

Taxonomy- Botanical Classification of Cultivated Crops

In the 1700's Swedish Botanist Carl Linnaeus developed the universal system of Taxonomy to identify and arrange species by Latin name based on their growth and reproduction.

Amaryllidaceae Family- 73 Genera and 1600 species

This family of plants was named after a shepherdess in Greek Mythology. Amaryllis and other maidens were after a young and handsome shepherd who challenged them to bring him the most beautiful flower they could find. Whomever brought the most beautiful won his heart. A high priestess advised Amaryllis to pierce her heart with a golden arrow and take the path to the shepherds house each day. On the 30th day, she gathered beautiful blood red flowers which sprouted from her blood and when given to the shepherd he instantly fell in love with her and her heart was healed. The word Amaryllis means ‘sparkling’ likely referring to the beautiful flower heads which burst from this plant family. Plants in this family are monocots.

Genus	Species	Common name
<i>Allium</i> (Gk. name: “garlic”)	<i>ampeloprasum</i> (Gk. ampelos “vine” and parson “leek”)	Leek
	<i>cepa</i> (Ln. name: “onion”)	Onion, Shallot
	<i>fistulosum</i> (Ln. “hollow”)	Bunching Onion
	<i>sativum</i> (Ln. “that which is sown”)	Garlic
	<i>schoenprasum</i> (Gk. “cord-like”)	Chives

Almost all alliums are biennial, requiring a certain number of chilling hours below 50°F and increasing daylength to initiate flowering. There are several ways to overwinter your alliums, see the section *Overwintering Biennials* in the appendix of this booklet for more information. Many of the allium, such as garlic, shallots and Egyptian onions can be propagated asexually from their bulbs.

Gen., Species	Life Cycle	Pollination ¹	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>ampeloprasum</i>	Biennial	XP, WI	500'	6"	>5; 1.3	0.23 oz
<i>cepa</i>	Biennial	XP, WI	500'	6"	>5; 1.3	0.35 oz
<i>fistulosum</i>	Biennial	XP, WI	500'	6"	>5; 1.3	0.23 oz
<i>sativum</i>	Saving asexual bulb			4"	-	1.2 lb
<i>schoenprasum</i>	Perennial	XP, WI	500'	12"	>5; 3.0	0.23 oz

¹XP= “cross-pollination”; W= “wind”; I= “insect”
²The more healthy plants you save seed from, the greater the genetic diversity
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Amaranthaceae (aka Chenopodiaceae)- 174 Genera and 2,500 species

Also known as the goosefoot family by the shape of its leaves, this family contains some of the most important food crops in the world as well as some of the most pernicious weeds known to agriculture. This family includes the former Chenopodiaceae Family which is now recognized as a sub-family of Amaranthaceae. These plants are dicots, usually have alternate or simple leaves and are prolific pollen producers. The root word Amaranthos is Greek meaning “unfading”, relating to the strong colors, blooms and long flowering periods which frequently occur in this Family.

Genus	Species	Common name
<i>Amaranthus</i> (Gk. “unfading”)	<i>hypochondriacus</i> (Gk. “upward”)	Amaranth
<i>Atriplex</i> (Gk. name: “orach”)	<i>hortensis</i> (Ln. “of gardens”)	Orach
<i>Beta</i> (Celtic name: “bete”)	<i>vulgaris</i> (Ln. vulgare “common”)	Beet, Chard, Mangels
<i>Chenopodium</i> (Gk. “goose-foot”)	<i>album</i> (Ln. albus “white”)	Lambsquarters
	<i>quinoa</i> (Quechuan name: “Kinwa”)	Quinoa
<i>Spinacia</i> (Ln. “thorny”)	<i>oleracea</i> (Ln. “cultivable”)	Spinach

