Heirloom Seed Library 2018
And Seed Saving Instruction Guide
The Heirloom Garden broke ground in 2014, when Master Gardeners and the North Yakima Conservation District partnered to provide land, water, and start-up funds for a vegetable garden of open pollinated and heirloom varieties, many of which are rare and endangered. The garden creates a hands-on learning experience, using low-cost, sustainable, organic methods. The main goal is to create and maintain a seed lending library, provide free gardening education; and donate all remaining produce to local meals programs. Every year we donate nearly a ton of fresh produce to our community.

The Heirloom Seed Lending Library loans seed to gardeners who plant the seed and then return new seeds that they grew from the borrowed ones. We understand that not all the borrowed seeds will grow to maturity and not all the seeds saved will be viable. Things happen! Learning to save seed is a process, and our free seed saving classes may help. By joining with other seed savers we improve health and nutrition; grow varieties with the flavor and qualities of our choosing (rather than those of large commercial growers); adapt varieties to our unique climate and soils; and increase plant diversity throughout our community. The Heirloom Seed Lending Library is a new project that is open to the public on a limited basis due to the size of our seed inventory.

Master Gardeners Free Classes on topics specific to vegetable gardening are offered on the third Saturday of each month from May to September at 10:00 AM in the Heirloom Garden, located at 1522 South 18th Avenue, Yakima (the same location as our Plant Sale). The Heirloom Garden is open to the public by invitation or upon request. Contact Master Gardeners at: gardener@co.yakima.wa.us or 574-1604 for more information.

The Demonstration Garden is an ornamental garden located in Ahtanum Youth Park, at 1000 Ahtanum, Union Gap. Free classes are offered on a wide range of garden related topics on the second and fourth Saturday of each month from April to October at 10:00 AM. The Demonstration Garden is open to the public during park hours. Parking is free while visiting the garden.
Beans

All beans require consistently warm weather to germinate. Sow 1 inch deep, 3-6 inches apart, when soil temps remain consistently above 60-65°. Vining varieties need strong trellising.

Asian Long Beans (Vigna Unguiculata) are a warm weather staple crop of East Asia where they have been grown for centuries. The tender pods are crisp and without many strings. Very heat tolerant, will continue to set pods when common beans drop their flowers. High yielding. The aggressive vining habit requires trellising. Harvest while pods are very slender, before beans inside begin to swell or pods will become fibrous.

Common Pole and Bush Beans (Phaseolus vulgaris) are a warm weather staple crop of North and South America where they have been grown for over 2000 years. The immature pods are tender and crunchy, and should be eaten before the seeds fill out. In shelling beans the seeds are filled out but still green and tender, the pods are not eaten. For dried beans, leave pods on the plants until mature and pods dry on the vine. Strings develop in all varieties as pods mature.

Runner Beans (Phaseolus coccineus) are usually grown ornamentally but all parts are edible. Flowers are very attractive to hummingbirds. Pods do not develop until cool fall weather, growing long, wide, and flat. The bean pod texture is firm and meaty, growing slightly sweet after the first light frost. Very aggressive, long vines up to 20 feet need very sturdy support.

Asparagus Greenway Long Bean
Vigorous climbing vines are easy to grow. Heavy yields. Needs warm soil to germinate and sturdy trellising. Pick when long green pods are 12-18 inches long. Best when sautéed, stir fried or pickled. 70 days. Seed donated by Diana Pieti.

Chinese Red Noodle Long Bean
Vigorous climbing vines are easy to grow. Heavy yields. Needs warm soil to germinate and sturdy trellising. Pick when long burgundy pods are 12-18 inches long. Beautiful burgundy beans are easy to see at harvest. Some of the red color is retained when cooked. Especially attractive when mixed with green long beans and sautéed together. 70 days.

Thai Soldier Long Bean
Vigorous climbing vines are easy to grow. Heavy yields. Needs warm soil to germinate and sturdy trellising. An Asian half-long bean, harvest at about 12 inches. Attractive green with purple striations that turns darker when cooked, but still retains most of their bicolor. 70 days. Seed donated by Phyllis Pugnetti.

Arikara Yellow Bush
Named for the Arikara Nation of South Dakota. This tribe of farmers suffered repeated small pox epidemics to near extinction. Sick and starving, they welcomed Lewis and Clark, sharing this seed. In 1807, Thomas Jefferson declared Arikara to be the very best (dried) bean. They can be eaten as a shelling or dried bean. 60-90 days. Original Seed donated by Monticello.

Borlotti Lamon Pole
In 1530 Pope Clement VII received New World bean seeds as a gift from the Spanish Court. He gave some seeds to a monk traveling to a village in Northern Italy. These beans eventually replaced peas and broad beans in that region. Records show this bean has been grown on the Lamon Plateau, continuously since then. A vigorous grower and heavy producer. Use as shelling or dried beans. Unfortunately they loose their bright color when cooked. 75 days.

Cherokee Wax Bush
A yellow wax bean with shiny black seeds at maturity. Can be eaten as a snap or dried bean. Very heavy yields. Resistant to pests and tolerant of poor weather conditions. Bush beans tend to produce all at once. For higher yields, stagger planting every 2 weeks until mid July. 45-55 days.

Cowpeas AKA Black Eyed Peas
See cover crops.

Borlotti Bush
This bean looks like the Borlotti Lamon except in a bush bean with even more prolific yields. Used as shelling or dried. They hold their shape well and are especially good when baked. Unfortunately they loose their bright color when cooked. 75 days.

Dragon’s Tongue Bush
An heirloom wax bean originally cultivated in Holland in the 1700’s. The 6-7 inch pods are yellow with purple streaks. Early, compact plants. High yields. Can be used as snap or shelling bean, are especially good in stir fries. Very attractive, compact plants. Also grow well in containers. 60-90 days.
Beets and Chard

*(Beta vulgaris)* Beets originated in Egypt and Greece, then spread across Europe by the Roman army. Centuries of selection have created, sugar beets, forage beets, table beets, and chard, but all are botanically the same species. Beets are not particular but prefer to germinate very warm weather and soil to germinate, 75-85\(^\circ\), then mature in gradually cooling weather. Survives light frost. Sow in full sun or light shade in fertile soil 1/2” deep and 2” apart thinning to 4” apart in all directions (8” for chard). Beets are biennials that grow roots and leaves the first season. Will not flower or set seed until the roots have been exposed to 6 weeks of consistently cold weather, between 32-40\(^\circ\). Beets will not tolerate hard frost. Chard is the most cold hardy of all beets. All beets and chard can cross pollinate. Pollen can travel up to 5 miles in the wind. This doesn’t create much problem for home gardeners, as so few gardeners let beets go to seed.

**Good Mother Stallard Pole**
This beautiful bean is plump and round with purple and white color. These are grown for their very creamy texture especially good in baked beans and soup. Color fades to tan during storage. Average yields. 85 days.

**Red Swan Bush**
A very beautiful bush bean with abundant pink and white blossoms and very high yields of bean pods in stunning colors of magenta to burgundy that very quickly turn green when cooked. Nothing on the plant is red except for the pods making them very easy to see for harvesting. Can be used as a snap or dried bean. Excellent buttery flavor and creamy texture. 55 days. Seeds donated by Farrah King.

**Rockwell Bush**
A very rare heirloom brought to Widbey Island in the late 1800 by Elisha Rockwell. Almost impossible to buy as there are only 4 suppliers, all descendants of Whidbey Island families. Very creamy beans that hold their shape in cooking, usually for baked beans. Tolerant of cold, rainy weather but grew well in Yakima. 60-70 days. Seed donated by Farrah King.

**Trionfo Violetto AKA Purple Triumph Pole**
Lavender flowers with green foliage and bright purple pods, stems, and veins. Grows to about 8 feet. Vigorous. Good yields. Pods turn green when cooked. Very good flavor. 75 days.

**Scarlet Runner**
Grown primarily for its red flowers but every part of this plant is edible. Vigorous vines grow up to 20 feet. Bean pods develop late in the cool fall weather. Survives light frost. Flat pods are 6-8” long with very good flavor, firm, meaty texture. Good for dill beans, steamed or sautéed. Very attractive to hummingbirds and bees. High yields. 90 days.

**Bull’s Blood**
This beet has leaves that are colors of iridescent dark purple and magenta. Leaves and roots are most tender when small. 40 days for leaves, 60 for roots.

**Cylindra**
An old heirloom from Denmark. The long cylindrical roots produce more uniform slices than round beets and double the yields. Tender and sweet with a smooth texture. Great for canning and pickling. Tender leaves. 55 days. Seed donated by Phyllis Pugnetti.

**Detroit Dark Red**
Old variety introduced in 1892. Good all purpose beet. Very dark red, uniform roots. 60 days.

**Early Wonder Tall Top**
Grows well in both warm and cool weather. Harvest when beet roots are small. Tall glossy leaves are a good choice for beet greens. 50 days.

**Fordhook Giant White Chard**
Very mild flavor. Large leaves can be used like spinach. White stems can be used like celery. Grows from early spring until hard frost. With a layer of mulch it may winter over and grow again in spring. 50 days.

**Ruby Red Chard**
So beautiful it works well in ornamental beds too. Leaves can be used like spinach, stems like celery. Grows from early spring to hard frost. With a layer of mulch it may winter over and grow again in spring. 50 days.
**Carrots**

*(Daucus carota)* Wild carrots date back 10,000 years and are found throughout Asia, the Middle East, and Europe, but probably originated in ancient Persia. Wild carrots are very tiny and bitter. Originally used as medicine, they were domesticated 5000 years ago. Selection for large roots and sweet flavor has made the carrot one of the most widely eaten root crops in the world. Orange carrots were originally selected from yellow and purple carrots in the 1500s in Holland.

Sow carrots in early May for a summer crop or mid July for a fall and winter crop. Carrots need deeply prepared light soil. Sow seed 1/4” deep, thin to 4” apart. Carrots that reach maturity in cool weather are much sweeter than those ripened in summer heat. Carrots will overwinter with 4-5 inches of mulch. Carrots are biennials growing leaves and roots in the first year and flowers that set seed in the second. Flowers are insect pollinated and need at least 8 plants to assure numerous visits by pollinators. Cross pollination occurs between all varieties including wild carrots and Queen Anne’s Lace.

**Chantenay**
Develops very thick, stocky roots up to 2 pounds each, when allowed to mature in fall and winter. One of the best varieties for winter gardens. 60 days.

