



STEP 4: HOW TO GROW MEDICINAL HERBS

Because there are so many different kinds of medicinal herbs, there is no “one way” to do it. There are some general steps that must be taken to grow all herbs. Those steps are included here. Following that are links to [production guides](#) for specific medicinal herbs.

Research the market before you plant a single seed! There is no sense in growing a medicinal herb crop if you don't have a market for it. Marketing information is available in [step 3](#).

1. Do You Want to Grow Organic?

Decide if you want to produce organic herbs. There is a growing market for certified organic herbs. If you want to enter this market, you need to plan in advance and educate yourself about organic production and certification requirements.

To sell your herbs as organic, your fields must be certified by a U.S.D.A. National Organic Program accredited certifying agency. The National Organic Program (NOP) website contains a list of all accredited certifying agents in the country. You are not required to use a certifying agent in your state. There is a fee to be certified.

Organic production requirements are very specific. No prohibited substances can be used for three years, crop rotation and soil building plans must be developed and followed, detailed records must be kept, fields must be inspected annually, and certification must keep certification current.

2. Site Selection and Field Preparation

Site selection is critical for medicinal herb production. The site should have excellent water drainage and good air movement. It should be located where you can access it easily with equipment for planting, weed control, and harvest.

Choose a site with good soil. The optimum soil is loamy, fertile, and high in organic matter. If you want the field to be certifiable organic the first year, no NOP prohibited substances could have been applied to that field for at least three years.

There should be ready access to high-quality water for irrigation. If the crop is going to be organic, the water source will have to be approved.

Pick a site with few hard-to-control weeds. Weed control is the major production problem. Preventing a weed issue is preferable to trying to solve one when the crop is established.

Pull soil samples and have them tested for nutrients, pH, and nematodes. Amend soil as needed. Don't be skimpy—pull enough samples to get a good representation of the site. There are excellent instructions on how to take a soil test on the NC Department of Agriculture & Consumer Services website. On the form that you submit with your samples, you will not find medicinal herbs. Use the code number for Home Garden Vegetables or Vegetables, Other for sun-loving herbs and the code number for Rhododendron/Ginseng/Native Ornamentals for woodland botanicals. Include a note about the kind of herbs you are growing. When results are returned, amend the soil as recommended in the production guides for the herbs you are growing. If fertilizer and pH recommendations are not provided, follow the recommendations on the soil test, but use the low end of the range for fertilizer.

Add organic matter to the soil. Most medicinal herbs like a soil high in organic matter. Add organic matter, such as compost, early. Consider this a slow-release fertilizer.

Plant a soil-building cover crop. Cover crops add organic matter and nutrients, build soil tilth, conserve moisture, and help control weeds. The whole field can be planted in cover crops for the winter. Cover crops can also be planted between the rows or beds of herbs and kept mowed during the growing season.

Woodland botanicals require shade. If you have woods on your property with the appropriate soil and access, that is the least expensive way to provide shade. A mixed stand of hardwoods is best. Look for plants growing on the forest floor that require similar conditions to the herbs you want to grow.

Artificial shade is most commonly provided by a polypropylene shade structure. These shade structures are expensive, but they can last for ten years or longer. The fabric must be rolled up for the winter.

A wood lath structure can also be used for shade. A wood lath structure is less expensive than polypropylene and a grower with carpentry skills can build one. The lath will not withstand a snow load and must be removed and stored for the winter.

Raised beds are a benefit in most areas. Raised beds allow the soil to warm up early in the spring, keep roots from getting water-logged during heavy rains, and provide a good loose soil for growing root crops. A few small raised beds can be constructed with shovels and rakes, but a field of raised beds requires special tractor-drawn equipment.

3. Seed and Rootstock Sourcing

Obtain high quality seed and planting stock. This can be difficult to obtain and expensive, especially for organic material. But do not scrimp on this issue. Certified organic growers must obtain certified organic seed or planting stock, if available.

Source your material from a reputable company. Purchase from companies that have reputations for supplying high-quality seed and planting stock. Inspect your order carefully. Ask if the material is wild crafted or cultivated.

Many medicinal herb seeds have very specific and long stratification requirements. Germination can be very slow and erratic. Know what the seeds need before you buy them. You might want to purchase primed seed or plugs instead.

