

## ASPARAGUS

**BOTANICAL NAME:** Asparagus officinalis

**TYPE:** Perennial

**CLIMATE PREFERENCE:** Cool season (harvest period) 10-15 days at 20-25°C

**GERMINATION TIME:** 3-4 years to maturity from seed; from roots

**DAYS TO MATURITY:** 2-3 years

**WHEN TO START:** Seeds can be direct sown in an outdoor seedbed in May or started indoors in flats in April. Soak seeds for two days to speed germination. The following year, move the roots to their final location in the dormant season.

**SPACING:** 20-25 cm deep. Cover with 5 cm of soil. Leave 30-50 cm between plants in rows 1-1.2 meters wide, or leave 30-50 cm between plant centres in beds.

**SOIL:** Needs deeply cultivated, well-drained soils, high in fertility. Favors sandy loams in heavy rainfall areas.

**IDEAL PH:** 6.0 - 7.0 - does not perform well in acid soils.

**FEEDING:** Heavy feeder - where available, apply 5-10 cm of-barnyard manure in early spring. Broadcast 1.2-1.5 kilograms of 3XG per 10 square meters (or equivalent) in July or early August.

**WATERING:** Adequate moisture is most important during the first year Irrigations should be thorough to encourage deep rooting.

**LIGHT:** Will tolerate slight shading.



**SPECIAL CULTURAL NEEDS:** Gradually fill in the trench during the first season. Cultivate carefully or hand weed to avoid injury to crowns and stems.

**YIELD:** Approximately .5 kilograms per meter of row.

**QUANTITY TO PLANT:** Fresh: 10-15 plants

**HARVESTING:** Light harvesting can begin for 2-3 weeks in the third year after transplanting Harvest for 4-6 weeks in the next year. Full harvesting can commence in the fifth year for 8-12 weeks or until spears become thin Spears should be picked before the heads begin to separate.

**STORAGE:** Spears can be cut or snapped off below the soil surface. Be careful not to damage emerging spears.

Asparagus is at it's best when eaten very soon after harvest. Refrigerated immediately, it will keep for up to 3 weeks. Spears can be stood in a few mm of water to preserve freshness.

### COMMON PROBLEMS:

Tough Spears: -asparagus needs cool nights and warm days to produce tender spears Low Yields: - overharvesting, under-fertilization, poor root systems due to inadequate or poorly prepared beds, or drought can reduce spear production.

Crooked Spears: usually due to mechanical injury. Bending occurs when one side of the spear grows quicker than the injured side.

Flattened Spears (fasciation): cause is unknown

### VARIETY TYPES:

Most strains available are selections from the Mary Washington or Martha Washington types and have variable vigour, size, and resistance to disease.

## BEANS

**BOTANICAL NAME:** phaseolus vulgaris: Kidney or common snap bean phaseolus coccineus: Scarlet Runner; 'White Dutch' Runner

**TYPE:** Annual

**CLIMATE PREFERENCE:** Warm season

**GERMINATION TIME:** 8-16 days at 15-20°C

**DAYS TO MATURITY:** 50-70 days



**WHEN TO START:** Direct seed  
May 15 - June 25  
Sow seeds 5 cm deep.

**SPACING:** Bush Beans: leave 10 cm between plants in double rows 50-60 cm apart or allow 10-15 cm between plant centres in beds. Pole Beans: sow 3-4 seeds in small hills 70-90 cm apart, or leave 5-10 cm between plant centres on trellises.

**SOIL:** Any warm well-drained soil of medium fertility.

**IDEAL PH:** 6.0 - 7.5

**FEEDING:** Light feeder. Beans are legumes; Rhizobium bacteria can form nodules on the roots and convert atmospheric nitrogen to useable forms. This can supply a portion of the nitrogen needs. As a general guide, just prior to planting, rake in 1.2-1.5 kg of Supergrow Mix per 10 sq. meters.

**WATERING:** Keep soil surface moist until beans emerge. Roots drown easily.

**LIGHT:** Needs full sun.

**SPECIAL CULTURAL NEEDS:** Soak seeds overnight before planting for even germination. Start runner and pole beans up strings, nets or poles.

Leave roots in the ground at crop removal to enhance nitrogen fertility and preserve Rhizobium inoculum for subsequent years. Remove ripe beans promptly for continued production.

**YIELD:** Bush: approximately 1.5 kg. per meter. Pole: approximately 1.8 kg. per meter

**QUANTITY TO PLANT:** Bush: Fresh: 40-60 Pole: Fresh: 10-20 (Per Person) Storage: 40-60 Storage: 20-30.

**HARVESTING:** Snap beans are ready when seeds are still relatively small and pods 'snap' in half cleanly. Runner beans are best if picked before they become large and stringy. Harvest carefully to avoid damaging the plants.

**STORAGE:** Beans will keep 7-10 days in the refrigerator. Good for freezing or canning.

**COMMON PROBLEMS:** Poor Germination and Emergence: soil too hot, cold, wet, or dry; birds; old seed; or crusted soil surface. Failure to Set Pods: poor pollination due to cold, heat, hunger, or drought.

**VARIETY TYPES:** Bush Types: available with green, yellow wax, purple and flat (Romano) pods. Pole Types: available with green, yellow wax, runner, purple or flat (Romano) pods.

## BEETS AND SWISCHARD

**BOTANICAL NAME:** Beta vulgaris

**TYPE:** Biennial; used in the first year

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 10 days at 15°C

**DAYS TO MATURITY:** 42-80 days

**WHEN TO START:** Direct seed from April 15-June 30 or start indoors 4 weeks earlier.

**SPACING:** Beets: thin to 5-8 cm between plants in rows 30-45 cm apart; or thin 5-10 cm between plant centres in beds.

Swiss Chard: thin to 15 cm between plants in rows 30-45 cm apart; or thin to 30 cm between plant centres in beds.

**SOIL:** Favours any well-prepared soil. Light sandy soils should 'be enriched with organic materials to improve fertility and moisture retention. Moderately deep root systems.

**IDEAL PH:** 5.8 - 7.0

**FEEDING:** Heavy feeder, just prior to planting, rake in 1.2-1.5 kg. per 10 sq. meters of 3XG (or equivalent). Once plants are established, side-dress with 150-200 grams per 10 sq. meters of 3XG.

**WATERING:** Will not tolerate drought; maintain even moisture.

**LIGHT:** Will tolerate slight shading.

### **SPECIAL CULTURAL NEEDS:**

Seeds form in clusters, so plants almost always need thinning. Mulching around the tops of the roots will help improve their appearance and maintain even soil moisture.

**YIELD:** Beets: approximately 2 kg. per meter  
Swiss Chard: approximately 2 kg. of leaves per meter of row.



### **QUANTITY TO PLANT:**

(Per Person) Beets: 30-60 for fresh eating 60-90 for storage. Swiss Chard: 3-5 for fresh eating 8-12 for storage.

**HARVESTING:** Beets: may be pulled at any size; immature for greens; 3-4 cm for bunching; 5 cm for 'baby beets'; 6 cm for canning and pickling; and 7-9 cm for mature roots.

Swiss Chard: light harvesting can begin at any time the plant

has 6 or 7 well-developed leaves. Older leaves should be removed to encourage new growth.

**STORAGE:** Pull beets before heavy frosts. Remove the tops 3 cm above the roots and store in a cool, moist area (1-5°C; 90-95 relative humidity). Swiss chard will overwinter well in coastal areas, and may be cut and used as needed. Leaves will keep 10-14 days in the refrigerator.

**COMMON PROBLEMS:** Small Woody Roots: usually due to improper thinning or drought

- Hairy, Cracked, or Deformed Roots: often caused by excess fresh manures (nitrogen). Deformities may also occur in hard, clumpy soils.

- Black Pitting, Surface Cankers, or Heart Rot: may be due to boron deficiency; apply laundry borax (11 B) at 60-70 ml per 10 square meters. Dissolve in water and sprinkle evenly over the soil surface at planting time or soon afterwards. Apply carefully; too much boron can cause severe damage to many plants.

**VARIETY TYPES:** Beet varieties can be obtained in flattened, oblate, round, half long, and cylindrical shapes.

- Swiss chard varieties are available with white or red stems.

## BROAD BEANS

**BOTANICAL NAME:** Vicia faba

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 5-10 days at 15-20°C

**DAYS TO MATURITY:** 68-90 days

**WHEN TO START:** Direct seed from March 1-30. May be sown in late fall in mild areas

**SPACING:** Sow seeds 5-8 cm deep

**SOIL:** Leave 15 cm between plants in rows 1 meter apart or leave 15-20 cm between plant centres in belts.

Any well cultivated site with adequate drainage

**IDEAL PH:** 5.5 - 6.5

**FEEDING:** Light feeder. Just prior to planting (or upon spring emergence of fall planted crops) apply 1-2-1-5 kg. of Supergrow Mix per 10 sq. meters.

**WATERING:** Not usually needed as it is a spring crop.

**LIGHT:** Needs full sun.

**SPECIAL CULTURAL NEEDS:** Removal of growing tips after sufficient pods have set will hasten maturity and protect against aphid attacks.



Cultivate lightly or hand weed to avoid disturbing shallow root systems. A 'second growth' is sometimes possible by cutting stems almost to the ground once the initial crop has been harvested. Best pods are produced in cool spring weather.

**YIELD:** Approximately 900 grams per meter of row.

**QUANTITY TO PLANT:** Fresh: 10-20 plants (Per Person). Storage: 20-30 plants.

**HARVESTING:** Beans are ready to pick and shell as soon as the pods fill out to about 1 cm in width. Each pod contains about 5-7 large beans. Can be used and prepared like lima beans.