**Little Fingers**
Very sweet. Small shallow roots are a better choice for heavy clay soils than longer rooted carrot varieties. 50 days.

**Scarlet Nantes**
Good all purpose carrot, adapts to a wide range of soils and climates. Best flavor when grown in early spring or fall. Not well suited for winter gardens as it is not as cold tolerant as other varieties. 65 days.

**Yellowstone**
A totally yellow carrot with a mild flavor. Can be eaten small. Grows very large and sweet when allowed to mature in winter garden. 75 days.

**Cucumbers**

*(Cucumis sativus)* Cucumbers originated in West Asia and have been cultivated for 3,000 years. They were spread across Europe by the Romans and arrived in the US in the 1600s. Do not plant until soil has warmed to 65⁰, as cold soil will result in poor germination. Plant in fertile soil with a steady supply of water. Applying mulch after the soil has warmed to 70⁰-75⁰ will help retain moisture in the soil. Cucumbers set a large flush of fruits and then die back quickly. For higher yields and less problem with powdery mildew, plant a second crop about 4 weeks after the first planting. Trellising also reduces rot, powdery mildew, and some pest problems. Vines grow 5-6 feet. Cucumbers prefer to be direct seeded as they do not like to have their roots disturbed. If you decide to transplant, care should be taken to disturb the roots as little as possible. To save seed, fruits need to be very large, with hard skin, and should undergo a change of color. Cucumbers will cross pollinate with all other cucumbers (*c. sativus*). A few cucumbers are actually melons (*c. melo*) and will readily cross pollinate with all other melon varieties but not other cucumbers. These are often called cucumber-melons.

**Armenian Cucumber Melon**
Light-green, mild-tasting, ribbed fruits are actually melons and will cross pollinate with other melons but not cucumbers. The long fruits coil when growing on the ground, but grow straight when trellised. Best harvested at 12-18 inches, before the skin gets tough. 65 days.

**Bush Champion**
This bush variety grows in half the space of other cucumbers, making it a good variety for containers and raised beds. Good yields of 8”-12” fruits. 55 days.

**Gele Tros**
An endangered yellow cucumber from Holland where it is called the ‘ancient race’. Originally grown by the wealthy, as green cucumbers were considered common. Average yields of 8” very attractive fruits. Harvest when pale yellow. Fruits turn bitter and tough as the skin turns gold. 65 days.

**Metki Cucumber Melon**
A rare heirloom. Dark green with light stripes. A mild and slightly sweet fruit that is actually a melon. Does not get bitter. Fruits get 20-30” long while still remaining slender with small seeds. To harvest, cut off the vine with 1” of stem attached. Will cross pollinate with other melons but not cucumbers. It takes a very long time for fruits to set seed. 65 days.
Marketmore 76
The most popular cucumber grown in home gardens in the US and with good reason. Very high yields of dark green 8” fruits. Good slicer. Excellent taste, juicy, not bitter even when fruits get quite large. Disease resistant. Long vines benefit from trellising. Grow in fertile, warm soil. 60 days. Out of stock.

Ping Tung
Beautiful purple, 12”-18” long, slender, mild flavored fruits that are not bitter. White flesh. Very high yields. 70 days.

Rosita
This beautiful eggplant came to the US from Puerto Rico in 1979 and is gaining in popularity. Stunning magenta-lavender color with pear shaped 8” fruits. White flesh. Slightly sweet, mild flavor that won’t turn bitter. Average yields. 85 days.

Picklebush
Compact 2 foot vines, have 4”, white spined fruits. Good yields. Resistant to powdery mildew. Good in containers. 55 days

Lettuce
(Lactuca sativa) A cultivated crop since ancient times, originating around the Mediterranean 4,000 years ago. Lettuce is easy to grow but needs cool weather, bolting quickly in the heat. Direct sow in spring when soil is 50-65°. Seeds sprout and grow quickly in mild weather. Thin to 4” apart for leaf lettuce and 8-12” apart for head lettuce. Succession plant for a continuous crop. Harvest outer leaves of loose leaf varieties leaving the small center leaves to harvest again a few days later. For fall crop, sow 8 weeks before hard frost, when soil is no warmer than 72°. Lettuce varieties do not easily cross pollinate; an 8-10 feet isolation distance between varieties is necessary. For seed saving, you may harvest a few outer leaves before lettuce bolts. Seeds are ready 21 days after bloom.

Straight Eight
All American Selections winner introduced in 1935. Smooth, dark green, straight with blunt ends are perfect for slicing and pickling. Harvest at 8 inches. 60 days.

Suyo Long
Thin skinned, sweet ribbed fruits, 16” long from China. Harvest at any size. Trellis for straight fruits. Not heat tolerant. Blossoms and fruit set stop in the heat of August, dappled shade helps. 70 days. Seed donated by Phyllis Pugnetti.

Buttercrunch Bibb
A very popular All American Selections winner. Loose heads have buttery texture. Cold resistance makes it a good choice for fall planting. Can harvest outer leaves or wait for heads to form. Dark green leaves with lighter yellow centers. 50-60 days. Limited stock.

Rosita
A rare, loose leaf variety with beautiful glossy, curly leaves. The deepest red of all red varieties. Doesn’t turn bronze. High in antioxidants. Has some heat and cold tolerance. 50-60 days. Seed donated by Phyllis Pugnetti

Parris Island Cos
Bred by the USDA on Parris Island, SC in 1952. Crisp romaine with 10” leaves. Prefers cool weather and partial shade. Tolerates heat and cold better than most varieties. Harvest individual leaves or wait until heads form. 40-50 days.

Eggplant
(Solanum melongena) Eggplant originated in India or Asia over 2,500 years ago. The Moors brought it to Spain in the 8th century. Europeans thought it caused insanity and leprosy; so it took nearly 500 years to gradually become accepted as an edible. Today eggplant is eaten widely in Mediterranean cultures and is often eaten as a meat or pasta substitute. It is a warm weather crop that should be started indoors 8 weeks before transplanting in the garden. Plant seedlings about 2 feet apart, in full sun or light shade when the soil and night time temps are above 60°. Fruits are mature when they feel slightly soft. Immature fruits will be rock hard. Eggplant is attractive and works well in ornamental gardens and containers. To save for seed, fruits need to be very over mature. Leave ripe fruits on the plant for 4-5 extra weeks to allow seeds to fully mature. The fruit color should change to tan or brown, and have tough skin that has lost its shine. Eggplant can cross pollinate with other eggplant varieties. Grow only one variety or isolate by 500 feet.
Red Leaf Lettuce
Broad red-bronze leaves are somewhat ruffled forming an open rosette. Harvest outer leaves leaving inner leaves to harvest a few days later. Grows continuously until hot weather arrives. 40-50 days.

Red Romaine
Big upright heads with bright red crunchy leaves and chartreuse centers. Leaves are brighter red in light shade and more bronze in full sun. Harvest individual outer leaves, or wait until heads form. 50-60 days. Limited stock.

Simpson Black Seeded
One of the most tender and delicate-flavored leaf lettuces with large green ruffled leaves. Grows continuously until hot weather arrives. 40-50 days.

Arugula—Rocket (Eruca sativa)
Ancient crop grown in Rome. Tender smooth leaves with a peppery flavor. Small leaves are mild. Eat fresh or cooked. Compact plants are very cold hardy. Bolts quickly in the heat. Flowers are edible. 50 days. Seed donated by Carol Woolcock.

Giant Red Leaf Mustard (Brassica oleracea) A cold weather plant of maroon and chartreuse leaves. Often used ornamentally as filler in empty garden beds in early spring and late fall. Adds a kick to a sandwich or salad. When sautéed the mustard bite mellows. Plant 12 inches apart. 45 days. Seed donated by Phyllis Pugnetti.

Kale—Blue Scotch Curly (Brassica oleracea) Compact plants with curly leaves. One of the most cold hardy varieties. Kale will grow year round when mulched heavily in the fall. A biennial will flower and set seed the following spring. Very attractive in ornamental beds. 65 days.

Kale—Red Russian (Brassica oleracea) Blue-green leaves with purple stems and veins. Very cold tolerant. Very mild flavor and tender leaves, usually wins blind taste tests. Kale will grow year round when mulched heavily in the fall. Will flower and set seed the following spring. Attractive in ornamental beds. 60 days.

Orach Mixed Colors (Atriplex Hortensis) Related to spinach and chard. Comes in red, chartreuse, and green. Native to the Alps, often called mountain spinach. A cool weather crop that tolerates warm weather, but not hot. Grows long after spinach and lettuce are done. Harvest individual leaves. Use in salads or lightly sauté. Plant will bolt to 10' and develop very ornamental seed bracts. 40-50 days.

Spinach Bloomsdale Long Standing (spinacea oleracea) A very old heirloom. Has large curled leaves, cold hardy, slow to bolt. Good yields. Prefers sun, tolerates partial shade. 50 days.

Sprigarello Rico
An ancient plant, very rare outside of Italy. In the 1400s Jewish refugees brought it to Venice with them. A variety of brassica eaten for its leaves and flowers, frequently called leaf broccoli. Grows like kale. Leaves vary in shape and are more tender than kale. Tastes like mild kale with a very slight broccoli flavor. A cool weather crop that prefers shade in hot weather. 50 days.

Water Cress (Nasturtium officinale) One of the first plants cultivated by humans. Smaller leaves are milder than arugula. Needs consistently moist soil, that is high in organic matter. Prefers full sun, but will survive in light shade. Allow plants to become well established growing to 6-12" tall before harvesting individual leaves. Established cress may become perennial. Seed donated by Dee Adams.

Other Leafy Greens
Okra

(*Hibiscus esculentus* renamed *Abelmoschus esculentus*) Okra is related to hibiscus, has beautiful flowers and pods, and is often grown ornamentally. It probably originated in Ethiopia and spread to Europe with the Moors, then came to the Americas with African slaves. Okra seeds are often pressed into oil or dried and ground into a coffee substitute. Okra is a tropical plant and should be started indoors about 8-10 weeks before planting into the garden. Okra grows very slowly and suffers insect damage when the soil and weather are cool, but grows rapidly in the heat and thrives when the temps soar into the 90s. In Yakima, plant into the garden around the first to the middle of June. Plant 1” deep and 12” apart in very fertile, well drained soil, in full sun. Pods should be harvested at about 3”-4” before they become tough and fibrous. To save seed, pods should be fully mature 7”-10” long, dry, and brittle.

