

Notes on WINTER VEGETABLE GARDENING

By Joyce Gemmell, Master Gardener, October 2009

Brassicas Broccoli

The first broccoli seed in North America was sold by Stokes Seed Co., NY, in the 1920s. The crop has only been popular since World War II when the frozen food industry blossomed. Since then many hybrids have been developed for the home garden with large compact central heads like one sees in the supermarkets.

There are other types grown in Europe and the Orient: The cauliflower-broccoli cross called Romanesco (85 days), and Floccoli (65 days), the green sprouting Broccoli raab (a turnip broccoli) and the Chinese broccoli which is actually a kale.

Most home vegetable gardeners like a plant that will produce a large central head, which after cutting, causes the plant to sprout many side shoots that can be harvested over a long season. Bonanza Hybrid (Burpee, 55 days) is a good one.

There are several varieties called Sprouting Broccoli that do not form a large central head. These are probably one of the easiest Brassicas to grow: Dandy Early (90 days) has a 6 inch head followed by many side shoots (Thompson & Morgan), Early Purple Sprouting (120 days) and the old Italian variety Calabrese (85 days). If you want a large- headed type, one of the best is Premium Crop, an All American Selection. Burpee, Park and Stokes all carry it. Do not forget that maturity dates listed here and in catalogues *are from setting out the transplants in the spring*. Also, for large head types, try Goliath & Packman.

Broccoli grows well in fertile, well drained soil. It needs to grow rapidly without slowing down. Prepare soil deeply and with correct drainage. A soil on the acid side, below 6.5, can increase the susceptibility to club root disease, which can be misidentified for nematodes. Black rot, a very destructive bacterial disease, has been reported in the El Cajon area. Both bacterial and fungal diseases can stay in the soil indefinitely and is one of the reasons one should rotate Brassicas in the garden on a 2 to 4 year basis.

Broccoli is a heavy feeder and soil should be supplied with a pre-plant fertilizer such as 16 – 20 – 0 or a slow release, balanced formula. If organic methods are used, incorporate composted chicken manure and some bone meal or a blood meal and bone meal combination at least a week ahead of planting.

Broccoli is shallow rooted and sometimes plants will blow over as they mature and become top heavy. Plant transplants up to the bottom set of leaves. This will place them a little deeper and prevent plants from leaning and forming a gooseneck stem. Never plant transplants that have a flower bud formed or ones with woody stems. Large transplants in six – packs at the nursery can be root-bound and under stress. Pass them up.

Space plants 12 – 18 inches apart depending on variety size, or wider spacing if furrow irrigating between rows. In raised beds, a staggered planting works well. Hand pull weeds under the shallow rooted plants.

Broccoli does very well under row covers such as Reemay. Young transplants are shaded about 20% and insects are kept off until tissue is hardened. Row covers do not mean you can forget about what is going on underneath. A weekly inspection, at least, is a must for aphids or earlier deposited worm eggs beginning to hatch.

Row covers produce a mini- environment of warmth during the day, slower evaporation and protection from insects, birds and ground squirrels. Seedlings can also be eaten by cutworms as soon as they are put out. Plants should have a paper collar put around the stem as they are placed in the ground if you have had cutworms before.

Some microclimate areas can produce edible broccoli all summer long; but don't count on it if you garden out on the valley floor with lots of sun and hot air. As soil and air temperatures rise in the summer, broccoli becomes tough and of poor flavor. The cabbage butterfly lays eggs all summer and the bug problem can be more than the crop is worth compared to other seasonal vegetables in the summer.

Cauliflower

Cauliflower is supposed to be one of the more difficult Brassicas to grow well. Proper planting time and variety choice is the secret to an easy crop in this area.

Cauliflower has no tolerance for a check in growth during the juvenile period. It is also sensitive to trace elemental deficiencies which cause hollow stems and malformed curds.

Cauliflower planted during the first week in October can be harvested in December. The plant likes deep soil with organic additions. Add a pre-plant fertilizer, in top 12 inches, high in phosphorus (16 – 20 -0) and side dress when half-grown.

Use young transplants from the nursery, or your own, no more than 4 inches tall. If raising your own, start seeds in containers 4–5 weeks before planting in the garden. Seedlings started Sept. 1st in a partially shaded place will grow much faster during this warm period and will not need bottom heat to germinate. Be sure not to let seedlings wilt. Water daily or put on a capillary mat and water from below. Seed will sprout in 5-7 days and four weeks later should be large enough to put in the garden. Plant a little deeper, but don't compact soil around roots.

Plant may need cutworm protection with a paper collar wrapped around the stem when transplanting.

Fall planted cauliflower tends to make larger plants so space 18-20 inches both ways on a staggered pattern in raised beds. Prepare soil ahead of planting with organic matter and composted manure or pre-plant fertilizer high in nitrogen and phosphorus (16 – 20 – 0). If only compost and manure are used, side dress with liquid fish emulsion every 2 weeks until heading begins.

Use self blanching varieties to keep top of the “curd” white or break a leaf or two over the head for shade.

Cauliflower does well under row covers and eliminates a lot of spraying for the imported cabbage worm and loopers. It also prevents the soil from drying out too rapidly. Follow same recommendations under broccoli for pest control and inspection. After plants reach top of row covers, remove the covers and start a spray program with Bt and soap.

Watch heads for maturity. Don't let them get ricey. Cut whole head off while buds are white and compact. Cauliflower can be stored in a plastic bag for one week in the refrigerator, or freeze.

