

From Garden to Table: Harvesting Herbs for Healthy Eating

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Herbs have been used for cooking, medicine, aromatherapy, religious ceremonies, pest control, and simply for decoration, since pre-Biblical times. Herbs offer a wide variety of plants that can be used for culinary and medicinal purposes. Plants that are referred to as “herbs” are not used as a food, but are grown and consumed as a garnishment, for flavor enhancement, for aroma, and sometimes for alleged healing properties.

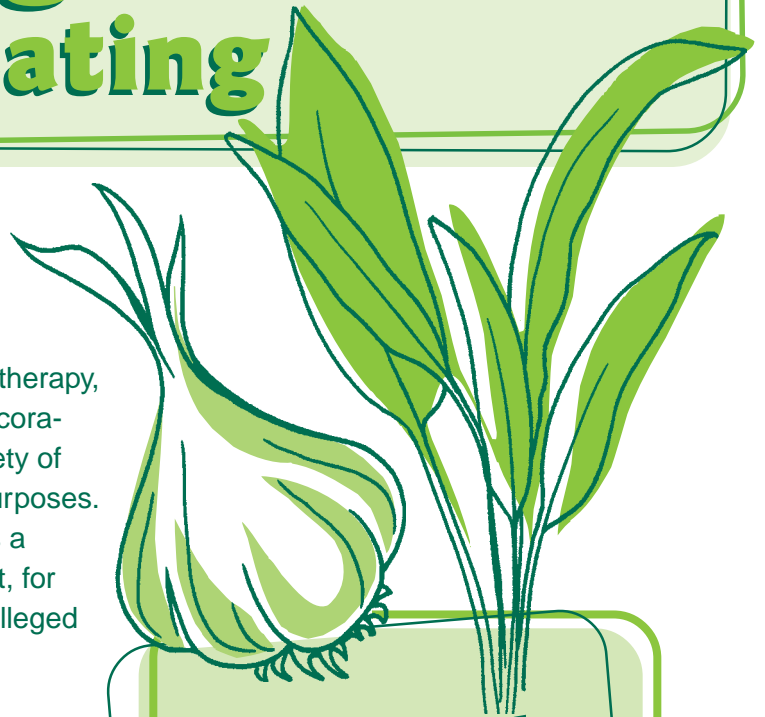
The aromas, tastes and pharmaceutical properties associated with herbs result from a collection of chemicals in each plant. These chemicals, known as essential or volatile oils, are synthesized in the plant during metabolism. Depending on the particular plant, the essential oil may be concentrated in the flowers, seeds, leaves, roots, or throughout the entire plant. Selective herbal use in culinary dishes can greatly enhance the flavor of the food, literally replacing table salt, resulting in a healthier alternative for many people.

The purpose of this publication is to serve as a guide in growing and using herbs for culinary purposes. No health claims are implied with any particular herb.

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Top 10 Herbs to Consider for Culinary Purposes

- ❖ Anise Hyssop
- ❖ Basil
- ❖ Chamomile
- ❖ Chives
- ❖ Coriander, Cilantro, Chinese Parsley
- ❖ Dill
- ❖ Garlic
- ❖ Lavender
- ❖ Oregano
- ❖ Tarragon



Growing Herbs

Herbs are so adaptable, anyone can grow them! From a windowsill to a garden plot to multi-acre plots, employing basic horticultural plant growing techniques usually results in success for the grower. Like all vegetable plants, herbs need adequate light, water, and soil nutrients to produce quality plants. While it is true some herbs are “weedy” with the apparent ability to grow “anywhere,” the home gardener or commercial producer should provide adequate soil preparation with attention being paid to soil pH, temperature extremes, potential pests, and other environmental variables.

Herbs can be grown via direct seeding, as is the case with dill, or set out as transplants from greenhouse sources, as is done with basil. Our long daylight hours during early summer stimulate vigorous growth for annual, biennial, and perennial herbs. Some herbs that are perennial, like rosemary, can only be grown as annuals in our northern region. The popular herb, parsley, is a biennial grown as an annual for its well-known tasty and aromatic foliage.