**Clear Clemson Superb**
Green pods and foliage. Seed donated by Ferry-Morse. No additional information is available.

**Red Burgundy**
Deep red stems and pods, with large showy blooms of creamy white or pale yellow. A beautiful plant. Grows very quickly once the weather remains consistently above 85º. Harvest small pods often to keep productivity high. Needs 55 days of hot weather. Original seed donated by Monticello.

Peas

(*Pisum sativum*) Peas are one of the oldest cultivated staple crops. They originated in the Near East and were originally grown for the dried seeds. Types of peas are—shelling, snow, and sugar snap. All are all grown the same way. They require light soil as the roots are not deep or vigorous. Plant seeds 1” deep and 3” apart in early spring when soil temp is around 50-55º. Pole peas need strong support. Bush peas may support each other when planted closely together in a wide row. Peas very rarely cross pollinate; no isolation distance is necessary. For seed saving, let pods remain on the plant until the pods fill out with fully mature seeds, and the plants start to yellow and die back.

**Cascadia Sugar Snap**
High yields of thick fleshy, crisp, tender sweet pods. Pick young to avoid strings. Vines are short needing little support. Developed at Oregon State University. 65 days.

**Sugar Ann Snap**
All American Selections winner 1984. Almost 2 weeks earlier than other pea varieties. Very short, compact vines, grow well in containers. Good yields for such a small plant. 24” tall. 52 days.

**Sugar Magnolia Snap**
The first purple podded sugar snap pea, grows on 6’-7’ vines, beautiful purple flowers, sets pods over a long period of time. Sweetest before pods get too plump. Not as sweet as other sugar snap varieties. Very attractive in spring salads. 70 days.

**Sugar Snap**
A snap pea with unusually thick-walled pods that are at their peak around 3 inches long. All American Selections winner 1979. Very sweet. This is a bush variety that has some mild disease resistance. Grows to 30” tall. 60 days.

**Dwarf Grey Sugar Snow**
Old heirloom introduced in the 1856. Sweeter than most snow peas. Often grown for the beautiful edible lavender-red flowers and tender shoots. Average yields. Pick light green pods when very small, 2”-3” long, flat and not filled out. Very short vines, only 24” tall, don’t need staking. More heat tolerant than other varieties. 65 days.

**Lincoln Shelling**

**Purple Podded Shelling**
Beautiful purple and magenta flowers are followed by deep-purple pods filled with green peas. Pretty enough to be grown as an ornamental. Used as a shelling pea. Strong, climbing vines 4’-5’ tall. 60-65 days. Original seed donated by Sandra Westford.

**Sugar Snap**
A snap pea with unusually thick-walled pods that are at their peak around 3 inches long. All American Selections winner 1979. Very sweet. This is a bush variety that has some mild disease resistance. Grows to 30” tall. 60 days.

**Taichung Snow Pea**
Snow peas are grown for the edible pods and harvested before seeds develop. Usually eaten raw or in stir fries. Height of vines is inconsistent, growing 3’-6’ tall. Some mild heat tolerance. 60-65 days. Very limited stock.
Peppers

*(Capsicum annum)* Peppers are native to South and Central America. Columbus named the plant ‘pepper’ because it tasted a little like black pepper which at the time was the same price per ounce as gold. Columbus introduced the plants to Spain where they quickly spread throughout Europe. There are 5 species of peppers but *c. annum* includes most sweet and hot peppers. All peppers can cross pollinate. Genes for hot flavors are usually dominant. Peppers are frost tender and should be started indoors 8 weeks before transplanting. Peppers prefer warm weather, full sun, and moist, fertile soil that is 65° or warmer. Peppers are self-pollinating but can also be pollinated by insects. For seed saving, grow only one variety of pepper each season or maintain an isolation distance of 500’. Seed should be saved from very mature fruits. The color will change from green to red, orange or yellow and fruits will become dull and slightly soft, but not moldy or rotten. Hot peppers can be left on the plant until most of the fruits are dry, then pull the plants out with the roots intact and hang upside down in a warm dry area to store until using.

**Cayenne Long Red**
Plants are 2’ tall, very vigorous and productive. Mature peppers are long slender, bright red, and very hot! Heavy yields make plants top heavy, may need staking or caging. 75 days.

**Habanero**
Small, bright orange peppers are very hot! Water only when soil is dry to prevent bitterness. Plants are 2’-3’ tall. 75 days.

**Jalapeno**
Plants are 2’ tall, very vigorous and productive. Peppers are often eaten green, but turn red at maturity. Mild heat. Heavy yields make plants top heavy, may need staking or caging. 75 days.

**Pepperoncinii Greek**
Sweet and only mildly hot. Peppers turn from green to yellow when ripe. Plants are 30” tall. Harvest when fruits are 2”-3” long. 65 days.

**Red Hot Chili**
Fruit ripens from green to yellow, orange, and finally red. Medium hot fruits are 2” long on 18” tall plants. Attractive ornamental. Grow well in containers. 80 days.

**Sweet Peppers**

**Antohi Romanian**
Named for Jan Antohi, a Romanian acrobat touring the US in 1983, who defected and became a US citizen. With the fall of the Soviet Union he returned to Romania to visit his family in 1991. His mother sent some of her heirloom pepper seeds home with him so he could always have a taste of home. He donated seed to Seed Savers Exchange. These are still very hard to find in the US. A heart shaped, sweet pepper that is perfect for grilling and stuffing. 50 days to yellow, 75 days to red.

**California Wonder**
An old time variety, introduced in 1928 and set the standard for bell peppers for decades. Blocky 4” mild flavored peppers. Good yields. Most commonly used as a green pepper. Turns red when fully mature. 50-75 days.

**Chinese Giant Sweet Red**
A true American heirloom, not from China. Introduced by Burpee in 1900 as one of the first truly giant bell peppers, twice as big as any other at the time. High yields of huge, blocky 4”-5”, sweet, thick-walled, bright red peppers. A real beauty. Excellent flavor. 80 days. Seed donated by Phyllis Pugnetti.

**Etiuda**
Rare outside Eastern Europe, originally from Poland. Blocky, thick-walled, very sweet pepper. High yields of beautiful bright orange peppers. 75 days.

**King of the North**
Introduced in NY in 1934. Short-season blocky fruits are nicely flavored when picked green or red. Similar to California Wonder but more vigorous in northern areas. More tolerant to cool and hot weather than most peppers. 70 days.

**Sweet Banana**
Very productive plants 24” tall. Mild yellow peppers are 6” long and slender turning bright red at maturity. An All American Selections Bronze Medal winner in 1941. Very ornamental. heavy yields. 75 days.
Squash & Pumpkins

Squash and pumpkins are botanically the same. Originating in South America, they are an ancient staple crop that is now found around the world. Squash requires warm weather, and warm fertile soil 65-75°. Varieties that take longer than 90 days to mature should be started indoors 4-6 weeks before planting outdoors. Most are not frost tolerant. All squash are from four Cucurbita species: c. maxima; c. mochata; c. pepo; and c. mixta; (newly named c. agyrosperma). All squash can cross pollinate only with other varieties from within the same species. To prevent cross pollination plant only one variety from each species in any growing season, or isolate and hand pollinate. All squash needs to be very over ripe for seeds to be mature. Grow several plants to insure enough blossoms for good pollination. Adding blooming cover crops or other flowers to the squash patch will encourage pollinators and increase and fruit set.

Summer squash: are eaten at immaturity while still small and tender. Winter squash: are mature when the skin is hard. Withhold water during the last 2 weeks before harvest to increase storage longevity. Fruits should be stored at least a month before eating to allow sugars to fully develop. Many can be stored for 4-12 months in a dry, cool place 60-65°.

Summer Squash

Cocozella di Napoli (c. pepo)
An Italian heirloom squash that gets very large, very quickly. Harvest while fruits are still small, 4-10". Similar to Costata Romanesca but slightly smaller plants and fruits. 55 days.

Costata Romanesca (c. pepo)
A rare Italian squash considered by many to have the best taste and texture of all zucchini. It is ribbed and green with lighter green stripes. Fruits get very large. Best harvested at about 12" while the blossom is still attached, but the flavor and texture remain very good up to 2’-3’. One of the few varieties that is good when dried. 60 days.

Dark Green Zucchini (c. pepo) Medium sized bushy plants produce very high yields. Fruits are very dark green, almost black and should be harvested at 6-10" for best flavor. 55 days.

Tromboncino (c. mochata)
This rare Italian heirloom can be used as either summer or winter squash. Harvest like zucchini when it is 4-12”, green and immature. For winter squash, wait to harvest until the fruits are 3-4’ long, turn tan, and the skin becomes hard. Tastes much like butternut squash. The neck is all edible flesh; the seeds are in the bulb. When allowed to sprawl on the ground the fruits will form loops. When grown on a sturdy trellis fruits will be straight. Vigorous vines up to 15 feet. Resistant to pests and disease. Very high yields of 5-7 pound fruits. Will store 4-6 months. 60-90 days.

Winter Squash

Acorn Table King (c. pepo)
Good variety for the small garden. Glossy, dark green, ribbed 2 pound squash have thick pale orange flesh with excellent flavor. Compact 2’ tall plants yield 5 to 8 fruits each. An All American Selections winner in 1974. 85 days.

Boston Marrow (c. maxima)
Endangered variety. Large 20-30 pound, pear shaped, bright red-orange, sweet squash. Beautiful in fall decor. First documented in 1831 in Buffalo NY when Native Americans distributed seed as they travelled. Its cold tolerance made it one of the most common varieties grown in North America for 150 years. Vines grow to 15’ or more. Heavy yields. Will store 4-6 months. 100 days.

Burgess Buttercup (c. maxima)
Buttercup was introduced in 1931. The compact Burgess bush variety was introduced in 1952. Turban shaped fruits with a distinct button on the blossom end are 3-5 pounds with sweet orange flesh. 95 days. Limited stock.
**Butternut** (*c. mochata*)
All American Selections winner in 1970. This squash was used for many years in commercially canned pumpkin. Fruits are sweet, 4-5 pounds and have thick flesh with a small seed cavity. 95 days.

**Connecticut Field Pumpkin** (*c. pepo*)

**Gete Okosomin** (*c. maxima*)
Very rare, endangered variety. Originating in Guatemala, it is not known how it got to Indiana where is was grown for perhaps 1000 years in the tribal gardens of the Myaamia. Very high yields of fruits 24-30” long and 15-25 pounds. Orange flesh, good in pies and roasted. 95 days.