**STORAGE:** Pods will keep 7-14 days in the refrigerator. Freezes well (like lima beans).

**COMMON PROBLEMS:** Tough, Poor Taste: overmaturity

- Black Pods and Stems: a natural condition of ripening; beans are too mature to eat at this stage
- Flavor Too Bland: allow a few more days of ripening
- Poor Seed Emergence: birds, poor drainage, or old seed

**VARIETY TYPES:** Broad beans are sometimes called 'Horsebeans' or 'Windsor Beans' Varieties are available with bushy or upright habits, and variable hardiness.

## BROCCOLI

**BOTANICAL NAME:** Brassica oleracea italica

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

5-10 days at 15-20°C

**GERMINATION TIME:** 50-90 days  
**DAYS TO MATURITY:**

**WHEN TO START:** Early:-sow indoors from March 1-25 for transplanting April 5 - May 5. Late:-sow indoors or direct seed May 10 - June 5  
Transplant June 25 - July 5  
Sow seeds 5-10 mm deep

**SPACING:** Leave 30-45 cm between plants in rows 60-90 cm apart; or, leave 40-60 cm between plant centres in beds.

**SOIL:** Leave 30-45 cm between plants in rows 60-90 cm apart; or, Leave 40-60 cm between plant centres in beds.

**IDEAL PH:** 6.0 - 7.0

**FEEDING:** Heavy feeder

Just prior to planting, rake in 1.2-1.5

kg. per 10 sq. meters of Supergrow Mix

Once plants are well-established, side-dress with 150-200 grams per 10 sq. meters of 3XG

**WATERING:** Needs ample water during hot, dry spells.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:** Best quality heads mature in cool weather. Mulching will conserve moisture and help cool the soil for late crops  
Cultivate lightly (or hand weed) to avoid disturbing shallow root systems.



**YIELD:** Approximately 1.5 kilograms per meter of row.

**QUANTITY TO PLANT:** (Per Person): Fresh: 3-5 plants, storage. 5-6 plants.

**HARVESTING:** Cut the centre heads when they have reached full size, but before the blossom clusters begin to separate. If a large stalk is left, several sideshoots will develop. If the stalk is cut quite low, fewer sideshoots will develop, but they will be larger.

**STORAGE:** Broccoli will last 7-10 days in the vegetable compartment of the refrigerator. Can be blanched and frozen.

**COMMON PROBLEMS:** Wilting on Hot Days: if the soil is adequately moist, this may be a signal of club-root or root maggot injury.

Blackened Head Centres: Bacterial head rot often occurs on varieties with dish-shaped heads as they hold rainwater. Dome-shaped heads are less susceptible.  
Hollow or Corky Stem: boron deficiency. Apply laundry borax (11 B) at 60-70 ml per 10 sq. meters. Dissolve in water and sprinkle evenly over the soil at planting time or shortly afterwards. Apply carefully; too much boron can cause severe damage to many plants.

'Buttoning' of Heads: small heads may be caused by interrupted growth such as severe chilling of young plants, drought, or sudden heat stress at flowering. Avoid using transplants which are too large.

**VARIETY TYPES:** There are two main types: Sprouting and Heading varieties  
Hybrids are available  
Some purple varieties can be obtained.



## BRUSSELS SPROUTS

**BOTANICAL NAME:** Brassica oleracea gemmifera

**TYPE:** Biennial, used in the first year

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 5-10 days at 15-20°C

**DAYS TO MATURITY;** 70-130 days



**WHEN TO START:** Sow indoors, or in seedbeds from April 10 - May 20 and transplant from June 1 - August 10.

Direct seed from May 20 - July 1. Sow seeds 5-10 mm deep.

**SPACING:** Leave 45-60 cm between plants in rows 60-90 cm apart; or leave 40-60 cm between plant centres in beds.

**SOIL:** Prefers well cultivated soils of good fertility and medium water retention.

**IDEAL PH:** 6.0 - 7.0.

**FEEDING:** Heavy feeder

Just prior to planting, rake in 1.2-1.5 kg. per 10 sq. meters of Supergrow Mix

When plants are well-established, side-dress with 150-200 grams per 10 sq. meters of 3XG.

**WATERING:** Needs ample moisture, particularly after transplanting and during hot dry spells.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:**

Cultivate lightly or hand weed to avoid disturbing shallow root systems. Sprouts which are ready after a few light frosts are often sweeter. Mulching can

improve moisture retention and cool the soil during hot periods.

**YIELDS:** Approximately .9 kg. per meter of row

**QUANTITY TO PLANT:** (Per Person) Fresh: 2-5 plants.

**Storage:** 5-8 plants

**HARVESTING:** Sprouts are ready when they are 2-3 cm in diameter and still firm. Over-mature sprouts turn yellow or expand into loose or 'blown' shapes.

Harvest the lowest ones first as they tend to mature from the bottom up. Snap of leaves and cut or pull off sprouts as needed.

**STORAGE:** Brussels sprouts will withstand several frosts before they decline in quality. Harvested sprouts will keep for 3-4 weeks in the refrigerator. Very suitable for blanching and freezing.

**COMMON PROBLEMS:** Internal Browning: -a physiological breakdown apparently due to a local calcium deficiency within the plant. Avoid stress conditions wilting on Hot Days: -if the soil is not dried out, this may be a signal of clubroot or root maggot injury. Hollow Stem: -boron deficiency. Apply laundry borax (11 B) at 60-70 ml per 10 square meters. Dissolve in water and sprinkle evenly over the soil at planting time or shortly afterwards. Apply carefully; too much boron can cause severe damage to many plants.

**VARIETY TYPES:** Standard sizes: 50 cm

- Semi-dwarf: 30-40 cm

- Hybrids are available which tend to mature the sprouts more evenly on the stalks

## KALE AND COLLARDS

**BOTANICAL NAME:** Brassica oleracea acephala

**TYPE:** Biennial

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 5-10 days at 15 C

**DAYS TO MATURITY:** 50-60 days



**WHEN TO START:** Early crops - may be sown direct or in flats from April 15 to May 15. Transplanting may be done 4-6 weeks later. Late crops - kale is most commonly direct seeded from June 15 to July 15 for fall and winter harvesting. Sow seeds 5-10 mm deep.

**SPACING:** Leave 35 cm between plants in rows 45-60 cm apart or leave 35-40 cm between plant centres in beds.

**SOIL:** Prefers any well-cultivated soils of good fertility and medium water retention. Shallow root systems

**IDEAL PH:** 6.0 - 8.0

**FEEDING:** Heavy' feeders

Just prior to planting, rake in 1.2-1.5 kilograms per 10 square meters of Supergrow Mix.

Once plants are established, side-dress with 150-200 grams per 10 sq. meters of 3XG.

**WATERING:** Needs ample moisture, particularly at transplanting and during hot periods.

**LIGHT:** Will tolerate some shading.

**SPECIAL CULTURAL NEEDS:** Cultivate lightly or hand weed to avoid disturbing shallow root systems. Mulches will improve moisture retention and help cool the roots during hot periods.

**YIELD:** Approximately 1 kg. per meter of row.

**QUANTITY TO PLANT:** (Per Person): 3-5 plants for fall and winter eating .

**HARVESTING:** Oldest leaves are often tough. Select young, mature leaves about midway up the plant and allow tops to continue producing. Flavor is improved by frosts. Harvesting can continue until warm spring weather induces

flowering. Collards are somewhat less hardy than kale.

**STORAGE:** Kale will overwinter very well in most areas. No storage is needed. Collards are not as resistant to frost but withstand heat better than kale.

**COMMON PROBLEMS:** Boron Deficiency: -may result in stunted growth and hollow stems. Apply laundry borax (11 B) at 60-70 ml per 10 square meters. Dissolve borax in water and sprinkle evenly over the soil surface at planting time or shortly afterwards. Apply carefully; too much boron can cause severe damage to many plants. Wilting on Hot Days: if the soil is not dried out, this may be an indication of clubroot or root maggot injury.

**VARIETY TYPES:** Kale: borecole or scotch types have dark green leaves with tight curls

-Siberian strains are smoother with grayish green leaves

-Ornamental varieties are available with white, red, and lavender curled leaves in tight clumps

- Collards: -are similar to kale except they have open, smoother leaves and a distinct cabbage flavor

- Chinese Kale: (gai lohn) (Var. alboglabra) produces edible stalks, buds, and leaves. Harvested like broccoli, the sideshoots will produce new leaves. Sometimes called Chinese Broccoli.

## CARROTS AND PARSNIPS

**BOTANICAL NAME:** Carrot: *Daucus carota saliva*

Parsnip: *Pastinaca sativa*

**TYPE:** Biennial

**CLIMATE PREFERENCE:** Cool season; but quite heat tolerant

**GERMINATION TIME:** 7-10 days at 15 - 20 C

**DAYS TO MATURITY:** Carrots: 55 - 80 days

Parsnips: 95 - 140 days



**WHEN TO START:** Parsnips and early carrots: Direct seed April 15 - May 15

Late carrots: Direct seed June 25 - July 5

Sow-seeds 1 cm deep

**SPACING:** Carrots: Thin to 4 - 6 cm between plants in rows 50 cm apart; or thin to 4 - 6 cm between plant centres in beds.

Parsnips: Thin to 10 - 12 cm between plants in rows 50 cm apart; or thin to 10 - 12 cm between plant centres in beds.

**SOIL:** Deep, well-drained, loose soils of medium fertility. Cultivate deeply or prepare raised beds. Parsnips need up to 45 cm of growing depth.