Top 10 Herbs to Consider for Culinary Purposes

Listed are the “Top 10” herbs for growing in Upper Midwestern prairie gardens and for culinary purposes. Selection of these 10 herbs was based on direct experience in both growing and culinary use, along with the belief they each have ornamental or environmental value. Certainly there are more herbs to consider and the authors hope this publication serves as inspiration to grow and use all the herbs in preparing meals.

Anise Hyssop (*Agastache foeniculum*)

Anise hyssop is perennial in North Dakota and is native to the continent of North America. American Indians used anise hyssop as a sweetener and in the preparation of teas and infusions. A member of the mint family, this species can be directly sown or transplanted. It grows best in sunny locations, and is apparently not soil pH sensitive. Irrigation and a balanced fertilization regime are needed for quality plant production. Insufficient moisture causes the plants to wilt under hot sun. The foliage is harvested for culinary purposes. The blue to purple flowers are borne on terminal spikes of the stem or branches, and are extremely attractive to honeybees, butterflies, and hummingbirds.

Basil (*Ocimum basilicum*)

Basil is an annual herb that is very cold sensitive. Planting it outside too early will result in either reduced yield or death of the plantings. It grows readily from seed when sown in warm, moist soil. In North Dakota gardens, one is better off setting out transplants when the soil has warmed to about 68 degrees at a three-inch depth. Full sun and well-drained soil, along with balanced nutrition, are essential for success. Regular watering via a drip hose or micro-irrigation are necessary, as overhead watering often leads to fungal disease development. Continue pinching the center of the plant to discourage flowering and harvest the tender new shoots that result for culinary purposes. Handle carefully, as basil foliage will darken if bruised.

There are over 160 species in this genus, and many have been successfully grown in North Dakota, including sweet basil, holy basil, and red Ruben basil. Because of the wide phenotypic character of this species, basil plantings for ornamental purposes are not uncommon.

Chamomile (*Matricaria recutita*)

Chamomile, or German chamomile, is an easily grown annual that some might classify as a “weed” because of its ease of growth and ability to reseed. This is an herb with attractive ornamental qualities due to the profusion of flowers it produces, which are used in preparing sedative teas. Chamomile is the least fussy of herbs to grow, requiring no particular fertilization regime, as long as there is some phosphorus and potassium present, along with a modicum of nitrogen.

The tea Peter Rabbit's mother prepared from this flower is what calmed him down after a stressful night of eating Mr. McGregor's garden!

Chives (*Allium schoenoprasum*)

Chives are a sure-fire confidence builder for the most amateur of gardeners. This hardy perennial can be seed sown directly into the site or moved in via divided transplants. The pink to bright purple flowers form globular heads at the top of the plant which attract any honeybee in the vicinity. Chives will readily self-seed and should be dead-headed to prevent volunteer plants from coming up in unwanted places. They are often used as border plants which will not get out of control. Like chamomile, it is not particular to soil conditions, needing only full sunlight to look and produce its best. This herb, along with parsley, can be grown in pot or windowsill culture.

Coriander, Cilantro, Chinese Parsley

(*Coriandrum sativum*)

Depending on the intended use, coriander, colantro, and Chinese parsley refers to the same plant. It is coriander when grown and harvested for the aromatic fruit (seeds); when grown and harvested for the foliage, it can be referred to by the other common names, cilantro or Chinese parsley. Although drought resistant, this annual requires full sunlight and regular watering for best production, and should be directly sown into the garden, not transplanted. This widely used herb is popular in most major ethnic cuisine, including Mexican, Chinese, South American, and Vietnamese. Before becoming a popular culinary dish, it was thought to be an aphrodisiac and was distilled as a love potion in the middle ages. Today, coriander's wide uses include traditional and Chinese medicine where it has been used as a carminative (relieves flatulence), diuretic, tonic, and stomachic (being of benefit to the stomach; stimulating gastric digestion).