Almost all biennials require a certain number of chilling hours below 50°F and increasing daylength to initiate flowering. There are several ways to plan for and overwinter your biennials. See the section *Overwintering Biennials* in the appendix of this booklet for more information. Beets, Chard and Mangels require at least 8 weeks of vernalization. Older Spinach varieties will begin flowering at 14.5 hours daylength, however, newer more bolt-resistant varieties have been bred. In this family are annuals and biennials which typically require a long dry autumn season for seed ripening. Beets and Swiss Chard are self-infertile and outcross readily. Spinach is dioecious, requiring both male and female plants for reproduction. Almost all members of this family have a long, indeterminate and continuous flowering period once initiated.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>A. hypochondriacus</i>	Annual	SP	80'	18"	1; 2.3	0.76 oz
<i>A. hortensis</i>	Annual	XP, W	4,000'	8"	5; 2.2	?
<i>B. vulgaris</i> (Beet, Mangels)	Biennial	XP, WI	4,000'	12"	5; 5.0	1.20 oz
<i>B. vulgaris</i> (Chard)	Biennial	XP, WI	4,000'	8"	5; 2.2	1.14 oz
<i>C. album</i>	Annual	XP, W	4,000'	7"	5; 1.7	?
<i>C. quinoa</i>	Annual	SP	80'	12"	5; 5.0	2.1 oz
<i>S. oleracea</i>	Annual	XP, W	2,000'	8"	5; 2.2	0.77 oz

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Brassicaceae Family- 372 Genera and 4,060 species

This family of plants, often referred to as the mustard family or the Cruciferae (the 4-petaled shape of the flowers like a cross) is a one of the largest and most widespread families of flowering plants. Members of this family share many key characteristics: (1) they have 4-petaled corolla; (2) they contain glycosinolate compounds giving them a strong sulfurous odor or taste; and (3) most all of them produce their seed in a long narrow pod in two carpels separated by a septum. Mustards have long been important edible, medicinal and oilseed crops. The commonly grown garden brassicas are almost universally cool-seasoned crops and do not produce well in hot climates.

Genus	Species	Common name
<i>Armoracia</i> (Ln. name: "Horseradish")	<i>rusticana</i> (Ln. "Countryside")	Horseradish
<i>Brassica</i> (Ln. name: "Cabbage")	<i>hirta</i> (Ln. "hairy")	White Mustard
	<i>juncea</i> (Ln. "rush-like")	Indian Mustard, Mustard Greens
	<i>napus</i> (Ln. "Turnip-like root")	rutabaga, Siberian Kale, Rape
	<i>nigra</i> (Ln. "black")	Black Mustard
	<i>oleracea</i> (Ln. "cultivable")	Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Collards, Kale, Kohlrabi
	<i>rapa</i> (Old Ital. name: "Turnip")	Turnip, Broccoli Raab, Chinese Cabbage, Chinese Mustard
<i>Crambe</i> (Gk. krambos "dry")	<i>maritima</i> (Ln. "of the sea")	Sea Kale
<i>Eruca</i> (unknown)	<i>sativa</i> (Ln. "that which is sown")	Rocket, Arugula
<i>Raphanus</i> (Gk. "quick-appearing")	<i>sativus</i> (Ln. "that which is sown")	Radish
<i>Rorippa</i> (unknown)	<i>nasturtium</i> (Ln. "twisted nose")	Water Cress

Their flowers are perfect, open in the morning and prolifically shed pollen. Their flowers have a gentle aroma and attract pollinators. Some members of this family, such as spring radishes and mustard greens have been selected for rapid production and can flower in their first year if planted early on. Others, such as rutabaga, kale and cabbages require vernalization. Most require a long dry period for seed maturation. Seed pods will shatter when they become fully ripened, so it is essential to keep a careful on the maturation process. The seed is nearing ripeness when the pod is drying and when opened, the seeds are observed to be black and hard to pierce you're your fingernail.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>A. rusticana</i>	Perennial	Root Division		12"	-	?
<i>B. hirta</i>	Annual	XP, WI	1,000'	7"	5; 1.7	2.06 oz
<i>B. juncea</i>	Annual	XP, WI	1,000'	8"	5; 2.2	0.82 oz
<i>B. napus</i>	Biennial	XP, WI	1,000'	5"	5; 0.9	2.78 oz
<i>B. nigra</i>	Annual	XP, WI	1,000'	7"	5; 1.7	2.06 oz
<i>B. oleracea</i>	Biennial	XP, WI	1,000'	15"	5; 7.8	0.01 oz
<i>B. rapa</i>	Annual	XP, WI	1,000'	12"	5; 5.0	0.02 oz
<i>C. maritima</i>	Perennial	XP, WI	1,000'	18"	5; 11.3	0.53 oz
<i>E. sativa</i>	Annual	XP, WI	1,000'	7"	5; 1.7	1.00 oz
<i>R. sativus</i>	Annual	XP, WI	1,000'	5"	5; 0.9	1.92 oz
<i>R. nasturtium</i>	Annual	XP, WI	1,000'	8"	5; 2.2	0.82 oz

