

# Herbs

Herbs are various kinds of non-woody plants whose fresh or dried parts are used to season foods, provide fragrances, supply natural dyes, or make industrial or pharmaceutical products. Herbs are different from spices. Herbs grow in temperate regions and spices come from tropical regions. Generally herbs are fresh or dried leaves while spices are seeds, roots, fruits, flowers, and bark. Herbs usually have a mild flavor while spices tend to have a stronger, pungent flavor. However, the terms herb and spice are artificial categories. This section focuses on selected fresh culinary herbs that are important to vegetable growers.

Fresh herbs certainly make excellent cash crops. “There is definitely a place for small-scale commercial herb growers; in fact, most buyers were looking for more qualified organic growers who could produce and deliver a quality product” (Oliver, 1997). However, growers should be very cautious before beginning herb production. Markets and buyers need to be established before any seeds are purchased.

Some of the most popular culinary herbs include basil, chives, dill, French tarragon, mints, oregano, parsley, rosemary, and thyme according to a marketing survey conducted with members of the Culinary Federation of Greater Cincinnati Area. However, growers should do their own marketing study to determine which herbs are suited for their areas.

Most herbs will grow well under the same sunlight, fertility, soil and growing conditions, and cultural techniques similar to many vegetable crops grown in Ohio. Growers should pay special attention to drainage and moisture requirements of certain herbs, since many are very sensitive to soil moisture conditions.

Sage, rosemary, and thyme require a well drained, slightly moist soil, whereas parsley, chervil, and mint grow best on soils which retain moisture. The use of plastic mulches, trickle irrigation, and raised beds may provide the necessary moisture and drainage requirements for the herb crop. The following is a more detailed description of some of the popular herbs.

## Basil

Basil, French basil, or sweet basil (*Ocimum basilicum*) is a popular, tender, annual herb. It is native to India and Asia. Basil is commercially grown for its green, aromatic leaves which are used fresh or dried as a flavoring. Fresh basil leaves are used in tomato sauces and pesto sauces. Basil is also good with veal, lamb, fish, poultry, white beans, pasta, rice, tomatoes, cheese, and eggs. It is used in vinegar and tea.

Basil can be direct-seeded or transplanted to the field in late spring after all danger of frost is over. Basil seeds normally germinate in 8 to 14 days. Basil requires full sun and prefers moist and well drained soil with a pH of 6.0. Typical spacing for basil is 12 inches between plants, 24 to 36 inches between rows. Suggested fertilizer should have a N-P-K ratio of 1-1-1 at a rate of 120-120-120 lbs per acre by a broadcast or plowdown. Nitrogen sidedressing at a rate of 15-30 lbs of actual nitrogen is recommended shortly after first harvest.

Trickle or overhead irrigation is necessary. Basil grown for dried leaves or essential oil is cut just prior to the appearance of flowers. The foliage should be cut at least four to six leaves above the ground to allow for regrowth and a subsequent crop. Information on insects and disease of basil is limited. Japanese beetle and powdery mildew have been reported to attack basil. For weed control, high populations of basil coupled with mechanical cultivation is highly recommended. Refer to Purdue University Extension publication HO-189 “Sweet Basil: A Production Guide” by Jim E. Simon for more information (<http://www.agcom.purdue.edu/AgCom/Pubs/HO/Ho-189.html>).

## Chives

Chives, *Allium schoenoprasum*, is a perennial, native to the Orient. It was first used by the Chinese and then the ancient Greeks. Fresh leaves are excellent for making herbal vinegars and butter. It is also used in salads, soup, and cheese. Chives are also used to add a mild onion flavor to fish, salads, steamed vegetables, soups, and omelettes. Chive seeds require darkness, constant moisture, and a temperature of 60°F to 70°F for best results. Sow them 1/2 inch deep in pots or flats. Germination will occur in 2 to 3 weeks. Transplant seedlings to the field when they are 4 weeks old. Chives reach a height of 18 inches, a width of 1 to 2 inches the first year from seed, and 10 to 14 inches in subsequent years. Chives require full sun and well drained soil with a pH of 6.0. No serious pests or diseases were reported although chives can get downy mildew and rust. To harvest chives, cut chive leaves 2 inches above the ground.

## Dill

Dill, *Anthem graveolens*, is native to the Mediterranean area and southern Russia. Dill is a hardy annual, and sometimes is grown as a biennial. Dill is commonly used as a seasoning for soups, fish, and pickles. Its aromatic leaves, seeds, flowers, and stems can also be used to flavor cabbage, vinegars, butter, apple pie, cakes, and bread. Dill should be direct-seeded in spring about 10 inches apart. Since dill has long tap roots, it should not be transplanted. Fresh leaves should be harvested before flowering begins. Harvest seeds as soon as seed heads are brown and dry. Dill does not have any serious pest or disease problems. However, phoma blight, rusty root, and stem rot have been reported.