Dill (*Anethum graveolens*)

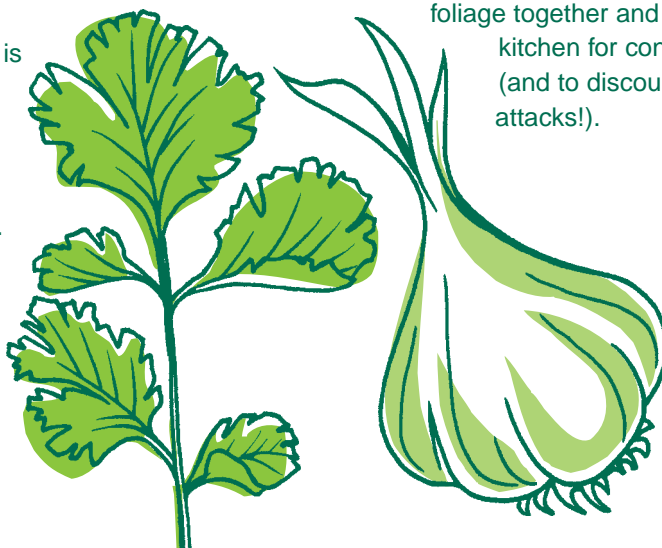
Dill, a highly versatile culinary herb—both fresh and dry—is one of the most commonly grown annual herbs in the Upper Midwest. The seeds, leaves, and seeds in umbels are all utilized. It produces small yellow flowers, which then quickly become seeds. Dill thrives in cool weather which allows it to be sown early in the spring. It bolts (goes to seed) when the temperatures rise. If the objective is to use the greenery from the dill and not the seed, then slow-bolting cultivars should be selected such as Tetra or Dukat. If seed head formation is desired, wait until the seed has turned brown in the umbel. Cut the plant and hang upside down to collect the seeds on a drop cloth.



Garlic (*Allium sativum*)

Garlic, a fall-planted perennial herb has grown in popularity over the past decade with home gardeners. Propagated from cloves, the larger outside ones are usually selected to provide the largest bulb the following summer. Place cloves pointed side up, a good three inches below the soil surface sometime after Columbus Day in the fall. The soil will have enough warmth to stimulate root growth and initiate stem growth, but hopefully the garlic will not break through the soil surface until the following spring. The cloves are harvested when the foliage begins to “flag” or turn yellow, which should be late August or early September. After harvesting, the bulbs should be allowed to cure for a day or two in a shady location with good air circulation.

Storage of garlic can be fun; simply braid the foliage together and hang in the kitchen for convenient use (and to discourage vampire attacks!).



Lavender (*Lavandula angustifolia*)

The lavender plant may or may not be perennial, depending on the cultivar selection, microclimate location and the amount of snow cover. It is perhaps best to consider it an annual and be pleasantly surprised if it should survive a winter. To have any chance of over-wintering success, lavender should be planted in soil with excellent drainage, in full sun, preferably on a south-facing slope. Lavender can be propagated via direct seeding (burying the seed about one-quarter-inch deep), by stem cuttings taken in the fall, or by division of the root system. In the spring, shear the plants back heavily to stimulate new growth and to remove the winter-killed branch ends.

Like other members of the mint family and most herbs, lavender will not need high levels of fertility. If given adequate winter protection and moisture throughout the summer months, lavender plants will produce an abundance of flowers that last only about a week, but attract butterflies, hummingbirds, and honeybees during that time. If the flowers are harvested before seed set, usually a second blooming period can be experienced. Air-dried flowers can retain their aroma for several weeks.

Two cultivars to consider for their hardiness level are Hidcote and Munstead.