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Compositae Family (aka Asteraceae)- 1,900 Genera and 32,000 species

Also referred to as the Asteraceae family, this family comprises most of our salad greens, daisies and sunflowers. Plants flower sequentially and are often times plants are harvested at 50-70% of their flowering phase and stacked to finish in the field before gathering and threshing. The first seeds produced are often the strongest. Excessive heat can often cause dormancy in the seeds of some crops like lettuce. If this occurs, mimicking vernalization by storing the lettuce seed in an airtight container in the refrigerator for a few weeks can help break dormancy.

Genus	Species	Common name
<i>Arctium</i> (Gk. arktos "bear" referring to rough involucre)	<i>lappa</i> (Ln. "bur")	Burdock, Gobo
<i>Chrysanthemum</i> (Gk. chrysos "gold" and anthos "flower")	<i>coronarium</i> (Ln. "crown" or "belonging to garlands")	Shungiku
<i>Cichorium</i> (Gk. Kichore name: "Endive")	<i>endivia</i> (Ln. name: "Endive")	Endive, Escarole
	<i>intybus</i> (Egypt. tiby "January")	Chicory
<i>Cynara</i> (Gk. kyon "dog" referring to toothed leaves)	<i>cardunculus</i> (Ln. "thistle-like")	Cardoon
	<i>scolymus</i> (Gk. name: "Artichoke")	Artichoke
<i>Helianthus</i> (Gk. helios "sun" and anthos "flower")	<i>annuus</i> (Ln. "annual")	Sunflower
	<i>maximiliani</i> (German explorer)	Edible Root Sunflower
	<i>tuberosus</i> (Ln. "swelling root")	Jerusalem Artichoke
<i>Lactuca</i> (Ln. lacta "milk")	<i>sativa</i> (Ln. "that which is sown")	Lettuce, Celtuce
<i>Polymnia</i> (Ln. poly "many")	<i>sonchifolia</i> (Gk. "thistle")	Yacon
<i>Scorzonera</i> (Ln. "Viper or Adder")	<i>hispanica</i> (Ln. "Spanish")	Black Salsify, Scorzonera
<i>Tragopogon</i> (Gk. tragos "Goat" and pogon "beard")	<i>porrifolius</i> (Ln. "Leek-leaved")	Salsify

All members of this family require a dry period during seed maturation. The flowers of most species in this family are perfect and can self-pollinate, however, insects can greatly increase pollination in the sunflowers. Some regions with short or cool and damp growing seasons may find difficulty saving seeds from members of this family. Often times, in these climates, getting as early as possible a start on seed crops helps ensure success. The successive flowering and maturing means that often one has to sequentially harvest seed or run the risk of mixing immature seed in with mature seed, lowering germination rate. Endive cannot be crossed by chicory, but chicory can be crossed by endive. Both are best planted midsummer to prevent early bolting. Cardoons will cross with artichokes.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>A. lappa</i>	Biennial	SP, WI	1,000'	12"	5; 5.0	?
<i>C. coronarium</i>	Annual	SP, WI	1,000'	12"	5; 5.0	?
<i>C. endivia</i>	Biennial	SP	1,000'	12"	5; 5.0	?
<i>C. intybus</i>	Biennial	SP	1,000'	12"	5; 5.0	?
<i>C. cardunculus</i>	Perennial	XP, I	1,000'	72"	5; 225.0	3 Roots
<i>C. solymus</i>	Perennial	XP, I	1,000'	72"	5; 225.0	3 Roots
<i>H. annuus</i>	Annual	XP, WI	1,000'	24"	5; 20	0.45 oz
<i>H. maximiliani</i>	Annual	XP, WI	1,000'	24"	5; 20	0.45 oz
<i>H. tuberosus</i>	Perennial	Root Division		15"	1; 1.6	2.06 lb
<i>L. sativa</i>	Annual	SP	2'	10"	1; 1.07	0.11 oz
<i>P. sonchifolia</i>	Perennial	Root Division		12"	1; 1.6	?
<i>S. hispanica</i>	Biennial	SP, I	500'	8"	5; 2.2	?
<i>T. porrifolius</i>	Biennial	SP, I	500'	8"	5; 2.2	?

