow no more than 5mm (¼") deep in well drained soil in full sun. Thin to 10-15cm (4-6") apart. **Growing:** Ideal pH: 6.5-7.0. Keep moist until germinated, and then water only as needed, erring on the dry side in cold weather. If any flower stalks appear, cut

them as low as possible to encourage leafier growth. **Harvest:** Pick baby greens or mature leaves as needed. Flavour and texture are best at around 5-8cm (2-3") in size. **Protection:** Protect from hard frost. Use heavy row cover or set up a cloche over the row once temperatures approach freezing in the fall. Keep this in place on all but the warmest days in winter. If severe cold is forecast, try mulching plants with lightweight row cover beneath the cloche.



Wild Arugula MS500



Dragon's Tongue MS506



Astro MS504



Wasabi MS554

BEETS

Beta vulgaris

Beets are biennial plants, so they store up energy in their root during the first year, and stay more or less dormant over winter. The following year, they use that energy to produce flowers and seeds. This means that they can be sown later in summer and harvested all winter long, direct from the garden. Beet greens can also be grown indoors over winter for tasty and nutritious microgreens.

Growing Winter Beets: Timing: Direct sow a crop for fall harvest 8-10 weeks before the first average frost date. Sow another crop into a cold frame or beneath a cloche 6-8 weeks before first frost. Add mulch to insulate the roots as frost approaches. Optimal soil temperature for germination: 10-26°C (50-80°F). **Starting:** Sow 1cm (½") deep, 5-10cm (2-4") apart, in rows 30-45cm (12-18") apart. **Growing:** Ideal pH: 6.0-6.8. For uniformly sized beets, thin carefully to 7-15cm (3-6") apart when seedlings are 5cm (2") tall. Eat thinned plants, roots and all. Root size is controlled by spacing and variety. **Harvest:** Pick beets at any time and as needed. Beets can stay in the ground all fall



Beet Blend BT171



Winterkeeper Lutz BT162

and winter with frost protection. **Protection:** Keep the cold frame or cloche in place through the season until all the beets are harvested. If very cold weather is forecast, mulch the row with a 15cm (6") layer of straw covered by heavyweight row cover. Layering mulch like this will help to prevent the roots from freezing. Remove this added mulch once the cold spell is over.

BROAD BEANS

Vicia faba

Broad beans (or fava beans) are very cold hardy, and will continue to grow throughout the winter. Fall-sown broad beans mature in early spring the following year, and are ready to harvest before the arrival of the black aphids that are such a nuisance on spring-sown plants. They are bulky plants that produce a great deal of very brittle, easy-to-use organic matter for the spring compost. They even fix nitrogen in the soil as they grow, which enriches the soil for spring crops.



Windsor Broad Bean BN150

Overwintering Broad Beans: Timing: Direct sow in October. In mild winters broad beans can be sown into November, and then again from February to mid-spring. Optimal soil temperature for germination: 10-21°C (50-70°F). **Starting:** Use a garden inoculant to provide a source of nitrogen. Sow seed 5cm (2") deep, 15cm (6") apart in double rows 23cm (9") apart. Each set of double rows should be 1m (3') apart. **Growing:** Ideal pH: 6.0-6.5. Enrich the soil with compost prior to planting. Keep overwintered plants weeded. **Harvest:** Pick when the pods begin to droop from the weight of the seeds. Shell (like peas) and cook or use in soup. For dried beans, wait until the pods start to shrivel. **Protection:** Plants are tall and tough, but too brittle to handle heavy snow and high wind. Stake broad beans in exposed gardens, and grow under a tunnel or other shelter in areas where ample snowfall is the norm.

BROCCOLI

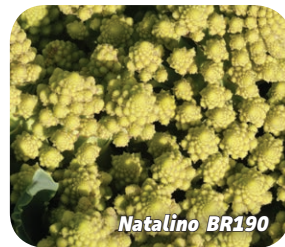
Brassica oleracea var. italica

Regular broccoli does not overwinter well, but it can be timed for fall harvests, and will continue to produce side shoots into cold weather. Keep an eye on the days to maturity, and select varieties that are fast growing. Leftover broccoli seeds make good sprouts and microgreens that are particularly nutritious.

Growing Fall Broccoli: Timing: Start seeds indoors under bright lights 15-17 weeks before first average frost date. That's around the last week of June to the first week of July. Transplant seedlings to the garden 10-12 weeks before first frost. Optimal soil temperature for germination: 10-30°C (50-85°F). **Starting:** Sow 3 or 4 seeds per pot, 5mm (¼") deep, under very bright light. Thin to the strongest plant. Space transplants 45-60cm (18-24") apart in rows 75-90cm (30-36") apart. **Growing:** Ideal



Everest BR182



Natalino BR190



Waltham 29 BR211

pH: 6.0-6.8. Broccoli is a moderate to heavy feeder that does best in humus-rich soil amended with composted manure. Mix ¼-½ cup complete organic fertilizer into soil under each plant. Transplants should be set out by the time they have 6-8 true leaves. When plants are 20-25cm (8-10") tall, push soil around stems up to the bottom of the first big leaf to encourage side shoots. To avoid diseases, plant in soil that has not had a Brassica crop grown in it for at least 4 years.

Harvest: Cut central head when buds begin to fatten and before yellow flowers appear. Side shoots will develop at leaf joints. Keep these picked, and the plant will keep producing. These side shoots can be harvested right into the fall. **Protection:** Use lightweight row cover to protect plants from cabbage moths. Put a cloche tunnel in place over the bed before the first heavy frost, and leave it in place. Open the ends on warm days, but close them by late afternoon to keep the heat.



SPROUTING BROCCOLI

Brassica oleracea var. italica



Sprouting broccoli is suitable for overwintering in mild winter areas to provide an early spring harvest. Unlike main season broccoli, it doesn't make a large central head. Instead, harvest the profusion of small, nickel-sized broccoli on long shoots. Leftover seeds are good for indoor sprouting and microgreens.

Overwintering Broccoli: Timing: Start seeds indoors under bright lights before the end of June. Transplant seedlings to the garden 10-12 weeks before first frost. Or direct sow in early July. Optimal soil temperature for germination: 10-30°C (50-85°F). **Starting:** Sow 3 or 4 seeds per pot, 5mm (¼") deep, under very bright light. Thin to the strongest plant. Space transplants 45-60cm (18-24") apart in rows 75-90cm (30-36") apart. **Growing:** Ideal pH: 6.0-6.8. Broccoli is a moderate to heavy feeder that does best in humus-rich soil amended with composted manure. Mix ¼-½ cup complete organic fertilizer into soil under each plant. Transplants should be set out by the time they have 6-8 true leaves. When plants are 20-25cm (8-10") tall, push soil around stems up to the bottom of the first big leaf to encourage side shoots. To avoid diseases, plant in soil that has not had a Brassica crop grown in it for at least 4 years. **Harvest:** Sprouting broccoli are considered extra early (ready in February), early (March), and late (April through June). The trick is to stay on top of the harvest: Pick as the stems come without letting the plant actually flower and go to seed. **Protection:** Transplant outdoors under lightweight row cover to protect from mid-summer Small White butterflies. When these can no longer be spotted, in early September, remove the cover. Sprouting broccoli is hardy to below -12°C (10°F). If colder temperatures are forecast, mulch heavily, and wrap the crop with heavy row cover.



Santee BR202



Red Spear BR205

BRUSSELS SPROUTS



Brussels sprouts are harvested in the fall and winter, after frosts

Brassica oleracea var. gemmifera have improved their flavour and texture. Achieving the perfect sprouts at the right time of year is all about timing. Aside from that, they are very easy plants to grow, and incredibly productive. Brussels sprout seeds can also be used to grow nutritious microgreens.