**Varieties: Snow Crown Hybrid 53 days, Stokes and Burpee
Snow Ball Self Blanching 70 days, Park Seed
Purple Head 80-85 days, Burpee**

Floccoli 60 days. Hybrid cross between broccoli and cauliflower, Thompson & Morgan

Romanesco 85 days, may be same as above, Thompson and Morgan Seed.

If you like to have a longer season, stagger plantings every 2-3 weeks or plant early and late varieties a week or so apart.

Kale & Collards

Kale has been virtually ignored by Southern California gardeners because of its cold tolerance and heat sensitivity. Actually, collards grow better for us. Kale is a super green containing twice the daily recommended allowance of Vitamin A and almost as much Vitamin C as peppers. Kale is also low in oxalic acid so its calcium can be utilized by the body. Kale isn't only cold tolerant; it prefers temperatures between 40 and 60 -65 degrees and becomes tough and bitter at 75 degrees. Cold actually makes it super sweet. It is hardy and easy to grow in this area where January temperatures are sometimes in the 70s.

Direct seeding the first of October will produce a crop during the colder winter months. It will take about 90 days to get plants large enough to harvest; thinnings can be eaten too. There are three categories: Dwarf, Siberian, and Chinese (also called Chinese broccoli)

Varieties are: Chinese Kale, Green Lance (45 days, from Thompson & Morgan), Dwarf Blue Scotch (70 days, from Park Seed Co.) Wild Red Kale (55 days, from Nichols)

Collards are not much different from kale. They differ in appearance and collards grow larger than kale, to 3 feet tall and 2 feet wide, with large smooth leaves. Collards don't have the super resistance from freezing, although they will survive down to 15 degrees F. Collards are a non-heading cabbage and have a cabbage flavor.

Start seed 4 weeks before transplant date (Oct.1st) for a fall and winter green or Feb. to March for a spring crop. Harvest like Kale, cutting tender leaves – not the biggest –leaving the center to produce more. Tear out the midrib which is tough and should be discarded. Young leaves have a sweet flavor and older leaves are often bitter.

Varieties: Hicrop Hybrid (75 days) both from Park Seed Co.

Kohlrabi

This is the mystery vegetable since there is nothing like it in the plant world although it is thought to have derived from wild cabbage. The closest vegetable in taste is the core of the cabbage. The plant has an edible “bulb” produced on a stem above the ground. The leaves sprout from around the top of the bulb. The flesh is mild and crisp. The bulb should be peeled before eating. Direct seed ¼ “ deep, with 2 seeds per inch, cover with sand or compost for faster germination. Thin to 3-4” apart in rows 5” apart in wide bands. Begin to harvest when stems have swollen to 1” to make room for remaining bulbs to expand.

Varieties: Grand Duke (45 – 60 days), Purple Vienna (60 days) and Rapid (45 days, a purple color) all from Park Seed Co.

Cabbage

Cabbage comes in many sizes, shapes and colors – Cannon Ball, Flat Dutch, Jersey Wakefield pointed and red, Ruby Ball and Savoy cabbage with its blue-green to light green crinkled leaves and creamy center. There is Chinese Cabbage that we will talk about later.

The Japanese have developed several hybrids in the past few years that resist splitting in warm weather (late spring here) and early varieties that would be good for spring planting here – Darkri Hybrid (42 days, Park Seed Co.)

Cabbage is easy to grow in all areas if planted to mature in cool weather. Seeds germinate quickly at 70 degrees and a few days later at 59 degrees. Because the plant needs cool temperature to mature, it is best to start your own transplants with the variety of seed you want to grow. Nursery grown transplants are not usually named hybrids. Early varieties, inland, do not grow well as an early fall crop due to the still warm soil and daytime temperatures during late Sept. to the first part of November. It is better to use the early varieties, 60 -65 days for early spring planting and use the mid and late maturing varieties for fall transplants.

Start seed about 5 weeks before setting out. Cabbage does well with decreasing day length, however, fall plantings grow more slowly than early spring plantings. A variety that has a 70 day maturity date might take 30 days longer depending on our winter temperatures.

Cabbage grows well in soil high in organic matter and composted manure. Or use compost for soil amending and 16 – 20 – 0 as a pre-plant fertilizer, lightly applied.

Space plants 12 inches to 2 ½ feet apart. New gardeners are surprised at the size of a mature cabbage. Some of the large Savoy cabbages will take the width of a 4 foot bed. General spacing is 12 to 18 inches for small varieties and 2 to 2 ½ feet for large varieties with 2 to 3 feet between rows. On raised beds, space 12 – 18 inches on a staggered pattern. Set transplants a little deeper in the ground, but don't bury bottom leaves. Avoid compressing the soil around the root ball as it retards root growth. Do not buy nursery transplants if they are root bound and stalks are kinked. Cabbage does very well under row covers and with drip irrigation.

Some recommended varieties are: Savoy Ace (85 days), Savoy King (90 days). These are both large plants. Spivoy Hybrid (50 days) is a small 15 – 18 inch diameter Savoy type for the garden. Treta (55 days) is a conical headed cabbage. Stonehead (70 days) is one of the Japanese hybrids and an All American winner. Emerald Cross Hybrid (63 days) is a firm, round, red head.

Chinese Cabbage

There are two major types of Chinese cabbage, the heading and the non-heading. The non-heading type under its most common name, Bok Choy is a rather open rosette of dark green leaves with white celery-like stalks. This plant is more heat tolerant but much more sensitive to cold which makes it bolt when it suddenly turns warm during winter or early spring. It grows very fast in fertile soil (45 – 55 days) and should be planted at 2 to 3 week intervals for constant supply. It can be harvested at the small plant stage or a few stalks at a time.