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Cucurbitaceae Family- 98 Genera and 957 species

Members of this family are annual or perennial plants ranging in their native habitats from temperate to tropical regions and include pumpkins, gourds, squash, cucumbers and melons. Many cucurbits such as winter squash, melons of cucumbers have trailing vines and tendrils. Some have a bush habit, like summer squashes and zucchini. Cucurbits tend to have a monoecious flowering habit with unisexual flowers to ensure cross-pollination, most often through insects.

In general these crops are heat-lovers, preferring warm springs and warm nighttime summer temperatures. On the average, cucurbits need daytime temperatures of at least 75-88°F (25-30°C) and nighttime temperatures not much lower than 68°F (20°C). Many summer squash varieties such as Crookneck Squash and Zucchini can thrive in lower temperatures. Most are annuals and produce large fruit. Most are sensitive to frost and need warmth for fruit to mature. Therefore, they need to start setting fruit early to mid-summer.

Genus	Species	Common name
<i>Citrullus</i> (Ln. citron relating to the odor, scent of Citron Tree)	<i>lanatus</i> (Ln. “woolly-haired”)	Watermelon, Citron
<i>Cucumis</i> (Gk. kykyon “Cucumber”)	<i>melo</i> (Ln. name: “Melon”)	Muskmelon, Cantaloupe, Armenian Cumber
	<i>sativus</i> (Ln. “cultivable”)	Cucumbers
<i>Cucurbita</i> (Ln. name: “Gourd”)	<i>ficifolia</i> (Ln. “fig-leaved”)	Chilicayote
	<i>maxima</i> (Ln. “largest”)	Squash- vars. Banana, Buttercup, Hubbard and Turban
	<i>mixta</i> (Ln. “mixed”)	Squash- vars. Cushaw, Silverseed Gourds
	<i>moschata</i> (Ln. “musky-scented”)	Squash- vars. Cheese, Butternut, Golden Cushaw
	<i>pepo</i> (Gk. “ripe fruit”)	Squash- vars. Acorn, Crookneck, Scallop, Spaghetti, Zucchini
<i>Luffa</i> (Egyp. name: “Lufah”)	<i>acutangular</i> (Ln. “sharp-angled”)	Angled Luffa
	<i>aegyptiaca</i> (Gk. “Egyptian”)	Smooth Luffa
<i>Sechium</i> (unknown)	<i>edule</i> (Ln. “edible”)	Chayote

Flowers can be hand-pollinated to ensure genetic purity. Female flowers have a swollen ovary at the base. Tie or tape flowers closed to keep pollinators out, remove a male flower and pollinate the female stigma by painting it with the male stamen. Quickly close the female flower and secure to prevent further pollination. Out-crossing species require genetic diversity.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>C. lanatus</i>	Annual	XP, WI	1,000'	22"	5; 16.8	0.20 oz
<i>C. melo</i>	Annual	XP, WI	1,000'	15"	5; 7.8	0.71 oz
<i>C. sativus</i>	Annual	XP, WI	1,000'	12"	5; 5.0	0.70 oz
<i>C. ficifolia</i>	Annual	XP, WI	1,000'	22"	5; 16.8	0.50 oz
<i>C. maxima</i>	Annual	XP, WI	1,000'	18"	5; 11.3	0.50 oz
<i>C. mixta</i>	Annual	XP, WI	1,000'	18"	5; 11.3	0.50 oz
<i>C. moschata</i>	Annual	XP, WI	1,000'	18"	5; 11.3	0.50 oz
<i>C. pepo</i>	Annual	XP, WI	1,000'	18"	5; 11.3	0.71 oz
<i>L. acutangular</i>	Annual	XP, WI	1,000'	30"	5; 31.3	0.28 oz
<i>L. aegyptiaca</i>	Annual	XP, WI	1,000'	30"	5; 31.3	0.28 oz
<i>S. edule</i>	Annual	XP, WI	1,000'	30"	5; 31.3	0.28 oz

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Gramineae Family (aka Poaceae)- 800 Genera and 12,000 species

Members of this family include the grasses, bamboos and major cereal grains which are staples in many cultures and livestock around the world. They are important for building materials and biofuels. Within this family are many C3 and C4 species. C4 species utilize water more efficiently in photosynthesis making such plants drought resistant. These plants are monocots. There are annual, biennial or perennial members of this family. The three crops rice, wheat and maize comprise over 50% of humanities calorie consumption.