Growing Brussels sprouts: Timing: Start indoors at the end of May or early June. Transplant to the garden by mid-August so the plants are in the ground for 9-10 weeks before the first hard frost. Optimal soil temperature for germination: 10-30°C (50-85°F). **Starting:** Sow 3-4 seeds in each pot, 5mm (¼") deep, under very bright light. Thin to the strongest plant. Space transplants 45-60cm (18-24") apart in rows 75-90cm (30-36") apart. **Growing:** Ideal pH: 6.0-7.5. Plant in humus-rich soil amended with composted manure. Mix ¼ cup complete organic fertilizer under each transplant. High nitrogen levels result in loose sprouts with internal browning, so do not fertilize after midsummer. Cool temperatures during sprout development are important for compact, quality sprouts. To avoid diseases, plant in soil that has not had a Brassica crop grown in it for at least 4 years. **Harvest:** Pick when sprouts are firm and well-formed, beginning with the ones at the bottom. The upper sprouts continue to form and enlarge as the bottom ones are harvested. For a once-over harvest, pinch out the growing point at the top of the stem when the lower sprouts are 1-2cm (½-¾") in diameter. A full stem of mature sprouts will



Gustus BS212



Red Ball BS210



Nautic BS211



Igor BS219

develop in about 2 weeks. In early spring, the plant sends up long, edible flower stalks that are tender when steamed or served with a dip. **Protection:** Use lightweight row cover to protect young plants from Small White butterflies. This can be removed once the butterflies are gone in September. Frost protection is not usually necessary.

CABBAGE



Brassica oleracea var. capitata

Choose cabbage varieties to mature in fall, or during winter, or to overwinter into the following spring. With some planning, cabbage can be grown to harvest at nearly any time of year. Some cabbages are hardy down to Zone 3, and many have improved flavour in cold weather. Cabbage seeds produce good microgreens and sprouts.

Fall & Winter Cabbage: Timing: Sow fall varieties indoors mid-May to early June & transplant in July. Sow overwintering varieties indoors in July & transplant in August. Optimal soil temperature for germination: 10-30°C (50-85°F). **Starting:** Sow 3 or 4 seeds in each pot, 5mm (¼") deep, under bright lights. Thin to the strongest plant. Space transplants 45-60cm (18-24") apart in rows 60-90cm (24-36") apart. **Growing:** Ideal pH: 6.5-7.0. Cabbage does best in humus-rich soil amended with composted manure. Mix ½ cup complete organic fertilizer into soil under each plant. If growth slows, side-dress with a little more



Deadon CB245



Lennox CB244



Kalibos CB226



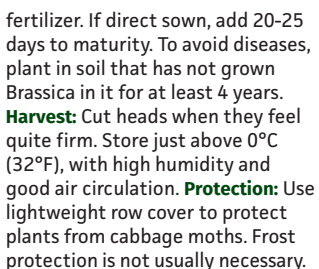
Capriccio CB224



Taiwan Cabbage CB243



Consul CB225



Early Jersey Wakefield CB236



Danish Ballhead CB242

fertilizer. If direct sown, add 20-25 days to maturity. To avoid diseases, plant in soil that has not grown Brassica in it for at least 4 years. **Harvest:** Cut heads when they feel quite firm. Store just above 0°C (32°F), with high humidity and good air circulation. **Protection:** Use lightweight row cover to protect plants from cabbage moths. Frost protection is not usually necessary.

CARROTS



Daucus carota ssp. sativus

Many carrot varieties keep best by leaving them in the ground in the fall, and under a mulch in winter. They tend to become sweeter after frost as they convert starches to sugars during their dormancy. Sow them in late summer and enjoy them all winter long.

Growing Winter Carrots: Timing: Direct sow to mid-July for harvests in the fall. Direct sow winter-harvest carrots in the first two weeks of August. Optimal soil temperature for germination: 7-30°C (45-85°F). **Starting:** Water deeply prior to planting. Keep the top-most layer of soil damp during the long germination period. Sow the tiny seeds 5mm (¼") deep, 4 seeds per 2cm (1") and firm soil lightly after seeding. Make sure the seeds are only just buried. **Growing:** Ideal pH: 6.0-6.8. The softer and more humus-based the soil, the better. Work to a fine texture, 15-20cm (6-8") deep. Raised beds work well. Broadcast and dig in ½ cup complete organic fertilizer per 3m (10') of row. Avoid fresh manure. Carrots will become misshapen, but still edible, if they hit anything hard. Keep weeded and watered. In order to keep the surface of the soil moist during germination, try laying a length of lumber down, over the planted row. Check daily, and remove as soon as seedlings appear. Another method is to sprinkle a thin layer of starter mix over the planted seeds to maintain higher moisture levels. Thin carrots to 4-10cm (1½-4") when plants are 2cm (1") tall. Use wider spacing to get larger roots. As they grow, carrots push out of the ground, so hill soil up over exposed roots to prevent a green shoulder. Carrots are subject to various blights, but most problems will be prevented by practicing a 3-4 year rotation. Carrot Rust Fly and Wireworms are also common problems. **Harvest:** Pick fall and winter carrots as needed, right from the bed. **Protection:** Once cold weather arrives in November, and the tops die back, mulch with a 30cm (12") layer of straw. Hold the straw in place with row cover, burlap, or an old sheet fastened to the ground. It's helpful to mark the ends of the rows with a stick or pole of some kind.



Napoli CR277



Yellowstone CR299



Deep Purple CR316



Canada CR312

CAULIFLOWER



Brassica oleracea var. botrytis

Sow fall harvest cauliflower seeds in the summer and protect from Small White butterflies with light-weight floating row cover. The crisp, fresh tasting heads should have just enough time to mature before the onset of cold weather. If frost threatens, cover the plants with heavyweight row cover at night.

Growing Fall Cauliflower: Timing: Sow fall-harvest cauliflower indoors 10-12 weeks before the first average frost date. Transplant outdoors in the first week of September. When cold weather is due, erect a cloche over the bed. Sow overwintering types indoors around mid-July under bright lights. Transplant mid-August. Optimal temperature for germination: 10-30°C (50-85°F). **Starting:** Sow 3-4 seeds 5mm (¼") deep in each spot a plant is wanted to grow. Thin to the strongest plant. Space transplants 45-60cm (18-24") apart in rows 60-90cm (24-36") apart. **Growing:** Ideal pH: 6.0-6.8. Humus-rich soil amended with composted manure. Mix ½ cup complete organic fertilizer under each transplant. From seedling to harvest, cauliflower must grow steadily to make a large plant and curd. If growth slows, scratch additional fertilizer into the surface of the soil around each plant. Shade the developing curds from sun by tying up leaves or using newspaper. This is known as "blanching," and will keep them whiter. **Harvest:** Once curd forms, check every day and cut when the florets are just beginning to separate. At this point the flavour is at peak quality and at maximum size. **Protection:** Erect a cloche over the fall-harvest cauliflower bed at least one week before the first average frost date.



Skywalker CF346



Mardi CF347

CELERIAC



Apium graveolens

Celeriac (and celery) are cold hardy plants that can stay in the garden throughout the winter months. Because they grow slowly, they need ample time to mature before the arrival of cold weather. We love harvesting big celeriac roots in winter for soups.