The heading types are known as Napa Cabbage or Michihili. Michihili has a tall cylindrical or tapered head while the Napa is a short barrel-shaped head. Neither of these Chinese cabbages look or taste like ordinary cabbage. They both have large cover leaves that are trimmed off to reveal the compact heads. They need space in the garden – 16-24 inches across.

Chinese cabbage is a heavy feeder; use compost made with manure and a constant supply of moisture. It is better to start plants in individual pots or cells as bare root transplanting will cause bolting in some types. To direct seed, plant ¼ inch deep in single rows or block on wide raised beds. Space heading types 1 ½ to 2 feet apart.

Varieties: heading types – Michihili Jade Pagoda Hybrid (60 days) Park Seed; Napa type, Two Seasons F1 Hybrid (65 days)

Thompson & Morgan Seeds. Non-heading types – Lei Choi (47 days)
Burpee Seeds, Pak Choi (45 days) Park Seed.

There are now many introduced Asian types of cabbage which are very different from the European cabbages. There is also a problem with names, depending on which country or part of the country the seed is coming from. There are many new hybrids from Japan worth trying. Try some from specialty seed companies.

Brussels Sprouts

Brussels sprouts are grown for the miniature cabbage-like buds that develop on the 2 – 3 foot stem. They need a long cool growing season. Most gardeners find them to be disappointing if planted in the spring as temperatures rise too quickly for the maturing plant.

If planted in the fall (Oct. to Nov.) they can take 90 to 100 days to mature from transplants. Raising transplants from seed takes 5 to 8 weeks and if it is still warm, they may need a little shade until temperatures drop.

Brussels sprouts like a well drained, fertile soil and should be side dressed with a complete fertilizer (5 – 10 – 5) when half grown.

Space transplants 18 to 24 inches apart in rows 2 -3 feet apart. Set transplants a little deeper but don't bury the root ball. Water each plant in and water daily for the first week. Water deeply once a week during the winter if there is no rain.

Before sprouts crowd each other, break off the lower leaves over a period of a few weeks, starting at the bottom and working up the stem, leaving the uppermost foliage. Pick when 1 – 2 inches in diameter and firm.

Varieties: Long Island Improved (100 days) semi-dwarf, old commercial variety

Jade Cross "E" (96 days) tall hybrid, better bud spacing

Prince Marvel (90 days) hybrid, tall (35") Parks & Stokes

Seed Co.

Brussels sprouts should not be grown in soil where other Brassicas have been before. All crops of this genus should be planted on a rotation pattern to avoid diseases building up in the soil.

Commercial growers top the plants when the lower sprouts are about $\frac{3}{4}$ " in diameter. The crop is ready for harvest about a month later when sprouts are $\frac{1}{2}$ - 1 " in diameter. This produces a stalk of fairly uniform sprouts for an once-over harvest.

Vegetable Gardening – Peas

There are three categories of peas: the English or shelling pea, the Chinese pea or snow pea and the snap pea. The differences between the last two, edible pod types, is in the maturity of the pea inside the pod. The Chinese or snow pea has a large flat pod, some up to 2 inches across and 4 – 5 inches long with immature peas, at ideal harvest. The snap pea has a smaller pod width, round or oval in diameter and fleshy. Flavor of the pod is very sweet in some varieties when the peas in the pod are half to fully developed. The sweetness of the pod encourages most people to eat them raw.

All of the three categories have hybrids developed for disease resistance, earlier harvest, plant size, yield and flavor. In areas of the country where cool wet spring and summer favor the pea, they grow and produce without many problems, but in an alien environment of mild wet springs and hot humid summers, they are susceptible to many diseases and generally give a quick flush of peas before the plants are under mildew stress and stop blooming.

To overcome, somewhat, the combination of powdery mildew and other susceptible wilts, we plant peas in late fall (October) and harvest in about 60 to 90 days, depending on the weather. The longer one delays planting, even early maturing varieties, the bigger chance that the harvest will begin the same time spring temperatures start rising and overcast days bring high humidity, the two factors for mildew infection. Most certainly, one should select varieties that have been developed with mildew resistance but that does not mean your plants will be 100% protected from the problem.

Germination can be a problem in wet cold soil. It can also be a problem in warm wet soil. Peas prefer well drained soil. On heavy soil, plant on mounds for better winter drainage. Do not use high nitrogen fertilizer as peas are sensitive to salinity. Apply all purpose (5 – 10 – 5) fertilizer before planting and work into the top 12 inches. Do NOT use fresh horse or any other fresh manure.

Plant seed 1 to 2 inches deep (2 inches deep if your ground is still warm, 70 degrees or over.) Water the rows or beds several days before planting to bring soil moisture up. After planting, wait for germination before watering again, especially on heavy soil. Peas can stand crowding, 2 – 3 inches apart in a row, or wait for good germination and then thin. If you plant dwarf varieties, try planting in double rows, 6 – 8 inches apart and they will support each other. Most dwarf varieties

do better with a short trellis. Large climbers need sturdy support, for some, as much as 8 feet.

The Shelling pea has a fibrous, stringy pod with sweet plump peas. It takes many plants to give enough peas for a good sized harvest. Pods are picked when the peas are filled out and before the pods become mottled or yellow. The peas, when over mature, lose their sweet flavor. Some of the better hybrids are: **Maestro** (61 days) with 11 peas in each pod, **Wando**(68 days) takes heat so you might try it is March, **Novella** (70) days is a dwarf, semi leafless and prolific, **Green Arrow** (70 days), **Burpeeana Early** (63 days) or **Alaska** (55 days), a smooth seed type that germinates better in wet soil. All of the maturity dates listed are based on spring planting. Fall planting and slower winter growth may extend maturity dates.

