H1267 (Revised)

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 decoration since the beginning of civilization.

Plants that are referred to as "herbs" are not used as a food but are grown and consumed as a garnish, and for flavor enhancement, aroma and sometimes 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 or roots, or throughout the entire plant. Selective herbal use in culinary dishes can enhance the flavor of the food greatly, 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.

Top 10 Herbs
to Consider for Culinary Purposes

- Anise Hyssop
- Basil
- Chamomile
- Chives
- Cilantro/coriander
- Dill
- Garlic
- Lavender
- Oregano
- Tarragon

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Growing Herbs

Herbs are so adaptable, anyone can grow them! From a windowsill to a garden plot to multiacre plots, employing basic horticultural plant-growing techniques usually results in success.

Like all vegetable plants, herbs need adequate light, water and soil nutrients to produce high-quality plants. While some herbs are "weedy," with the apparent ability to grow "anywhere," the home gardener or commercial producer should provide adequate soil preparation and pay attention 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 French tarragon. Our long daylight hours during early summer stimulate vigorous growth for annual, biennial and perennial herbs.

Some herbs that are perennial, such as rosemary, can be grown only 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. The selection of these 10 herbs was based on direct experience in growing and culinary use, along with the belief they have ornamental or environmental value. You certainly have 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 hardy to Zone 4 (Red River Valley and southern three-fourths of North Dakota). American Indians used anise hyssop as a sweetener and in preparing teas and infusions. A member of the mint family, this species can be sown directly or transplanted. It grows best in sunny locations and apparently is not soil pH-sensitive.

High-quality plant production requires irrigation and a balanced fertilization regime. Plants wilt easily under hot, dry conditions. The foliage and flowers are 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 reduced yield or death of the plantings. It grows readily from seed when sown in warm, moist soil. In North Dakota, transplants often are set out in gardens when the soil has warmed to about 68 degrees. Full sun and well-drained soil, along with balanced nutrition, are essential for success.

Regular watering via a drip hose or microirrigation is useful because 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 because basil foliage will darken if bruised.

Many types of basil, including Genovese, holy, lemon, cinnamon and purple basil, grow well in North Dakota. Because of the wide phenotypic character of this species, basil plantings for ornamental purposes are common.

Chamomile *(Matricaria recutita)*

Chamomile, or German chamomile, is an easily grown annual that some might classify as a "weed" because it is easy to grow and reseed. This is an herb with attractive ornamental qualities due to the profusion of flowers it produces, which are used in preparing teas. Chamomile is among the least fussy herbs to grow and adapts well to many types of soil.

Chives *(Allium schoenoprasum)*

Chives are a sure-fire confidence builder for the most amateur 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 that attract any honeybee in the vicinity. Chives will self-seed readily and should be dead-headed to prevent volunteer plants from coming up in unwanted places. They often are used as border plants that will not get out of control. Like chamomile, it is not particular about soil conditions, needing only full sunlight to look and produce its best. This herb, along with parsley, can be grown in containers.

Cilantro, Coriander (*Coriandrum sativum)*

Depending on the intended use, cilantro and coriander refer to the same plant. When grown for the foliage, it can be referred to as cilantro, as well as Chinese parsley or Mexican parsley. When grown for its seeds, it often is referred to as coriander. Although drought resistant, this annual requires full sunlight and regular watering for best production. It should be sown directly into the garden, not transplanted. This widely used herb is popular in many ethnic cuisines, including Mexican, Chinese, South American and Vietnamese. Before becoming popular in culinary dishes, it was thought to be an aphrodisiac and was distilled as a love potion in the Middle Ages.