Celeriac CL345

Growing Winter Celeriac: Timing: Start indoors as late as April, and transplant in late June or early July. Celeriac takes a long time to germinate and grows very slowly. **Starting:** Sow seeds 5mm (¼") deep, 3 to a pot over bottom heat. Thin to the strongest plant. Optimal temperature for germination: 15-24°C (60-75°F). **Growing:** Ideal pH: 6.0-6.5. Celeriac is a heavy feeder and needs rich, moist soil. Add compost to soil and apply ¼-½ cup complete organic fertilizer per 1.5m (5') of row. Transplant when 10-12cm (4-5") tall. Space transplants 30cm (12") apart in rows at least 45cm (18") apart. Water frequently. Good disease prevention measures include crop rotation and aphid control. The larvae of the carrot rust fly are an occasional pest—they burrow into the heart and stunt or kill the plant. **Harvest:** Pick as needed over the course of the winter. Celeriac will flower and go to seed in the spring. **Protection:** Mature plants are very cold hardy, but if severe cold is forecast, a mulch of straw or heavy row cover will prevent frost damage.

CHERVIL



Anthriscus cerefolium

Chervil will thrive all winter long with the protection of a cold frame or cloche cover. Tear some leaves over salads or soups for a wonderful depth of mild licorice flavour.

Winter Chervil: Timing: Direct sow in late August and September for a winter crop. Chervil grows best in cool weather, don't erect a cloche until nights are frosty. Ventilate cold frames on warmer days. **Starting:** Sow seeds 5mm-1cm (¼-½") deep, and space plants 23-30cm (9-12") apart. **Growing:** Avoid transplanting chervil. **Harvest:** Use as a cut and come again plant, taking leaves as needed throughout winter. **Protection:** Chervil is a perfect candidate for cold frame growing. It will also grow continuously all winter beneath the shelter of a cloche cover.



Chervil HR1061

CHICORY *Cichorium sp.*



Radicchio and endive grow from a thick tap root, and are very winter hardy. With the help of a cloche cover, they can be grown all winter long. Many varieties, when cut from the stem at the soil level, will grow back within a few weeks. Enjoy endive lightly cooked or raw. It's the only green that can take a hot salad dressing. Radicchio is delicious when grilled. Both are great for microgreens.

Winter Endive & Radicchio: Timing: Direct sow from early July into September for a fall crop, and even later under cloche protection. Optimal soil temperature for germination: 10-22°C (50-72°F). **Starting:** Sow seeds 5mm (¼") deep, and thin or transplant to allow 30-45cm (12-18") between plants with rows 30-45cm (12-18") apart. **Growing:** Ideal pH: 6.0-6.5. Enrich soil with compost and add ½ cup complete organic fertilizer beneath each transplant. Rapid, continuous growth is essential for good yields and high quality. Radicchio heads can be blanched to reduce bitterness by placing a cardboard or plastic disc on top. **Harvest:** Use as a cut and come again crop or let the heads form and cut at ground level. Many will grow back. **Protection:** No protection is needed until frost. After that, a simple cloche tunnel over the row will keep plants growing all winter.



Palla Rossa Special MS491



Rossa di Verona MS509



Italian Dandelion MS498



Zidane (Frisee) MS511

CILANTRO *Coriandrum sativum*



Cilantro grows quickly and does not require warm weather to thrive. In fact, like many cool season greens, it is very slow to bolt in cold weather, making it easier to manage in winter than summer. Cilantro seeds produce tasty microgreens.

Fall & Winter Cilantro: Timing: Direct sow every three weeks in summer to the end of August. Direct sow in September under cloche protection for winter harvests. Optimal soil temperature for germination: 15°C (60°F). **Starting:** Sow seeds 2cm (1") deep in short rows. Thin seedlings to stand 5-10cm (2-4") apart. **Growing:** Ideal pH: 6.0-6.5. Cilantro is not fussy and will grow well in any fertile soil with good drainage. The main challenge with cilantro has to do with bolting in summer heat. This is not a concern in fall/winter crops, so they are even easier. **Harvest:** Harvest leaves and stems as needed or allow to grow to full size and harvest whole plants, roots and all. **Protection:** With cloche protection, cilantro will overwinter down to Zone 7.



Cilantro Santo HR1073

CORN SALAD *Valerianella locusta*



Vit MS478



Granon MS477

Still unfamiliar to many North American gardeners, this cold hardy salad green is variably known by such European names as mâche, lamb's lettuce, bird lettuce, field salad, fetticus, vit, and Rapunzel. The leaves are crisp and mild, with a higher vitamin content than lettuce. Corn salad belongs in every winter garden.

Winter Corn Salad: Timing: Direct sow numerous short rows from August to the end of September. Corn salad grows slowly, but will be ready to harvest in 50 days from sowing. Germination is best in cool, damp soil. **Starting:** Sow thinly 1cm (½") deep in rows 30cm (12") apart. Thin to 5cm (2") or broadcast seeds about 2cm (1") apart. **Growing:** Corn salad will grow nearly anywhere in reasonably fertile soil or in containers. **Harvest:** Flavour and texture is at its peak from February to March. Cut whole rosettes at the ground level, or pick individual leaves as needed. **Protection:** In mild winters no protection is required however, in colder areas a cloche cover or even heavy row cover will help protect plants.

SEED GARLIC

Allium sp.



Garlic is an undemanding, easy crop to grow. Simply plant it in the fall, and don't think about it until the following summer. After harvest, it can keep for months. Home-grown garlic has much more flavour, hotness, and overall character.



Red Russian HR1163



Music HR1162



Yugoslavian HR1165

Overwintering Garlic: Timing: Plant garlic from September to October, before the first hard frost. **Starting:** Separate the cloves and set each one, pointed end up, 10-15cm (4-6") apart and with the tip of the clove 2-5cm (1-2") deep. Don't skin the cloves. Use deeper planting if rain or frost may expose the cloves, and shallower planting if using mulch or planting into heavy soil. The largest cloves will make the largest bulbs. **Growing:** Ideal pH: 6.2-6.8. Rich, well drained soil. Dig well, add compost (lots of it if the soil is heavy) and do not compact it by stepping on it. Fertilize when spring growth starts. Water as needed and keep weeded. Cut flower stalks

(scapes) to keep energy in the bulb. If individual cloves haven't formed, either eat the clove or replant and it will bulb next year. Fall planted garlic is harvested in July. Many growers have been hit with White Rot that causes black spots and decay on the bulbs. It is easily spread in infected soil and water, and is very persistent in the soil. Flooding the bed for 4 weeks in the spring may kill it. Best way to avoid it is not to leave decaying alliums in the ground and by using a strict 4-year rotation. **Harvest:** When the bottom 2/3 of the plants are dry, pull and air-dry like onions in a warm spot with good air movement. **Protection:** None needed.

KALE & COLLARDS



Brassica oleracea var. acephala

Kale and collards are the hardiest of the winter vegetables, and can survive down to -10°C (14°F), even without protection. With some insulation, they'll grow all winter long in Zone 6. As with many winter vegetables, the trick is in the timing, because the plants want to be mature before frost arrives. Both kale and collards are exceptionally nutritious. Leftover seeds make excellent sprouts and microgreens.



Champion Collards CO350



Top Bunch Collards CO351

Winter Kale & Collards: Timing: Direct Sow or start indoors 12-14 weeks before the first average frost date. Transplant outside 4 weeks later. Optimal soil temperature for germination: 10-30°C (50-85°F). **Starting:** Sow 3 or 4 seeds in each spot, 5mm (¼") deep, under bright lights. Thin to the strongest plant. Space transplants 45-60cm (18-24") apart in rows 60-90cm (24-36") apart. **Growing:** Ideal pH: 6.0-6.8. Add lime to the bed 3 weeks prior to transplanting. Kale and collards can both be grown as a cut and come again crop for salad mixes by direct-seeding and cutting when plants are 5-8cm (2-3") tall. They will re-grow. To avoid diseases, plant in soil that has not had a Brassica crop grown in it for at least 4 years. **Harvest:** Pick leaves from the bottom up, as needed. In spring, the surviving plants start to flower, so eat the delicious flowering stems and buds and the seed pods that follow. **Protection:** Use lightweight row cover to protect plants from Small White butterflies. Where winters are cold, hay bales can be used to line either side of the row, with rigid plastic or windows placed on top. This will keep kale growing down to -23°C (-10°F).