Harvesting Herbs

When using herbs for meal preparation, timing is everything to maximize flavor. Generally, herbs should be harvested before the heat of the day — but after the dew has dried. This results in capturing optimal aroma and also cuts down on the potential of spreading disease among the plantings.

Herbs Suitable for Container Gardening

If you lack garden space, consider your windowsills. Several herbs, including basil, parsley, marjoram, chives, mint and rosemary, are well suited for growing in pots. Herbs can be started from seed or transplanted from outdoor plantings. Place potted herbs in a sunny window and care for them like houseplants.

Oregano (*Origanum vulgare*)

Oregano is perhaps the most confusing of the herbs to consider, as opinions and species vary widely. The species planted experimentally on residential property in Fargo has survived at least three winters, even though it is supposed to be hardy only to Zone 5. A perennial it might be, depending on your location in the state, or at least, an attractive and aromatic annual.

Every American teen is familiar with oregano due to the high consumption of pizza common to this age group. Fresh oregano is unequaled for flavor and aroma enhancement in Italian dishes!

Like the other Mediterranean herbs, it needs a warm, sunny location and well-drained soil to thrive. It is usually started from seed in a greenhouse and transplanted outdoors after frost threats have passed. Like other herbs, the flavor will be best if the fertilization is kept to a minimum, with phosphorus and potassium being added at the end of the growing season to help in developing winter hardiness.



Tarragon (*Artemisia dracunculus*)

French tarragon, not Russian tarragon, is the real herb here. It is hardy in the Fargo area of North Dakota, and may be in other parts of the region if given sufficient winter protection. Unfortunately, the Russian tarragon is even harder. True French tarragon cannot be purchased as seed, only as started or divided plants that were propagated asexually. French tarragon has a distinct licorice scent, while the Russian does not. Russian tarragon will grow to six feet in height and tend to spread from the seed it produces; French tarragon will grow to just two feet in height. This is one of the few herbs that can be grown in full sunlight or partial shade. The other cultural requirements - well-drained soil, not overwatering and modest fertility - are the same as with the other herbs.

Questions and Answers about **Culinary Uses of Herbs**

Using freshly harvested herbs in cooking tops the taste of dried herbs in just about every instance. Try preparing a pizza or pasta dish with dried oregano and basil vs. fresh, and you'll see which imparts the most pronounced flavor and aroma! Be a little adventuresome with flavorful herbs. These are some common questions about herbs:

Are herbs nutritious?

Herbs add flavor but no caloric and little, if any, nutritional value; however, using herbs in cooking can offer some potential health benefits. Many people find they can cut down on the amount of salt and fat in their recipes when herbs are added. Using less sodium and less fat are good moves toward heart-healthy cooking.

Bouquet Garni

Herbs used in soups and gravies may develop unpleasantly strong flavors, so they are often gathered in small bunches and placed into tiny tied cheesecloth bags ("bouquet garni"), which are removed when the desired level of flavor has been reached. A sample "recipe" for bouquet garni suitable for use in soup or stew is as follows:

- 2 sprigs or 6 Tbsp. dried parsley
- 3 Tbsp. dried celery leaves
- 3 Tbsp. dried onion, chopped
- 1 sprig or 3 Tbsp. dried thyme

Tie in cheesecloth and immerse in a simmering pot of soup or stew. Remove when desired flavor has been reached.



How do you use herbs in food preparation?

Rinse fresh herbs well under running water, then use a pair of scissors to snip herbs or a sharp knife to chop herbs in tiny pieces. For optimal flavor, expose as much surface area as possible. For dried herbs, use a mortar and pestle (available in most kitchen supply stores or catalogs) to grind the herbs into a powder.

How much should I use?

A rule to remember: Don't overdo herbs in a dish. Use herbs for variety and accent only. Usually one strongly flavored herb alone or paired with one or two more mildly flavored herbs is a better bet. In recipes calling for dried herbs, substitute a larger amount of fresh herbs. No two herbs are exactly alike, so it's difficult to generalize; however, the usual comparison is as follows:

- 2 teaspoons fresh herbs**
- = ¾ teaspoon dried herbs**
- = ¼ teaspoon powdered herbs**

Herbs also can be categorized by strength.