**Jack Be Little** (*c. pepo*)
Children love these! Mini pumpkins are 6-8 ounces and perfect for fall decorations or used as bowls for individual servings of pumpkin custard or squash soup. Great in fall décor. Vines grow up to 10’ and bear 6-7 fruits per vine. Grows well on a fence or trellis. 95 days. **Very Limited Stock**

**Jarrahdale** (*c. maxima*)
This stunning blue-green pumpkin comes from the town of Jarrahdale in New Zealand. Fruits weigh 8-10 pounds with thick, sweet, golden flesh and a small seed cavity. A long keeper, easily stores for a year. 100 days. Seed donated by Diana Pieti.

**Oregon Homestead Sweet Meat** (*c. maxima*)
Endangered squash originally grown by Willamette Valley pioneers and became a Pacific NW regional favorite for a century. Very sweet, thick flesh and small seed cavity. Blue-green fruits lighten to grey-white when ripe, and golden-tan in storage. Harvest right before frost. Heavy yields of 12-25 pound squash. A very long keeper, easily stores for a year. 100 days. Seed donated by Phyllis Pugnetti **Limited stock.**

**Spaghetti Squash** (*c. pepo*)
This squash was introduced in 1934 in Japan. A very popular 3-5 pound squash with stringy flesh that is used as a vegetable spaghetti. 90 days

**Sugar Dumpling** (*c. pepo*)
Small 1-2 pound green and cream striped fruits with sweet orange flesh, usually turning gold and cream after harvest. Average yields. Vines are a little brittle, use care if trellising. Good when stuffed and baked. 90 days.

**White Cushaw** (*c. mixta*)
A rare squash with white skin and sweet, golden flesh. Easy to grow, good yields of large 15-25 pound fruits. Good pest resistance and cold tolerance. Silvering pattern on leaves is normal and should not be mistaken for powdery mildew. A Southern heirloom introduced in 1891. Will store 3-5 months. 100 days.

**Solanum Berries**
These are not true berries but are related to eggplant, peppers, and tomatoes. The plants are attractive and look a bit like large pepper plants with clusters of small blossoms and colorful berries.

**Aunt Molly’s Ground Cherries**
(*Physalis pruinosa*) A polish heirloom that is sweet and tart without the savory flavor of tomatoes. Fruits are the size of small cherries inside papery husks. Grow like tomatoes in full sun with consistent moisture. Fruits in the husks will drop to the ground when ripe. Grows well in containers. Tastes very mild and slightly tropical. Excellent raw and in pie, cobbler, and preserves. **65 days.**

**Garden Huckleberries**
(*Solanum scabrum*) Plants have clusters of 6-8 small white flowers all along the vines that develop into clusters of shiny, dark purple berries. Let berries ripen on the vine until some look powdery, then harvest the whole plant. Cooked berries taste a bit like Concorde grapes combined with blueberries. Must be cooked with lemon and sugar to develop flavor. Good in pies and jam. Yields 3-5 pounds per plant. Attractive plants are 30” tall and do well in containers. **Raw berries have an unpleasant bitter metallic taste.**
Tomatoes

(*Lycopersicon lycopersicum*) An ancient crop native to South America. Types of tomatoes include:

**Determinant (det)** with short vines 2'-4' that should not be pruned, except to remove all the branches near the ground to prevent leaves and fruits from touching the soil. About 75% of fruit ripens at the same time. Plants are smaller and oftentimes labeled as bush, or patio tomatoes.

**Semi-determinant (s-det)** are in all respects like determinate except that they grow to 5'-8' tall and need to be staked or trellised or need room to sprawl on the ground. Prune judiciously.

**Indeterminate (ind.)** have long vines, 10-15 feet. They set fruit all season and usually benefit from pruning. Need very sturdy trellising, or allow to sprawl on the ground.

Tomato seed should be saved from a minimum of 6 plants to assure adequate genetic variation. Plants are self-pollinating so no isolation distance is necessary. Plant indoors 6-8 weeks before last frost date. Transplant outdoors when soil temps are 60-70°. Plants thrive and set fruit when air temps are between 65-85°. Most tomato plants will not survive when soil is consistently colder than 50°, and will not set fruit when air temp is consistently over 90°.

**Determinant Tomatoes**

- **Clear Pink Early** (det.)
  A Russian heirloom with long trusses of 4-6 ounce tomatoes. Fruits are a good combination of sweet and tart. High yields for such a small plant, only 30” tall, grows well in containers. 60 days.

- **Heintz 9129** (det.)
  Average yields on small plants, only 24-30” tall, good in containers. Developed for commercial uses at a Heintz Company breeding station. Taste and texture are similar to a commercial processing tomato. Tough skin and flesh, holds up for canning chunky sauces and salsas. 5-8 ounce fruits. 75 days.

- **Karen’s Orange AKA Orange King** (det.)
  Rare. Very high yields of 6-8 ounce fruits on a small plant, 24-30” tall. Good in containers. Sweet, juicy, low acid, beautiful orange color. Sets fruit in both hot and cool weather. This variety was bred at Oregon State University under the name, Orange King. There are many different varieties all named Orange King. To prevent confusion, we unofficially renamed this one Karen’s Orange after a retired Yakima teacher and Master Gardener. 65 days.

**Semi-determinant Tomatoes**

- **Ace 55 Bush** (s-det.)
  Excellent for slicing and salads. A low-acid fruit that produces good yields of 6-10 ounce sweet, mild fruits. Low-acid tomatoes cannot be safely canned in an open water bath. Plants are 4’-6’ tall. 75 days.

- **Black Sea Man** (s-det.)
  A beautiful, rare Russian heirloom from the Black Sea area. Prefers less water than most varieties. Dense canopy of potato leaves prevents sunscald. Plants are 8’ tall. Very high yields of 8-12 ounce fruits. Thick branches require staking to prevent breaking under weight of fruits. At maturity the color is a deep mahogany with olive green shoulders. Fruit is very juicy with intense flavors of savory, smoky, sweet, and tart. Awarded the Best Tasting Tomato at Tomatofest 2016. 75 days.

- **Mushroom Basket** (s-det.)
  A rare Russian heirloom. Large 8-14 ounce purple tomatoes with ruffled edges, meaty interior and few seeds. Attractive hollowed out and used as a bowl for salads. Plants are 6-7’ tall, need staking due to weight of fruits. Moderate yields. This variety was awarded Most Beautiful Tomato at Tomatofest 2016. 75 days. Original seed donated by Pat Moszeter.

- **Sioux** (s-det.)
  Bred in Nebraska and introduced in 1944. A vigorously vining plant grows 8 feet tall. Needs some pruning or it becomes hard to harvest. Reliably high yields even in hot weather. Somewhat drought tolerant. Red 6 ounce fruits have a balanced flavor of sweet, tart, and savory. 70 days.

- **Sweet Israeli** (s-det.)
  Bred for the hot, dry climate of Israel. A variety bred for commercial uses, has firm skin and flesh. Red 5-8 ounce tomatoes, moderate yields. Performs well during hot weather when others fail. Grows 6’-8’ tall with wispy foliage. Not prone to sunscald. 75 days.

- **Tomatofest 2016**
  These tomatoes won awards at Toma- tofest 2016. 75 days.

- **Orange King**
  A Russian heirloom with long trusses of 8 ounce fruits. 75 days.

- **Orange King**
  A Russian heirloom with long trusses of 8 ounce fruits. 75 days.
Indeterminant Tomatoes

**Amana** (ind.)
A 1984 heirloom bred by Gary Haley, an employee of Amana Appliance Company located near the historic German Amana Colonies in Iowa. Sweet, low acid beefsteak tomatoes with few seeds that weigh 1-2 pounds. Very bright orange. Hardy and prolific. Not overly prone to cracking. 80 days.

**Azoychka** (ind.)
Very rare. Bred by a Russian hobby gardener. Beautiful bright lemon yellow, early tomato with 5-8 ounce fruits. High yields. A good balance of sweet and tart especially for a yellow variety. Selected by Tomato Growers Supply as the 2013 Tomato of the Year. For best flavor, harvest before color turns from yellow to gold. 65 days.

**Dagma’s Perfection** (ind.)
Unique for its bi-color pastel yellow with a pink blush. Most fruits weigh about a pound. Very aggressive, long vines need lots of room or study staking. Mildly sweet with more tang than most yellow tomatoes. Early for such a large tomato. 72 days.

**Eva Purple Ball** (ind.)
A pink tomato from the Black Forest brought to the US by German immigrants in the early 1800s. Fruits are juicy with a mild flavor, neither too sweet or tart. The plants are very vigorous, with average yields of 5-6 ounce fruits. Somewhat disease resistant. 70 days.

**Jubilee** (ind.)
First introduced in 1943 as an All-America Selection winner. The golden orange Jubilee has 6-10 ounce fruits with very meaty, thick-walled interiors, mild flavor and few seeds. High yields. 75 days.

**Large Red Oxheart** (ind.)
A Russian large red heart-shaped tomato, 8-16 ounce fruits. Plants are slow to germinate and grow. But once they get going they are very vigorous! Fruit continues to ripen very well even in cool fall weather. Tolerates light frost. The largest and latest tomato in our 2015 garden. Include one or two plants in your garden to extend the season. Heavy fall yields. 85 days.

**Opalka** (ind.)
A rare Polish heirloom brought to NY by the Opalka family in the early 1900s. Average yields of 5” long horn-shaped, red paste tomatoes that look more like red peppers than tomatoes. Meaty fruits have few seeds. Sweeter than most paste tomatoes. Good in sauces and sun dried. 80 days.

**Prudens Purple AKA Prudence Purple** (ind.)
A stunning purple-red tomato with a flavor similar to Brandywine, but sets fruit earlier, with much higher yields. Disease resistant. Very study, aggressive, long vines of 15 feet or more with beautiful fruits that weigh 1-2 pounds. Not prone to cracking or catfacing. If you have room for very large plants these worth bragging about. 72 days.

**Solar Flair** (ind.)
Consistently a very beautiful and productive 5-8 ounce tomato. The outside has yellow, green, orange and red striations that look like the Aurora Borealis. Inside is solid red, juicy with a balance of sweet and slightly tart flavors. Has dense leaf canopy and sturdy branches. Good yields. 75 days.