Red Ursa KL431



Vates Blue Curled Scotch KL429



Winter Red KL432



Winter Kale Blend KL420



Dwarf Green Curled KL423



Winterbor KL422



Starbor KL441



Scarlet KL444



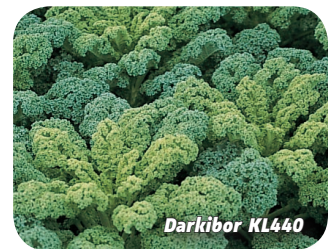
Beira Tronchuda KL435



Redbor KL424



Rainbow Lacinafo KL428



Darkibor KL440

KOHLRABI



Brassica oleracea var. gongylodes

Looking at them, one wouldn't suppose that kohlrabi shares a common ancestor with broccoli and Brussels sprouts, but they were all bred from the wild European cabbage hundreds of years ago. Kohlrabi is another cold-hardy Brassica with mild flavour and crisp texture. They are extremely nutritious, too. Kohlrabi seeds make interesting and tasty microgreens and sprouts.



Purple Vienna KH435



Kolibri KH434

Fall & Winter Kohlrabi: Timing: Direct sow mid-July to early August for fall and winter crops. Optimal soil temperature: 10-30°C (50-85°F). **Starting:** Sow seeds 5mm (¼") deep with plants spaced 10-15cm (4-6") apart in rows 30-45cm (12-18") apart. **Growing:** Ideal pH: 6.0-6.8. Kohlrabi is a moderate to heavy feeder that does best in humus-rich soil amended with composted manure. Mix ¼-½ cup complete organic fertilizer into soil under each plant. To avoid diseases, plant in soil that has not had a Brassica crop grown in it for at least 4 years. **Harvest:** Spring-sown kohlrabi will get larger than tennis balls in fair soil, but if they are picked when they are still less than 5-8cm (2-3") in diameter, they will be sweet and tender. Fall grown kohlrabi can grow larger yet stay tender. Kohlrabi is frost hardy and may last well beyond Christmas in the garden, even without protection. **Protection:** Generally, no protection is needed. Plants can be mulched with straw if extreme cold is forecast.



Superschmeltz KH432



LEEKs *Allium ampeloprasum var. porrum*

Leeks are slow to mature, but they're quite easy to grow. Harvesting fresh leeks from the garden in late fall and winter for hearty soups is a genuine pleasure.

Fall & Winter Leeks: Timing: Start fall harvest leeks in February/March in flats indoors. Start winter harvest leeks around the same time or into April in a humus-rich nursery bed outside and then transplant. Optimal soil temperature: 10-25°C (50-75°F). **Starting:** In flats: sow seeds 5mm (¼") deep, about 1cm (½") apart. Transplant when 20cm (8") tall. Space 15-20cm (6-8") apart, in rows 45cm (18") apart. **Growing:** Ideal pH: 5.5-6.5. Leeks like fertile soil with lots of compost and ¼-½ cup complete organic fertilizer worked in beneath each 2m (6') of row. Use a dibber to make holes 15cm (6") deep. Set transplants at the bottom of the hole and cover with soil up to the first leaf notch. Leave the rest of the hole unfilled—rain will fill it in as the leek grows. To blanch further, hill the soil up around the stem as the leek grows, or mulch with straw. **Harvest:** Dig any time the leeks are



Bandit LK441



Tadorna LK445

2cm (1") in diameter or larger. **Seed info:** If severe cold is forecast below -10°C (14°F), cover the bed with a tarp, or line the row with straw bales topped with rigid plastic or windows.

LETTUCE *Lactuca sativa*

Lactuca sativa

Lettuce can be a challenge in hot weather, but in cool weather it grows steadily and slowly. With cloche protection, many varieties grow long into winter.



Rouge d'Hiver LT478



Winter Density LT461

Fall & Winter Lettuce: Timing: Lettuce grows best in cool weather in the spring and fall. Sow in April every 2-3 weeks for a longer, staggered harvest. Using a cloche or cold frame over mid-late August plantings can extend harvests into

winter. Optimal soil temperature for germination: 10-22°C (50-72°F). Seeds don't sprout easily when the soil temperature is over 22°C (72°F) in summer. Get around this by sprouting them indoors in a cool area. In hot weather, lettuce goes to seed quickly, so keep an eye on them and have new transplants ready to go. **Starting:** Direct sow or start indoors and transplant. Sow seeds 5mm-1cm (¼-½") deep. Space or thin heading lettuce to 30cm (12") apart. Space or thin loose-leaf types to 20-25cm (8-10") apart. **Growing:** Ideal pH: 6.0-6.5. Aim for a soil with ample drainage and lots of organic matter. Add compost and lime 3 weeks before planting. One cup of complete organic fertilizer per 3m (10') of row will give adequate nutrition. Seedlings should be hardened off by reducing water and putting the plants outdoors 2-3 days before transplanting. Regular watering is essential to prevent leaves from getting bitter. Most varieties will be ready for harvesting baby leaves in half the days shown on the packet. Crop rotation is good for disease prevention. Tipburn (tips of leaves turn brown) is caused by a calcium deficiency, but if lime and fertilizer have been added, tipburn is likely due to lack of moisture. **Harvest:** Pick individual leaves from the outside of the plant or wait and harvest full heads. Summer lettuce stays in prime eating condition only a short time, so harvest promptly and keep planting. In fall and winter the plants stay in good condition longer. **Protection:** A cloche will keep frost off the leaves and prevent the soil from getting waterlogged. If severe cold is forecast, mulch lettuces beneath the cloche with heavy row cover.

MESCLUN BLENDS

Mesclun mixes are composed of leafy greens like lettuce, kale, chard, scallions, mustards, and pac choi. They are harvested as baby greens, cut with scissors and encouraged to grow back. Depending on the combination of ingredients, mesclun mixes can be mild, tangy, sharp, or spicy. Because they are harvested while immature, they are an excellent candidate for container growing. Most mesclun mixes will thrive in winter beneath a cloche cover, and all can be grown indoors under lights to produce microgreens or baby salad greens.

Fall & Winter Mescluns: Timing: Seed every 3 weeks from March to September for continuous harvest. Mescluns can also be grown on a balcony in sun or part shade, in any container that is at least 10cm (4") deep and has holes for drainage. **Starting:** Plant in a block or a wide row. Sprinkle seeds evenly over prepared moist soil. Try to space seeds about 1cm (½") apart, cover lightly with soil and firm them in. Four grams of seed will plant a

12m (40') row, 7cm (3") wide. The most common mistake with mescluns is to over-plant the seeds. Err on the side of caution for best results. **Growing:** Moderately fertile soil. Dig in 1 cup complete organic fertilizer for 3m (10') of row. For containers, use peat or coir-based mixed with compost. Water regularly. If growth slows after harvest, use a bit of kelp or fish fertilizer to provide nutrition for the next growth spurt. If growing indoors,

provide very bright, full spectrum light. Keep fluorescent tubes no more than 10cm (4") from the plants. **Harvest:** Begin cutting 3 weeks after planting. Most mixes can be cut 2-3 times. If properly fertilized, they will keep growing back. **Protection:** If growing outdoors, erect a cloche over the bed by mid-October. If severe cold is forecast, mulch plants beneath the cloche with heavy row cover.



