

Hops

Planting & Growing Guide

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The hop (*Humulus lupulus*) is a hardy, perennial plant which produces annual bines from a permanent root stock (crown). Bines are distinct from vines because they climb by wrapping around a support instead of by producing tendrils. Bines may grow up to 25' in a single season but will die back to the crown each fall. In addition to the true roots and aerial bine, the crown also produces underground stems called rhizomes. Rhizomes resemble roots but possess numerous buds and are used for vegetative propagation. Thus propagated, all plants of a variety are genetically identical.

Hops are dioecious, which means they have separate male and female plants. Only the female produces the flowers that are used for brewing or medicinal purposes. Male plants have no commercial value, but are used to pollinate females. Pollination stimulates higher yields by increasing cone size and seed set, but because brewers prefer seedless hops, males are only grown with otherwise poor yielding female varieties. Hop seed from a pollinated female is only planted when a cross between the male and female is desired to obtain a new variety.

Hops are native to the temperate zones of the northern hemisphere. They are found wild in western Europe, Asia and certain parts of North America. Commercial hops are generally grown between the 30th and 50th parallel north or south latitude and at various altitudes. Therefore the ability to grow hops is usually not limited by your location on earth. The health of the bine is more dependent on the growers ability to provide proper growing conditions and care. Under good conditions hops will produce from ½ lb to 2 pounds of dried flowers per plant.

HEELING IN

When your bare root rhizomes arrive, open the plastic bags immediately. It is best to plant right away, within a week of delivery, however if you cannot plant right away, you may "heel in" the rhizomes to protect them and keep them alive (but still dormant) until you are able to plant them in their permanent spot.

Outdoors: To heel in bare root rhizomes outside, pick a location that is shielded from wind, dig a hole, and cover the rhizomes with soil or sand and gently tamp down to avoid air pockets. Periodically check them and keep the soil moist.

Important Information

- **If your plants arrived damaged**, take photographs and contact us immediately and we will provide you with a refund of the purchase price, or a replacement.
- **You should plant your hops within a week of delivery.** If you are unable to do so, you can plant it in a pot or "heel in" your hops until you are able to plant.
- **In the rare event that your hops do not leaf out by May 15th**, we offer a Limited Guarantee on dormant plants. See the last page for details.

Indoors: To heel in bare root rhizomes indoors, whether due to snow or a frozen ground, choose a cool place like a root cellar, basement, or garage. It's important to choose a place where the temperature stays between 38°F and 45°F. This is important so the rhizomes neither freeze, nor do they break dormancy. Place the rhizomes in a container with soil or sand and be sure to keep them moist.

PLANTING

In spring, plant hop rhizomes about 3' apart in well-drained soil. Cover the rhizomes with loamy soil and a layer of mulch. Upon obtaining rhizomes, they should be stored in a plastic bag slightly moistened and kept in a refrigerator until you are ready to plant.

The soil should be tilled to create a weed free area. A strong support system is needed for the plant to climb on. Look for space along fences, garage, or property lines. Plant in early spring once the threat of frost is gone but no later than May. The soil should be worked into a fine, friable condition prior to planting. In cold climates you can plant rhizomes in pots and transplant in June.

Plant 1 rhizome per hill with the buds pointed up and cover with 1" of loose soil. Hills should be spaced at least 3' apart if the hills are of the same variety and 5' apart if they are different. The first year the hop plant requires frequent light watering.

GROWTH CYCLE

Being a perennial, the hop lays dormant during winter and is rather unaffected by freezing temperatures. The time of year when the annual bines break ground, when they flower and when they die back is very much determined by local temperature and day length. The bines will not break ground until soil temperatures have risen to the point where most spring flowers appear. A minimum of 120 frost free days are required for the hop to fully ripen a crop of flowers. Once out of the ground the bines need to be supported off of the ground. Vegetative growth continues until approximately mid-July when most hops are either past bloom or in full bloom depending up on location and variety.

Hop is dioecious, producing male and female flowers on separate plants. The commercial hop is a female plant with flowers (burrs) produced on side arms that develop along the stem. Burrs develop into hop cones, which are sometimes called hops.