**Stump of the World** (ind.)
Originally bred by Ben Quisinberry a hobby gardener from Ohio. His friends named it Big Ben, but being a modest man, Ben renamed the variety Stump of the World after a biblical passage. This is basically a smaller version of Prudens Purple, with shorter vines, and fruits that weigh close to a pound, so yields are not quite as high. Tastes much like Brandywine but earlier with higher yields. 78 days.
Cherry Tomatoes

Black Vernissage (ind.)
A new variety with beautiful burgundy and olive green striated, large cherry tomatoes, about 2 ounces. The skin is firm and less prone to cracking as long as you don’t over water. Has the complex flavor so common in dark colored tomatoes. 72 days.

Green Tiger (ind.)
A new variety with green and yellow striated, 2 ounce, bullet shaped fruits that are very sweet and juicy. Firm skin makes it resistant to cracking as long as you don’t overwater. Very high yields. 70 days.

Large Red Cherry (ind.)
Introduced in the 1980s by hobby gardener Ben Quisinberry. A one bite cherry tomato that is larger than most at 1 ½ ounces. Plants are large, with dark foliage, and prolific clusters of fruits. 72 days.

Yellow Pear (ind.)
An old variety, dates to 1700’s, originally from Europe. Fruits are bright yellow with a narrow neck, mildly sweet and low acid. Fruits are 1 ½” and 1-2 ounces. Very large vigorous plants, benefit from pruning and trellising. High yields. 75 days.

Did You Know?
Have you ever wondered why some seeds have poor germination rates? Why do you need to plant some seed heavily and then thin? Maybe it isn’t you. The Federal Germination Standard for commercially grown seed is as low as 50% for some seed. Carrots, peppers, peas, and spinach are some examples of an acceptable 50% germination standard. This is because the seeds on some plants don’t all reach maturity at the same time. In some varieties it is impossible to tell the mature seed from immature seed. Regardless of the standard, all seeds from the Heirloom Seed Library have a germination rate of 80% or more unless otherwise noted on the package.

Sweet Tomatoes

Some of the sweetest and most flavorful tomatoes have green shoulders, a trait where the fruit ripens from the bottom to the top with the shoulders being the last part to change color. About 80% of the sugar in tomatoes is developed in the leaves and later transported to the fruit. Green shoulders on the fruits develop sugar in the same way as the leaves. So even if the fruit is picked before it is fully ripe, the green shoulders continue to develop sugar and flavor within the fruit. Other tomatoes can be picked green and will develop nice color; but they won’t develop any more sugar or flavor.

Turnips

(Brassica rapa) Turnips have been eaten by humans and animals for 10,000 years. They were domesticated independently in Asia, India, and Europe. Turnips can cross pollinate with broccoli raab, Chinese cabbages and mustards. Flowers cannot pollinate themselves and require insects for pollination, therefore it is necessary to grow at least 5 plants of the same variety to assure good pollination. An isolation distance of half a mile between varieties is necessary for seed purity. Turnips are a biennial that grow leaves and roots in the first year, then flowers and seeds the second. They must be exposed to at least 6 weeks of cold temps consistently 35-45° in order to set seed. Turnips are undemanding, growing in cool weather 45°-70° turning woody and bitter when weather is above 75°. Sow seeds in full sun or light shade in fertile soil 1/2”deep and 2” apart, then thin to 4’ apart in all directions. They come in white, cream, yellow, and bi-color with purple or red tops and white at the bottom. Contrary to popular belief, turnips and rutabagas are different species and

Purple Top
Smooth round roots are sweet and tender. Turnips are often 3”-4” across and blushed with pink or purple above the soil and white below the soil line. Turnips can be eaten cooked or raw. Eat young leaves in to salads or as cooked greens. 50 days.
Basil—Genovese
(*Ocimum basilicum*)
A classic basil, mildly spicy with a sweet fragrance that is easily recognized by cooks and gardeners alike. To keep plants bushy and growing all season, harvest near the bottom of a stem by cutting immediately above a leaf node. Warm weather, full sun or dappled shade.

Basil—Lemon
(*Ocimum basilicum*)
An aromatic herb used mostly for its sweet lemony fragrance, especially good in potpourri. Also used for cooking in curry, chicken, and fish. To keep plants bushy and growing all season, harvest near the bottom of a stem by cutting immediately above a leaf node. Warm weather, full sun or dappled shade.

Basil—Thai
(*Ocimum basilicum*)
Native to Southeast Asia. Has a strong clove scent and anise flavor. Attractive purple stems and edible flowers. 1997 All American Selection winner. To keep plants bushy, and growing all season, harvest near the bottom of a stem, cutting immediately above a leaf node. Warm weather, full sun or dappled shade.

Cilantro/Coriander
(*Coriandrum sativum*)
Leaves are cilantro and seeds are coriander. Grows in cool weather. Best when planted in late summer and grown in fall. When grown in a sheltered area with heavy mulch, cilantro may grow all winter then bolt in spring. When the plant bolts, the leaves appear fernlike and develop an unpleasant soapy flavor. Out of stock.

Dill—Bouquet
(*Anethum graveolens*) Early to flower with large seed heads. Fronds are used by cooks as dill weed, seeds are culinary dill seed, fresh flowers are also edible. Attractive in ornamental beds. Dill is a vigorous re-seeder. Full sun.

Dill—Vivian’s Huge
(*Anethum graveolens*) This unkown dill variety came up as a volunteer growing over 5 feet tall. Grow like Bouquet Dill, listed above. Seed donated by Vivian Hunt.

Lemon Balm
(*Melissa officinalis*) Native to the Europe and Asia. Leaves have a fresh citrus aroma. A non-invasive mint that spreads only by seeds. Cut back often to prevent flowering and to keep the plant bushy and healthy. Needs well drained soil, dappled or afternoon shade.

Oregano—Greek

Oregano—Italian
(*Origanum vulgare*) Grows, looks, and tastes like Greek oregano but with a mild, subtle flavor.

Parsley—Italian
(*Petroselinum crispin*) A flat leaf parsley preferred for cooking. A biennial that grows leaves and roots the first year, flowers and seeds the second. Leaves, flowers and roots are edible. Bitter after bloom. Re-seeds easily in the second year. Full sun, tolerates part shade.
**Butterfly Flower**
Unfortunately this plant is also called milkweed, but it’s not a weed! Attractive foliage is 24” tall with bright orange blooms. Very attractive to butterflies. Drought tolerant, low water. Full sun.

**Cardoon**
An attractive warm weather thistle like plant grows to 5’ tall with large purple blooms. Start inside 6 weeks before transplanting. Plant outside 3-4 weeks after the last frost when soil and night temps are warm. Cardoon is edible but is more often grown as an ornamental. Full sun.

**Columbine—Rose**

**Coneflower—Purple**
Large full-headed flowers topped with golden-tipped cones. Slow growth the first year. Drought tolerant. Divide every 3-4 years. Hardy, full sun. 18”-24” tall. Seeds need sunlight to sprout, cover with 1/8” soil after germination. Seeds need 10-12 weeks of moist vernalization, or plant seeds in late fall.

**Coreopsis—Early Sunrise**
Easy to grow. Compact mounding growth habit. Prefers unamended soil, heat, and full sun. Deadhead to keep plants blooming and reduce aggressive re-seeding. 12”-18” tall.

**Cosmos—Orange**
Free flowering, open lacy foliage gives an airy touch to the garden from midsummer to frost. Good filler in the back of the garden or plant among zucchini and squash to bring in pollinators. Grows best in full sun. Tolerates poor soil, heat, and humidity. 30-36” tall.

**Coneflower—Purple**
Large full-headed flowers topped with golden-tipped cones. Slow growth the first year. Drought tolerant. Divide every 3-4 years. Hardy, full sun. 18”-24” tall. Seeds need sunlight to sprout, cover with 1/8” soil after germination. Seeds need 10-12 weeks of moist vernalization, or plant seeds in late fall.

**Coreopsis—Early Sunrise**
Easy to grow. Compact mounding growth habit. Prefers unamended soil, heat, and full sun. Deadhead to keep plants blooming and reduce aggressive re-seeding. 12”-18” tall.

**Cosmos—Orange**
Free flowering, open lacy foliage gives an airy touch to the garden from midsummer to frost. Good filler in the back of the garden or plant among zucchini and squash to bring in pollinators. Grows best in full sun. Tolerates poor soil, heat, and humidity. 30-36” tall.

**Hollyhock—Mars Magic**
A biennial that grows a small rosette of leaves in the first year, sending up a 4’-6’ flower stalk the second year. Blooms are single blossom, trumpet shaped, bright cherry red. Readily re-seeds.

**Hollyhock—Nigra**
A biennial that grows a small rosette of leaves in the first year, sending up a 4’-6’ flower stalk the second. Blooms are single blossom, trumpet shaped, dark maroon that is almost black. Readily re-seeds.

**Love in a Puff**
Also known as Balloon Vine Plant. A warm weather tropical vine grows 3-6 feet. Vines are not aggressive; looks good on a mailbox or fence post. Has small white flowers followed by papery lantern like pods with small round black seeds each having a white spot in the shape of a heart. Great for gifts.

**Marigold—French**
One of the most common marigolds. Multi-colored yellow, orange, and red. Compact bushy plants, about 12” tall. Plant in full sun, 12 inches apart. Plants are often wider than they are tall. Pest resistant. 12” tall.

**Sunflower—Giant Yellow**
Very large golden blooms with black centers, 12” across, on single stalk. Plants are 8’ tall. Good to screen unattractive spots in your garden. Attractive to bees and butterflies. Sunflowers cross pollinate easily. These may not grow true to original parent plant.

**Sunflower—Lemon Queen**
Large lemon yellow blooms with large chocolate centers 5”-6” across, on multi branched plants up to 6’ tall. Attractive to bees and butterflies. Sunflowers cross pollinate easily. These may not grow true to original parent plant.

**Sunflower—Mixed**
Several flowers on multi-branched stalk. Blooms are 6” across with yellow petals and black centers. Plants are 6’-8’ tall. Attractive to bees and butterflies. Sunflowers cross pollinate easily. These may not be true to the original parent plant.
**Agricultural Mustard** *(Sinapis alba)*
Easy to grow. Rapid, dense growth chokes out weeds and shades soil. Wispy upright stems that hold edible blooms above foliage. Sow seed over the surface of the soil and gently tamp in to make good contact with soil. Full sun or part shade. Rapid germination at 65-85°C. Tolerates poor soil. Somewhat drought tolerant. Will not tolerate waterlogged soil. Flowers appear in 4-6 weeks, seeds form about 4 weeks later. Mustard reseeds easily. Cut or pull plants after blossom but before seed set. Excellent cover crop for cucurbitas to attract pollinator and predator insects which may improve yields, may have some mild beneficial effect on soil pests. Very shallow roots. 18-24” tall. Leaves and blooms are also edible.