West Coast Market Mix MS489



Tangy Mesclun MS488



Stir-fry Blend MU521



Saladini Blend MS479



Global Gourmet Blend LT452



Mustard Blend MU520



Wonder Wok MU510



Winter Blend MS497



City Garden Blend LT450



Alfresco Blend LT465

MUSTARD *Brassica sp.*

The mustard family includes a wide range of cold-hardy, edible greens that are suitable for salads or for light cooking, as in stir-fries. Many of these nutrient rich plants will grow perfectly well through the winter months if protected with a cloche or heavy row cover. In fact, we have seen mizuna flower and go to seed in January! Mustards come in a range of flavours from mild and delicate to horseradish-hot, so there is one for every taste.

Fall & Winter Mustards: Timing:

Mustards are cool season plants that grow quickly and then flower and go to seed. Sowing short rows every 3 weeks allows for a continuous harvest of baby leaves or full sized plants. Sow in August for late fall and winter crops. Optimal soil temperature for germination: 21°C (70°). **Starting:** If growing to full size, sow 3-4 seeds in each spot a plant is wanted to grow. Sow 5mm-1cm (¼-½") deep and thin to the strongest plant, spaced 10-15cm (4-6") in the row. **Growing:** Ideal pH: 6.0-6.5. One cup of complete organic fertilizer per 3m (10') of row will provide nutrients. Water regularly. Mustards are good candidates for container growing as well as growing indoors under



Giant Red MU544



Komatsuna Green MU540



Red Kyona Mizuna MU563



Mizuna MU543



Komatsuna Red MU547



Ruby Mizuna MU517

lights for microgreens or baby salad greens. If growing indoors, provide bright light. **Harvest:** Cut with a harvest knife or scissors as one would mescluns for baby greens, or as full size heads. **Protection:** Provide protection in winter by using a cloche or heavy row cover. It's wise to erect a cloche by mid-October at the latest.

ONIONS *Allium cepa*



Walla Walla ON585

Walla Walla onions get BIG, but they need a lot of time to grow to that size. They are ideal for planting in late summer and overwintering in the ground. The following summer enjoy huge, sweet onions!

Overwintering Onions: Timing: Overwintering onions need to be transplanted by the middle of August and will be ready to harvest the following June. Sow seeds indoors in trays in

late June/early July. Optimal soil temperature for germination: 21-25°C (70-75°F). **Starting:** Sow 3 seeds 5mm-1cm (¼-½") deep in each cell of a 72-cell tray. Transplant as a clump, spacing each 12-15cm (5-6") apart in rows 45-75cm (18-30") apart. **Growing:** Ideal pH: 5.5-6.5. Fertile, well-drained soil in full sun. Add well-rotted compost and band ½-1 cup complete organic fertilizer below each 3m (10') of row. Keep high moisture level in the top 20-30cm (8-12") of soil. Most of the bulb should form on the surface of the soil, don't transplant too deeply. Bulb size is dependent on the size of the tops: the bigger the tops, the bigger the bulb. Botrytis blast and downy mildew are common leaf diseases. One starts with white spots and streaks, the other with purple-grey areas on the leaves. Leaves wither from the top down and plants die prematurely. Separate the overwintered and spring crops, because disease starts in older plants and moves to younger. Avoid overhead watering and plant in open, sunny locations. Practice strict sanitation and crop rotation procedures. Spraying

with copper hydroxide every 7-14 days at the first sign of a problem may help keep the disease from spreading. **Harvest:** After half the tops have fallen, push over the remainder, wait a week, and lift the bulbs. Curing is essential for long storage: Spread bulbs out in a dry place for about a week, covering them at night to protect them from dew. When the outer layer of the onion changes from moist to dry and crisp, it is cured. If weather is poor, cure inside. **Protection:** Walla Walla onions are hardy to -23°C (-10°F), so it's extremely unlikely that protection is called for in coastal gardens. Inland, if these temperatures are forecast, line the rows with bales of straw, and securely fix tarps over the top for the duration of the cold spell.

Be sure to choose onions specifically recommended for overwintering, like Walla Walla. Other varieties will not be able to handle the cold as well. Likewise, overwintering onions may not produce a bulb if planted in the spring. Accurate timing is essential for the big pungent bulbs to fully develop. For scallions, see page 12.

PAC CHOI *Brassica rapa chinensis*



Pac choi (or bok choy) is very easy to grow and it thrives in cold weather.

From the end of summer to late spring, pac choi can be harvested right from the garden for fresh eating. Start some more seedlings indoors in January for transplanting out under cover in February. It grows slower in winter, but will produce succulent and nutritious full size rosettes. Try growing some Choi Sum following the exact same growing instructions. Both types of seeds make nice microgreens.

Fall & Winter Pac Choi: Timing: All are cool season plants that grow quickly and then flower and go to seed. Direct sow in August and September for fall and winter harvests. Planting short rows every two weeks works best for the home garden for steady harvest. **Starting:** Sow 3-4 seeds 5mm-1cm (¼-½") deep in each spot a plant is wanted to grow. Thin to the strongest plant at a spacing of 15-20cm (6-8") between each plant in rows 30-45cm (12-18") apart. **Growing:** Ideal pH: 6.0-6.8. One cup of complete organic fertilizer per 3m (10') of row will provide nutrients. Water regularly. **Harvest:** Cut with harvest

knife as one would mescluns for baby greens, or as full size heads. **Protection:** Provide protection in winter by using a cloche or heavy row cover. Use light row cover against Small White butterflies in August plantings. Keep growing area tidy to prevent slug damage.



Tah Tsai MU533



Mei Qing Choi MU553



White Stemmed MU526



Toy Choi MU522



Ching Chiang MU528

PARSLEY *Petroselinum crispum*

Parsley is another crop that grows particularly trouble-free in cold weather. It is packed with vitamins C and K, and is an excellent source of iron and folate. Given some protection from harsh winter cold, it will continue growing for fall, winter, and spring harvests.

Fall & Winter Parsley: Timing: For a fall and winter crop, direct sow after August 15th, or sow indoors in July for transplanting in September. **Starting:** If starting indoors, sow seeds 1cm (½") deep, in sterilized seed starting mix, in peat pots or plug trays. Like its cousins dill and cilantro, parsley develops a taproot that does better if left undisturbed. Sow outdoors in drills 3cm (1¼") deep,



Dark Green Italian Parsley PL571

spaced 8cm (3") apart. Thin final plants to 15cm (6") apart.

Growing: Grow parsley in a deeply dug bed. Add a generous amount of rotted manure or finished compost to the bed several weeks in advance.

Harvest: Pick leaves and stems as needed all winter. **Protection:** Parsley will grow all winter with cloche protection. It's hardy to Zone 5, but if



Forest Green Parsley PL570

extreme cold is forecast, add a mulch of straw or heavy row cover.

Parsley is biennial. Even if the plants freeze in a harsh winter, expect new growth the following spring. Use most of the fresh leaves, because the plants tend to get woody and lose much of their flavour before flowering. Both curly and flat-leaf parsley behave this way.

PARSNIPS *Pastinaca sativa*



Gladiator PN581

Like carrots, parsnips can be left in the ground through the fall and winter and harvested when they are needed. Some minimal mulching will protect them from the harsh winter cold. The flavour of parsnips improves after a couple of weeks of frosty weather.

Winter Parsnips: Timing: Parsnips are slow growing. The seeds are notorious for not remaining viable for more than 1 or 2 years, so use fresh seed. For winter crops, direct sow in May and June. **Starting:** Sow seeds 5mm-1cm (¼-½") deep. Cover seeds with compost and/or put floating row cover over planting to shade the soil and conserve moisture during germination. Thin to 7-10cm (3-4") apart in rows 45-60cm (18-24") apart. **Growing:** Ideal pH: 6.0-6.8. Prepare ground as for carrots, digging deeply to loosen soil prior to planting. For even longer parsnips, dig or form holes 60cm (24") deep. Weed carefully and keep watered. Carrot rust fly maggots may injure roots of parsnips. Use lightweight row cover to prevent insects from settling and laying eggs. Practice crop rotation. **Harvest:** Dig up parsnips from October 1st through the winter as needed. **Protection:** Protect from freezing in the soil with a thick straw mulch if it is a cold winter. Parsnips keep better in well-drained soil.