**IDEAL pH:** Carrots 5.5 - 6.5

Parsnips 6.0 - 8.0

**FEEDING:** - Light feeders. Avoid fresh manures  
Just prior to planting rake in 1.2 - 1.5 kg. of Carrot Formula per 10 sq. meters.

**WATERING:** Keep soil moist until germination. Maintain even moisture during root formation.

**QUANTITY TO PLANT:** plants (PER PERSON):

Carrots: fresh - 30 - 60 storage: 60 - 90 plants

Parsnips: fresh : 20 plants storage: 20 plants.

**HARVESTING:** Carrots may be lifted at any time the roots are useable size. Parsnip flavor is improved by frosts. Use a fork to loosen soil near roots and lift by the tops (long parsnips may require digging). Remove tops for storage.

**STORAGE:** Bunched carrots (tops on): Will keep for about 2 weeks in the refrigerator. Storage carrots

(tops off) : Will last 2-4 months at temperatures just above freezing when packed in damp sand, sawdust or peat. Parsnips and carrots will overwinter in place in the garden in coastal regions; carrots should be mulched; parsnips are quite hardy.

**COMMON PROBLEMS:** Forked roots: Avoid using fresh manures or excessive nitrogen.

- Root dieback: Caused by wet soils or high water table; primary taproot dies and several lateral roots emerge to replace it.

- Deformed roots: -often due to clumpy, compacted, or stoney soils. Prepare the soil with thorough cultivation.

- Splitting: Most often occurs when heavy rainfall follows a dry period; maintain even moisture in hot weather.

- Small, short roots: May be caused by crowding, drought, excessive shading, or planting too late in the season.

- Poor germination: May be due to seeding too deep or drying and crusting of soil surface.

Parsnips are available with long tapered roots, or thick shouldered wedge shapes. Sizes vary considerably among varieties.



## CARROTS AND PARSNIPS

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS :**  
Mulch or mound earth over the tops of roots to prevent green shoulders. Heavy mounding may also help reduce carrot rust fly infestations.

**YIELD:** Approximately 1-3 kilograms per meter of row.



### VARIETY TYPES:

Numerous carrot varieties are available in the following shapes:

- long, slender
- medium length tapered
- cylindrical or 'Nantes' types
- tapered, plump shouldered or 'Chantenay'
- turnip rooted
- baby finger types (good for shallow soils)

- round or beet shaped (good for shallow soils)

Novelty varieties have white and crimson colored roots.

Parsnips are available with long tapered roots, or thick shouldered wedge shapes. Sizes vary considerably among varieties.

## CAULIFLOWER

**BOTANICAL NAME:** Brassica oleracea botrytis

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 10 days at 15 C

**DAYS TO MATURITY:** 50 - 70 days from transplanting

**WHEN TO START:** Early , Sow indoors from Feb. 25 - March 25  
[or] transplanting April 25 - May 15  
Late - Direct seed or sow in flats or seedbeds from May 1 - June 25. Transplant from June 15 - July 15. Sow seeds 5 mm deep

**SPACING:** Leave 35 - 45 cm between plants in rows 45 - 60 cm apart; or leave 35 - 45 cm between plant centres in beds.

**SOIL:** Prefers well-cultivated soils of good fertility and medium water retention cauliflower has shallow root systems.

**IDEAL pH:** 6.0 - 7.0

**FEEDING:** Heavy feeder

Just prior to planting, rake in 1.2 - 1.5 kilograms per 10 sq. meters of Supergrow Mix

Once plants are well established, side-dress with 150 - 200 grams per 10 sq. meters 3XG

**WATERING:** Needs ample moisture, particularly after transplanting and during hot, dry spells.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:** Cultivate lightly or hand weed to avoid disturbing shallow root systems. Break or tie leaves over heads as they begin to form to prevent yellowing mulches



will improve moisture retention and help cool the roots during hot periods.

**YIELD:** Approximately 1.5 kg per meter of row.

**QUANTITY TO PLANT:** (Per Person): Fresh: 3-5 plants. Storage: 8-12 plants.

**HARVESTING:** Heads are ready to cut when they are smooth and

fully sized before the bud segments begin to separate and become 'ricey'. After cutting, small useable heads may develop from sideshoots if the plant is left in the ground. Heads can withstand several light frosts without damage.

**STORAGE:** Heads will keep about 2 weeks in the refrigerator if some wrapper leaves are left on. Suitable for blanching and freezing.

**COMMON PROBLEMS:** Hollow Stem and Brown Curd: boron deficiency; apply laundry borax at 60-70 ml per 10 sq. meters. Dissolve in water and sprinkle evenly over the soil surface at planting time or soon afterwards. Apply carefully; too much boron can cause severe damage to many plants. Wilting on Hot Days if the soil is not dried out, this may be a signal of clubroot or root maggot injury.

'Buttoning' of Heads: small heads may be caused by interrupted growth such as severe chilling of young plants, drought, or sudden heat stress at flowering. Avoid using transplants which are too large.

**VARIETY TYPES:** Early, mid and late season varieties are available as well as overwintering strains.

- Some varieties feature self-wrapping leaves
- Hybrids have been developed for earliness, size, and even maturity.
- Purple and green novelty varieties are available.

## CELERY AND CELERIAC

**BOTANICAL NAME:** Celery:  
*Apium graveolens* duice-

Celeriac: *Aplum graveolens*

**TYPE:** Biennial

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 10 - 20 days at 15 - 20°C

**DAYS TO MATURITY:** Celery: 85 - 130 days

Celeriac: 110 - 120 days



**WHEN TO START:** Sow seeds 2 nun deep in flats indoors from February 15 - March 1. Transplant April 20 -May 5.

**SPACING:** Leave 12 cm between plants in rows 90 - 100 cm apart; or leave 12 - 20 cm between plant centres in beds.

**SOIL:** Best suited to rich, deep organic soils with high moisture retention. Will perform well on any well-cultivated fertile soil.

**IDEAL pH:** 6.0 - 6.5; will tolerate acidic conditions in organic soils.

**FEEDING:** Heavy feeder. Responds well to fresh manures

Just prior to planting rake in 1.2 - 1.5 kg of Super-grow Mix per 10 sq. meters

JOnce plants are established, side-dress with 150 - 200 grams of 3XG per 10 sq. meters.

**WATERING:** Needs even moisture. Will not tolerate drought.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:** Some varieties need blanching. Mound soil or mulches around stalks for tender blanched stems. Paper, cans, or milk cartons around stems will also work

- Mulching will help conserve moisture

- Best quality celery usually matures in cool weather.

**YIELD:** Celeriac: Approximately .8 kg. per meter of row

Celery: Approximately .9 kg. per meter of row.

**QUANTITY TO PLANT:** (PER PER-SON) Celery: 2-6 plants

Celeriac: 15 - 20 plants

**HARVESTING:** Celery : stalks can be cut off and used a few at a time, or the entire plant may be cut

- Celeriac : Harvest in fall after light frosts

- Trim off tops and small roots

**STORAGE:** Celery will keep 3-4 weeks in the refrigerator

- Celeriac will keep 3-4 months in damp sand, peat or sawdust at temperatures just above freezing. Celery can also be stored for shorter periods in this manner.

- Celeriac can remain in the garden if mulched.

**COMMON PROBLEMS:** Stalks tough or bitter: drought, overmaturity, or under-feeding; lack of blanching on some varieties. Small roots on celeriac: underfeeding, under-watering, or overcrowding.

Bolting: May be caused by cold weather at transplanting or following a hot, dry period.

**VARIETY TYPES:** Many new green varieties do not need blanching if grown properly

- Yellow, or self-blanching varieties have golden yellow or pale green leaves and white stalks

## CUCUMBERS

**BOTANICAL NAME:** Cucumis Sativus

**TYPE:** Annual

**CLIMATE PREFERENCE:**

Warm season

**GERMINATION TIME:** 7-13 days at 15-20 C. Soil temperatures must be above 15 C for germination

**DAYS TO MATURITY:** Slicing: 56-78 days

Pickling:

50-65 days

**WHEN TO START:** Direct seed from May 24 - June 30 or start indoors April 15 - May 15

**SPACING:** Cucumbers should be transplanted with as little root disturbance as possible; use individual pots or peat blocks. Sow seeds 3 cm deep.

Sow 5-6 seeds in hills 1-1.2 meters apart and thin to 3-4 plants. In bed plantings, leave 30-45 cm between seedlings for a final spacing.

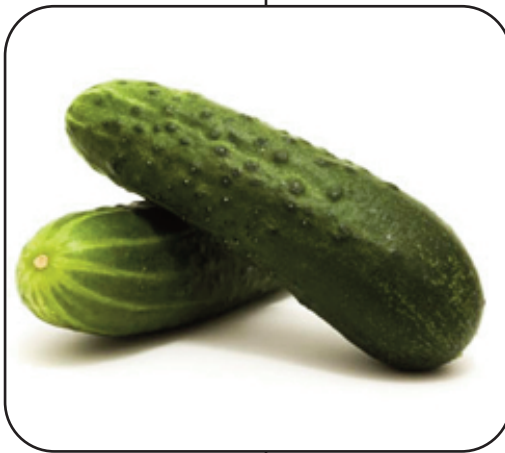
**SOIL:** Prefers rich sandy loam with good drainage. Preparation of raised beds or hills will speed warming and drying.

**IDEAL PH:** 6.0 - 8.0

**FEEDING:** Heavy feeders

Just prior to planting, rake in 1.2-1.5 kilograms of Flower Power per 10 sq. meters. Once plants are established, side-dress with 3XG at 150-200 grams per 10 sq. meters.