Dill *(Anethum graveolens)*

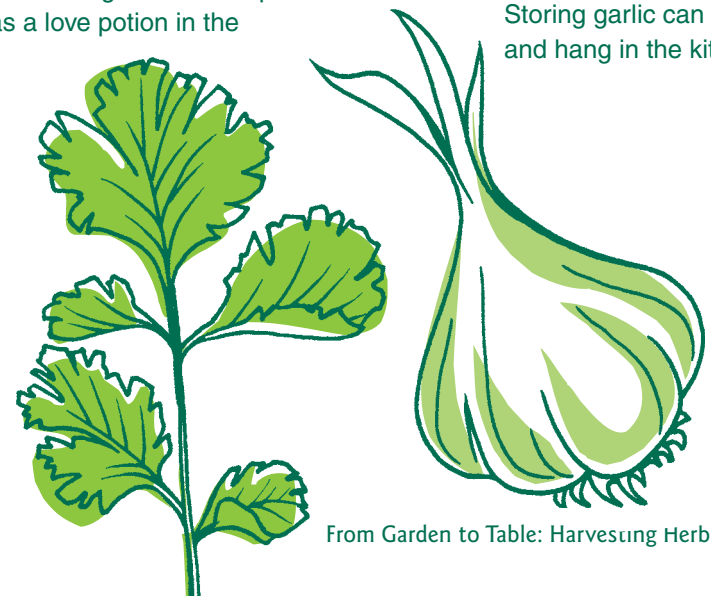
Dill, a highly versatile culinary herb fresh and dry, is one of the most commonly grown annual herbs in the upper Midwest. The seeds, leaves and seeds in umbels are all used. It produces small yellow flowers, which quickly become seeds. Dill thrives in cool weather, which allows it to be sown early in the spring. It bolts (goes to seed) when the temperatures rise. If an objective is to use the greenery from the plants, then slow-bolting cultivars such as 'Bouquet' or 'Dukat' should be selected. If use of the seed is desired, wait until the seed has turned brown in the umbel. Cut the plant and hang it upside down to collect the seeds on a drop cloth.

Garlic *(Allium sativum)*

Garlic, a fall-planted perennial herb, has grown in popularity with home gardeners during the past decade. Propagated from cloves, the larger outside ones usually are selected to provide the largest bulb the following summer. Place cloves pointed side up, 3 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 the garlic should 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.

Storing garlic can be fun; simply braid the foliage together and hang in the kitchen for convenient use.



Lavender *(Lavandula angustifolia)*

Whether the lavender plant is a perennial depends on the cultivar selection, microclimate location and amount of snow cover. Perhaps your best option is to consider it an annual and be pleasantly surprised if it should survive a winter. To have any chance of overwintering successfully, lavender should be planted in soil with excellent drainage and in full sun, preferably on a south-facing slope. Lavender can be propagated via direct seeding (burying the seed about 1/4 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.

'Hidcote' and 'Munstead' are among the hardiest of cultivars; however, none is reliably hardy.

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 captures optimal aroma and 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 because its types vary widely in growth habit, hardiness and flavor. Several Greek and Italian types are hardy in Zone 4 if provided winter protection.

American teens are familiar with oregano because of their high consumption of pizza. 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 usually is started from seed in a greenhouse and transplanted outdoors after frost threats have passed. Also, like other herbs, the flavor will be best if you keep fertilization to a minimum and you add phosphorus and potassium at the end of the growing season to help in developing winter hardiness.

Tarragon *(Artemisia dracunculus)*

French tarragon is hardy in Zone 4 if given sufficient winter protection. Russian tarragon is even hardier. French tarragon has a distinct licorice scent, while the Russian does not. Russian tarragon will grow to 6 feet tall and tends to spread from the seed it produces; French tarragon will grow to just 2 feet tall. 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 most 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 and negligible, if any, calories and other 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 they add herbs. 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 often are gathered in small bunches and placed in tiny tied cheesecloth bags (bouquet garni), which you remove when the soup or gravy reaches the desired level of flavor. 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 the herbs or a sharp knife to chop them into 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 generalizing is difficult; 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 flavored herbs include basil, dill, mint, marjoram and oregano. Use about 2 teaspoons for every six servings.
- *Mildly* flavored 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 c. 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 six 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 publication:

Anise hyssop: beverages, soups and fruit salads

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 of 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 (leaf)/Coriander (seed): salsa, soup, salads, potato dishes

Dill (seed): 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

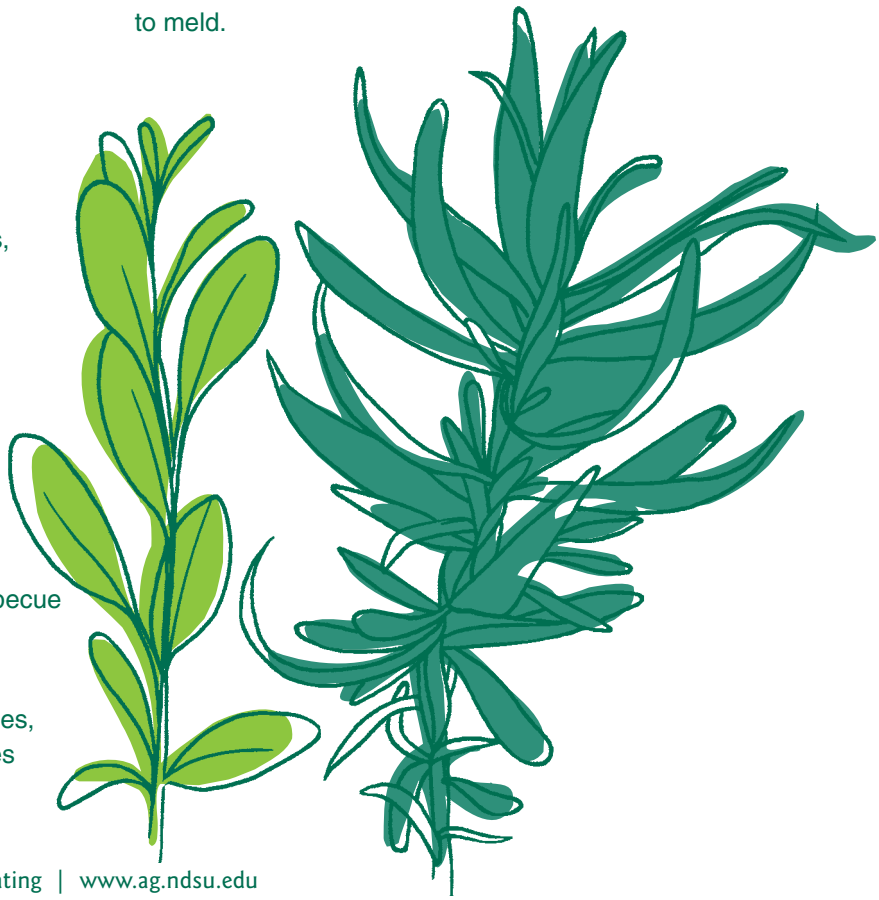
Lavender: beverages (tea, lemonade), baked goods such as cookies, honey, chicken, lamb and jelly

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 such as soups and stews, add fresh herbs close to the end of cooking (about 10 to 15 minutes). Flavor can be lost with extended cooking. In "cold" dishes such as 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?

You have four main methods 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 the 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. 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