Grow your own transplants. Many of the open field herb seeds are wild-crafted and the seed is extremely variable. Consider growing your own transplants to provide a uniform stand of plants in the field.

Many medicinal herb roots and rhizomes also have chilling requirements that must be met before they will emerge. Know where the rootstock came from and how it has been handled. Find out if it must be chilled before planting. Inspect carefully upon receipt, being sure there is no rot or mold on the roots. Rootstock can be difficult to store and some decay easily. We have had success storing roots in sphagnum moss at 30-40° F.

4. Planting and Growing

Mechanized planting is strongly recommended! Options for doing this range from tractor mounted precision seeders and transplanters to very simple, inexpensive hand-push seeders.

All woodland botanicals should be mulched. In western N.C. we have had the best success with wood based mulches such as hardwood bark, hardwood bark and sawdust mixes, and hardwood and pine bark mixes. Composted leaves also work well. We have had very poor results with using straw as a mulch in western N.C. Disease and slug problems are more severe with straw than other mulches. In other parts of the country, oat straw is the mulch of choice for shade herbs such as ginseng and goldenseal.

Some growers use plastic mulch for open field herbs. They like it because it controls weeds and keeps the herb foliage clean. Our research indicates that plastic mulch should only be used on crops where the cost of weed control would exceed the cost of the plastic mulch and its application.

You should always have the ability to irrigate. For most open field herbs, standard over-head sprinkler irrigation is appropriate. Drip-irrigation can also be used. In the mountains, a gravity feed system with micro-sprinkler heads might be employed for crops in the woods.

5. Assuring product quality through testing and practices

As a grower, you can produce herbs that meet the rising standard in the industry for safe, high quality medicinal herbs by following good agricultural practices (GAPs) and good manufacturing practices (GMPs) and by having your herbs tested for heavy metals, pesticides, and bioactive constituents.

The World Health Organization released [guidelines for good agricultural practices](#) for medicinal herbs in 2003 and for [good manufacturing practices](#) for herbal medicines in 2005. Growers should follow these guidelines as closely as possible until the time that federal guidelines or regulations are enacted. Federal GMPs are currently out for review. You can read that document at the [U.S. Food and Drug Administration](#) website.

[California Proposition 65](#) puts restrictions on the amount of heavy metals that can be present in products sold in California. Because so many herbal products are sold in California, many manufacturers insist that the raw materials used in their products be tested for heavy metals so they can ensure that their final products will contain less than the threshold amounts listed in the law. Sometimes the buyer tests raw material samples for heavy metals, but growers might choose to have that information on their products to use as part of their quality assurance. The same is true for pesticides. Some fields may have pesticide residues

that can be taken up by your medicinal herb crops. Former tobacco fields and apple orchards are of particular concern. You should ask your buyer if there are particular pesticide residuals that are unacceptable in any of the herbs they purchase. If you have fields that those pesticides were used on, you should consider having your herbs tested for those pesticides.

For an increasing number of medicinal herbs, quality is at least partially determined by the concentration of certain bioactive constituents in the raw material. Your buyer will tell you which bioactives are of interest in the herbs you are growing and the minimum levels required. The buyer will often test for these bioactives when a sample is submitted by the grower. But many growers prefer to have this testing done by an independent lab because they are uncomfortable with the buyer making all of the product quality determinations.

6. Pest Control

Herbs are susceptible to insects and diseases. Many people think herbs don't have pests. Unfortunately, this is not true. There is very limited information on the insects and diseases of many herbs. You need to observe your crops closely and maintain good records of the problems you encounter. Take pictures. Obtain good reference books and request assistance in identification from a county agent, experienced grower, or other specialist.

Prevention is the best approach to pest control. Provide healthy soil and good water and air drainage. Do not over water or over fertilize the plants. Try to plant several smaller fields of different species of herbs instead of one large field of a single herb.

Insects such as aphids, mites, flea beetles, and cutworms can all be a problem on herbs.

To try to prevent problems, keep plants healthy, don't over fertilize, maintain plant diversity whenever possible, and encourage beneficial insects.

Slugs are a particular problem on woodland herbs. No one control method works for everyone. Growers have reported success with diatomaceous earth, beer traps, commercial slug and snail baits, and copper strips. The type of mulch used can also have a dramatic effect on slug populations.