**Buckwheat** *(fagopyrum esculentum)*
A warm season grain crop often used to attract pollinator and beneficial insects. Rapid, dense growth chokes out weeds and shades soil. Grows in a wide range of conditions, but prefers daytime temperatures around 60-75°C and slightly cooler nights. Seeds sprout in 3-5 days, blooms at 6 weeks, seeds begin to set at 8 weeks. Will re-seed but not aggressively. Plants should be cut or pulled after blossom but before seed set. Very shallow root system. Does not grow well in heavy soils. Use top growth as mulch or turn into the soil. Excellent companion crop for cucurbitas and brassicas to attract pollinator and predator insects which may improve yields. For a grain crop, sow 12-14 weeks before fall frost. Not cold hardy! 12-18” tall.

**Cowpeas AKA Black Eyed Peas** *(vigna unguilata)*
This legume is an Asian long beans. Require warm days when soil temps are consistently above 65°C. Very heat tolerant. Avoid water logged soil. Plant 1” deep and 4” apart. When grown as a cover crop to increase nitrogen in the soil, harvest when plants are in bloom but before pods develop. Nitrogen nodules develop along the roots. Leave roots in the soil as nodules decompose they release nitrogen. Use top mass as mulch or compost. Do not grow in the same soil more often than every 4 years. Pods and dried beans are edible.

**Daikon Radish** *(raphanus sativus)*
Used as a ‘bio-drill’ to loosen clay and break up compacted soils. Roots grow 1’-3’ deep, drilling holes and filling them with nitrogen rich roots that decompose quickly, feeding the soil microbes. Leaves grow to 2 feet long. Leaves and roots make excellent fall and winter mulch and should be left in the garden through the winter. Temps of 20°C will winter kill. Plant 1/2” deep, 6” apart, in July for cover crop. For seed saving, plant in spring. Mild leaves and roots are also edible.

**Sunn Hemp** *(Crotalaria juncea L. )
A tall, fast growing tropical legume that requires very warm weather. Grown for its abundant biomass both above and below the ground. Used to loosen heavy soil and add organic matter. A legume that converts airborne nitrogen into nodules along the plant roots. Leave roots in the soil to release nitrogen slowly into the soil as roots decompose. Plant 1” deep in full sun when soil temps are consistently 70°C or warmer. When plants begin to flower, cut stalks at the ground, before they become woody. Will not set seed outside the tropics. Makes excellent mulch and compost. Does not set seed in North America. Grows to 6’ tall. Limited Stock.

**Winter Mix —Rye, Vetch, and Tiller Radish**
Rye grows large amounts of biomass both above and below the soil, breaking up heavy soil and providing carbon to the soil. Vetch is a legume that adds substantial nitrogen to the soil. Fodder radishes grow up to 3’ deep and act as a bio-drill to break up heavy soil, scavenge nutrients from deep in the soil, provide soil cover to reduce winter erosion, and release nitrogen as the radishes decompose. Plant in late July and leave all winter. Will winter kill during very cold winters. In mild winters, this crop will over winter and grow again in spring. Cut through the crown of plants to kill or wait for hot summer weather to kill this cool weather cover crop. Even when the leaf canopy is only 12” the roots mass will be substantial to a depth of 2 feet. A good cover crop for heavy or unproductive soil, in new garden beds.
## Air and Soil Temperature Chart

<table>
<thead>
<tr>
<th>Vegetable Crop</th>
<th>Air Temperatures Degrees F</th>
<th>Soil Temperature Degrees F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Range</td>
<td>Optimum</td>
</tr>
<tr>
<td>Beet</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Beans</td>
<td>Warm</td>
<td>50-80</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Cabbage Chinese</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Carrot</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Celeriac</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Celery</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Chard</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Chive</td>
<td>Cool</td>
<td>45-85</td>
</tr>
<tr>
<td>Collard</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Corn</td>
<td>Warm</td>
<td>50-95</td>
</tr>
<tr>
<td>Cucumber</td>
<td>Warm</td>
<td>60-90</td>
</tr>
<tr>
<td>Eggplant</td>
<td>Hot</td>
<td>65-95</td>
</tr>
<tr>
<td>Endive</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Fennel</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Garlic</td>
<td>Cool</td>
<td>45-85</td>
</tr>
<tr>
<td>Kale</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Kohlrabi</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Leek</td>
<td>Cool</td>
<td>45-85</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Melons</td>
<td>Warm</td>
<td>60-90</td>
</tr>
<tr>
<td>Mustard</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Okra</td>
<td>Hot</td>
<td>65-95</td>
</tr>
<tr>
<td>Onion</td>
<td>Cool</td>
<td>45-85</td>
</tr>
<tr>
<td>Parsnip</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Peas</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Peppers Hot</td>
<td>Hot</td>
<td>65-95</td>
</tr>
<tr>
<td>Peppers Sweet</td>
<td>Hot</td>
<td>65-85</td>
</tr>
<tr>
<td>Potato</td>
<td>Cool</td>
<td>45-75</td>
</tr>
<tr>
<td>Potato Sweet</td>
<td>Hot</td>
<td>65-95</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>Warm</td>
<td>50-90</td>
</tr>
<tr>
<td>Radish</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Rutabaga</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Salsify</td>
<td>Cool</td>
<td>45-85</td>
</tr>
<tr>
<td>Shallot</td>
<td>Cool</td>
<td>45-85</td>
</tr>
<tr>
<td>Spinach</td>
<td>Cool</td>
<td>40-75</td>
</tr>
<tr>
<td>Squash (Summer &amp; Winter)</td>
<td>Warm</td>
<td>50-90</td>
</tr>
<tr>
<td>Tomato</td>
<td>Hot</td>
<td>65-85</td>
</tr>
<tr>
<td>Turnip</td>
<td>Cool</td>
<td>40-75</td>
</tr>
</tbody>
</table>

### Helpful Tips:

Most vegetable seeds prefer soil temps around 72-77° for germination. The most notable is mache (corn salad) that likes it closer to 55°, while most root crops, beets, carrots, parsnips, rutabagas and turnips aren’t picky but prefer it warm, closer to 80-85° to germinate with cooling weather to mature.

Plants that like warm soil but cool air temps prefer to be planted in the late summer when the soil is still warm but cool fall weather is approaching.
Seed Saving Instructions

Basic

Leguminosae
Beans, Peas, Legumes

Legume flowers are perfect, self-pollinating blossoms, meaning that pollination takes place before the flower opens. For this reason, it is uncommon for legumes to cross pollinate naturally. However, if the seed is precious or rare you may want to take extra precaution to grow only one variety from each species to assure that there is no accidental cross pollination. Peas are (*P. sativum*) and common beans are (*P. Vulgaris*) but there are many other species of legumes. Legumes only cross pollinate within their species.

Always save seed from healthy plants that bear heavily. Pods should be allowed to dry on the vine. If possible, plants should be totally dry—stems, leaves, and pods. This will increase the germination rate. If pods are totally dry but plants are still growing, seeds will be viable but some seed may not be fully mature so germination rates will be lower. As the plant matures cull out any plants that do not look true to the parent plant. Plant size, leaf shape, flower color, and pod appearance should all look like the original parent plants.

To save seed from beans the dried pods need to be very dry, thin, and papery. Break the pod above the seed and let the seed fall into a container. Repeat for each seed. Pea pods are thicker, but when fully dry, usually the pods can be split open along the seam to release the seeds. This method may seem somewhat slow but when done this way, the seed will not need to be winnowed. All legumes are susceptible to bean weevils which can destroy stored seeds in a very short time. Weevils lay eggs inside the pods; when seed is dry the weevils hatch and eat the seed. Storing seed in a freezer for 7-10 days will kill the weevils. Seed must be totally dry to prevent damage from the freezing process. To check for dryness place a few seeds on a hard surface and hit with a hammer, if seeds shatter they are ready to be frozen; if seeds mash they need more drying time. Most legume seeds will maintain germination rates of 50% or higher for 4-5 years when stored in a cool, dark, dry place. If seed is stored in a freezer it will remain viable for 10 years. The standard for commercially sold seed is 70% germination rate.

Compositae
Lettuce

Lettuce is an annual that sends up a seed stalk when the days grow long and warm weather arrives. Plants that bolt early may result in immature seed. Seed should only be saved from plants that are true to the parent type. Plants that are different in color, size, shape, or leaf style should not be allowed to go to seed. There are six types of lettuce; crisphead, butterhead, cos, leaf, stem, and Latin. All belong to *Lactuca sativa*. All lettuce are inbreeding plants with perfect blossoms. There is less than a 5% chance of naturally occurring cross pollination. If it is necessary to assure absolute purity, an isolation distance of 50 feet is recommended. Lettuce seeds ripen irregularly and are ready to harvest 12-24 days after flowering. To harvest, vigorously shake the seed head into a bag every day during that period. The loose seed will fall into the bottom of the bag. An alternate method is to wait until about 10 days after flower and then cut the whole plant. Place the seed head upside down into a bag. When the seed head is totally dry, vigorously shake while seed head is still in the bag. This will result in fairly clean seed that will need little or no winnowing. More seed can be obtained by rubbing the seed head between your palms. However, approximately half of the volume will be chaff. The seed and chaff are about the same size and weight, so much seed is lost in the winnowing process. To winnow, use a fine mesh strainer just large enough to let the seed pass through, then remove the chaff. Next use a fine mesh that is too small for the seed to pass through and gently rub with your fingers the seed will remain above the mesh and the fine chaff fall through. This is a time consuming process. Lettuce seed will remain viable for 3 years when stored in a cool, dry, dark place. The standard for commercially sold seed is 80% germination rate.
Solanaceae
Tomatoes, Peppers, Eggplant

The Solanaceae family includes 90 genera and 2000 species of plants that includes tomatoes, peppers, and eggplant. Most originated in Central and South America. Solanaceae are self-pollinating and are not particularly attractive to bees but many other insects are attracted to the blooms which results in occasional cross pollination. There is disagreement among plant breeders and seed savers as to how often this occurs, but is generally thought to be less than 5%. Seed must be harvest from fully ripe, very mature fruits.