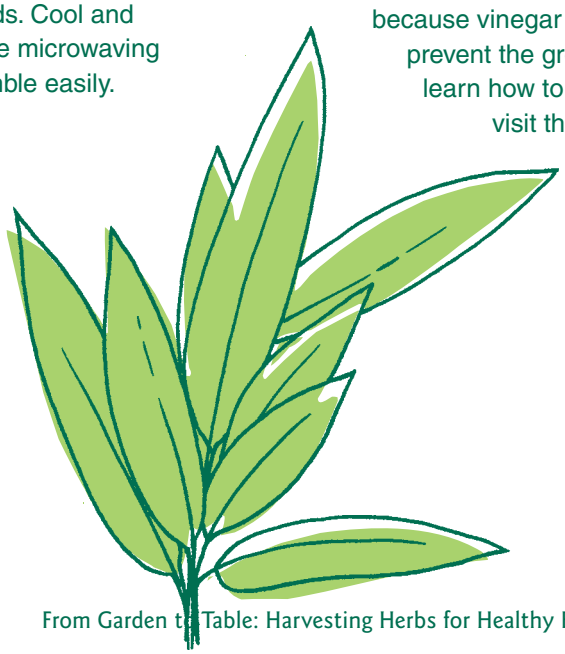
Dry washed herbs in a conventional oven set at 100 degrees or the lowest setting and heat until brittle, testing hourly. Position a fan near the oven to circulate the heat. Note: If the oven temperature is above 100 degrees, sometimes undesirable flavors result. Follow manufacturer's directions for dehydrator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

Microwave drying

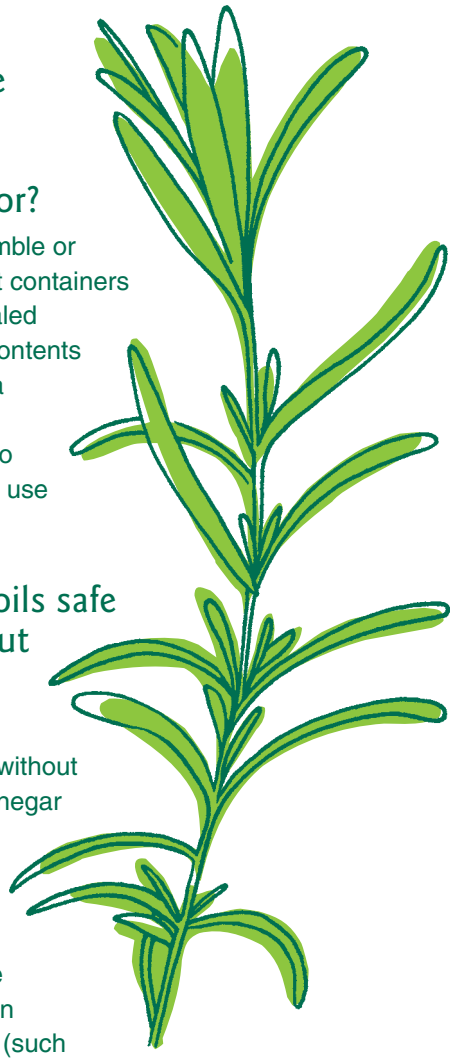
To dry using a microwave oven, simply place about four bunches of washed herbs between two microwave-safe pieces of paper toweling and microwave on high for one to three minutes, checking every 30 seconds. Cool and test if the herbs are dry and brittle. Continue microwaving for 30-second intervals until 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 such as 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. *Clostridium botulinum*, the type of bacteria that can produce botulism toxin, grows in an oxygen-free environment (such as 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." These oils must be stored in the refrigerator constantly 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 website: 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 you have an allergy to a particular herb. We hear a lot about over-the-counter (OTC) dietary herbal supplements because they are 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 to promote good health.