The Chinese or snow pea that we know from Chinese cooking, must be picked when the pea is immature. The pods can be fibrous and “grassy tasting.” Some of the tall varieties are very prolific and need daily picking. Some of the recommended varieties in field testing are: **Mammoth Melting Sugar** (90) days, very large pods, prolific; **Dwarf White Sugar** (60 days) early, large harvest; **Dwarf Grey Sugar** (80 days), very prolific, good mildew resistance. A new Park Seed Co. introduction (1996) is **Short ‘N Sweet** (50 days), a snow pea with vines only 30 inches tall. Wait until October to plant. **Oregon Giant** (60 days), 2 ½ foot vines, high sugar pod, tolerant of powdery mildew.

The Snap Pea, a generally different pea from the snow pea, was developed by a plant breeder in Idaho in the early ‘70s. It was awarded the All American Selection for vegetables in 1981 under the name of **Sugar Snap**. Since its introduction, many variations of the snap pea have been developed to improve the characteristics. **Sugar Daddy**, a 1985 introduction, is stringless; **Sugar Bon** is a dwarf variety and early. There are now 5 or 6 snap pea relatives from which to choose. All have the typical sweet, oval, fleshy pod with large sweet peas inside.

There is some evidence that some snap type peas are day length sensitive, which would mean that some varieties would grow larger, bloom more and consequently have higher yield if planted in early spring instead of the fall. Which varieties should be planted in the spring and which could be planted in the fall may be determined by the field trials.

Field trials were done in El Cajon by the University of California for three seasons on both types of edible pea pods. Evaluations were made for mildew resistance, maturity dates, yield and flavor. (see notes following)

Snap Pea and China Pea (Snow Pea) Notes from Field Trials

Snap Pea: Size varies, plants 2 ½ to 6 or 7 feet tall. All have thick wall pods, round or oval, firm, crisp, sweet, some more than others. Can be eaten raw, cooked and shelled. Original variety called **Sugar Snap** is stringy, later varieties are stringless.

China Pea or Snow Pea: Plant size from 3 ½ to over 6 feet tall. Pods are 3 – 5 inches long and broad, depending on variety. In field tests done by the Master gardeners, the highest yielding China Pea was **Dwarf Grey Sugar** and a tall variety called **Mammoth Melting**.

PLANTING: If planted October to mid-November, harvest should begin in January to mid-February and continue for approximately two months before mildew affects the yield. Once mildew is observed on the bottom leaves and temperatures are increasing, the yield begins to decline. It's time to pull the vines. Smooth seed varieties are adapted to cool weather and colder soil.

FROST: Mature plants can take freezing temperatures to the mid twenties, but if in bloom and pod, freezing will usually kill both flower and fruit. The plants will continue to grow and set more fruit as soon as temperatures rise again.

MATURITY DATES: Listed maturity dates are based on spring planting. Use them only to compare varieties. Maturity will depend on the date one planted and the winter temperatures.

GARDEN PEA VARIETIES

Green peas, sugar peas, china peas, and snap peas are all cultivars within **Pisum sativum**. Green peas are the common shelling variety of pea, while others are edible podded varieties botanically identified as **P. sativum** var. **saccharatum** and **P. Sativum** var. **macrocarpon**.

In the edible-pod varieties, there are two sub groups –the sugar or snow peas and snap peas. Within sugar peas, china peas are semi-dwarf types growing to a height of about three feet and producing pods three or four inches long. Standard sugar peas typically grow to a height of six feet or more and produce pods four or five inches long. Both the China and standard sugar pea types produce pods that are broad and thin. The leading China pea variety is Dwarf Grey Sugar, while Mammoth Melting Sugar is the most preferred standard sugar pea variety. The plant size of snap peas varies as there are standard varieties and a growing number of dwarf ones now available, but they all have pods with thick walls that become round, firm, and crisp. Pods may be eaten raw, cooked or allowed to mature for shelling like common peas.

Pea varieties are categorized further into groups through many traits: pod color (light or dark green); seed surface (smooth or wrinkled); days to maturity (early, mid or late season); plant size (indeterminate/tall, semi-determinate/semi-dwarf or determinate/dwarf); pod shape; seed size and color. The varieties with dark green pods are preferred for freezing and home garden use. Smooth-seeded varieties are more adapted to cool weather conditions, and wrinkled- seeded peas are generally considered to be sweeter, although there is recent evidence contradicting this.

There is an ever-changing list of garden pea varieties as breeders develop new peas with improved qualities. Better flavor, larger peas, higher yields, dwarf growing habit, more tendrils for vine support, disease resistance, and stringless pods have all been introduced. Most dwarf varieties and many semi-dwarf ones require no staking or support. However, harvesting may be easier if plants are grown on a short fence to keep them from falling over in the wind. The tall varieties will require a strong support system consisting of stakes and twine to keep plants upright and facilitate harvesting.

Source: Dennis Pittenger, Urban Horticulturist; VC – UCR, Vegetable Briefs, January 1985.

ROOT CROPS

Carrots – The two most lamented problems of carrot growers are slow germination and forking. First carrot seed is small and does not have

much stored food reserves. If the germinating seed takes too much time to push through crusted soil or the top half inch of soil dries out repeatedly, they can't make it.

Try some of the recommended planting tips if you have trouble getting carrots to come up or you have clay soil. Try trenching and filling the trench with composted soil mix or compost and sand, or on amended soil, try covering the seed with sifted compost, sand or vermiculite. Carrots are divided into shape and length. This variation allows you to choose one for your soil condition. Don't plant long thin carrots if you have heavy soil.