STORING ROOT VEGETABLES

It used to be that root cellars were a common feature of every home. Even without such a specialized room in the house, beets, carrots, potatoes, and other root vegetables can still be stored for months in the right conditions. The first issue is moisture—some growers prefer the traditional method of storing roots in buckets of damp sawdust or sand, or simply use moist burlap for a tidier approach. Remove the tops of all root crops, and brush off any excess soil. Wrap them in damp burlap, and try to store them in a cool place with some air movement. Hanging them, or storing them on racks works well. Maintain a temperature of 4 °C (39°F) for best results. Make a point of checking the stored roots once a week or so, to be sure they're keeping fresh. Moisten the burlap at least once a week, and many root crops (as well as winter squash) will stay fresh for several months.

PEAS *Pisum sativum*

Pisum sativum

Peas are a great crop for urban gardeners, or anyone short on space. They can be grown in containers and trellised to grow vertically, even in partial shade. Plus they are one of the best crops for freezing for winter use. After harvesting shell-

ing peas, hull them and prepare a pot of boiling water as well as a bowl full of ice water. Blanch peas by dunking them in the boiling water for no more than 90 seconds. Then place them in the ice bath to cool. This will kill any bacteria on the peas as well as the enzymes in the peas themselves, essentially stopping the aging process so the peas will taste fresher when they're cooked. Lay peas out in one layer on a piece of foil in the freezer. This will prevent them from clumping. Then place them inside an air-tight container and freeze for future use. (Family: Fabaceae)

Growing Peas: Timing: Plant July to mid-August for a fall crop. Optimal soil temperature: 10-20°C (50-70°F). Seeds should sprout in 7-14 days.

Starting: Soaking seeds is not advised for wet soils. Use a seed inoculant and sow seed 5cm (2") deep. Space seeds 2-7cm (1-3") apart in the row. Do not thin. **Days to Maturity:** From direct sowing. **Growing:** Use well-drained soil amended with finished compost. Add 2 cups of rock phosphate or bone-meal for 3m (10') of row, or 3-4kg (6-8 lbs) per 30m (100') of furrow. Plant most varieties along a trellis or fence. If plants turn yellow and wither from the ground up just after flowering, the cause may be pea root rot from a soil fungus. It infects the plant in early spring when the soil is very wet. Prevent it by delaying planting until the soil is drier and by using finished compost when planting. Observe a 4-year crop rotation. Pea enation disease is a coastal virus spread by the green peach aphid. It ends flowering and causes pods to become warty and misshapen. For best results, choose

enation-resistant varieties **Harvest:** Pick when pods fill out and peas are bright green. Do multiple sowings or grow several varieties to extend the harvest. **Seed info:** In optimum conditions at least 75% of seeds will germinate. Usual seed life: 2 years. Per 100' row: 1.2M seeds, per acre: 260M seeds.



Alaska PE631



Cascadia PE619



Oregon Giant PE608



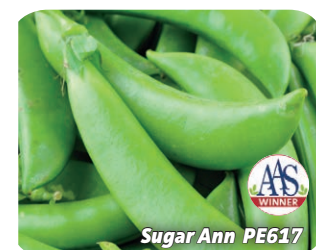
Green Arrow PE620



Sugar Lace II PE621



Oregon Sugar Pod II PE598



Sugar Ann PE617

RADISH *Raphanus sativus*



Radishes can be grown for fall and winter harvest, and they can also be sown just before first frost for a very early spring crop the following year. Daikon radishes need a longer growing season, but can remain in the ground longer into the fall and early winter.

Growing Radishes: Timing: For a winter crop, direct sow 8-10 weeks before the first average frost date. Two weeks later, sow another batch into a cold frame or beneath a cloche cover. For very early spring radishes the following year, direct sow 2-4 weeks before frost into a cold frame or cloche. Optimal soil temperature for germination: 18-24°C (65-75°F). **Starting:** Sow 5mm (¼") deep, 25 seeds per 30cm (12") in rows spaced 30-45cm (12-18") apart, and thin to 6-12 plants per 30cm (12"). **Growing:** Ideal pH: 6.0-6.8. Radishes are moderate to heavy feeders. Best in rich, loamy soil amended with composted manure. Add 1 cup of complete organic fertilizer to each 3m (10') of row for background fertility. The real secret to growing this little vegetable is speed: Sow a short row frequently, thin them quickly, keep them watered, eat them quickly, and sow some more. Root maggots and flea beetles can be a problem. Expect to lose 20-30% of the crop to maggots if no floating row cover is used. **Harvest:** Harvest promptly when radishes are the size of marbles. Leaves and developing seed pods are also tasty. **Protection:** Provide cold frame or cloche protection with the advent of harsh winter weather, around the end of October.



Easter Egg II Blend RD674



Miyashige White Neck RD694



Red Mini Daikon RD691



Rido Red RD697



Noir Long Maraicher RD669



Black Spanish Round RD683



Saisai Purple RD699

RUTABAGA



Brassica napobrassica

There are few hardier winter crops than the mighty rutabaga. Swedes, as they're sometimes called, are nice after frost for cubing into winter soups and stews. Plus they're packed with vitamin C and carotenoids, which encourage normal cell growth. Flavour is best after a few weeks of frost.

Winter Rutabagas: Timing: Direct sow 3½ to 4 months before the first average frost date. Optimal soil temperature for germination: 18-21°C (65-70°F). **Starting:** Sow seeds 5mm-1cm (¼-½") deep in rows 60-75cm (24-30") apart. Thin seedlings to 15-20cm (6-8") apart in each row. **Growing:** Ideal pH: 6.0-6.8. Rutabagas are moderate to heavy feeders that do best in rich, loamy soil amended with composted manure.



Laurentian RU692



Helenor RU693

Add 1 cup complete organic fertilizer beneath each 3m (10') of row. Lime beds several weeks before planting. Rutabagas appreciate lots of organic matter in the soil. Water copiously in hot, dry weather. Root maggots and flea beetles can be a problem. Expect to lose 20-30% of the crop to maggots if no floating row cover is used. **Harvest:** Pull up rutabagas when they are larger than tennis balls. Store in paper bags in a cool, dry place. Storing in dry sand or peat may conserve moisture and freshness. Otherwise, leave in the ground for fall and winter harvesting. The leaves are also tasty. **Protection:** In really severe weather, provide a 30cm (12") mulch of straw over the plants. This kind of protection is not normally necessary.

SCALLIONS *Allium cepa*



Scallions are surprisingly productive in the cool weather months, and a simple cloche over the row will keep them growing (very slowly) all winter. They work well in cold frames, too.

Fall & Winter Scallions: Timing: Direct sow into mid-August. Start some indoors in flats, too, for transplanting in September. Optimal soil temperature for germination: 21-25°C (70-75°F). **Starting:** Sow seeds 5mm-1cm (¼-½") deep. Thin seedlings or transplant to 2-5cm (1-2") apart in rows 15cm (6") apart. **Growing:** Ideal pH: 6.0-6.8. Fertile and well-drained soil in full sun. Add well-rotted compost and band ½-1 cup complete organic fertilizer below each 3m (10') of row. Keep high moisture level in the top 20-30cm (8-12") of



Ramrod ON571



Ippon Negi ON588



Kincho ON569

soil. **Harvest:** Gently pull scallions from the row as needed. Be careful not to disturb the roots of other scallions in the row. **Protection:** A cloche cover over the row will be sufficient in mild winters. Where winters are more severe, a mulch of straw or heavy row cover inside the cloche will add insulation.