At this "burr" stage the flower is approximately ¼" in diameter and is composed of many florets whose styles give it a spiny appearance. This is when the flower is receptive to pollen and if males are present, wind-borne pollen will fertilize the female flower and result in a seeded female hop cone. Regardless of pollination, the styles eventually fall off and miniature petals grow which eventually result in a cone-like structure.

Most female flowers develop and ripen predominately between mid-August and mid-September depending on location, weather, and cultural practices. Commercial growers actually delay flowering by removing the earliest bines in the Spring in order to enhance regrowth and encourage a higher yield of flowers. After the flowers ripen, the bine will continue to build reserves until it totally dies back with the first freezes of Fall.

PRODUCTION

Because hops can produce such a large bine in a matter of months, they will use a large amount of solar energy, water, and nutrients. It is not to say that the hop will not grow under less than optimum conditions, only that the bines will be smaller. Hops prefer full sun and rich soil, preferably light textured, well-drained soil with a pH of 6.5–8.0. If drainage is a problem, small mounds can be built using surrounding top soil mixed with organic matter. Because the hop is a perennial, it's not a bad idea to dig holes about one foot deep so that some manure and other slow release organic fertilizers can be mixed with your soil and replaced into the hole. This puts the nutrients in the root zone. Rhizomes should be planted vertically with the bud pointing up or horizontally about 1" below the soil surface. First year hops have a minimal root system and require frequent short waterings much like any baby plant, but do not drown it with too much water. Mulching the soil surface with some organic matter works wonders in conserving moisture as well as helps control weeds. Once the hop is established after the first season, less frequent deep watering is best, preferably drip irrigation. Try not to soak the bine during watering, as that will sometimes encourage diseases. Each Spring apply a hearty dose of manure as a top dressing or fertilize with a balanced chemical fertilizer that is recommended for garden vegetables. Don't expect very much in growth or flowers the first year because the hop is basically establishing it's root system. Full growth and maximum crops of flowers will be achieved during the second year.

PRUNING

Do not prune baby hops, let everything grow. When the young bines are about 1 foot long in more mature hops, 3–4 bines are trained clockwise per string which has been staked to the hill. It is common to run 2–3 strings per hill. Remaining weaker bine should be cut off at the ground so more energy can be focused to the trained bines. Hops mainly grow vertically, but lateral sidearms extend from the main bine and produce flowers. The main concern is to support the bines and prevent sidearms from tangling. Most cones are produced on the upper part of the plant.

In July, the lowest 4' of foliage and lateral branches can be removed to aid in air circulation and reduce disease development. The removal of lower leaves (stripping) must be done carefully to avoid breaking or kinking the main stem. In August allow additional bottom growth to remain to promote hardiness of the crown and the plant vigor for next year.

At the end of the season you can bury healthy bottom bines for propagating new plants the next spring. Simply bury the bines in a shallow trench and mark their location. In spring dig them up and cut them into pieces about 4" long. Make sure each new cutting has an eye or bud.

SPACING & SUPPORT

Get the bines off the ground and if possible, to keep different varieties from getting tangled up with each other. Plant mixed varieties at least 5' apart. Identical varieties can be as close as 3' if you don't have much room. Hops mainly grow up, then produce lateral sidearms extend off of the main bine.

The bines are easiest to grow and deal with if they are trained onto strong twine. This twine can be supported by a trellis wire, pole, tree branch or building. Small diameter poles, lattice and chain link fence also work but require more hand labor. Keep in mind that the bine does die back each Fall. In the First year bines can be established with a 6' stake, and can grow as high at 20'.

Commercial hop farmers do not train up the first shoots of spring but prune them off mechanically. Hardier shoots are trained onto the string about 4 weeks later (early to mid-May in Oregon). Only 2–3 bines should be trained onto each string with 2 strings per plant. All subsequent bines should be cut off. Bines are ready to be trained when they are about 12" long and must be gently wrapped clockwise onto the string without kinking. Once trained, the bine will take care of itself unless you want the bine to grow horizontally, this must be done manually.

HARVESTING

Because most hops are produced out of reach from the ground, it is safest to lower the bines in order to pick the hops. The harvest date varies with variety and location but will become evident as you gain experience as a hop grower. At maturity, the hop aroma is at its strongest and is measured by crushing a cone and smelling it. The yellow lupulin glands in the cone become much more evident and plump looking when magnified.