Genus	Species	Common name
<i>Avena</i> (Ln. name: “oats”)	<i>sativa</i> (Ln. “cultivable”)	Oats
<i>Hordeum</i> (Ln. name: “barley”)	<i>vulgare</i> (Ln. “common”)	Barley
<i>Oryza</i> (Gk. name: “rice”)	<i>sativa</i> (Ln. “cultivable”)	Rice
<i>Panicum</i> (Ln. name: “millet”)	<i>miliazeum</i> (Ln. name: “millet”)	Proso Millet
<i>Pennisetum</i> (Ln. “feather-bristle”)	<i>glaucum</i> (Gk. “blue-grey”)	Pearl Millet
<i>Secale</i> (Ln. name: “rye”)	<i>cereal</i> (Gk. Ceres, goddess of agriculture)	Rye
<i>Setaria</i> (Ln. “bristle or hair”)	<i>italica</i> (Ln. “Italian”)	Foxtail Millet
<i>Sorghum</i> (Ln. “tall grass”)	<i>bicolor</i> (Ln. “two-colored”)	Sorghum
<i>Triticum</i> (Ln. name: “wheat”)	<i>aestivum</i> (Ln. “summer-ripening”)	Wheat
<i>Zea</i> (Gk. “grain”)	<i>mays</i> (Taino mahiz name: “corn”)	Corn/Maize

The flowers are generally small, without obvious sepals or petals and are arranged in spikelets. The flowers are usually hermaphroditic and can self-pollinate. Exception to this is the wind-pollinated corn/maize whose flowers are separate. Pollination from corn can be controlled by bagging both male and female flowers and transferring pollen manually. Care must be insured in this process to mix pollen from different plants in order to ensure genetic diversity.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>A. sativa</i>	Annual	SP,	15’	5”	10; 1.7	1.18 oz
<i>H. vulgare</i>	Annual	SP	15’	5”	10; 1.7	2.35 oz
<i>O. sativa</i>	Annual	SP	15’	5”	10; 1.7	1.08 oz
<i>P. miliazeum</i>	Annual	SP, XP	15’	5”	5; 0.9	1.11 oz
<i>P. glaucum</i>	Annual	XP, W	1,000’	5”	5; 0.9	1.11 oz
<i>S. cereal</i>	Annual	SP, XP	100’	5”	10; 1.7	2.38 oz
<i>S. italica</i>	Annual	SP	15’	5”	5; 0.9	1.11 oz
<i>S. bicolor</i>	Annual	XP, W	2,000’	5”	5; 0.9	1.89 oz
<i>T. aestivum</i>	Annual	SP	15’	5”	10; 1.7	1.18 oz
<i>Z. mays</i>	Annual	XP, W	2,000’	15”	50; 78	1.28 oz

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Leguminosea (aka Fabaceae) Family- 751 genera and 19,000 species

The legume family is comprised of some of the most important crops in the world. Over 100 are cultivated as agricultural crops worldwide including forages, pulses, cover-crops, vegetables and ornamentals. Domestication of this crop goes back at least 6,000 years. The protein-rich dry seeded pulses are a major source of human nutrition worldwide second only to the grains. The two eaten together can provide all the essential amino acids needed by man. Crops in this family are also important timber, fiber, dyes, forage, tannins, insecticides, flavorings, flowers and resins.