Tomatoes (Lycopersicon lyceopersicon)

All tomatoes are inbreeding and have perfect, self-pollinating blooms, meaning pollination takes place before the blossom opens. Some agitation of the plant, usually by wind, will increase pollination rates. There is much disagreement among plant breeders and seed savers as to how often tomatoes naturally cross pollinate but it seems to happen in up to 5% of blossoms. If the seed is precious or rare you should grow only one variety or may isolate each variety by 50 feet. To maintain genetic variation seed should be saved from a minimum of 6 plants, more is better.

To save seed, wash very ripe and fully mature fruits then cut horizontally and squeeze seeds and surrounding gel into a bowl. Each seed is encased in a gel that contains chemicals to inhibit seed germination while still inside the fruit. To aid in separating the seed from the pulp add one cup of water for each cup of pulp. Set the bowl aside for 2-4 days out of direct sunlight. Do not leave seeds in water longer as they will start to germinate. Stir once a day. The seeds should start to drop to the bottom of the bowl and the pulp will float to the top. As the pulp ferments it may begin to smell bad and you may see mold on the pulp. This is normal. Seeds that continue to float are immature and will not germinate, so should not be saved. After the seeds have separated from the pulp, carefully pour off the pulp and most of the water leaving the seeds in the bottom of the container. Add water and rinse again until the water is clear of pulp. Pour seeds into a sieve and rinse well. Dry bottom of sieve and pour seeds into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Fully dry seed will break when folded. If seeds bend, additional drying time is needed. Seed stored in a cool, dry, dark place will remain viable for 5-10 years. When stored for 25 years germination rates often remain above 50%. The standard for commercially sold seed is 75% germination rate.

Pepper (Capsicum annum)

There are four species of peppers but most sweet peppers and hot peppers belong to C. annum. Most peppers are green when immature and gradually change colors at maturity. Some agitation of the blossoms may increase pollination and fruit set. Although the blossoms are not particularly attractive to bees, many pepper varieties cross pollinate up to 80% of the time. The hot gene is dominant in peppers. If you are growing more than one variety of pepper an isolation distance of 500 feet is recommended. Plants can be grown in pots or dug at the end of the season and brought indoors where they will often continue to set fruit. To maintain genetic variation seed should be saved from a minimum of 6 plants, more is better.

Harvest pepper seeds when fruit is fully ripe, and very mature. Cut through the shoulder of the fruit and gently scrape the seeds from the fruit. Put seed in a small container with water. Mature seed will drop to the bottom and immature seed and pulp will float to the top. Pour off water and pulp, leaving mature seed. Pour into sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Fully dry seed will break when folded. If seeds bend, additional drying time is needed. Small peppers can be processed in a blender with water to separate the seed from the fruit. Then continue to process the same as for large peppers. Seed stored in a cool, dry, dark place will have 50% germination rates for 3 years. The standard for commercially sold seed is 55% germination rate.
**Eggplant** *(Solanum melongena)*

Eggplant originated in India from very bitter small fruited spiny plants. Centuries of human selection have resulted in large fruits that often lack the bitterness of the original plants. Eggplant are annuals in northern climates because they will not tolerate frost. Plants can be grown in pots or dug at the end of the season and brought indoors where they will often continue to set fruit. Eggplant fruits can be green, white, yellow, tan, orange, red, pink, purple, or striped.

Eggplant are inbreeding with perfect flowers and are usually self-pollinating. Eggplant are not particularly attractive to bees but some cross pollination does occur. To prevent accidental cross pollination an isolation distance of 50 feet is recommended. To maintain genetic variation seed should be saved from a minimum of 6 plants, more is better.

To save seed, let fruits grow very far past edible stage, fully ripe but not moldy. All eggplant will change color, become dull, and have a hard shell. Mature seeds will be near the blossom end of the fruit. Seed should only be saved from the bottom 1/3 of the fruit. Seeds closer to the stem will be immature. To separate seed from the flesh use a box grater. Add the grated flesh and seed to a bowl of water and begin squeezing the pulp to release the seed. Mature seed will sink to the bottom and immature seed and pulp will rise to the top. Pour off water and pulp. Add water and repeat until all pulp is gone and water is clear. Pour seed into a sieve and rinse well. Seed should only be saved from the bottom 1/3 of the fruit. Seeds closer to the stem will be immature. To separate seed from the flesh use a box grater. Add the grated flesh and seed to a bowl of water and begin squeezing the pulp to release the seed. Mature seed will sink to the bottom and immature seed and pulp will rise to the top. Pour off water and pulp. Add water and repeat until all pulp is gone and water is clear. Pour seed into a sieve and rinse well. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Seed will maintain 50% germination for 7 years when stored in a cool, dry, dark location. The standard for commercially sold seed is 60% germination rate.

**Seed Saving Instructions**

**Intermediate**

**Cucurbitaceae**

**Cucumbers, Melons, Squash**

Cucurbitas can be found in every country and culture on the earth. They are some of the first plants used by humans. Most cucurbitas are heat loving annuals and are not frost tolerant. All cucurbitas rely on insects for pollination. Each plant produces both male and female flowers that are very attractive to insects. Plants must have both male and female flowers in bloom at the same time for good pollination rates and high fruit set. Adding flowering plants near cucurbitas will increase visits by pollinators. There are many species of cucurbitas and all plants will readily cross pollinate within their own species. A minimum isolation distance of ½ mile is required to prevent unwanted crosses of cucurbitas within the same species. Cross pollination outside their species is unusual but does happen very rarely. There are many methods to assure that cross-pollination does not occur; but all are labor intensive. However, you can plant one variety from each species without concern about accidental cross pollination. Be sure to check with nearby neighbors so your cucurbitas do not cross with theirs. To assure genetic variation save seed from as many different plants of the same species as possible.

To save seed: The following is a guideline about species of cucurbitas. You may plant one variety from each species without worry of cross pollinating.

*To avoid cross pollination, you must identify the species of each squash, melon, and cucumber.*
Cucurbitaceae
Cucumbers, Melons, Squash

**Cucumbers** (*Cucumis sativus*)

Cucumbers should be very large well past the edible stage. The skin should be hard and change color. Save seed from half the cucumber near the blossom end. Seed near the stem are usually immature. Scrape seed and gel out of fruit into a bowl of water. Set aside in a very warm location (90°) out of direct sunlight to ferment for 12-24 hours. Stir twice a day. When fermentation is complete most seeds will drop to the bottom while the pulp, seed cases, and immature hollow seeds will float. Pour off water and pulp. Add water and repeat until all pulp is gone and water is clear. Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Seed will remain viable for 10 years when stored in a cool, dark, dry location. The standard for commercially sold seed is 80% germination rate.

**Melons & Cucumber Melons** (*Cucumis melo*)

Many melons are frustrating to grow because they require insect pollination but only 10-20% of female flowers will set fruit. Planting with blooming flowers will encourage more visits by insects and may increase fruit set. Hand pollination doesn’t usually increase yields. Seeds are mature when fruits are over ripe. Scoop seeds into a bowl of water and work between your fingers to release from the pulp. Pour off water, pulp and floating immature seeds. Add water and repeat until water is clear. Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Seed will remain viable for 5 years when stored in a cool, dark, dry location. The standard for commercially sold seed is 70% germination rate. (Armenian cucumbers are *c. melo* and must be very large with hard skin. Only save seed from the bottom half of the fruit near the blossom end.)

**Watermelons** (*Citrullus lanatus*)

Watermelons are insect pollinated. They often set 2 flushes of blooms. Up to 90% of the first blooms will drop off the vine without setting fruit. The second flush of blooms set fruit about 50% of the time. Planting with blooming flowers will encourage more visits by insects and may increase fruit set. Seeds are mature when fruits are over ripe. Scoop seeds into a bowl of water and work between your fingers to release from the pulp. Pour off water, pulp and floating immature seeds. Add water and repeat until water is clear. Pour seed into a sieve. Use a small amount of dish soap to wash seed then rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Depending on variety, seed will remain viable for 6 years when stored in a cool, dark, dry location. The standard for commercially sold seed is 70% germination rate.

**Banana, Hubbard, Buttercup, Turban Squash** (*Cucurbita maxima*)

**Cushaw Squash** (*Cucurbita mixta*, new Latin designation: *Cucurbita argyrosperma*)

**Butternut and Cheese Squash** (*Cucurbita moschata*)

**Mini Pumpkins, Zucchini, and Acorn Squash** (*Cucurbita pepo*)

All squash are insect pollinated. Planting with blooming flowers will encourage more visits by insects and may increase fruit set. All winter squash must be fully ripe and then allowed to sit at room temperature for 1-2 additional months before saving seed. All zucchini and summer squash must be very over ripe. Fruits should be very large, with hard skin that has changed color. Fruits should be cut from the vine and allowed to sit at room temperature for 3-4 additional weeks. For long shaped squashes, like zucchini and banana squash, save only the half of the seeds that are closest to the blossom end. Seeds near the stem may be immature. In the squash cavity, work seeds between your fingers to release from the pulp. Mature seeds release from pulp easier than immature seeds. Scrape seeds into a bowl. Add water, pulp will rise. Pour off water and pulp. Add water and repeat until water is clear. There is no easy way to tell which seed are immature as all seeds will sink including the immature ones. (Mature seed are plump; immature seeds look flat.) Pour seed into a sieve and rinse well. Dry bottom of sieve and pour seed into a glass or plastic bowl or plate. Seed will stick to paper plates or paper towels. Put seed in a dry, warm place (not hot) out of direct sunlight. To aid in even drying and prevent clumping stir the seed twice a day until completely dry, about 1-2 weeks. Depending on variety, seed will remain viable for 6 years when stored in a cool, dark, dry location. The standard for commercially sold seed varies by variety but is between 60-80% germination rates.
Seed Saving Instructions

Advanced

**Allium**
Onions, garlic, shallots, chives

Varieties within each onion species will cross with each other. Crosses between species are uncommon but possible.
- **Common chives** (*Allium schoenoprasum*)
- **Garlic chives** (*Allium tuberosum*)
- **Japanese bunching onions** (*Allium fistulosum*)
- **Allium cepa:** this species has 3 subspecies that can all cross pollinate with each other.
  - *Aggregatum:* includes shallots, multiplier onions and potato onions;
  - *Cepa:* our biennial, common storage and slicing onions;
  - *Proliferum:* includes the Egyptian or walking onions.