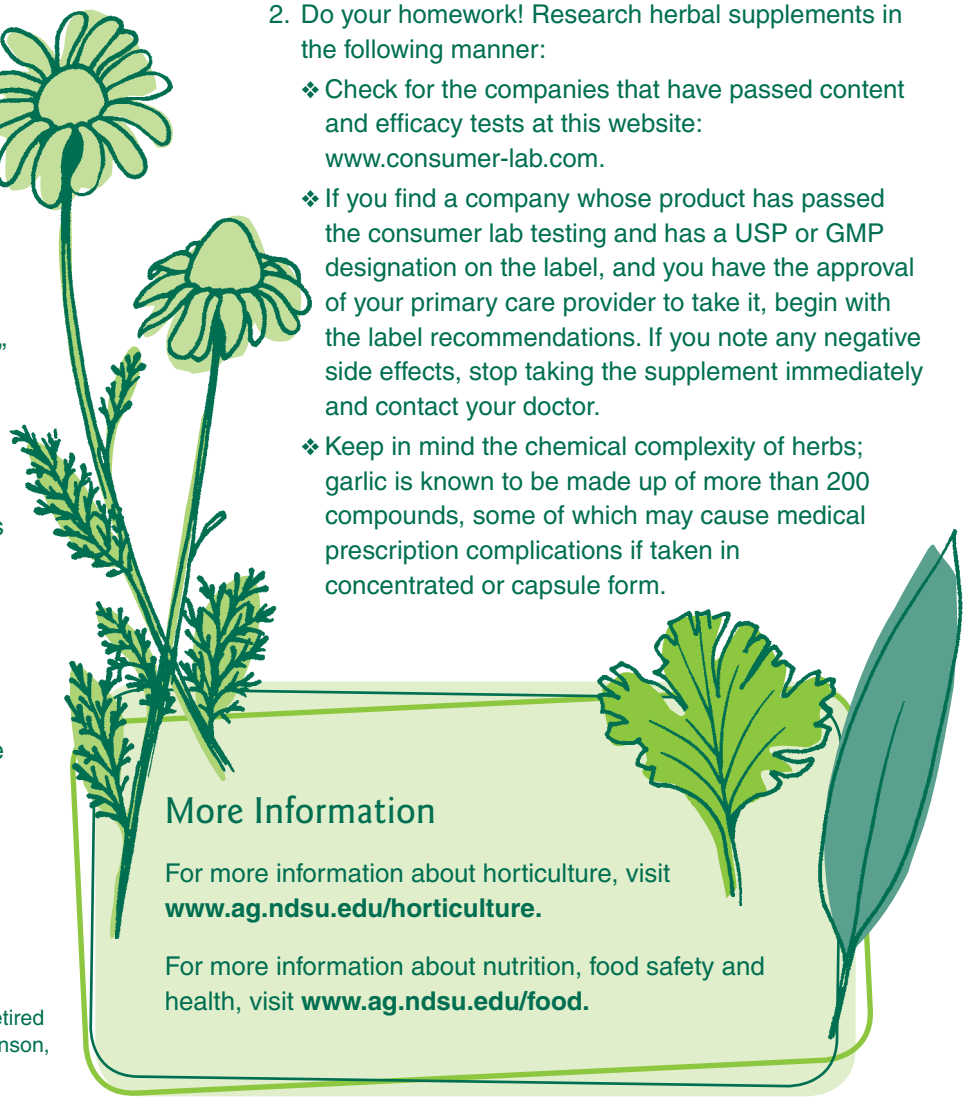
Using herbs as a health supplement first was thought to be a simple matter of incorporating the herbal product into a pill or capsule. However, some manufacturers have mislabeled their products, provided misinformation or committed fraud. Enter USP (United States Pharmacopeia), whose mission is to produce 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 such as aspirin or vitamin C supplements earn a "USP" designation relatively easily because most of the products are synthesized in labs. The problem with herbal dietary supplements is that no one knows what all of the active ingredients are; consequently, nobody knows the ideal formulation of most supplements.

A "GMP" designation on the label is an indication that "good manufacturing practices" have been followed in the development of the herbal product. The inspectors who determine whether a product can use the USP designation also control whether a company has the right to place the "GMP" designation on a label.. The products that carry those labels must meet stringent tests for purity, potency and consistency.

People who choose to use 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 the supplements won't cause 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 website: www.consumer-lab.com.
   - ❖ If you find a company whose product has passed the consumer lab testing and has a USP or GMP designation on the label, and you have the approval of your primary care provider to take it, begin with the label recommendations. If you note any negative side effects, stop taking the supplement 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.edu/horticulture.**

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

This publication was authored by Ron Smith, retired Extension horticulturist, and Julie Garden-Robinson, Extension food and nutrition specialist, 2005.

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