There are several causes for forked carrots – compacted soil, too much water, heavy fertilization (fresh manure), close spacing and disease. Think stump-rooted carrots like CHANTENAY, or short tapered ones like DANVERS, are less likely to fork but all carrot varieties fork if the soil is dry, compacted or rocky.

Charles Ledgerwood, an old time seedsman, who had a seed store in Carlsbad and previously worked for Ferry-Morris Seed Co. for many years wrote some notes of FORKING OF CARROTS.

He says that regardless of the variety of carrot you are growing, the shape and length of the mature carrot is determined when the tiny root is the size and diameter of a piece of sewing thread. This fact is true regardless of the type of soil in which the crop is grown or the time of year it is planted. Carrot seeds require soil to be kept wet after planting for up to 12 days or more depending on the temperature. This long period of wet upper soil causes water to penetrate to deeper depths, and capillarity continues to bring this deeper moisture up to the tiny carrot root. When the baby carrot roots need for water is satisfied it stops penetrating the ground, and divides and spreads laterally or “forks”. This “forking” occurs at whatever depth the ground is saturated when the root is the size of sewing thread, or up to string size.

Ledgerwood goes on to say that the shorter varieties such as Chantenay may fork at shallow depths, but the extra long kinds, such as Gold Pak, Long Imperator or Nuggeteer may fork at either shallow or deeper depths at what level the soil is saturated when the root is less than string size.

Ledgerwood gives the solution: Stop watering carrots when the tops are about ½ to ¾ inches tall and the roots are only thread size. They have a remarkable ability to do without water at this stage, but must be watched closely to know when they reach their extremity and need to be irrigated again. Because carrots planted in the summer or early fall

need an abundance of water, it is a time when forking is most likely to occur. But, it still is true that water must be withheld from the tiny little carrot plants in order to **FORCE THEM** to penetrate the ground to full depth. After they show a slight wilting, normal watering can be resumed, and no amount of over watering will affect the shape of the mature carrot after the tiny root has reached its full depth. Irrigation in any amount should not be allowed when the crop is in the thread stage – but all water should be withheld until the tops begin to “look thirsty.” A sampling of the tiny roots might also be advisable at various places in the field, to see how the roots are developing in the thread size stage. Rains, however, during the thread stage of growth will prevent drying and induce forking.

Testing done by the University of Florida has shown that the ultimate shape of a carrot is determined in the first 21 days of growth. The carrot taproot is thread-like and if the temperature of the soil is above 82 degrees F. at a 6 inch depth or if the soil is saturated with water for as little as 12 hours during the first seven days after germination, there will be an increase in forking and the taproot will not grow as long. Don't plant if soil temperature is over 80 degrees at a 2-4 inch depth.

Before planting be sure soil is moist, after seeding and covering not more than ½ inch, mist the covering on a daily basis to keep it from drying out until seeds begin to germinate. Do not over water.

Wooly aphid, with their ant association, can be a problem on carrots in the winter. They feed at the crown and just below ground level. Get rid of the ants or you can't control the aphid.

It is difficult to recommend varieties except for the current year. Ones listed here are old favorites and may not be available now from source listed.

Varieties: Stokes Catalog lists 26 varieties from baby carrots to hybrids and open pollinated old standbys. The Burpee seed catalog has a variety chart with eight different lengths from less than 4 inches to over 8 inches long. Sunset Magazine (9/86) listed 3 new imported varieties of sweet hybrids. They are TOUDO (Burpee), MOKUM (Thompson & Morgan), LINDORO (Park) and MINICOR (Stokes)

Baby carrots are hybrid varieties that mature early (49 – 54 days)

BEETS – Beets can be a succession planted in fall, winter and spring. In warm areas of the country, beets should be planted at least 2 months

before average daytime temperatures reach 80 degrees . Hot dry weather lowers the sugar content and toughens the root. Beets are usually direct seeded, however, they can be grown as transplants and set out in the garden at the two-leaf stage. Use a long dibble so the taproot is not crimped in the hole. The multiple seed ball contains from one to eight seeds from which the clumps of seedlings sprout. Seeds germinate in from 4 -10 days at 45 -70 degrees soil temperature.

For more uniform germination, soak seed overnight. Plant $\frac{1}{4}$ to $\frac{1}{2}$ inch deep with a foot between rows on raised beds or rows 20 inches apart on the flat. In one to two weeks the seedlings should emerge. At 3 inches tall, start thinning the clumps of seedlings to 4 inches apart and start harvesting when the beets are 1 $\frac{1}{2}$ - 2 inches in diameter. Water every 5 days in winter if it doesn't rain. Be sure to keep weeds pulled. Deep cultivation should not be done as the side roots are near the surface. The beet root needs the same friable soil that any expanding underground root would need. Fertilizing should be with a high phosphate and lower nitrogen formula (5 – 10 – 5) or (16 – 20 – 0) if you used sawdust or wood-based amendments recently.

Varieties : The GOLDEN beet doesn't bleed like other beets. The "greens" of this beet are very good. The only drawback to this variety is its lower germination rate, so plant a little thicker. The long season LUTZ GREEN LEAF beet is grown for the tops and late in the season a large beet. LITTLE BALL is a baby beet for spring and fall planting. DETROIT DARK RED won't take heat as it loses quality, a good one for Nov. – Feb. planting. CYLINDRIA, a long cylindrical beet grown up to 8 inches long and 2 inches in diameter, good for slicing. ALBINO, a white beet, is high in sugar. Start harvesting when roots are 1 – 1 $\frac{1}{2}$ inches in diameter. Maturity dates are 50 to 68 days.