**WATERING:** Heavy water users. Should not be allowed to wilt. Ample water is most critical at transplanting and for fruit set and growth.



**HARVESTING:** Do not allow over-mature fruits to stay on the vine, as production of new female flowers may be reduced

- Cut ripe cucumbers from the stem, taking care not to injure the vines

- Yellow coloring of skin indicates overmaturity

The usual harvest lengths are:

- Sweet Pickles and Gherkins: 5-10 cm

- Dill Pickles: 12-15 cm

- Slicing: 15-30 cm

**STORAGE:** Cucumbers will store approximately 10-14 days at cool temperatures (7-10°C)

- Wrapping in perforated plastic film may help increase storage life.

**COMMON PROBLEMS:** Cross-pollination: cucumbers will cross-pollinate only with other cucumbers; not squash, pumpkin, or melons

- Poor Fruit Set: first flowers are usually male with no ovary (tiny cucumber) between petals and stem. Female flowers usually follow, but are fewer in number. Cool rainy weather or overcrowding of plants may hamper pollinating insects. Some varieties are gynoecious, producing only female flowers. A few dyed seeds of standard male/female flowered plants are usually included in the seed packages.

- Bitterness: due to the accumulation of bitter tasting compounds just under the skin and towards the stem end of the fruit. Usually caused by stresses in temperature, nutrition, or water. Some varieties are less susceptible to bitterness than others. If bitterness occurs, peel deeply and discard stem end. Rubbing the end or the direction of peeling has no effect on bitterness.

## CUCUMBERS

**LIGHT:** Needs full sun

**SPECIAL CULTURAL NEEDS:** Provide some shade on hot, sunny days and just after transplanting.

- Mulches can help conserve soil moisture and minimize fruit rot due to contact with soil. Apply organic mulches only after soils have fully warmed.
- May be trained up strings, poles, trellises or nets to save space.

**YIELD:** Approximately 2.2 kg. per sq. meter.

**QUANTITY TO PLANT:** (Per Person): Fresh Slicing: 1-3 hills, pickling: 3-5 hills.

**VARIETY TYPES:** Slicing cucumbers: available in a great variety of shapes and lengths, with white spines, black spines, or almost spineless. Many varieties have tender, non-bitter skins and do not require peeling. A few strains with bush habits are suitable for container planting. Pickling Cucumbers: usually shorter, stockier, and have more spines than slicing cucumbers. They produce prolific numbers of fruits suitable for whole, or sliced pickling. The West Indian Gherkin (*Cucumis anguria*): Produces very small, heavily spined fruits and is used exclusively for pickling. Novelty Varieties: are available in white, yellow, and light green colors; in serpent, fluted, lemon, and apple shapes.



## EGGPLANT

**BOTANICAL NAME:** Solanum melongena ovicernum

**TYPE:** Annual

**CLIMATE PREFERENCE:** Warm season; choose a warm, sunny location

**GERMINATION TIME:** 7-13 days at 20 - 25°C. Seeds may take 3 weeks to germinate at temperatures below 20°C

**DAYS TO MATURITY:** 62 - 85 days from transplants



**WHEN TO START:** Sow indoors from April 1 May 24 - June 15. Sow seeds 5 mm deep 25 for transplant! Minimum night temperature 18°C after germination.

**SPACING:** Leave 45 - 60 cm between plants in rows 60 cm apart; or leave 45 cm between plant centres for beds (dwarf varieties may be planted closer) .

**SOIL:** Prefers warm soils that drain well responds well to high organic matter, i.e., peat bags, or muck soils if well drained.

**IDEAL pH:** 6.0-7.0

**FEEDING:** Light feeder Just prior to planting, rake in 1.2 - 1.5 kg. of Flower Power per 10 sq. meters. This should sustain the crop for the season. If needed, additional fertilizer may be added later in the season as a liquid feed. Excess nitrogen will delay flowering and fruit set, and result in too much vegetative growth.

**WATERING:** Needs plenty of water during fruit development.

**LIGHT:** Needs full sun.

### SPECIAL CULTURAL NEEDS:

Hardening off is not recommended. Wait until warm weather to transplant, and use hot caps i other protection. Growing points can be pinched out when plants are 15 - 20 cm high to encourage branching bu fruiting will be delayed If large fruits are preferred, branches or yo fruit may be thinned out when oversetting occurs.

**YIELD:** 4" 10 fruit Per Plant weighing from 200 - 500 grams

**QUANTITY TO PLANT:** (PER PERSON): Fresh: 1 - 2 plants

**HARVESTING:** Fruits are ready when they have attained a good size and the skin is glossy. Color dulls as they become too mature and the fruit turns spongy and seedy. Snip ripe fruits from the plants leaving about 3 - 4 cm of stem attached.  
- Handle carefully to prevent bruising.

**STORAGE:** Eggplants will keep about 10 days in the refrigerator.

**COMMON PROBLEMS:** Usually due to adverse weather. Hand pollination with a feather or soft brush may aid in early fruit set. Poor growth after transplanting: Soil too cold or wet, or night too cold. Cold damaged plants often remain behind for the entire season. Plant in warm soils and provide protection from cold.

**VARIETY TYPES:** Varieties have been developed with purple white, or yellow-orange skins  
- Dwarf, varieties are adapted to container growing strains have been produced for larger fruit, disease resistance and earliness.

## ENDIVE, ESCAROLE, WITLOOF AND CHICORY

**BOTANICAL NAME:** Cichorium  
littoralis (French or Belgian Endive, Witloof; Chicory)

- cichorium endiva (Endive; Escarole)

**TYPE:** Biennial

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 10-14 days at 15-20°C

**DAYS TO MATURITY:** 55-140 days

**WHEN TO START/SPACING:** Endive/Escarole: -direct seed small plantings in successions from April 15-June 30.

Witloof/Chicory: direct seed from May 15-June 15

Endive/Escarole: leave 25-30 cm between plants in rows 30-60 cm apart; or thin to 30 cm between plant centres in beds.

Witloof/Chicory: thin to 5-10 cm between plants in rows 30-45 cm apart; or leave 10 cm between plant centres in beds.

**SOIL:** Any well-cultivated, fertile soil with medium water retention. Choose sites free of large stones, heavy clods, or compaction for good root production.

**IDEAL PH:** 5.0 - 6.8- (quite tolerant of acid soils)

**FEEDING:** Heavy feeders. Just prior to planting, rake in 1.2-1.5 kg. of Supergrow Mix per 10 sq. meters. An additional 150-200 grains of 3XG per 10 sq. meters may be side-dressed, if needed once the plants are established.

**WATERING:** When needed, irrigate deeply for good root development.



**YIELD:** Endive/Escarole; Approximately .6 kg. per meter of row.  
- Witloof/chicory: Approximately 15 - 20 roots per meter of row.

**QUANTITY TO PLANT:** (PER PERSON): Endive/Escarole - 4 - 6 plants per succession.  
Witloof/Chicory - 10 - 20 plants.

**HARVESTING:** Endive/Escarole - 3 - 6 weeks after blanching, leaves may be removed singly or heads can be cut. Discard older outer leaves.

Witloof/Chicory - leaves may be used as needed during the growing season. Harvest 'Witloof heads in fall and lift roots for storage. (Roots may also be left in the garden.)

**STORAGE:** Endive/Escarole: will keep 7-10 days in the vegetable compartment of the refrigerator.  
Witloof/Chicory : Roots will overwinter in place in the garden, or may be stored in damp sand or peat in a cool place (0-4°C) until needed for forcing.

**COMMON PROBLEMS:** Bitterness: leaves of endive and chicory have a naturally bitter flavor, increasing with age. Blanching improves flavor.  
Bolting: premature seedstalk formation may result due to planting too early, over-maturing, or environmental stress.

## ENDIVE, ESCAROLE, WITLOOF AND CHICORY

**LIGHT:** Will tolerate some shading.

**SPECIAL CULTURAL NEEDS:** Forcing of Witloof: place dormant roots upright in containers of damp sand or peat in a cool (10°C) dark room. Emerging heads or 'chicons' will be ready in 3-5 weeks and resemble blanched 'cos' lettuce. Keep roots moist but not soaked. Blanching Endive and Escarole: when plants are about 3/4' s grown, they can be covered with pots, boards, or dark cloth to blanch the leaves for tenderness and flavor.

**VARIETY TYPES:** Endive or Escarole: are the usual names for varieties used fresh for salads. Although the names are interchangeable, the deeply cut, curled, frilly-leaved types are usually called endive and the broader, non-curved types with white mid-ribs are known as escarole. Chicory varieties have several uses. Some are used as greens and are called 'Asparagus Chicory' or 'Cicorea'. The leaves are used in the first season and new shoots are harvested like asparagus the next spring.

Cicorea normally have small roots. The large roots of 'Magdeburg' varieties are roasted and blended with coffee, or used alone as a substitute. Chicory strains used for winter forcing are commonly called 'Witloof' or 'French' and 'Belgian' endive.

## Garlic

**BOTANICAL NAME:** Allium sativum

**TYPE:** Perennial; used as an annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** Seeds are not produced. Cloves emerges in 7-12 days

**DAYS TO MATURITY:** 110-190 days from cloves

**WHEN TO START:** Plant in October-November in mild areas, or February-March in colder regions.

**SPACING:** Plant cloves 2-4 cm deep. Leave 5-10 cm between plants in rows 30-45 cm apart; or 5-10 cm between plant centres in beds. Large bulbed 'Elephant' varieties need 10-15 cm between plants.