To grow to seed: Flowering *alliums* of the same species can cross pollinate edible *alliums*. Grow only one variety in each species or separate all *alliums* within the same species by at least 1000 feet. Harvest in the fall and select the largest bulbs which will produce more seed. Clip tops to 6 inches and store at 35-40° F. in a dry, airy location. In early spring replant bulbs 12 inches apart and cover with 1/2 inch of soil. *Alliums* produce perfect flowers, most of which are cross pollinated because the pollen is shed before the stigma is receptive. Individual flowers in an umbel open at different times so pollination can occur between different flowers on the same umbel or on different umbels on different plants.

**Onions:** Many onions require vernalization (cold, winter-like temperatures for 2-3 weeks). The refrigerator works well for this. Onions display some inbreeding depression. Save seeds from at least 5 different plants. As soon as 50% of blooms show seeds, clip individual flowers and store in an open bag in a cool dry place for an additional 2-3 weeks. Fully dried flowers will drop clean seeds easily. Most seed will release simply by shaking the dried bloom. Alternatively, rub umbel tips to free seeds and winnow to remove debris. Onions remain viable for only 2 years in a cool, dry, dark place. Storing in the freezer in a glass jar will increase viability to about 8 years.

**Garlic** is easier to grow to mature edible bulbs. Plant individual cloves in September or early October. Cloves will overwinter and grow to maturity by the next July. Dig bulbs when tops fall over. Let bulbs dry in an airy place out of direct sunlight until tops pull off easily. Store in a cool, dry place. In September or October, choose the largest healthiest bulbs, break apart and plant individual cloves.

**Chives** are aggressive re-seeders and are easier to grow from root divisions. Cut blooms off plant before seed set.

**Brassicaceae**
Broccoli, Brussels sprout, Cabbage, Cauliflower, Kale (*Brassica oleracea* )

All vegetables and varieties in this large species will cross with each other. Grow only one variety at a time for seed, or separate different varieties at least 1000 feet or more. *B. oleracea* suffer from inbreeding depression and therefore require seed to be saved from at least 6-8 of the most healthy plants that have desirable traits. Plants chosen for seed production should not be harvested for consumption. Plants should be carefully dug in the fall, trimmed and stored for the winter. Nearly all plants in this species require vernalization (cold winter-like temperatures) for 8-10 weeks at 35-40° F. in an area with high humidity. Replant in the spring. Flowering plants can reach 4 feet high and need at least 2 feet spacing for good seed production. Flowers are perfect, but cannot self-pollinate. Pollinator insects are required to carry pollen from one plant to another. Better pollination is achieved when planted in a bunch rather than a long line. Allow individual pods to dry to a light brown color before picking and opening by hand. There will be far more seed than you will need. Never the less, some seed should be saved from each plant in order to have a viable gene pool. Most brassica seeds remain viable for 5 years when stored in a cool, dry, dark place.

**Kale** (*B. oleracea*)
Kale being the most cold hardy of the *B. oleracea* and usually will survive all but the coldest of Yakima winters with a thick layer of mulch. Plants will grow again in spring and send up a flower stalk. Follow all other *B. oleracea* instructions for growing kale to seed.
**Brassicaceae**

*Turnips, broccoli raab, Chinese mustards, Chinese cabbage, spinach mustard*  
*(*Brassica compestris* formerly known as *Brassica rapa*)

This species has 5 sub-species and all can cross pollinate with each other.  

*Rapifera*: root turnips  
*Ruvo*: flower-stalk turnips, broccoli raab  
*Chinensis*: nonheading varieties of Chinese mustard  
*Pekinensis*: heading varieties of Chinese cabbage  
*Perviridis*: spinach mustards

Grow only one variety at a time for seed, or separate different varieties at least 1000 feet or more. *B campestris* suffer from in-breeding depression and therefore require seed to be saved from at least 6-8 plants. Nearly all plants in this species require vernalization (cold winter-like temperatures) for 8-12 weeks at 35-40° F. Then roots should be replanted in the spring. Flowering plants can reach 3 feet in height and need at least 2 feet spacing for good seed production. Flowers are perfect, but cannot self-pollinate. Pollinator insects are required to carry pollen from one plant to another. Better pollination is achieved when planted in a bunch rather than a long line. Allow individual pods to dry to a light brown color before picking and opening by hand. There will be far more seed than you will need. Never the less, some seed should be saved from each plant in order to have a viable gene pool. Most brassica seeds remain viable for 5 years when stored in a cool, dry, dark place.

**Turnip (Brassica campestris subsp. Rapifera)**

Plants chosen for seed production should not be harvested for consumption. Plants should be carefully dug in the fall. Select the most healthy plants that have desirable traits. Trim leafy tops to 2 inches and taproot to 6 inches. Store for the winter in humid area with temperatures between 35-40° F. *Turnips* need vernalization (cold winter-like temperatures) for 8-12 weeks. *Turnip roots* will not survive Yakima winters even in cold frames or with deep mulch. *Turnip roots* need to be stored in a refrigerator or use the pit method. Green seed pods rarely produce viable seeds and should not be saved. Harvest only seeds from brown seed pods.

**Chenopodiaceae**

*Beets and Chard*

**Beet (Beta vulgaris)**

Beets and chard have perfect flowers with light pollen that can be carried on the wind for a mile or more. All beets and chard will cross pollinate. Grow seed for only one variety of beet or chard at any one time or separate by 1000 feet or more. Plant beets in mid summer. Mulch heavily in fall and allow to mature. Beets will not overwinter in Yakima. Before hard frost, dig roots. Beets suffer from inbreeding depression and therefore require seed to be saved from at least 6-8 plants. Select large healthy roots with desirable traits. Trim tops to 2 inches and taproots to 6 inches. Beets require vernalization (cold winter-like temperatures) for 8-12 weeks at 35-40° F. in a humid location. This can be accomplished in a refrigerator. Alternatively, in all but the worst Yakima winters, roots can be stored in an outdoor pit. Dig a pit about 2 feet deep, line with 4 inches of dry material, straw, sawdust, or shredded leaves work well. Place roots so they are not touching each other and cover with another 4 inches of dry material, then cover with the soil that originally came out of pit, and cover with a waterproof tarp or cold frame to keep roots from getting water logged. In early spring replant beet roots 18 inches apart with tops just showing above the soil. Better pollination is achieved when planted in a bunch rather than a long line. Beets will grow 4 feet tall and bushy. By August, plants will be covered with beet seed. When seeds are tan, cut tops just above the root and sore in a cool, dry place for 2-3 additional weeks. Seeds can be saved by stripping by hand. Seeds are rough, gloves may be required. There will be far more seed than you will need. Never the less, some seed should be saved from each plant in order to have a viable gene pool. *Beet* and chard seeds retain 60% germination rates for 6 years when stored in a cool, dry, dark place.

**Chard (Beta vulgaris)**

Beets and chard are botanically the same. All instructions for beets should be followed to save seed from chard. However, the tough, fibrous, roots of chard are not as easily damaged by frost and will survive all but the coldest of Yakima winters without putting the roots in a refrigerator or pit. If you decide NOT to bury in a pit, you may leave the plants in the ground with a 4 inch layer of mulch through light frost. When the leaves wilt and begin to die back, add another 6 inch layer of mulch and cover with a tarp or cold frame to prevent water logged roots. In the very early spring, dig up plants and choose 6-8 of the largest, healthiest roots. Follow all other instructions for beets.
**Umbelliferae**

**Carrot (Daucus carota)**

Carrots (*D. carota*) will cross pollinate with all other carrot varieties and Queen Anne’s Lace. For seed, grow only one variety at a time or separate by 1/2 mile. Carrots suffer from severe inbreeding depression. Save seed from as many plants as possible, at least 10 but more is better. Carrot flowers are not self-pollinating and require pollinator insects to move pollen from one plant to another. There are several ways to save carrot roots through the winter. Carrots require vernalization (cold winter-like temperatures) for 8-12 weeks. Carrots need to be stored at 35-40°F with 90% humidity. This can be accomplished in a refrigerator. Alternatively, in all but the worst Yakima winters, roots can be stored in an outdoor pit. Dig a pit about 2 feet deep, line with 4 inches of dry material, straw, sawdust, or shredded leaves work well. Place roots so they are not touching each other and cover with another 4 inches of dry material, then cover with the soil that originally came out of pit, and cover with a waterproof tarp to keep roots from getting water logged. Another option that will work in all but the coldest of Yakima winters is to plant carrots in mid-summer, mulch heavily in late summer. In late fall, cut tops to 2 inches and add several more inches of mulch. Cover with a tarp or cold frame to prevent roots getting water logged. In spring dig up roots choose the largest, healthiest roots with desirable traits and replant 30 inches apart with the soil just covering the shoulders. Blooming carrots grow 4 feet tall. Better pollination is achieved when grown in bunches rather than a long line. When the umbels turn brown and dry, hand pick 1 or 2 of the largest umbels from each plant and allow to dry for an additional 2-3 weeks. Rub the tips of the umbel between your fingers to release seeds. Carrot seeds are naturally hairy (bearded). Commercial seed is de-bearded, but it is not necessary to do so, and does not affect germination. There will be far more seed than you will need. Never the less, some seed should be saved from each plant in order to have a viable gene pool. Carrot seeds will store 6 years in a cool, dry, dark, place.

**Zea mays**

**Corn**

Corn has male and female flowers on the same plant. The male flowers are the tassels at the top of the stalks; the silks are part of the female flowers. Corn rarely self pollinates as the female silks are not receptive when the male pollen is released. The female flowers need to be pollinated by pollen from surrounding plants. Each individual silk must be pollinated in order to form one kernel. Better pollination is achieved when corn is planted in blocks of 25 plants or more, or in wide rows of with at least 5 plants across. Corn pollen is very light and can be carried great distances. Separate corn varieties by at least 1 mile or grow varieties that are in tassel at different times.

Corn is susceptible to extreme inbreeding depression. If seed is saved from too few plants, subsequent plants may be short, mature late, and produce few ears. Save seed from 200 different plants. When harvesting corn leave one ear on each plant to mature an additional 4-6 weeks until it is dry. Pick the dried ears, pull back the husks, and allow to dry for 3 additional weeks in a cool, dry place. Process the seed by twisting the cob and allowing kernels to fall into a container. If there is remaining silk and chaff it can be removed by winnowing. Corn seed has a short life and is normally good for one or two years, when stored in a cool, dry, dark place. Storing dry seed in a glass jar will increase the shelf life by 50%. Storing in a glass jar in a freezer can quadruple the shelf life.