- ❖ *Strongly* flavored herbs include bay, rosemary and sage. About 1 teaspoon per six servings will suffice.
- ❖ *Moderately* flavored herbs include basil, dill, mint, marjoram and oregano. Use about 2 teaspoons for every six servings.
- ❖ *Mildly* flavored herbs include chives and parsley. These combine well with other herbs and can be used generously.

For the Herb Novice: **Savoring the Flavors**

To acquaint yourself with the unique flavors of the herbs you cultivate, try this "recipe." Chop or crush fresh herb finely, add a small amount to about a tablespoon of softened butter or cream cheese, and allow to stand for about an hour. Spread on a cracker or piece of bread to discover the unique taste.

Herb Butter

½ cup softened butter
2 Tbsp. finely chopped parsley, basil,
or herb of choice
½ tsp. minced garlic
2-3 tsp. lemon juice
Salt and pepper to taste

Blend all ingredients and form into a roll.
Wrap tightly and freeze up to 6 months.
Slice and use as desired.

Herbed Cream Cheese

1 lb. low-fat cream cheese
½ lb. butter or margarine
1 clove garlic, minced
¼ tsp. white pepper
½ tsp. chopped fresh basil leaves
¼ tsp. chopped fresh marjoram leaves
⅛ tsp. chopped fresh thyme leaves

Place cream cheese and butter in food processor or mixer. Add garlic and herbs and blend. Serve with crackers.



What herb goes with what food?

Here are some ideas to get you started using the herbs in this circular.

Anise: The seed may be used in cookies, cakes, breads, candy, cheese, beverages, pickles, soups, beef stew, fruits or fish.

Basil: Tomatoes, pasta, rice, beef stew, pork, meatloaf, duck, fish, veal, green or vegetable salads, salad dressings, eggplant, potatoes, carrots, spinach, peas, eggs and cheese.

Chamomile: Often used to make tea. The usual method is to use about 2 teaspoons dried flowers per cup, pour boiling water over the flowers, cover with a saucer and allow to steep for about five minutes, then strain.

Chives: Soups and chowders, salads and salad dressings, potatoes, fish, meat, poultry, cheese and eggs.

Cilantro: Salsa, soup, salads, potato dishes.

Dill: The seed may be used in cucumber pickles, pickled beets, salads, sauerkraut, green beans, meatballs, egg dishes, stews, fish, chicken and breads.

Garlic: Tomato dishes, soups, dips, sauces, salads, salad dressings, dill pickles, meat, poultry, fish, stews, marinades and breads.