**SOIL:** Best suited to loose, well cultivated soils rich in organic matter.

**IDEAL PH:** 5.5-7.0

**FEEDING:** Heavy feeders. - Just prior to planting, rake in 1.2-1.5 kg. of 3XG per 10 sq. meters.  
More feed yield bigger bulbs.

**WATERING:** Requires even moisture near the soil surface.

**LIGHT:** Needs full sun

**SPECIAL CULTURAL NEEDS:** Cultivate lightly or hand weed to avoid disturbing shallow root systems

- Mulches applied later in the season will reduce weeds and conserve moisture near the surface.

**YIELD:** Approximately 500 grams per meter of row.

**QUANTITY TO PLANT:** (Per Person): 4-10 plants

**HARVESTING:** Lift bulbs when the tops have died in early fall

- Cure with the tops attached, in the sun, or a warm, dry place until the skins are papery white and the tops have fully withered
- Tops can be braided when cured, to hold bulbs in long bunches.

**STORAGE:** Bulbs should be stored in cool, dark locations, free of dampness (2-10°C, 70 relative humidity)

- Braids can be hung in well ventilated locations
- Cloves will keep 6-8 months.

**COMMON PROBLEMS:** Waxy Breakdown: sunken, light yellow areas in mature clove tissues. Cause is not known.  
- Sunscald: watery, soft spots caused by excessive heat and sunlight during curing.

**VARIETY TYPES:** There are two main types; the standard-sized varieties, and 'Elephant' garlic which can grow bulbs up to 6 times larger. Elephant garlic has a mild flavor.



## KOHLRABI

**BOTANICAL NAME:** Brassica oleracea caulorapa

**TYPE:** Biennial, used in the first year

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 5-10 days at 15-20°C

**DAYS TO MATURITY:** 45-60 days



**WHEN TO START:** Make successive sowings every 15 days from April 1 - June 30

**SPACING:** Sow seeds 5mm deep - thin to 10-15 cm between plants in rows 40-45 cm apart; or leave 15 cm between plant centres in beds.

**SOIL:** Prefers well-cultivated soils of good fertility and medium water retention. Shallow root system.

**IDEAL PH:** 6.0 - 7.0

**FEEDING:** Heavy feeder

(1) just prior to planting, rake in 1.2-1.5 kg. per 10 sq. meters of Supergrow.

(2) once plants are well established, side-dress with 150-200 grams per 10 sq. meters of 3XG.

**WATERING:** Needs even moisture; will not tolerate drought.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:**

Best quality plants mature in cool weather. Mulching will conserve moisture and cool the root systems.

Cultivate lightly or hand weed to avoid disturbing shallow root systems.

**YIELD:** Approximately 1 kg. per meter of row.

**QUANTITY TO PLANT:** (Per Person) : Fresh: 15-20 plants. Storage: 15-20 plants.

**HARVESTING:** Fleshy ball is actually a swollen stem. Plants are ready to cut when balls are 8-10 cm.

**STORAGE:** Kohlrabi will keep 2-3 weeks in the refrigerator. Freezing qualities similar to broccoli.

**COMMON PROBLEMS:** Wilting on Hot Days: if soil is not dried out, this may indicate damage due to clubroot or root maggots.

- Hollowness: may indicate boron deficiency. Apply laundry borax (11 B) at 60-70 ml per 10 sq. meters. Dissolve in water and sprinkle evenly over the soil at planting time or shortly afterwards. Apply carefully; too much boron may cause severe damage to many plants.

**VARIETY TYPES:** Two main Types: purple and green-white in flattened or globe shapes.



## LEEKs

**BOTANICAL NAME:** Allium porrum

**TYPE:** Biennial; harvested in the first year

**CLIMATE PREFERENCE:** Cool season; overwinters well in coastal B.C.

**GERMINATION TIME:** 7 days at 15°C

**DAYS TO MATURITY:** 70-150 days

**WHEN TO START:** (1) Indoors: sow seeds 4-5 mm deep into flats from February 1 - March 31; transplant 8-10 weeks later.

(2) Direct Seed: sow 8-10 mm deep into the garden from April 15 - June 15

**SPACING:** Leave 5-10 cm between plants in rows 30-45 cm apart; or leave 5-15 cm between plant centres in beds.

**SOIL:** Best suited to loose, well cultivated soils rich in organic matter. Leeks have shallow root systems.

**IDEAL PH:** 6.0 - 8.0 will tolerate more acidic conditions in organic soils.

**FEEDING:** Heavy feeders

(1) just prior to planting, rake in 1.2-1.5 kilograms per 10 square meters of Supergrow

(2) once plants are established, side-dress 150-200 grams of 3XG per 10 square meters.

**WATERING:** Requires even moisture near the soil surface.

**LIGHT:** Will tolerate some slight shading.

**SPECIAL CULTURAL NEEDS:** Transplant into 15 cm deep holes for long, white shafts.

May be mulched later in the season for blanched stems, moisture conservation, and overwintering. Cultivate lightly or hand weed to avoid disturbing root systems.

**YIELD:** Approximately 1.5 kilograms per meter of row at maturity.

**QUANTITY TO PLANT:** (Per Person): 20-50 plants

**HARVESTING:** Lift at any time the shafts are large enough to use; or leave until late fall when they will be fully grown

- May be harvested directly from the garden until growth resumes in spring
- Cut the roots from the base and trim the leaves about 10 cm from the top of the shaft.

**STORAGE:** Will keep about one month after harvest in the vegetable compartment of the refrigerator.

**COMMON PROBLEMS:** Bolting: alternating hot and cold periods, in conjunction with moisture fluctuations, may induce plants to flower in the first year.

Provide even moisture and avoid using transplants that are too large (greater than a pencil width).

**VARIETY TYPES:** Summer, fall, and winter cropping varieties are available with varying shaft widths and heights.

## LETTUCE

**BOTANICAL NAME:** Lactuca sativa

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 5-10 days at 10-15 C

**DAYS TO MATURITY:** Head: 80-95 days

Romaine: 70-80 days

Butterhead: 60-65 days

Leaf: 40-45 days

**WHEN TO START:** Make small successive sowings every 10-15 days. Sow indoors in flats from February 10 - March 15. Transplant or direct seed from March 5 - August 25.

**SPACING:** Sow seeds 5mm deep

Heads: thin to 25-30 cm between plants in rows 40-50 cm apart. For beds, leave 25-30 cm between plant centres.

Butterhead, Leaf, and Romaine: thin to 15-20 cm between plants in rows 40 cm apart; or leave 15-20 cm between plant centres in beds.

**SOIL:** Any rich, well cultivated soil with good drainage. Lettuce has shallow root systems.

**IDEAL PH:** 6.0 - 7.0

**FEEDING:** Heavy feeder

(1) just prior to planting, rake in 1.2-1.5 kg. per 10 sq. meters of Supergrow

(2) once plants are well established, side-dress with 150-200 grams per 10 sq. meters of 3XG.

**WATERING:** Needs ample moisture at all times. Will not tolerate poor drainage.

**LIGHT:** Will tolerate partial shade. Most varieties initiate seedstalk production at 14 hours day-length or more.

**SPECIAL CULTURAL NEEDS:** Planting on small ridges can help reduce bottom root diseases by allowing more air circulation at the base of the plant.

- Prompt thinning is needed to ensure rapid growth
- Cultivate lightly or hand weed to avoid disturbing shallow root systems.
- Heads: approximately 1-1.5 kg. per meter of row. Head/Romaine, and Leaf: approximately .6-.8 kg. per meter of row.

**QUANTITY TO PLANT:** Heads: 20 plants over the growing season. Butterhead, Romaine, and Leaf: 40 plants over the growing season.

**HARVESTING:** use thinnings first

- Pick leaves or heads in the morning for peak crispness
- 
- Leaf varieties may be harvested a few leaves at a time until they bolt or turn bitter
- Heads are ready when they are firm and well wrapped.

**STORAGE:** Head lettuce will store approximately 2 weeks in the vegetable compartment of the refrigerator and leaf types will keep 7-10 days.

**COMMON PROBLEMS:** Tipburn: -thought to be due to a local calcium deficiency within the leaf. Some varieties are resistant. Most frequent when sunny, dry weather follows dull periods.

- Bolting to Seed: hot weather, drought, improper thinning and long day length contribute to premature seedstalk formation. Crops maturing in hot weather should be planted in partially shaded locations.
- Poor Germination: lettuce does not germinate well at temperatures above 25°C.
- Bitterness: may be due to variety, but most often caused by overmaturity or stress.

## PARSLEY

**BOTANICAL NAME:** *Petroselinum crispum*

**TYPE:** Biennial

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 14-17 days at 15-20°C

**DAYS TO MATURITY:** 65-90 days

**WHEN TO START:** Direct seed May 1 - June 30 or start indoors 6-8 weeks earlier. Sow seeds 5 mm deep (soaking for 2 days may speed germination).

**SPACING:** Thin to 10-15 cm between plants in rows 30-38 cm apart; or leave 10-15 cm between plant centres in beds.

**SOIL:** Does well in any well cultivated, fertile soil.

**IDEAL PH:** 5.0 - 7.0

**FEEDING:** Heavy feeder. Just prior to planting, rake in 1.2-1.5 kg. of Supergrow per 10 sq. meters. Once plants are established, side-dress with 150-200 grams of 3XG.

**WATERING:** Requires moderate watering during hot, dry period.

**LIGHT:** Will tolerate some shading.

**SPECIAL CULTURAL NEEDS:** Heavy fertilization insures rapid tender growth. At seeding, mix in a few radish seeds for a marker crop. These germinate quickly and loosen the soil for the slower growing parsley seeds.