TURNIP The turnip, along with the next root vegetable belongs to the Brassicas. There are leafy brassicas, like collards, flowering brassicas like broccoli, and the ones with the edible stems and roots like kohlrabi and rutabaga. With selection of the right variety, turnips can be harvested in as little as 35 days. They are direct seeded in rows a foot apart or by broadcasting on a raised bed. They like a fertile, well drained soil and continuous moisture, especially the fast growing types. Pests are common to all brassicas. Grow under Reemay if you want bug free crops. Underground pests are wireworms.

Varieties: An early variety is TOKYO CROSS HYBRID or WHITE LADY, (35 days). JUST RIGHT HYBRID, (60 days), PURPLE TOP

WHITE GLOBE (55 days), GOLDEN BALL (60 days). Any small white variety with a harvest date of 35 days can have the same characteristics of TOKYO CROSS HYBRID. Names change but good genetic qualities are kept.

RUTABAGA – Surprisingly, this is a cross between cabbage and turnips. They don't do as well as turnips here because they need a long cool growing season and most people plant them in the spring instead of the fall. They are good keepers in the refrigerator. They take the same cultural practices as the turnip

Varieties : **PURPLE TOP YELLOW or LAURENTIAN (90 days)** Nichol's, Stokes or Burpee's. **AMERICAN PURPLE TOP** Park Seeds.

PARSNIP - Shaped like a giant carrot, this root crop does well in deep soil, planted in late fall and with fresh seed. Parsnip seed is not long lived and it's best to buy seed each year from a good company. Parsnips are not recommended for heavy soil unless well amended and double dug. They have beautiful foliage and if you like their flavor, a challenge to grow well. Use raised beds for extra depth, a composted manure or a slow release high P fertilizer. Nematodes in the soil will cause them to fork. Fresh manure will do the same. Seed is large enough to space evenly, which reduces a thinning chore. Plant 1 inch apart and thin to 4 – 5 inches in rows 1 ½ feet apart. They are slow to germinate. Water every five days during the winter if it doesn't rain. Deep soak when plants are up to encourage long straight roots. Harvest in spring before hot weather starts.

Varieties: **ALL AMERICAN (100 days); HOLLOW CROWN (100 days).** Early varieties are **HAMBURG HALF LONG (85 days); EARLY SUGAR (78 days)**, a short type for heavy soil. Both varieties are from Stokes.

RADISH – There are many shapes, sizes and colors of radish. Fast growing varieties mature in 20 days and the large rooted Chinese varieties as long as 120 days. The most important factor in growing radishes is constant moisture. The faster they grow the better flavor they have. The biggest pest they have is the flea beetle, which riddles the leaves with holes. If your crop is left in the ground too long and they become hot – stir fry them.

Varieties: **BURPEE WHITE (25 days); CHERRY BELLE (22days); EASTER EGG (22 days); FRENCH BREAKFAST (24 days); ICICLE**

(28 days); INCA (25 days); MIYASHIGI, an Oriental radish (60 days) ROUND BLACK RADISH (55 days); SUMMER CROSS HYBRID, giant white Daikon type (45 days); CHINESE ROSE (55 days) Stokes, Burpee and Cooks.

2006 NEW AND OLD VEGETABLES – WINTER

- ARTICHOKE:** Imperial Star – seed, 95 days.....Territorial & Park
Violetto Territorial & Park
- ASPARAGUS:** Purple Passion – seed and crowns Territorial & Park
- BEET:** Pronto 50 -55 days for baby beets 1 – 2 inches Territorial
Egyptian Flat TF68 – 50 days 3-5 inches Park
- BROCCOLI:** Premium Crop, Packman/old standbys 55 – 58 days
Nichols
Romanesco Variety ‘Minaret’ 100 days Territorial
Broccoli raab ‘Novantina’ 30 – 50 days Nichol’s
- CABBAGE:** Savoy Express, 55 days, small heads – Nichol’s
- CAULIFLOWER:** Snow Crown 53 days from transplants Nichol’s
Cheddar, 80 – 100 days yellow-orange curd
Nichol’s
- CELERY:** New Redventure, 115 days (stalks red, leaf green, pink heart
Nichol’s
- CARROT:** Purple Haze, 70 days, purple outside-orange inside Nichol’s
Park
- CHICORY:** Rouge de Verone 85 days, sow seed July to September for
winter harvest, Nichol’s
- ENDIVE:** Frisee, 85 days, cream center if tied
- KALE:** Russian Red, 50 days/Dwarf Blue Curled, 55 days Nichol’s
- CHARD:** Ruby Red, 60 days, good flavor Nichol’s
- ONION:** Day neutral varieties – ‘Candy’ & ‘Super-star’ 85-100 days
Plants of short day varieties from Park’s and others.
Walla Walla is planted in Washington between Aug. 15 and
Sept 1. Harvest in June./
- PEAS:** All varieties developed by Oregon State University should do
well on coast. Try OREGON GIANT 70 days, SUGAR POD BUSH and
OREGON SUGAR POD II, 70 days from Territorial Seed.
- CASCADIA** – like a snow pea bush, 60 days, resistant to mildew.
Park Seed has the old ‘Sugar Daddy’ 65 days, bush.

LETTUCE: Multiple mixes with soft herbs called ‘Mesclun’. Both French and Italian blends. Many beautiful leaf varieties, follow class notes as to types.

RADISH: Easter Egg – Chinese, rose flesh, Misato Green. These are fun. Try several different ones.

SPINACH: Melody, 42 days, long time favorite, smooth leaf; Razzle Dazzle, 30 days, needs cool weather, soil temp under 65 degrees F. at 2 inches from Nichol’s. Correnta, 45 days, better for warm weather.

SOFT HERBS: Borage, Burnet, Chamonile, Chervil, Chives, Fennel.