SORREL *Rumex acetosa*



Sorrel is still unfamiliar to many gardeners in North America, but it grows enthusiastically in cool weather when it is least troubled by insects. And during cool weather, the lemony flavour is milder, with less bite.

Fall & Winter Sorrel: Timing: Direct sow in April and May. Start some indoors for transplanting, but these perennial plants want to be relatively mature by their first winter, so don't transplant later than the end of June. **Starting:** Sow the tiny seeds on the surface of the soil. As they appear, thin to about 20cm (8") apart. Sorrel plants are variable. Some tend to send up seed stalks immediately in warm weather, while others produce copious leaves before eventually bolting. Dig out and compost the plants that are eager-seeders. Leafy plants can be divided in the fall and planted up for transplanting in other areas. By selecting the best, leafiest plants and discarding plants prone to bolting, the sorrel bed will eventually become very productive. **Growing:** Once established, sorrel is hardy, and very easy to grow. If flower stalks appear, cut the whole plant just 2cm (1") from the ground. Leafy re-growth will emerge. **Harvest:** Pick leaves as necessary. Longer days and warmer weather in spring produces an unpleasantly bitter flavour. **Protection:** Sorrel is hardy to Zone 3. Severe cold snaps may cause the foliage to die back; but, in time, this will re-grow. No protection is needed.



Sorrel MS482

SPINACH *Spinacia oleracea*



Spinach sown in the spring can be unpredictable, sometimes going to seed all at once as the days get longer. Spinach sown in August produces a lush abundance of leaves for harvest throughout the fall and winter, and after dying back a bit in deep winter, it will return the following March to May.

Fall & Winter Spinach: Timing: Sow spinach during the first two weeks in August. The seeds germinate better in cool soil, so provide shade and ample moisture if the weather is particularly hot, or simply sow extra seeds. Optimal soil temperature for germination: 5-20°C (45-70°F). **Starting:** Sow seeds 2cm (1") deep, 10 seeds per

30cm (12"), in rows 30-45cm (12-18") apart. Thin to at least 5-8cm (2-3") between plants, or further for even larger leaves. **Growing:** Ideal pH: 6.0-6.5. This heavy feeder requires rich soil. Dig in ¼-½ cup complete organic fertilizer beneath each 1m (3') of row. Overwintering spinach requires well drained soil. Pale, soft tunnels on leaves are probably leaf miner damage. Prevent by covering with floating row cover. Kill the little insect that causes the damage by pinching it inside the leaf. **Harvest:** Cut leaves as needed for fall & winter salads, or cut whole plants the following spring, before they go to seed. **Protection:** The spinach season can be extended by erecting a cloche over the bed, but spinach tends to die back in January and February. Be patient and await its return in the spring.



Yukon SP600



Bloomsdale Savory SP707



Olympia SP703



Renegade SP714



Corvair SP711

SWISS CHARD *Beta vulgaris var. cicla*



Beta vulgaris var. cicla

Swiss chard is a hugely productive plant and near the top of the charts in terms of nutrition. It is packed with beta carotene and vitamin C, and an excellent plant source of iron and calcium. Chard grows upright so it produces a large amount of food in a limited amount of space.



Eldorado SW760



Flamingo Pink SW757



Fordhook Giant SW750



Rhubarb Chard SW752

Fall & Winter Chard: Timing: Direct sow mid-April to early August for winter harvests. Plants sown in mid-April will still be productive into the fall. Optimal soil temperature for germination: 10-30°C (50-85°F). **Starting:** Sow seeds 1cm (½") deep, spaced 10-30cm (4-12") apart in rows 45cm (18") apart. Thinning is important as each seed produces several plants.

Growing: Ideal pH: 6.0-6.5. Swiss chard prefers loose, deep and fertile soil that has lots of added organic matter. Plenty of consistent moisture is required, especially as plants grow larger. It grows in full sun, but will tolerate light shade in summer. A liquid fertilizer or compost tea applied twice during summer will keep chard growing well.

Harvest: For salad mix, seed more densely and cut as baby leaves. Cut individual mature stalks using the large outside ones first. **Protection:** Erect a cloche over the chard row as cold weather approaches in October. Allow frozen leaves to thaw on the plant before harvesting, and they'll be good for eating.

SLOWER GROWTH

In summer, growers rely on "days to maturity" to estimate when they can harvest, and how quickly a particular variety will mature. From fall to early spring, though, this estimate goes out the window. The air and soil are cold, and the sun is low in the sky, with light levels even lower. Even if a warmer soil is maintained beneath a cloche or in a greenhouse, all plants are going to grow slower than they would in the warm days of summer. The mildness of winter weather plays a big role in what we can expect in the garden. Higher chances of temporary cold snaps with below freezing temperatures and strong winds could allow only the toughest vegetables to survive, even with heavy mulch. Diligent observation and timely frost protection will provide every chance for a fall and winter garden to succeed.

TURNIPS



Brassica rapa ssp. rapa

Like parsnips and rutabagas, turnips are an important, if somewhat neglected fall and early winter harvest root crop. Turnips grow much faster than rutabagas, and produce tasty and nutritious leaves, as well as roots, and even seed pods.



Purple Prince TR819



Hakurei TR815



Purple Top White Globe TR810

Growing Turnips: Timing: Direct sow 6-8 weeks before the first frost date. Continue to sow turnips into October, but provide the row with a cloche tunnel or cold frame. Optimal soil temperature for germination: 18-21°C (65-70°F). **Starting:** Sow 5mm-1cm (¼-½") deep, in rows spaced 45-60cm (18-24") apart, spacing plants to 10-15cm (4-6") apart. **Growing:** Ideal pH: 6.0-6.8. Humus-rich,

deeply cultivated soil is key. Add plenty of well rotted compost or manure to the beds and cultivate to a depth of 20cm (8"). Dig in 1 cup of complete organic fertilizer for every 3m 10' of row. The real secret to growing turnips is speed. Sow a short row frequently, thin them quickly, keep them watered, harvest, and sow some more. **Harvest:** Begin gathering radish-sized roots

just 35 days after sowing. Make sure to harvest turnips while they're 5-10cm (2-4") across, as larger roots start to get woody. The leaves can be harvested as needed. Immature seed pods are also tasty. **Protection:** Erect a cloche tunnel or cold frame over fall plantings beginning in October. Leave this in place until the last turnips are harvested.

FALL & WINTER BRASSICAS

The Brassica family includes many food crops, including the cabbage group *Brassica oleracea*. All members of this species (broccoli, brussels sprouts, cabbage, cauliflower, kale, and kohlrabi) are attractive to the Small White butterfly (AKA the cabbage moth). This butterfly lays eggs on the underside of leaves which hatch to little green caterpillars with voracious appetites. The butterflies will stop laying eggs in early September, but summer-planted seedlings can be protected with lightweight floating row cover.

The advantage of growing Brassicas in cool weather is there are literally no pests. The lightweight row cover can be removed in early fall, once the adult butterflies are no longer active. It's wise to have heavyweight row cover on hand to protect fall cauliflower if frost is in the forecast.



Year-Round Cold Frame ZRC600A

From Austria comes this new dynamic, easy-to-assemble cold frame that snaps together in minutes. Perfect for large and small space gardening. In early spring and in autumn, when temperatures are too cold for planting out, the double-skin 4mm polycarbonate lid folds down to keep plants warm and heat the soil beneath them. It can be propped open on sunny days for ventilation. As the weather warms up, the polycarbonate slides out revealing a screen that will protect crops from insects and small animals. This can also be raised up, out of the way, or water straight through the mesh. The footprint is 127cm l x 60cm w (50Lx23"W). Front panel is 30cm (12") tall, and Back panel is 40cm (16") tall. Shipping size in box: 142 x 68 x 5cm (56 x 27 x 2").