**YIELD:** Approximately 400 grams of leaves per meter of row.

## PEAS

**BOTANICAL NAME:** *Pisum sativum*

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 6-10 days at 15-20°C

**DAYS TO MATURITY:** 50-75 days

**WHEN TO START:** Direct seed from March 5 - June 30. Sow seeds 3-5 cm deep.

**SPACING:** Leave 2-5 cm between plants in rows 60 cm apart or leave 7-15 cm between plant centres in beds.

**SOIL:** Any well prepared soil with good drainage and moderate fertility.

**IDEAL PH:** 6.0-8.0

**FEEDING:** Light feeder. Just prior to planting, rake in 1.2-1.5 kg. of Flower Power per 10 sq. meters.

**WATERING:** Maintain even moisture at flowering and pod set.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:** Plant a few successions, or choose varieties with varying maturity times. Train vines up trellises or nets. Remove mature pods promptly to encourage continued production and to interrupt pea weevil and pea me larval stages. Peas do not produce well in hot weather. Good light penetration to the nodes is needed for flower production.

**YIELD:** Approximately .3 kilograms per meter of row.

**QUANTITY TO PLANT:** (Per Person): Fresh: 200-300 plants (9 meters)

Storage: 600 plants (18 meters).

**HARVESTING:** Pick 'snow' peas when pods are still flat and peas are tiny.

- Standard varieties are ready when pods have filled out, but before peas become tough and lose sweetness
- Edible podded 'Sugar Snap' types are ready when the pods have filled
- Be careful not to injure vines when harvesting.

**STORAGE:** Fresh peas will keep 7-10 days in the pods in the refrigerator. Flavour is best when eaten soon after harvest.

- Suitable for canning or freezing

**COMMON PROBLEMS:** Heavy Vine: due to excess nitrogen. Flowering and pod set are often delayed.

**VARIETY TYPES:** Early, mid-season, and late varieties are available and pod lengths vary, as well as the number of peas in a pod. Many varieties produce two pods per node. Dwarf varieties need no staking.

- Wrinkled pea seed usually produces more vigorous and sweeter peas. Smooth seeded types tend to be more disease resistant and cold tolerant.

## PEPPERS

### **BOTANICAL NAME:**

Hot Peppers: *Capsicum annuum*

Sweet Peppers: *Capsicum frutescens*

**TYPE:** Warm season

**CLIMATE PREFERENCE:** Annual

**GERMINATION TIME:** 12-14 days at 20°C

**DAYS TO MATURITY:** 60-90 days

**WHEN TO START:** Sow indoors from March 1 - April 15 and transplant into the garden May 24 - June 15. Sow seeds 5 mm deep.

**SPACING:** Leave 30-60 cm between plants in rows 60-80 cm apart, or leave 30-45 cm between plant centres in beds.

**SOIL:** Well drained, warm, and of moderate fertility.

**IDEAL PH:** 6.0 - 6.5

**FEEDING:** Light feeder. Just prior to planting, rake in 1.2-1.5 kg. of Flower Power per 10 sq. meters.

**WATERING:** Provide even moisture, particularly during flowering and fruit set.

**LIGHT:** Needs full sun.

**SPECIAL CULTURAL NEEDS:** Provide a warm, sheltered site. Use hot-caps or other protective coverings after transplanting, until nights are quite warm. If plants overset, thinning can be done to increase size of fruits. Plants are well-suited to container growing on sunny patios.

**YIELD:** Approximately .8 kilograms per meter of row.

### **QUANTITY TO PLANT:** (Per Person): Sweet Pep-

pers: Fresh: 3-5 plants

Storage: 3-5 plants

Hot Peppers: 1-2 plants

**HARVESTING:** Green Bell Peppers: can be picked when they are full sized and green, or may be left until they turn red

- Hot Peppers: can be used fresh when they have attained their proper size, or can be picked for drying or canning
- Cut the stems, leaving the cap intact until used
- Do not rub eyes when handling hot peppers.

**STORAGE:** Hot Peppers: can be dried and stored for winter use

- Green Bell Peppers: will keep 7-14 days in the vegetable compartment of the refrigerator.

**COMMON PROBLEMS:** Blossom End Rot: fruits blacken and decay at the blossom end due to calcium deficiency and/or moisture stress

- Poor Fruit Set: usually due to cold weather. Excessive nitrogen fertilizer during early growth may also delay fruit set.

**VARIETY TYPES:** Sweet Peppers: Green Bell Peppers are the most commonly grown; but other sweet types such as Pimiento, Cherry, and long, slender 'Hungarian Yellow Wax' Peppers can be grown. Bell Peppers are sweeter when allowed to turn red, but most people prefer the flavour at the green stage.

- Hot Peppers: these are usually smaller fruited, but heavier setting than sweet peppers. The main types are: Chili, Tobasco, Hot Cherry, and Cayenne varieties.



## POTATOS

**BOTANICAL NAME:** *Solanum tuberosum*

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 10-15 days at 18-22 C -  
Usually grown from tuber pieces (seed potatoes)

**DAYS TO MATURITY:** 120 days from seeds after transplanting;  
90-140 days from seed stock (tubers).

**WHEN TO START:** Plant stock pieces from May 15 to April 15 for early crops, and from April 15 - May 24 for storage crops.

**SPACING:** Leave 25-30 cm between plants in rows 60-80 cm apart; or leave 25-30 cm between plant centres in beds. Plant seed stock 7-10 cm deep.

Closer spacings usually result in better yields, but smaller potatoes.

**SOIL:** Requires well-prepared, deep, fertile soils. Large stones or clumps may produce misshapen tubers.

**IDEAL PH:** 4.8 - 6.5

**FEEDING:** Light feeders. Just prior to planting, dig in 1.2-1.5 kg. of Acid Plant Potato mix per 10 sq.meters. Avoid large amounts of fresh barnyard manures or lime.

**WATERING:** Maintain even moisture. Irrigate thoroughly when needed.

**LIGHT:** Needs full sun.

**YIELD:** Approximately 1.5-2 kilograms per meter of row.

It is generally best to wait until sprouting has begun before planting seed pieces.

- Mound the soil around the base of the plant when cultivating to cover any exposed tubers and prevent greening and sunburn. Be careful not to damage any exposed tubers when hilling.
- Mulches will help maintain even moisture and keep the soil cool in hot weather.

**HARVESTING:** Early Potatoes: can be dug when tubers reach a useable size. This is often 2-5 weeks after flowering

- Storage Crops: should be left in the ground until light frosts or natural decline cause the tops to wither. Tops can also be pushed over by hand to encourage maturity when tubers have reached a suitable size
- Potatoes should be carefully lifted with a fork to avoid cutting or bruising.

**STORAGE:** Mature potatoes will not sprout for 2-4 months after harvest. This is a rest period for the tuber. Under proper storage conditions, they can be kept in good condition from 6-9 months.

**COMMON PROBLEMS:** When first harvested, the tubers should be stored in a warm, humid location for about 3 weeks until the skins have 'set'. This allows for healing of cuts and bruises. Ideal storage conditions are around 7-10 C at 85-90 relative humidity.

Avoid storing potatoes with apples as they give off ethylene which promotes sprouting and deterioration of eating quality. Second Growth: caused by interrupted growth. Usually due to dry conditions followed by rains.

## POTATOS

**QUANTITY TO PLANT:** Early: 30 plants

- Storage: 50-100 plants

**SPECIAL CULTURAL NEEDS:** Use Only Certified Seed Stock: do not use table potatoes for seed since they may carry diseases and viruses which may not affect eating quality, but will produce poor crops. In addition, some potatoes are treated with sprout inhibitors for extended storage and will not grow properly when planted.

- Planting: small tubers (golf ball size) may be planted whole. Larger ones can be cut into pieces weighing about 50 grams each and having at least 1-2 eyes. Seed pieces can be planted immediately after cutting, but will generally sprout sooner and show better resistance to decay if left in a cool, moist room with good ventilation 1-2 weeks prior to planting. This process is called 'suberization' and ideal conditions are 7-10°C at 90 relative humidity.

Tubers may develop knobby shapes, hollow centres, or cracks. Large varieties are most susceptible to 'hollow heart' Maintain even moisture.

Scab: the occurrence and severity of this disease is influenced by too much lime or fresh manures. Some varieties have resistance.

Sunburn - Green Skins: caused by light induced chlorophyll and toxic glycoalkaloid formation in tubers. Green potatoes should not be eaten or fed to livestock. Keep plants hilled, and store tubers in a dark place.

**VARIETY TYPES:** There are a great variety of shapes, sizes, and colours? but potatoes may be grouped into three categories: white skinned, red skinned, and russeted.

- Other less common varieties have blue-purple or yellow skins
- Flesh colours vary from white to yellow, and the purple skinned types often have some purple or blue streaks in the flesh. Varieties are available with scab resistance
- Early maturing varieties generally do not store as well as late season types.

## RADISH

**BOTANICAL NAME:** Raphanus sativus

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 5-7 days at 15°C

**DAYS TO MATURITY:** Spring Radishes: 20-30 days

Winter Radishes: 50-60

days

**WHEN TO START:** Spring Types: direct seed successive crops from March 1 - June 30 and again from September 1 - September 15  
Winter Radish: direct seed August 1-25.

**SPACING:** Spring Radishes: thin to 3-5 cm between plants in rows 30 cm apart; or leave 5-8 cm between plant centres in beds.

Winter Radishes: thin to 7 cm between plants in rows 30 cm apart; or leave 7 cm between plant centres in beds.