## French Tarragon

French tarragon, *Artemisia dracunculoides*, originates from southern Europe. Do not confuse it with Russian tarragon, *Artemisia dracunculoides*, which is much coarser, and has paler leaves, and a bitter taste. It is used to flavor vinegar, herbal butter, shellfish, pork, beef, poultry, many vegetables, and rice. Fresh leaves can also be used in salads, tartar sauce, and French dressing. French tarragon is a woody perennial that will grow 2 feet tall. It produces few seeds, and must be propagated by stem cuttings or division. Plant in full sun in rich, well drained soil with a pH of 6.9. Divide the plants every three to four years. Two harvests can generally be made each year, the first six to eight weeks after setting out. Harvest until leaves turn yellow in the fall. French tarragon is prone to root rot in heavy and wet soils.

## Mints

Mints, *Mentha* spp., are a group of herbs that are mostly native to Europe and Asia. Some are indigenous to South America, America, and Australia. It is naturalized throughout North America from southern Canada and Mexico. With the possible exception of Corsian mint, mints are such rampant growers that they will quickly overwhelm other plants. Mints are commercially important as sources of flavor and menthol. Japanese mint (*M. Arvensis* var. *Piperescens*), peppermint (*M. Xpipita*), and spearmint (*M. Spicata*) are the mint species mostly cultivated. Mints can be propagated by cuttings or seeds, except peppermint, since it is a sterile F1 hybrid of *M. Aquatica* and *M. Spicata*. Peppermint does not produce seeds and can only be propagated by cuttings. Mints can be planted in full sun or partial shade, and require rich, well drained soil with a pH of 6.5. Mint can be harvested almost as soon as it comes up in the spring. Young, tender leaves and stems are the best. Mint is susceptible to verticillium wilt, mint rust, and mint anthracnose. The pests that could bother mint include: spider mites, loopers, mint flea beetles, mint root borers, cutworms, root weevils, and aphids.

## Oregano

Oregano, *Origanum vulgare* subsp. *Hirtum* also referred to as *O. Heracleoticum* and *O. Hirtum*, is native to the Mediterranean region of Europe and central Asia. It is naturalized in the eastern United States. It is added to tomato sauce for a hot and peppery taste. It adds dimension to yeast breads, marinated vegetables, roasted meats, and fish. Oregano is a perennial, and can be propagated by seeds. Direct seed in the field and do not cover seeds since oregano seeds need sunlight to germinate. However, flavor can greatly vary among seed propagated plants. It is better to propagate by root divisions or cuttings from plants that are known to have strong flavor. Oregano reaches a height of 12 to 24 inches, and a width of 10 to 20 inches. It requires a site with full sun, and well drained soil that has a pH of 6.8. Some of the pest and disease problems for oregano include aphids, leafminers, spider mites, and root rot. Sprigs of oregano can be cut off when the plant is at least 6 inches high. In June, vigorously grown plants can be cut back to the lowest set of leaves. Plants will generally leaf out after two weeks and can be cut back again in August.

## Rosemary

Rosemary, *Rosmarinus officinalis*, is a tender perennial hardy to zones 8 to 10. It is native to the Mediterranean, Portugal, and northeastern Spain. It is pungent, somewhat piny, mint-like yet sweeter, with a slight ginger finale. Its flavor harmonizes with poultry, fish, lamb, beef, veal, pork, and game. Rosemary also enhances vegetables, cheese, and eggs. Rosemary can be started from seeds, but germination rates are very low. Use fresh seeds, preferably less than two weeks old. Packaged seeds are difficult to germinate. Start plants from cuttings or by layering from existing plants. Rosemary grows slowly from seeds, and eventually reaches a height of 72 inches and a width of 36 to 72 inches. Plant rosemary in a sunny location with well-drained and slightly acidic soil. Pest and disease problems of rosemary include aphids, spider mites, scale, mealybugs, root rot, and botrytis. Harvesting can be done throughout the year. Cut about 4-inch pieces from the tips of the branches, being careful not to remove more than 20% of the growth at one time.

# Thyme

Thyme, *Thymus vulgaris*, is native to the western Mediterranean region. It is a small, many-branched, and perennial shrub. Thyme tastes delicately green with a faint clover aftertaste. It ranks as one of the finest herbs of French cuisine. Thyme leaves and sprigs are used in clam chowder, meats, herbal butter, and vinegar. Use it with vegetables, cheese, eggs, and rice. Start seeds indoors and transplant seedlings into the field once the danger of frost is over. Thyme reaches a height of 12 inches and a width of 10 to 12 inches. Thyme can be propagated from cuttings, by layering, and division. The pest and disease problems include spider mites and root rot. Harvest the entire plant by cutting them back to 2 inches above ground in mid-summer. One more harvest can be expected before the season ends.