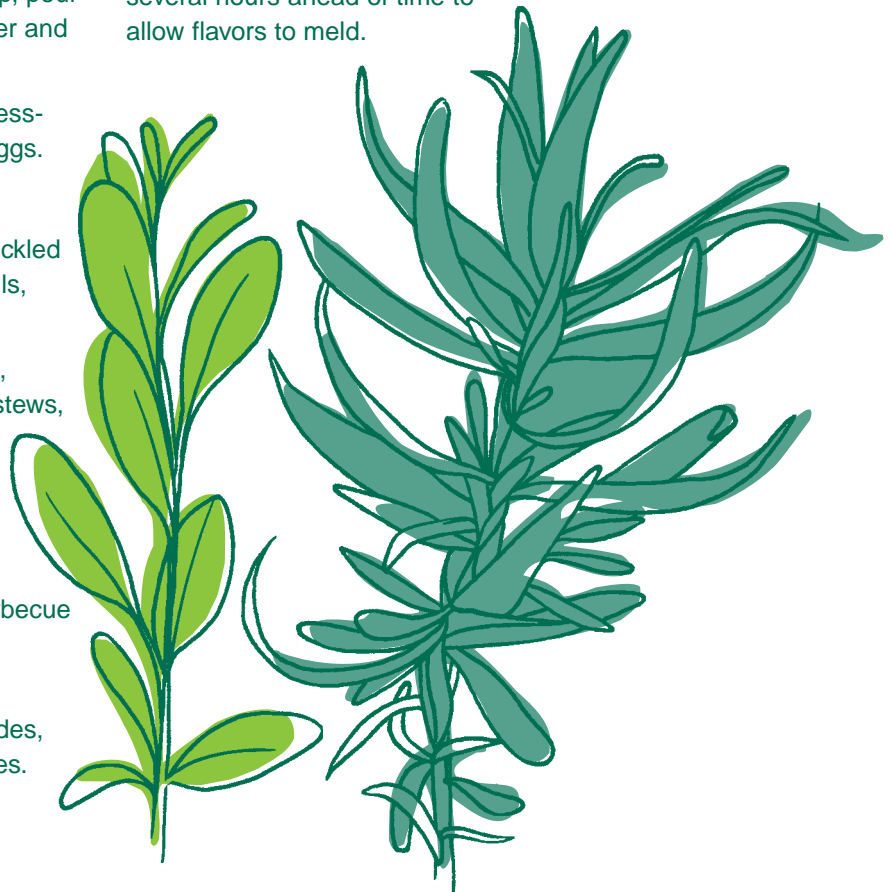
Lavender: Beverages (tea, lemonade), baked goods like cookies, honey, chicken, lamb and jelly.

Oregano: Tomatoes, pasta sauces, pizza, chili, barbecue sauce, vegetable soup, egg and cheese dishes, stuffing, pork, lamb, chicken and fish.

Tarragon: Sour cream sauces, casseroles, marinades, pot roasts, veal, lamb, poultry, fish and egg dishes.

When should I add herbs during food preparation?

In “hot” dishes like soups and stews, add fresh herbs close to the end of cooking (about 10-15 minutes). Flavor can be lost with extended cooking. In “cold” dishes like salads with dressings, add herbs several hours ahead of time to allow flavors to meld.



My herbs have become prolific in my garden and I don't want to waste them. How can I preserve them for later use?

There are four main methods that can be used to preserve herbs for later use: air drying, oven drying, microwave drying and freezing. *Be sure to wash fresh herbs well under running water before preserving them. Use paper towels to pat dry. For larger amounts, place in a clean sink or large bowl of water, remove and repeat washing until no grit remains and water is clear. Consider using a salad spinner to remove excess water.*

Air drying

Pick plants at their peak, just before they blossom and when the dew is off in the morning or after sunset before the dew forms. Bunch washed young leaves and tender stems, tie with string and hang them upside down in a well-ventilated, dark place for about two weeks. Stems sometimes have an undesirable flavor, so you may not want to use them. Be sure the herbs are completely dry, so they do not mold during storage. The leaves should crumble easily.

Oven/dehydrator drying

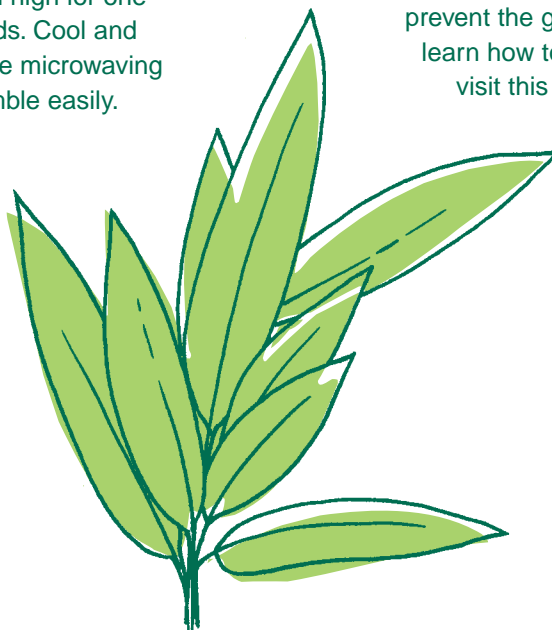
Dry washed herbs in a conventional oven set at 100 degrees or the lowest setting and heat until brittle, testing hourly. Position a fan near the oven to circulate the heat. Note: If the oven temperature is above 100 degrees, sometimes undesirable flavors result. Follow manufacturer's directions for dehydrator drying.