**SOIL:** Any soil of good fertility and reasonable cultivation will produce good radishes. Large varieties need deeper soils to produce long roots.

**IDEAL PH:** 6.0 - 8.0

**FEEDING:** Heavy feeder. Just prior to planting, rake in 1.2-1.5 kg. per 10 sq. meters of Super-grow Mix.

**WATERING:** Very susceptible to drying out. Root systems are often shallow.

**LIGHT:** Tolerates partial shading.

**SPECIAL CULTURAL NEEDS:** Radishes do not perform well in hot weather, but successful production can be achieved by inter-cropping with taller crops to provide some shading.

**YIELD:**

Approximately 20-30 roots per meter of row.

**QUANTITY TO PLANT:** Spring Radishes: 20-25 plants every two weeks  
- Winter Radishes: 20-60 plants (depending on size).

**HARVESTING:** Spring radishes become tough and woody quickly at maturity.  
- Harvest as soon as roots have developed

**STORAGE:** Radishes will keep 10-14 days in the vegetable compartment of the refrigerator  
- Winter radish will keep 2-4 months in cold storage (0°C - 90-95 relative humidity). In mild areas, it will keep through the winter in the garden if protected by mulches.

**COMMON PROBLEMS:** Cracking: -soil too wet or fluctuating moisture.  
- Pithyness: -soil may be too dry or roots over-mature  
- Strong Flavour: -may be due to variety or environmental stress  
- Failure to Form roots and Bolting: -too hot, improper thinning, or too dry.

**VARIETY TYPES:** Spring Radishes: - are available in round (red, white, or red with white tips); oblong (red or white); or long (red and white) shapes  
- Winter Radishes: - are usually long or round with red, white, or black colours  
- Several Oriental Radishes are also available, most are winter varieties.

## RHUBARB

**BOTANICAL NAME:** Rheum raponticum

**TYPE:** Perennial, very hardy

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 30 days (not usually started from seed)

**DAYS TO MATURITY:** One year from roots

**WHEN TO START:** Buy root pieces or divide crowns in early spring while the plants are still dormant. Plant crowns so that 'eyes' are just below the soil surface.

**SPACING:** Leave 60-75 cm between plant centres.

**SOIL:** Thrives in any deep, well-drained soil of high fertility. Rhubarb has deep root systems.

**IDEAL PH:** 5.0 - 6.8

**FEEDING:** Heavy feeder. Where available, apply 5-10 cm of barnyard manure in early spring or substitute with 150-200 grams per 10 sq. meters of 3XG. Broadcast 1.2-1.5 kilograms of Superphosphate per 10 sq. meters in June or July.

**WATERING:** Uses large amounts of water. Deep root systems usually extract enough water without irrigation in all but the driest periods.

**LIGHT:** Needs full sun.

**SPECIAL CULTURAL NEEDS:** Rhubarb crowns

can be dug up in spring and forced indoors for early stalks. Crowns are set in damp sand, peat, or sawdust in a warm, dark room after they have been chilled outdoors. Stalks are long with small, colourless leaves. Early spring forcing can also be done in the garden by placing a barrel over the crown and banking it with 60-70 cm of barnyard manure. Removal of seed stalks will help increase yields of leaf stalks.

**QUANTITY TO PLANT:** (Per Person): Fresh: 2-3 plants

- Storage: 2-3 plants

**HARVESTING:** Don't eat leaves as they can contain toxic amounts of oxalic acid and oxalates

- Light harvesting can begin in the second year after planting

- Stalks can be cut; but it is preferable to pull at the base to one side so that they break off

- Stalks become tough in hot weather

- Young, mature leaves are best

**STORAGE:** stalks store for about two weeks in the refrigerator

- Freezes well

**COMMON PROBLEMS:** Cracked Stalks: overmaturity, or extend wet periods. Usually on largest stalks.

- Small Stalks: -plantings often decline after 7-10 years and roots should be divided and moved to a new location. Overharvesting will also reduce yields and quality in subsequent years by depleting energy reserves in the crown.

**VARIETY TYPES:** There are two distinct types: those having red stalks; and those with greenish-red stalks.

## SPINACH

**BOTANICAL NAME:** *Spinacia oleracea*

**TYPE:** Annual

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 10 days at 10°C

**WHEN TO START:** Spring: direct seed from March 5 - April 25 or start indoors four weeks earlier

Fall: direct seed from August 15 for fall cropping

September 1. Overwintering: direct seed from September 1 - September 15 for early spring crop. Sow seeds 1-2 cm deep.

**SPACING:** Rows: 8-10 cm between plants in 30-45 cm rows. Beds: leave 15 cm between plant centres.

**SOIL:** Prefers any well-cultivated soil of high fertility. Shallow root systems.

**IDEAL PH:** 6.5-7.0

**FEEDING:** Heavy feeder. (1) just prior to planting, rake in 1.2-1.5 kg. per 10 sq. meters of Supergrow (2) once plants are established, side-dress with 150-200 grams of 3XG per 10 sq. meters (or equivalent).

**WATERING:** Needs even moisture for fast growth. Drought may contribute to premature seedstalk formation.

**LIGHT:** Will tolerate slight shading.

**SPECIAL CULTURAL NEEDS:** Seed formation is triggered by long day length. Requires conditions favourable to fast growth. Stress may result in smaller, less palatable leaves.

**YIELD:** Approximately 800 grams of leaves per meter of row.

**QUANTITY TO PLANT:** (Per person): Fresh Eating: 20-40 plants  
- Storage: 40-60 plants

**HARVESTING:** cut or pull off larger leaves as needed once plants are established. Wash before using to remove soil particles which adhere to leaves.

**STORAGE:** Leaves will store 10-14 days in the vegetable compartment of the refrigerator.  
- May be canned or blanched and frozen

**COMMON PROBLEMS:** Bolting: caused by long day length. Drought and overcrowding may hasten seed formation.

**VARIETY TYPES:** Smooth leaved; savoyed; semi-savoyed. erect. prostrate and semi-erect varieties are available. Some hybrid varieties have been developed for vigour, disease resistance, and longer picking periods .

- New Zealand Spinach: (*Tetragonia expansa*) is a large, warm season replacement crop for true spinach. It is somewhat resistant to heat and drought and can be direct seeded from May 15 - June 5. Sow seeds 2 cm deep and thin to 40-45 cm between plants in rows 60-90 cm apart. In beds, thin to 30-40 cm between plant centres.  
- Harvest leaves as needed



## SQUASH, PUMPKINS AND MARROWS

### BOTANICAL NAME:

Cucurbita pepo: Summer squash, pumpkins, vegetable marrows, acorn squash, vegetable spaghetti, and edible gourds

- Cucurbita moschata:

Pumpkins and 'Butternut' squash

- Cucurbita maxima: most 'Winter' squash and 'Big Max' pumpkins

**TYPE:** Annual

**CLIMATE PREFERENCE:** Warm season

**GERMINATION TIME:** 5-14 days at 20-25°C

**DAYS TO MATURITY:** 50-110 days from transplants

**WHEN TO START:** Direct seed from May 24 - June 5 or start seedling indoors 4 weeks earlier

- Avoid disturbing root systems when transplanting (use peat blocks, pellets, or pots).

**SPACING:** Varies with habit of plant

- Sow seeds 3 cm deep in hills

- Leave 3-6 plants per hill with 120 cm between hill.

**SOIL:** Prefers any warm, well-drained soil of good fertility. Silt loam and warm, organic soils are ideal.

**IDEAL PH:** 6.0 - 8.0

**FEEDING:** Heavy feeder.

Just prior to planting, rake in 1.2-1.5 kg. of Flower Power per 10 sq. meters

**LIGHT:** Needs full sun.

**WATERING:** Heavy users of water.

- Provide ample moisture during hot periods, preferably not wetting leaves and flowers



### SPECIAL CULTURAL

**NEEDS:** provide protection from severe weather in the early seedling or transplant stage

- Provide adequate surface moisture until seedlings emerge

- Vines may be trained up strong trellises to conserve space; but heavy fruits may require some support

- Once sufficient fruits have

set, vines may be

lightly pruned for containment purposes.

**YIELD:** Approximately 2-2.5 kg. per sq. meter.

**QUANTITY TO PLANT:** (Per Person): Summer Squash: 1-2 plants Winter Squash: 2-3 plants.

**HARVESTING:** Summer Squash: cut fruit leaving a small portion of stem on the end. Be careful not to injure the vines. Summer squash should be used when small and tender, before large seeds develop and the skin toughens. Prompt harvesting will promote further fruit production

- Winter Squash: are usually left in the garden until light frosts have killed the leaves and vines. Leave the thickened stem attached for better storage.

**STORAGE:** Summer Squash: will keep 2-4 weeks in the refrigerator, depending upon maturity. Winter Squash: cure in a warm, dry room for 3-4 weeks to set the skins. Washing is not necessary but if done, a 1 solution of laundry bleach should be used to kill fungi and bacteria. (Mix about 200 ml of bleach per 1 liter of water) Squashes should then be thoroughly rinsed with clean water and allowed to dry fully before storage. Once skins are hard and shell-like, move to a cool dry place 7-10°C - 70-75% relative humidity). Mature squash will keep about 6 months in good storage.

## SWEET CORN

**BOTANICAL NAME:** Zea mays rugosa

**TYPE:** Annual

**CLIMATE PREFERENCE:** Warm season

**GERMINATION TIME:** 7-12 days at 15 - 20°C

**DAYS TO MATURITY:** 58 - 110 days

**WHEN TO START:** Direct seed from May 15 - June 15. Make a few small successive plantings for extended harvest period, or use varieties with varying maturity times.