COVER CROP: A warm weather crop Buckwheat ready in 5 – 6 weeks, 24 inches tall. Mow down before seed heads form and turn under. Has hollow stems and will breakdown fast – good for new beds. 1 pound @ \$4.45 covers 500 sq. feet – Nichol’s and Territorial

LEAFY CROPS

Spring and Fall

LETTUCE Lettuce has two peculiarities: it needs light for optimum germination and it will not germinate in hot soil. Lettuce is easy to grow as long as proper timing of planting in the fall and early spring is followed. It is fast growing and can be planted among other slower growing plants.

There are four classes of lettuce: **LOOSELEAF**, like Black Seeded Simpson and Red sails; **CRISPHEAD**, like Iceberg and Great Lakes; **BUTTERHEAD**, like Bibb and Buttercrunch; and **ROMAINE** or **COS**, like Rouge d’Hiver or Winter Density. All lettuce can be direct-seeded, but if you want to avoid the thinning or want to space plants on a raised bed or for a drip system, any of the varieties can be seeded in containers and transplanted into the garden beds at the fourth week.

Temperature controls rate of growth. The range for lettuce development is between 60 and 75 degrees F. Bolting in lettuce is induced by high temperatures, generally several days above 80 degrees. However, fluctuating temperatures in the fall and winter can stimulate reproductive growth or retard it. A fall planting (of transplants) in late September or early October can be harvested in four weeks, if every day

is a growing one. If the growth of a young plant is checked by lack of nutrients or water, it never fully recovers. In my garden, I not only apply slow release balanced fertilizer before planting, but feed young plants weekly with a dilution of fish and seaweed emulsion.

Plant lettuce seed $\frac{1}{4}$ inch deep or place 2 or 3 seeds in each cell of a multi-celled tray and lightly sift compost to cover. Water with a fine mister. Daily watering is necessary in early fall. After plants are up, water on a regular basis.

Early fall plantings of lettuce can bring problems with cabbage and cutworms. A caterpillar control called Bt can control the problem if discovered soon enough. The material is used as a “preventative” and must be reapplied every 5 -7 days. Fungus diseases, such as rots and mildew can cause problems in wet weather. Resistant or tolerant varieties have been developed for California Crisphead types. Birds can also be a problem in the fall when most succulent growth will attract them. Nylon netting or floating row-covers on hoops will keep them off.

SPINACH - This is not an easy crop in warm areas unless you have found the right planting date for your micro-climate. In Southern California, spinach is a fall and spring crop. Planting too early in the fall is disastrous if the soil is above 70 degrees F. The germination rate drops to 50 %. If you have a soil thermometer, check the temperature at 2 – 4 inches depth before you plant in October. If it is above 70, shade the soil after preparing it for planting with a piece of 50% shade cloth laid over a frame 1 -2 feet above the soil. After a couple of days, check the temperature again. Water the bed to keep the soil moisture up: this will also help to cool it. As the temperature at night drops, your soil will gradually cool. Start planting seed in small blocks across the bed with a pre-spouted seed; soak seed overnight, then put between moist papers towels in a plastic bag. Refrigerate for a few days. Spinach likes light but only for 10 – 12 hours a day. Field testing at Cornell University showed that day length was the limiting factor in early spring planting because spinach bolts as days lengthen. They also found that wide ranges between day and night temperatures are factors in plant development – the plants thriving at 60 degrees day temperature and 40 – 45 degrees night temperature.

Conclusion: Plant so crop can mature while days are short and cool – 10 – 12 hour days. October 25 – February 15. If weather cooperates, a direct seeding is in and out of the ground in eight weeks. Try Reemay row covers during Oct/Nov for a little shade and to keep birds from helping themselves.

Spinach needs lots of nitrogen. In addition to pre-plant fertilization, use a liquid fish at the four-leaf stage. Sow seed ½ inch deep, 2 inches apart and thin to 6 inches. Harvest begins when plants are 6 inches tall. Pick the outer leaves and leave a 2 inch growing center.

Spinach varieties: MELODY, 43 days (semi-Savoy, All American Winner); TYEE, 53 days (good wintering over); OLYMPIA, 46 days 9 plain leaf); and other new varieties every year.

CELERY : This is a cool season biennial. Most people find celery a disappointing garden vegetable because the stalks are too strong in flavor and somewhat dry and pithy. In the wild, celery is a bog plant. Here, in east San Diego County, one can find wild celery growing along the Sweetwater River Channel and other drainage ditches where its root is constantly wet. In the garden it needs almost the same conditions to be crisp and tender, plus the blanching of the stalks (we will go into that later). Soil for celery should have a high moisture holding capacity. Organically rich soil is important. Celery is also a heavy feeder and needs additional applications of a high nitrogen and phosphorus fertilizer (16 – 20 – 0) during the growing season. A two year study (spring '84 – '85) at the South Coast Field Station (UC Irvine) has shown phosphorus significantly influences maturity and quality in celery.

If you have good luck with starting your own seedlings, try growing this challenging transplant. It takes 8 – 10 weeks for seedlings to become large enough to set out. Unfortunately, there are several problems involved. Seeds in any batch will sprout at different times; seeds need light for germinating and its small seed and seedlings must never go below 55 degrees or the cold will trigger the plants to bolt later. To overcome some of these problems, commercial growers pre-sprout seed by soaking in warm water (65 – 70 degrees) day and night.

After all of this you may just want to buy your plants from a nursery. If so, be sure to get young plants. Set out at the same depth they were in containers. Space plants 10 – 12 inches apart in rows 24 inches apart, or on raised beds with flat tops and an irrigation furrow down the middle. Set plants on opposite shoulders. Shelter plants for a few days, if it is hot.