Microwave drying

To dry using a microwave oven, simply place about four bunches of washed herbs between two microwave-safe pieces of paper toweling and microwave on high for one to three minutes, checking every 30 seconds. Cool and test if the herbs are dry and brittle. Continue microwaving for 30-second intervals until the herbs crumble easily.

Freezing

Place washed herbs in airtight freezer bags and freeze. Alternately, place chopped herbs in sections of an ice cube tray. Cover with water and freeze. Pop the ice cubes into plastic bags labeled with contents and date. Drop a whole cube into a pot of soup or stew to season.



How should I store dried herbs? How long do they maintain their flavor?

To store dried herbs, crumble or crush and store in airtight containers like jars or tightly sealed plastic bags. Label with contents and date. Keep herbs in a convenient place in your cupboard as a reminder to use them. For best flavor, use within a year.

Are herb-flavored oils safe to make? How about herb-flavored vinegars?

Homemade flavored oils without an added acid such as vinegar or lemon juice have been linked with cases of botulism. *C. botulinum*, the type of bacteria that can produce botulism toxin in the right environment, grows in an oxygen-free environment (like a sealed jar filled with oil and low-acid ingredients, such as herbs). With this information in mind, homemade herb-flavored oils can be made for "fresh use." It must be constantly stored in the refrigerator and used within three days.

Flavored vinegars, on the other hand, are safe to prepare because vinegar is acidic, which helps prevent the growth of botulism toxin. To learn how to make flavored vinegars, visit this Web site: www.uga.edu/nchfp/publications/uga/uga_flavored_vinegars.pdf



I see a lot about herbal supplements. Do culinary herbs act like herbal supplements?