**SPACING:** Sow seeds 1 - 2 cm deep  
Seeds may be sown individually and thinned to 20 - 30 cm between plants in rows 50 cm apart, or leave 40 - 45 cm between plant centres in beds. May also be planted in groups of 3 or 4 seed and thinned to 2 sprouts per group.

**SOIL:** Soil temperature should be at least 15 C before planting. Prefers sandy, well-drained loams with medium amounts of organic matter. Corn is shallow rooted.

**IDEAL pH:** 6.0-7.0

**FEEDING:** Heavy feeder.

Just prior to planting, apply 1.2 - 1.5 kg. per 10 sq. meters of Flower Power

Once plants are established, side-dress with 150 - 200 grams per 10 sq. meter of 3XG.

**WATERING:** Maintain even soil moisture and irrigate during hot, dry periods.

**LIGHT:** Needs full sun.

**SPECIAL CULTURAL NEEDS:** Plant in blocks for even pollination.

- Cultivate lightly or hand weed to avoid disturbing shallow root systems
- If organic mulches are used, do not apply until plants are well established to allow thorough warming of the soil
- Sucker removal is unnecessary.

**YIELD:** Approximately 3-7 ears per meter of row.

**QUANTITY TO PLANT:** (Per person) : Sweet corn is ready at the 'milk' stage (when liquid inside kernels is milky). If liquid is clear, it is immature and if it is doughy, the ear is overmature. When judging ripeness, check kernels in the center of the cob.

- Ears are near maturity when they fill out, and the silks turn brown.

**STORAGE:** Flavour deteriorates quickly after harvest. Refrigerate immediately.

- Cobs will keep in their husks for up to 8 days in the refrigerator
- Suitable for freezing or canning.

**COMMON PROBLEMS:** Poor pollination - may be caused by stress, or planting in long thin rows. Plant in blocks.

- Poor Taste : Cross pollination with field corn or popcorn varieties. Isolate 'supersweet' varieties from all others that mature at the same time
- Purple leaves : usually found on young plants. This may signal a phosphorous deficiency, but it is most often a sign of chilling or stress. If the soil is adequately fertile, the plants usually recover when the weather improves.

**VARIETY TYPES:** Only early and mid-season varieties are recommended for coastal areas.

- The main types of corn grown in gardens are yellow, white, bicolour, supersweet, popcorn, and ornamental (Indian corn).

## TOMATOES

**BOTANICAL NAME:** *Lycopersicon esculentum*

**TYPE:** Annual

**CLIMATE PREFERENCE:** Warm season

**GERMINATION TIME:** 6-10 days at 20-25°C

**DAYS TO MATURITY:** 55-90 days from transplants



**WHEN TO START:** sow

Indoors from April 1 - May 1 and transplant May 24 - June 10. Sow seeds .5-1 cm deep.

**SPACING:** Leave 45-60 cm between plants in rows 1 meter apart; or leave 45-60 cm between plant centres in beds.

**SOIL:** Any warm, well-drained soil of good fertility and cultivation. Deep silt-loams are best.

**IDEAL PH:** 6.0 - 7.0

**FEEDING:** Light feeder. Just prior to planting, rake in 1.2-1.5 kg. of Flower Power per 10 sq. meters. Avoid excessive nitrogen feeding, particularly before fruit setting.

**WATERING:** Provide even moisture during fruit set and development. Excessive waterings can increase fruit size, but may decrease flavour.

**LIGHT:** Needs full sun.

**SPECIAL CULTURAL NEEDS:** Provide some staking or support, even for determinate (bush) types. Mulches may increase early yields and lessen decay problems due to soil contact with fruits. Train and prune indeterminate (staking) varieties to 1, 2, or 3 stems by removing the lateral growing points (suckers) from the leaf axils, allowing only the main stem(s) to grow.

## COMMON PROBLEMS: Poor

**Fruit Set:** usually due to cool weather conditions, but excessive heat and drought may also cause poor setting. Flowers can be hand pollinated by gently brushing a feather or soft brush from flower to flower. The best time to pollinate is around mid-day.

**-Blossom End Rot:** Due to a local calcium deficiency within the fruit. Contributing factors

are high fertilizers salts, drought, or calcium deficient soils. Maintain even moisture.

**-Oedema:** Small, calloused, or corky bumps appear on the undersides of leaves, petioles and stems of seedlings. This condition is brought on by high soil moisture and humidity and is not usually serious. Provide good ventilation and water sparingly if oedema occurs.

**-Sunscald:** Bright sunshine on fruits may cause yellow, blotchy areas to appear which may become whitened and papery as the fruit matures. Do not remove leaves above the fruiting trusses.

**-Catface:** Fruits are misshapen, and malformed blossom ends have darkened scarred areas with areas with deep cracks. The condition is thought to be caused by a disturbance during flower development, and cool, moist weather conditions.

**-Herbicide Injury:** tomatoes are extremely sensitive to 2-4-D and related compounds used as weed killers in turf. Do not mulch plants with treated lawn clippings and avoid spray drift when applying herbicides. Symptoms of injury include distorted, flattened, and twisted leaf shapes. Avoid spraying any garden plants with equipment that has been used for herbicide application.

## TOMATOES

**YIELD:** 2-4 kilograms per meter of row.

**QUANTITY TO PLANT:** (Per Person): Fresh: 3-5 plants  
Storage: 8-K plants.

**HARVESTING:** Tops of plants may be removed about 4-6 weeks prior to frost to increase the size of those fruits which have set. Fruits setting later than this date will not normally have enough time to develop.

Harvest fruits when they are pink or red' but before the flesh softens.

- Most garden tomatoes taste best when vine-ripened.

**STORAGE:** Ripe tomatoes will keep 3-6 days at 10°C

- Remove all remaining fruit just prior to the first frosts: If stored in a cool room (12-15°C - 85-90% relative humidity) with good ventilation they will slowly ripen in 2-6 weeks. Some immature fruit may rot ripen.



**VARIETY TYPES:** There are two main growth habits; determinate and indeterminate. Determinate, or bush varieties, are not pruned, and they tend to produce fruit in flushes. Indeterminate, or staking varieties, can be trained to one or more main stems and require pruning and support. They tend to produce a more regular supply of fruits.

- Varieties are available for early to late cropping but only early and some mid-season varieties will perform well in cool coastal areas.

- Colours vary from the standard reds to pink, yellow, and orange

- Sizes are very variable depending upon variety and growing conditions. Generally, the larger the fruits, the fewer of them, and the later they will mature. Sizes range from tiny 'cherry' tomatoes to upwards of one kilogram.

- Shapes of tomatoes range from round to oblate (flattened) and heart-shaped to pointed. Some novelty varieties are pear-shaped or boxy (square).

- Paste types are used for cooking. Flesh is meaty and rather dry

- Many varieties, especially hybrids, have excellent resistance to several diseases and nematodes.

## TURNIPS AND RUTABAGA

**BOTANICAL NAME:** Turnip:  
Brassica rapa

Rutabaga: Brassica napobrassica

**TYPE:** Biennial, used in the first year

**CLIMATE PREFERENCE:** Cool season

**GERMINATION TIME:** 7-14 days at 15°C

**DAYS TO MATURITY:** Turnips:  
28-70 days

Rutabagas: 80-90 days

**WHEN TO START:** Turnips: direct seed from March 5 - May 5. Fall sowings can be made in early August  
Rutabagas: direct seed June 10-25 for fall and storage crops.

**SPACING:** Turnips: sow seeds 10 mm deep and thin to 10 cm between plants in rows 40-50 cm apart. Leave 10-15 cm between plant centers for bed plantings.

Rutabagas: sow seeds 15-20 mm deep and thin to 15 cm between plants in rows 50-60 cm apart. Leave 15-20 cm between plant centers for bed plantings.

**SOIL:** Any well-cultivated soil with medium water retent and sufficient depth for root growth.

**IDEAL PH:** 6.0-8.0

**FEEDING:** Light feeders.

Just prior to planting, rake in 1.5 kilograms of Supergrow Mix per 10 square meter.

**WATERING:** Adequate moisture is required during root development.

**LIGHT:** Will tolerate slight shading.



**SPECIAL CULTURAL NEEDS:**

Mulches will improve moisture retention and help cool the roots during the hot periods. Sweetness and flavor of rutabagas is enhanced by light frosts. **YIELD:** Approximately 1-1.5 kilograms per meter of row.

**QUANTITY TO PLANT:** (Per Person): Fresh: 20 plants.  
Storage: 20-40 plants.

**HARVESTING:** Turnips: -are ready when 5-10 cm roots have formed. Like radishes, they can overmature quickly. The tops are often used for greens.

- Rutabagas: are normally used when the roots have attained 8 cm or more. Since they mature in the fall, they will hold for long periods, or even overwinter in the garden.

**STORAGE:** Turnips:-will keep 2-3 weeks in the refrigerator if the tops are removed

- Rutabagas: will overwinter if mulched, and will store for 2-4 months in cold storage (0°C - 90-95 relative humidity).

**COMMON PROBLEMS:** Tough or Woody Roots: overmaturity, or roots maturing in hot, dry conditions.

- Cracked Roots: may occur if soils are too wet

- Wilting on Hot Days: if the soil is not dried out, this may be an indication of clubroot or root maggot injury.

**VARIETY TYPES:** Turnips: varieties are available with globe and flattened shapes and in colors of red, purple, white, and yellow. Some varieties are grown principally for roots or greens, and others are dual purpose.

- Rutabagas: colors range from yellow-purple to white-red skins with white or yellow flesh. Some strains are milder and sweeter than others.