The cone will develop a drier, papery feel and in some varieties a lighter color as it matures. Some browning of the lower bracts is a good sign of ripeness. Squeeze the cones as they develop and you will notice they become more light and resilient rather than green and hard. The actual picking is self-explanatory and this is where you want the flower cones, not the leaves. I don't know why raw hop cones are occasionally called leaf hops, when the idea is to not pick the leaves.



DRYING

Drying can be done in a good dehydrator, custom made hop dryer, well vented oven, or they can be air dried. If you use heat, the temperature should not exceed 140°F. Cooler temperatures take longer but a higher quality hop is obtained. Under dry weather conditions, I suggest taking a screen off of your house and setting it up in a wind protected area, elevated on each end. Spread the hops as shallow as possible and fluff daily so moist inner cones are brought to the outside of the pile. If weather is dry and the pile is not too thick they will dry in about 3 days.

A high moisture content in the cones will adversely affect storability and recipe formulation. The hops are dry when the inner stem of the cone (strig) is brittle and breaks rather than bends. The strig takes much longer to dry than the bracts, so be patient. Pack the hops in an air tight container and store in a freezer until used.

Return Policy

Perishable Items (3-Day Return Policy)

We guarantee the perishable items we sell to be in good, viable condition when we sell them. Perishable items include, but are not limited to, garlic bulbs, flower bulbs, seed potatoes, onion sets & transplants, bare-root trees, vegetable crowns... etc. If your perishable item arrives in substandard condition, please contact us within 3 days of the purchase date (or delivery date) and we will provide you with a refund of the purchase price (including shipping costs), or a replacement. Accordingly, we urge you to open any boxes marked as "Perishable" immediately upon receiving them. Because some perishable items can deteriorate very quickly, we cannot accept any claims beyond the 3-day time frame as it becomes too difficult to determine if these items were delivered in substandard condition, or if they turned into such substandard condition because of having been improperly cared for or stored once delivered.

Limited Product Guarantee

Limitation of Remedy

We warrant to the extent of the purchase price only that the seeds or plants sold hereunder are as described on the label within recognized tolerances. No other warranty is given, expressed or implied, of (1) the merchantability or fitness of the seeds or plants for any particular purpose, or (2) against loss due to any cause. We cannot accept any responsibility for the many uncontrollable growing and climatic conditions (soil preparation, fertilization, weed and pest control, temperature control, irrigation...etc.) that must be met to insure the success of your crop(s) or plants.

Limited Dormant Tree & Plant Guarantee

WHEN PLANTED IN THE GROUND BY APRIL 1ST

Claim Deadline is June 1st (with the exception of persimmon trees, which have a deadline of June 15th). Claims placed after June 1st (or June 15th for persimmon trees) will be denied.

Please note: Our trees will come to you topped off at approximately 3 ft. in height to put the tree's stored energy into root development vs. foliage production.

What We Guarantee

Our only guarantee is that your dormant tree/plant will arrive in good, viable condition and will leaf out by May 15th (historically 98% of our trees do). This guarantee is only available to customers who purchased their tree/plant directly from us, and who planted their tree/plant in the ground by April 1st (or temporarily in a pot if the ground in their zone was still frozen solid).

What We Cannot Guarantee

We cannot guarantee that your tree/plant remains alive and healthy, or bears fruit, as there are too many variables beyond our control in order to do so (i.e. soil preparation, planting, fertilization, weed & pest control, adequate irrigation and/or drainage, chill hours, compatible hardiness for your zone, proper choice of pollinator, etc).

How to Request a Credit

If your tree/plant does not leaf out by May 15th, please perform a scratch test by checking for green under the bark, a few inches over the graft. If the scratch test reveals a brown cambium, that means your tree/plant is dead or dying. Watch our video titled Bare Root (Dormant) Warranty on how to perform this simple test. If the scratch test revealed that your plant is dead or dying, pull it from the ground and take pictures of the entire tree/plant, including the roots. Submit your claim & pictures by using the "Return an Item" tool on our Customer Service page (or email us at helpdesk@groworganic.com) no later than June 1st (or June 15th for persimmon trees). We will review your claim and issue you a credit (not a refund) for the purchase price of your tree/plant (excluding shipping).*

(We reserve the right to not issue credit for items already replaced. We also reserve the right to require photographic evidence that the tree/plant was not killed by root rot, rodent or mechanical damage.*



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