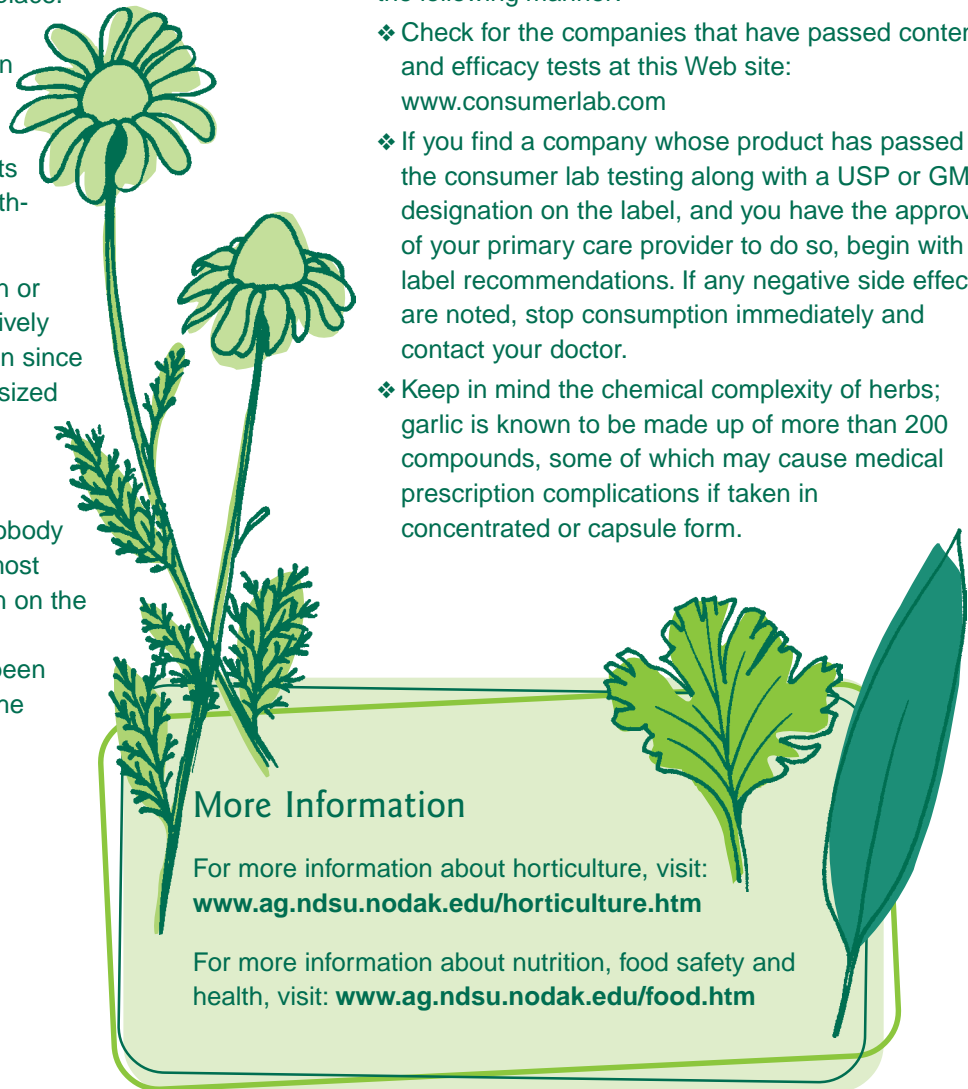
In most instances, no complications result from using herbs in culinary preparations unless one has an allergy to a particular herb. We hear a lot about over-the-counter (OTC) dietary herbal supplements because it's a multibillion dollar business in the U.S. Most are different substances than culinary herbs. Unfortunately, many of the products sold as dietary supplements do little in the way of promoting good health. At first thought to be a simple matter of incorporating the herbal product into a pill or capsule, it has been found that mislabeling, misinformation, and outright fraud on the part of some manufacturers has taken place.

Enter **USP—United States Pharmacopeia**—whose mission it is to produce state-of-the-art standards and information to ensure the quality of the products sold in medicinal and other health-care technologies.

Typical OTC products like aspirin or vitamin C supplements are relatively easy to earn a “USP” designation since most of the products are synthesized in labs. The problem with herbal dietary supplements is that no one knows what all the active ingredients are; consequently nobody knows the ideal formulation of most supplements. “GMP” designation on the label is an indication that “Good Manufacturing Practices” have been followed in the development of the herbal product. The right for a company to place the “GMP”

designation on a label is controlled by the same inspectors of the USP designation, where stringent tests for purity, potency, and consistency must be met. Those who choose to pursue the use of OTC herbal dietary supplements should take the following steps to avoid health complications:

1. Discuss the alternatives being considered with your doctor to be sure there are no dangerous interactions with any drugs you may be taking.
2. Do your homework! Research herbal supplements in the following manner:
 - ❖ Check for the companies that have passed content and efficacy tests at this Web site: www.consumerlab.com
 - ❖ If you find a company whose product has passed the consumer lab testing along with a USP or GMP designation on the label, and you have the approval of your primary care provider to do so, begin with the label recommendations. If any negative side effects are noted, stop consumption immediately and contact your doctor.
 - ❖ Keep in mind the chemical complexity of herbs; garlic is known to be made up of more than 200 compounds, some of which may cause medical prescription complications if taken in concentrated or capsule form.



More Information

For more information about horticulture, visit:
www.ag.ndsu.nodak.edu/horticulture.htm

For more information about nutrition, food safety and health, visit: www.ag.ndsu.nodak.edu/food.htm

For more information on this and other topics, see: www.ag.ndsu.edu



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