WINTER SUGGESTIONS

- ✓ **Use raised beds:** It is often waterlogged soil, rather than frost, that kills winter plants. If soil becomes too sodden, oxygen cannot get to the roots of plants, and they drown. Raised beds make natural use of gravity for better drainage. Also, the soil in raised beds warms faster in the day, which helps plants grow.
- ✓ **Use frost protection:** Mulch with straw or use heavyweight row cover to keep frost off plants. In severe weather, straw and row cover can be used in combination to blanket winter veggies.
- ✓ **Use wind protection:** Simply planting down wind from summer's corn stalks will help keep temperatures marginally warmer. Build a windbreak out of stakes and row cover, or only fill raised beds halfway with soil. The extra height of the walls will offer some protection.



Pop-up Grow Bag Accelerator HG407

Release the toggles and it pops open, ready to place over plants. The top is made from mesh to allow warm air to escape, preventing overheating, and it also lets water in. When the weather warms up, the top can be unzipped and left open for even better ventilation. Made from durable, reinforced greenhouse fabric. Flattens for easy off-season storage. 24" diameter, 44" tall.



CROP PROTECTION

What is a cloche?



The word cloche is derived from the French word for bell. It describes the curved glass cover that protects the face of a clock. In 19th century France, market growers would use a bell-shaped glass cover (or bell jar) to cover individual plants early or late in the growing season. Modern agricultural cloches are nearly all made of plastic.

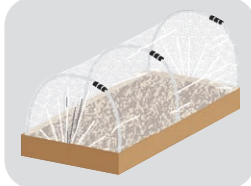
We take this definition further and apply it to the idea of cloche row cover, or simply cloche cover. A cloche cover works particularly well over vegetable beds with defined dimensions like raised beds. If the bed is four by eight feet in size, it is easy to determine the amount of materials needed to build a cloche cover.

One Concept, Numerous Applications

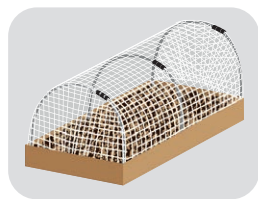
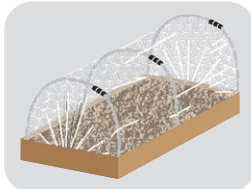


All cloche covers follow a basic construction plan. A simple skeleton is built over the bed to support a variety of materials from mesh to screen to cloth to plastic. Select the cover to achieve the desired purpose.

Frost Protection – As with the original glass bell jars, a cloche cover can be put in place to protect young seedlings (or mature plants) from frost damage. There is an average last frost date in spring, and an average last frost date in the fall. By employing frost protection, the grower can extend the season by two weeks or more at either end of the season. The preferred material for this kind of cloche is Heavyweight Row Cover. At 9 oz per yard, it lets through rain, air, and 70% of sunlight.

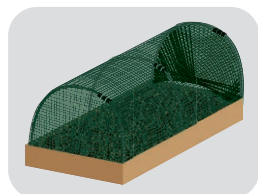


Insect Protection – Insects follow predictable life cycles. Commonly, adult insects appear in spring and look for host crops on which to lay their eggs. Cabbage moths prefer the cabbage family just as carrot rust flies prefer carrots for their young to feed on. To protect crops, the grower places a physical barrier between the adult insect and the crop. In many cases this is enough to protect crops from serious damage or infestation. Lightweight Row Cover is the standard material to use for this purpose. It allows water, air, and 85% of sunlight to pass through.

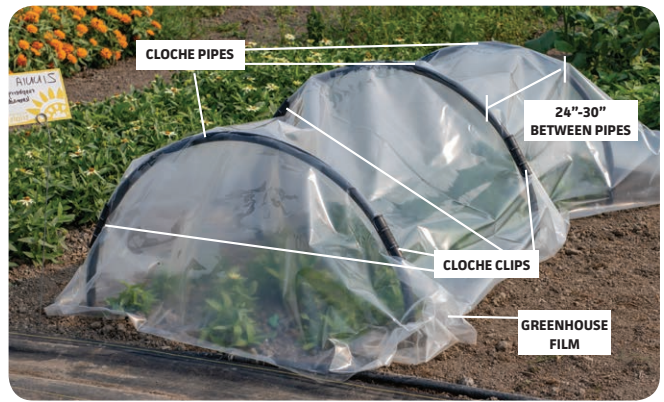


Animal Protection – Protect garden beds from cats, rabbits, and larger pests by employing chicken wire or mesh over the cloche frame. This simple physical barrier is all that is needed to prevent damage to plants (and soil).

Mini Greenhouse – Use the same basic cloche skeleton to suspend tough Greenhouse (plastic) Film for a quick and inexpensive greenhouse. The plastic captures energy from the sun and creates a substantially hot environment beneath. Heat loving plants like melons, tomatoes, eggplants, and cucumbers thrive in these conditions. This system acts as an umbrella, also, which is useful for keeping rain off of tomato plants. It's important to roll up the sides or leave the ends open to allow for air circulation around plants – more so as the weather heats up.



Shade House – In high summer, some plants suffer heat stress or sunscald. Minimize this damage by placing Shade Cloth over the cloche frame. It reduces the impact of sunlight by 50%.



Complete Cloche Kits ZRC400

Boxed and ready to ship, these complete kits are ready to build a cloche for winter growing or to protect precious tomatoes. Each complete kit comes with 5 lengths of Cloche Pipe, 16' wide sheet of Greenhouse Film, 20 Garden Clips, and complete instructions on how to erect a garden cloche.



Lightweight Row Cover 0.5 oz ZRC401

This useful insect barrier is one half ounce per square yard. It creates a physical barrier between seedlings and the pest insects that would eat them or use

them to feed their young. This fabric is good for protection without heat buildup. Flea beetles, aphids, thrips, cabbage moth caterpillars, carrot rust flies, cabbage root maggot flies, and leaf miner flies will be excluded if the cover is carefully applied. It can also be applied over newly seeded beds to aid germination and decrease water evaporation from the surface of the soil. Applied over new transplants it offers some sun and wind protection and moisture retention. Our lightweight row cover is 2.2m (7½') wide.



Heavyweight Row Cover 1oz ZRC504

A heavier fabric, this cover offers frost protection down to -5°C. Placed over heat-loving vegetables, it can make a 2-3 month difference in cool summer areas. When using with tall seedlings, support the fabric on hoops to prevent the plants from bearing weight. Doubling the fabric gives more frost protection but it transmits less light. Our heavyweight row cover is 3.048m (10') wide.



Easy Poly Tunnel ZRC300

The tough UV stabilized 150 micron polyethylene sheet forms a complete barrier, retaining humidity and warmth while protecting against frosts, harsh weather, and pests. Easy Poly Tunnels can also be used for warming the soil prior to planting out.

West Coast Seeds Ltd.

5300 34B Avenue
Delta, BC V4L 2P1



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cover crops

Improve garden soil organically

Another great option for using garden spaces during fall and winter is to plant cover crops. By simply growing, these plants perform amazing services to the soil and growing space. Cover crops have the potential to:

- Fix nitrogen
- Prevent soil erosion
- Improve drainage
- Add organic matter
- Loosen packed soil
- Suppress weeds
- Provide winter habitat
- Feed soil biology

Discover more about nitrogen fixing and soil building cover crops online at www.westcoastseeds.com/collections/cover-crops-seeds