Genus	Species	Common name
<i>Arachis</i> (Gk. "vetch-like")	<i>hypogaea</i> (Gk. "below ground")	Peanut
<i>Cajanus</i> (Gk. arkadia "fertile land")	<i>Cajun</i> (Gk. akadia "fertile land")	Pigeon Pea
<i>Canavalia</i> (Malay name)	<i>ensiformis</i> (Ln. "sword-shaped")	Jack Bean
<i>Cicer</i> (Ln. name: "Chickpea")	<i>arietinum</i> (unknown)	Garbanzo
<i>Glycine</i> (Gk. glykys "sweet")	<i>max</i> (Ln. "extreme")	Soybean
<i>Lathyrus</i> (Gk. name "Spurge")	<i>odoratus</i> (Ln. "odorous")	Sweet Pea
<i>Lens</i> (Ln. "lens")	<i>culinaris</i> (Ln. "kitchen, food")	Lentil
<i>Lupinus</i> (Ln. lupus "wolf")	<i>mutabilis</i> (Ln. "changeable")	Tarwi
<i>Medicago</i> (Gk. name: "Alfalfa")	<i>sativa</i> (Ln. "cultivable")	Alfalfa
<i>Melilotus</i> (Gk. "honey plant")	<i>officinalis</i> (Ln. "medicinal herb")	Sweet Clover
<i>Phaseolus</i> (Gk. phaselos "little boat")	<i>acutifolius</i> (Ln. "sharp-angled leaf")	Tepary Bean
	<i>coccineus</i> (Ln. "deep-red")	Runner Bean
	<i>lunatus</i> (Ln. "moon-like")	Lima Bean
	<i>vulgaris</i> (Ln. "common")	Common Bean
<i>Pisum</i> (Ln. name: "pea")	<i>sativum</i> (Ln. "cultivable")	Garden Pea
<i>Trifolium</i> (Ln. "three-leaved")	<i>incarnatum</i> (Ln. "flesh-colored")	Crimson Clover
	<i>pretense</i> (Ln. "pretend")	Red Clover
<i>Vicia</i> (Ln. name for the genus)	<i>Americana</i> (Ln. "American")	Purple Vetch
	<i>Villosa</i> (Ln. "villainous")	Hairy Vetch, Woolly Pod Vetch
	<i>faba</i> (Ln. name: "Fava Bean")	Fava Bean
<i>Vigna</i> (Ln. "vining")	<i>aconitifolia</i> (Gk. "poison")	Moth Bean
	<i>angularis</i> (Ln. "angled")	Adzuki Bean
	<i>radiata</i> (Ln. "radiating")	Mung Bean
	<i>umbellate</i> (Ln. "cluster")	Rice Bean
	<i>unguiculate</i> (Ln. "little red claw")	Cowpea

Many of the vegetable and pulse legumes require low humidity, clear and sunny days, and cool nights to ensure disease-free seed. The butterfly-shaped flowers of Leguminosea is typically 5-petaled and perfect. Most are self-pollinated because they tend to release their pollen and self-fertilize the day before the flowers open. Crossing can happen however as many of these flowers have nectar or pollen which insects cannot resist. Beans are susceptible to weevils. 5 days of Freezing the seed at 0°F can kill the weevils. If plants need to be harvested early one can stack them in windrows to finish or hang them upside down in a warm and dry place.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>A. hypogaea</i>	Annual	SP	30'	9"	3; 1.7	0.88 oz
<i>C. Cajun</i>	Perennial	SP, XP, I	30'	8"	3; 1.3	?
<i>C. ensiformis</i>	Annual	SP, XP, I	500'	8"	3; 1.3	?
<i>C. arietinum</i>	Annual	SP	30'	4"	13; 1.4	2.57 oz
<i>G. max</i>	Annual	SP	30'	6"	7; 1.8	1.44 oz
<i>L. odoratus</i>	Annual	SP	30'	9"	15; 1	2.20 oz
<i>L. culinaris</i>	Annual	SP	30'	3"	25; 1.6	0.75 oz
<i>L. mutabilis</i>	Annual	XP, WI	1,000'	9"	15; 1	?
<i>M. sativa</i>	Perennial	XP, WI	1,000'	5"	30; 5.2	0.19 oz
<i>M. officinalis</i>	Biennial	XP, WI	1,000'	8"	3; 1.3	?
<i>P. acutifolius</i>	Annual	SP, XP, I	30'	6"	30; 7.5	?
<i>P. coccineus</i>	Annual	XP, WI	1,000'	6"	30; 7.5	1.07 oz
<i>P. lunatus</i>	Annual	SP	30'	4"	7; 1.0	2.00 oz
<i>P. vulgaris</i>	Annual	SP	30'	4"	7; 1.0	2.00 oz
<i>P. sativum</i>	Annual	SP	30'	9"	15; 1	2.20 oz
<i>T. incarnatum</i>	Perennial	XP, WI	1,000'	5"	30; 5.2	0.38 oz
<i>T. pretense</i>	Perennial	XP, WI	1,000'	5"	30; 5.2	0.38 oz
<i>V. americana</i>	Annual	XP, WI	500'	4"	25; 2.8	0.11 oz
<i>V. villosa</i>	Annual	XP, WI	500'	4"	25; 2.8	0.11 oz
<i>V. faba</i>	Annual	SP	100'	8"	3; 1.3	2.15 oz
<i>V. aconitifolia</i>	Annual	SP	30'	5"	30; 5.2	?
<i>V. angularis</i>	Annual	SP	30'	5"	30; 5.2	?
<i>V. radiata</i>	Annual	SP	5'	5"	30; 5.2	?
<i>V. umbellate</i>	Annual	SP	5'	6"	30; 7.5	?
<i>V. unguiculate</i>	Annual	SP, WI	50'	12"	3; 3.0	0.17 oz