Good weed control is critical to producing a quality herb crop. Give weed control lots of thought before you plant. The presence of weeds in your herbs will greatly reduce the market value of the crop. Choose the planting site carefully. If appropriate, use a mulch. Invest in mechanical cultivation equipment. Hoes and hand-pulling are appropriate for only the very smallest of plots.

7. Harvest the Bounty

Plan way ahead of time for harvest. Consider how you will harvest the leaves, seeds, or roots. What will be practical? Practice with different methods ahead of time. You need to be aware of how important time of harvest is. For most sun-loving herbs, the window of opportunity for harvest of a high-quality crop is very narrow.

Many annuals are harvested the same season they are planted. Examples are burdock root, dandelion herb and root, and milk-thistle seed. You should know how you are going to harvest these herbs before you even plant them.

Many perennials can be cut and allowed to regrow year after year. Examples are Echinacea-herb and seed, St. Johnswort flowers, stinging nettle herb, goldenseal herb, and ginseng herb.

Most forest perennials are grown for two or more years before harvest. Examples are ginseng root, goldenseal root, and black cohosh root. These crops give you a few years to decide how you are going to harvest them. The temptation, however, is to leave this to the last minute.

Medicinal herbs usually require specialized harvest equipment. Herbs can be harvested by hand, with shears, shovels, and forks. But consider the economic feasibility of doing this. What is your time worth? How strong is your back. Flowers need to be handled gently-there are machines specially made for this with "fingers" to comb the flowers off the plants. There are also small hand scoops, called chamomile rakes, that can be used to harvest small crops of some flowers. The foliage, referred to as the "herb", has to be kept very clean and should not make contact with the soil. Machines are available that cut the herb close to the ground and drop it onto a conveyor which loads it into a wagon. Small amounts of herb can be harvested with a small sicklebar mower, dropping the herb onto sheets of plastic laid out alongside the row. Roots can be modified potato or bulb diggers.

8. Post Harvest Handling

Handle harvested roots and herbs carefully. Proper post-harvest handling is important to maintain the quality of the herbs. You need to know the buyer's requirements for how to handle the herbs. Usually, roots need to be washed and dried. Seeds need to be cleaned and separated. Herb needs to be dried. Be sure to follow good agricultural practices to ensure your herb product is safe for human consumption.

Root washers can be purchased or built. Washing roots by hosing them down is a long, dirty task. Use of a root washer is recommended. Used ginseng root washers can be purchased from major ginseng production areas. Many innovative growers, however, have designed and built their own effective root washers. They usually consist of a horizontal, rotating drum with an internal water spraying system.

Buyers will test the herbs for cleanliness. It is very important to get the herbs clean because the buyers will test them for dirt and contaminants. Remember, these herbs are destined for human consumption.

Know what form the buyer wants the herbs in before you harvest. Some buyers want the herbs kept fresh, others want them dried. Different buyers want the herbs harvested at different stages of growth. You are taking a chance of not having what the market wants, or missing a high-priced opportunity, if you process your herbs without knowing who you are selling it to first.

Most herbs and roots are sold dried. Most growers will need drying facilities for at least some of their crops.

Need a dryer with temperature control and good air movement. Most herbs should be dried at low temperatures, 95-100° F maximum. In high humidity conditions, it may be necessary to raise temperatures to as high as 130°F. Your dryer should be able to hold your entire crop and dry it fast enough that the crop does not spoil and efficiently enough to be cost effective.

There are many different kinds of dryers available. In North Carolina, there are thousands of forced air tobacco dryers that can be easily converted into herb dryers. If these are not available to you, a dryer can be constructed from an existing or new shed outfitted with a heater, fan, and dehumidifier.

The herb product must be properly packaged and labeled. How does the buyer want the product packaged? Required packaging often depends on the kind of product. Many herbs can be baled or packed in cardboard boxes. Burlap sacks or huge polypropylene sacks are often required. Ginseng roots destined for export must often be packed into cardboard barrels. The objective is to keep dry herb dry and safe from insects and rodents. Every container must be labeled with grower's name, address, date, herb common name and botanical name, and lot number.

Store in a dry place protected from insects and rodents. Many herb crops have been made unmarketable because of improper storage. The biggest problem is dried herbs absorbing too much moisture, destroying the value of the crop. If you must store a dried herb crop for any length of time and you live in a humid environment, consider renting a controlled atmosphere storage unit. Organic herbs must be stored separately from non-organic products.