Blanching Blanch by using a half-gallon paper milk carton with the top and bottom cut off. Slide the carton over the young transplant as soon as you plant it in the ground. The celery will grow upright inside the carton and be cream colored and tender.

If you have an earwig problem, begin trapping them right away as they will use the enclosed plant as a hiding place during the day. As the plant becomes mature and grows out of the top of the carton, harvest stalks either by cutting off outer stalks, as needed, or dig up the whole plant. Cut off root, trim leaves and outer stalks. It will look just like the heads from the supermarket.

ENDIVE/CHICORY These are winter salad greens that have a slightly bitter flavor. They are more popular in Europe, but recent introductions of Italian red chicory, called Radicchio (re-dee-kee-o) has spawned interest among home gardeners. There are forcing and non-forcing types. There are varieties that need cold to induce heading and color change, and there are a few varieties that turn red without cold temperatures – these are the kind to grow. There is still not much local information on cultural practices. Some seed suppliers will send you a culture sheet.

If you enjoy trying new vegetables, grow this on a trial basis with some of the latest seed introductions. Learn all you can about planting dates and cultural needs for our area. Seed sources: Johnny's, Nichol's, and Shepherd's.

Endive is generally used as a salad garnish because of its curly leaves and cream-colored heart. Italian dishes use it sautéed or baked. Another chicory gourmet item, called Witloof chicory, is forced during winter to produce blanched, golden, cone shaped shoots that are used as a salad dish.

All the non-forcing types of endive and chicory have the same growing requirements: fertile, well-drained soil, cool temperatures for maturity, and plenty of water. Problems: Botrytis rot or grey mold during cool wet weather. Overcrowding and poor drainage should be corrected. Pests are unusual. However, sow bugs and earwigs will hide in and under plants. Trap or bait for both.

SWISS CHARD - This is one of the best leafy green crops for our area because it is not only drought tolerant, but is also heat tolerant. It will go through a hot summer if spring planted and watered well. It is easy to grow from seed and leaves can be harvested in about 60 days. Like beet seed, chard also has a multiple seed ball so thin early and use the little plants in salad mix. Mature plants are large in diameter and need space. Plant seed ½ inch deep in rows 18 – 20 inches apart or start transplants set in the beds 18 inches apart on drip tape.

Chard varieties: Forkhook Giant, Ruby or Rhubarb which have red stalks, or Rainbow, which is mixed seed of white, red and yellow stalks (Thompson Morgan Seed).

LETTUCE: RECOMMENDED VARIETIES

BUTTERCRUNCH – larger and more heat tolerant than Bibb (Stokes and Nichol's).

VERANO – a Dutch Batavian, combines crunch of head and flavor of leaf; heat resistant; good for October planting. (Shepherd's)

LOLLA ROSA – deeply curled loose leaf pink ringed; heat tolerant (Shepherd's)

BRUNIA – loose oak-leaf type (Nichol's)

RED SAILS – large leaf lettuce, deep red and green; takes heat (Nichol's)

ROUGE D'HIVER – red-bronze romaine for winter; does best in fall planting; can pick outer leaves (Shepherd's)

SALAD BOWL – deep-lobed, lime green; heat resistant (Nichol's)

SANGRIA – a fall and winter bi-colored butterhead; will form a soft head in spring (Stokes')

OTHER SALAD SPECIALITIES

ARUGULA – peppery addition to salad mix; pick individual leaves of cut plants off a ground level. Use young. Bitter at bloom. (Nichol's or Shepherd's)

CURLY ENDIVE – also under the name Frisee (Cook's or Shepherd's)

GIANT RED MUSTARD – fast growing; tastes like Dijon-style mustard. Pick young, bitter and hot when older (Nichol's)

MIZUNA – fast growing into large clumps, fine cut leaf, dark green with white crunchy rib; mild mustard flavor in salad or cooked (Cook's or Nichol's)

RED RUSSIAN KALE – cold weather turns leaf color to pink; use raw or cooked (Nichol's)

MESCLUN – a seed mix of lettuces, Romaine, Endive and some herbs used for baby lettuces/salad mixes; succession plant (Many catalogs)

SOURCES

Vermont Bean Seed Co. www.vermontbean.com

Stokes' Seed – PO BOX 548 Buffalo, NY 14240 www.stokeseeds.com

Burpee Seed Company, 300 Park Ave., Warminster, PA 18970 (800) 888-1447, www.Burpee.com

Johnny's Selected Seeds 955 Benton Ave., Winslow, ME 04901 (800)879-2258 www.johnnyseeds.com

Nichol's Garden Nursery, 1190 Old Salem Rd. N>E., Albany OR 97321 (800) 422-3985 www.nicholsgardennursery.com

Park Seed Co., 1 Parkton Ave., Greenwood, SC 29647 (800) 213-0076 www.parkseed.com

R. H. Shumway Seed Co., 335 S. High St., Randolph, WI 53957 (800) 342-9461 www.rhshumway.com

Renee's Garden – there are two ways to purchase Renee's Garden seeds: www.reneesgarden.com (web site has a full description of varieties) or some San Diego nurseries and garden centers carry Renee's Garden Seeds. Phone (888) 880 – 7228 for the nearest source to you.

Seeds of Change, PO BOX 15700, Santa Fe, NM 87592, (888) 762-7333
www.seedsofchange.com

Territorial Seed Co., POBOX 158 Cottage Grove, OR 97424 (800) 626-0866 www.territorialseed.com

The Cook's Garden Catalog (800) 457-9703 www.cooksgarden.com

Shepherd's Garden Seeds, 30 Irene St., Torrington, CT 06790