¹XP= "cross-pollination"; W= "wind"; I= "insect"
²The more healthy plants you save seed from, the greater the genetic diversity
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Solanaceae Family- 98 Genera and 2,700 species

This family is mostly native to Central and South America, though many species grew throughout Europe known for their toxic alkaloids. *Solanum* means "quieting" in Latin. This family contains 5 of the most important agricultural crops in the world- peppers, tomatoes, potatoes, eggplant and tobacco. Commonly known as "nightshades" many members in this family bloom at night.

Genus	Species	Common name
<i>Capsicum</i> (Ln. capsa "case")	<i>annuum</i> (Ln. "annual")	Sweet and Chili Peppers
	<i>frutescens</i> (Ln. "shrubby")	Tobasco Pepper
	<i>pubescens</i> (Ln. "soft-haired")	Manzano Pepper
<i>Cyphomandra</i> (Ln. "curved flock")	<i>betacea</i> (Celtic bett "red")	Tamarillo

<i>Lycopersicon</i> (Gk. “wolf-peach”)	<i>lycopersicum</i> (Gk. “wolf peach”)	Tomato
	<i>pimpinellifolium</i> (unknown)	Currant Tomato
<i>Nicotiana</i> (after Jean Nicot de Villemain)	<i>tabacum</i> (unknown)	Tobacco
<i>Physalis</i> (Gk. “bladder”)	<i>ixocarpa</i> (unknown)	Tomatillo
	<i>peruviana</i> (Ln. “Peruvian”)	Cape Gooseberry/ Goldenberry
	<i>pubescens</i> (Ln. “soft-haired”)	Downy Ground Cherry
	<i>subglabrata</i> (Ln. “hairless”)	Purple Ground Cherry
<i>Solanum</i> (Ln. “quieting”)	<i>burbankii</i> (after Luther Burbank)	Sunberry
	<i>melongena</i> (It. “mad-apple”)	Eggplant
	<i>muricatum</i> (Ln. “rough-surfaced”)	Pepino Dulce
	<i>tuberosum</i> (Ln. “swollen”)	Potato

All members of this family are easily identifiable by their similar perfect flowers of 5 united or partially united petals with 5 stamens attached near the base of the symmetrical, wheel-shaped corolla. In general, pepper flowers are white, tomatoes yellow and eggplant purple. Most species in this family are self-pollinated though many can be crossed by insects. Hot day times and warm nights are favored for pollination and fruit-set. Many of these plants are grown as annuals but can perennialize in warmer climates.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>C. annuum</i>	Annual	SP, XP, I	50'	18"	5; 11.3	0.03 oz
<i>C. frutescens</i>	Annual	SP, XP, I	50'	18"	5; 11.3	0.03 oz
<i>C. pubescens</i>	Annual	SP, XP, I	50'	18"	5; 11.3	0.10 oz
<i>C. betacea</i>	Perennial	SP, XP, I	50'	4'	1; 4'	?
<i>L. lycopersicum</i>	Annual	SP	50'	21"	5; 15.3	0.18 oz
<i>L. pimpinellifolium</i>	Annual	SP	50'	21"	5; 15.3	0.18 oz
<i>N. tabacum</i>	Annual	SP, XP	1,000'	21"	5; 15.3	?
<i>P. ixocarpa</i>	Annual	SP	5'	18"	5; 11.3	?
<i>P. peruviana</i>	Annual	SP	5'	21"	5; 15.3	?
<i>P. pubescens</i>	Annual	SP	5'	?	?	?
<i>P. subglabrata</i>	Annual	SP	5'	?	?	?
<i>S. burbankii</i>	Annual	SP, XP, I	50'	18"	5; 11.3	?
<i>S. melongena</i>	Annual	SP, XP, I	50'	18"	5; 11.3	0.03 oz
<i>S. muricatum</i>	Perennial	SP, XP, I	50'	18"	5; 11.3	?
<i>S. tuberosum</i>	Annual	Save tuber for seed		9"	-	2.00 lb

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Umbelliferae (aka Apiaceae) Family- 434 Genera 3,700 species

Members in this family have umbrella shaped flowers many of which are oily, aromatic and some of which are poisonous. The flowers are perfect but do not self-pollinate. The main seed stalk forms a primary umbel which contains the highest quality seeds. These umbels ripen and mature over a period of 30-40 days. Warmth is needed, but temperatures exceeding 100°F can damage seeds. Many members of this family have strong roots, allowing the plant to overwinter and wait to flower until the following spring. These roots can be dug up in the fall, inspected and replanted immediately in mild winters or overwintered in a root cellar to be planted out in the spring when ground has thawed in colder regions.

Genus	Species	Common name
<i>Apium</i> (Ln. name: Celery)	<i>graveolens</i> (Ln. “strong smelling”)	Celery, Celeriac
<i>Anethum</i> (Gk. name: Dill)	<i>graveolens</i> (Ln. “strong smelling”)	Dill
<i>Anthriscus</i> (Ln. name: Chervil)	<i>cerefolium</i> (Ln. “waxy-leaved”)	Chervil
<i>Coriandrum</i> (Gk. name: Coriander)	<i>sativum</i> (Ln. “cultivable”)	Coriander/Cilantro
<i>Daucus</i> (unknown)	<i>carota</i> (Gk. name: Carrot)	Carrot
<i>Foeniculum</i> (Ln. “hay-smelling”)	<i>vulgare</i> (Ln. “common”)	Fennel
<i>Pastinaca</i> (Ln. pastus “food”)	<i>sativa</i> (Ln. “cultivable”)	Parsnip
<i>Petroselinum</i> (Ln. “rock parsley”)	<i>crispum</i> (Ln. “curled, wavy”)	Parsley

Insects are the primary pollinators. Many species can be grown at once by controlling pollination. Some folks bag the flower heads and remove the bags each day at some point between 7 and 11 AM, using a brush to paint pollen from one plant to another and then re-bag. Isolation cages can also be used to prevent insects from cross pollinating, by alternating which varieties get cages every other day during the pollination period.

Gen., Species	Life Cycle	Pollination	Isolation Distance (ft)	Spacing for Seed Saving	# Plants for Diversity; sqft ²	Seed Yield per sqft (lbs or oz)
<i>Ap. graveolens</i>	Biennial	XP, WI	1,000'	6"	5; 1.3	0.92 oz
<i>An. graveolens</i>	Annual	XP, WI	1,000'	5"	5; 0.9	?
<i>A. cerefolium</i>	Biennial	XP, WI	1,000'	9"	5; 2.8	2.14 oz
<i>C. sativum</i>	Annual	XP, WI	1,000'	6"	5; 1.3	?
<i>D. carota</i>	Biennial	XP, WI	1,000'	10"	5; 3.5	1.42 oz
<i>F. vulgare</i>	Biennial	XP, WI	1,000'	10"	5; 3.5	?
<i>P. sativa</i>	Biennial	XP, WI	500'	9"	5; 2.8	2.14 oz
<i>P. crispum</i>	Biennial	XP, WI	500'	9"	5; 2.8	2.14 oz

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