## Disease and Insect Problems

As discussed earlier, culinary herbs have their share of disease and insect problems. More disease and pest problems are being discovered as more research is being done on herb production. A good integrated pest management program (IPM) should be implemented when growing herbs.

Some of the insecticides labeled for “herbs” are as follows:

- imidacloprid (Provado for foliar treatment, Admire for soil treatment): for aphids, whiteflies, leafhoppers, flea beetles.
- spinosad (SpinTor 2SC, Entrust 80WP): for loopers and armyworms. Use Spintor 4-6 fl oz/A or Entrust 1.25-2 oz/A. PHI = 1 day.
- spinetoram (Radiant): for loopers, thrips. 5-8 fl oz/A. 1-day PHI.
- abamectin (Agri-Mek 0.15EC): for leafminers, 8-16 fl oz/A; 14 days PHI.
- pyrethrins: Pyronyl (pyrethrins + PBO), Pyganic (pyrethrins).
- *Beauveria* (Mycotrol-O, Naturalis-L): for caterpillars, Colorado potato beetle, whiteflies, aphids, thrips, leafhoppers, plant bugs. Use 1/4 to 1 qt/A. PHI = 0 days.
- the B.t.s (Javelin, DiPel, Agree, etc.)—for caterpillars only.
- azadirachtin (neem): Neemix, Aza-Direct, Ecozin, Azatrol, Azatin XL—for caterpillars, some beetle larvae, leafhopper nymphs.
- soap (M-Pede, etc.)—for aphids, mites, whiteflies, and other soft-bodied pests only.
- bifenthrin (Brigade 2EC): for cilantro, 2.1-6.4 fl oz/A.
- bifenthrin + imidacloprid (Brigadier): for cilantro, 4.24-5.5 fl oz/A.
- methoxyfenozide (Intrepid 2F): for cilantro, 4-16 fl oz/A, for caterpillars.

The following fungicides are labeled for use on herbs:

Product	Crop	Disease	Rate	PHI (days)	Resistance management required?
Rally 40W	Mint	Rust Powdery mildew	4.0-5.0 fl oz/A	30	✓
Quadris	Mint	Rust Powdery mildew	6.2-15.4 fl oz/A	0	✓
	All herbs (except chives)	Dill blight Phoma blight	2-5 oz/A	0	✓
Switch	All herbs	Alternaria leaf spot Powdery mildew Fusarium blight	11-14 oz/A	7	✓
Prophyte	All herbs	Downy mildew	3.0-4.0 pt/A	0	✓
K-Phite	All herbs	Downy mildew	1.0-3.0 pt/A	0	✓
Contans (biocontrol)	All herbs	Sclerotinia white mold	See label	0	
Armicarb	Basil, oregano, rosemary, sage, thyme	Powdery mildew	2.5-5 lb/100 gal water	0	
Ridomil Gold SL	All herbs	Pythium damping-off	1-2 pt/A	21	✓

# Weed Control

## Postemergence

**SelectMax:** For control of annual or perennial grasses, apply 9-16 fl oz/A plus non-ionic surfactant at 0.25% of final volume. Repeat applications can be made at 14-day intervals for maximum allowed use per season of 64 fl oz/A. Pre-harvest interval is 14 days. Safety of SelectMax has not been determined on all herbs and varieties. Prior to applying SelectMax to a field, treat a small test area and evaluate for 7 days before treating the rest of the field. Refer to the SelectMax label for a list of approved herb crops.

## Mint and Spearmint

**Garrison:** For control of sensitive annual, biennial and perennial broadleaf weeds apply 1/3 to 2/3 pt/A when weeds are actively growing. Two applications are permissible with no more than 1 pt/A applied for the growing season (30 days-PHI).

## Directed/shielded application

**Aim EC:** Controls emerged broadleaf weeds. Apply as a directed spray, using a shielded sprayer, to actively growing weeds up to 4 inches in height. Add non-ionic surfactant at 0.25% or crop oil concentrate at 1-2%. Formulations available include: **Aim EC:** Use 1-2 fl oz/A, and **Aim EW HERBICIDE:** Use 0.5 to 1.6 fl oz/A.

# Marketing of Herbs

Marketing of herbs is one of the most important part of the herb business. Possible outlets of culinary herbs include health food stores, grocery stores, upper-scale restaurants, farmers markets, and food manufacturing companies. It is always recommended that growers have buyers and markets established before attempting herb production on an agricultural scale. Growers are also strongly encouraged to have greenhouses for year-round production. The Ohio State University conducted a marketing survey of the members of The American Culinary Federation of Greater Cincinnati. The survey showed that popular herbs in demand by chefs in the Greater Cincinnati Area are basil, dill, French tarragon, mints, oregano, rosemary, chives, parsley, and thyme. The table below shows the survey results.

<b>Percentages of Chefs Who Will Purchase Herbs Each Week in Four Quantity Categories</b>				
<b>Quantity Categories</b>	<b>1-2 lbs</b>	<b>3-4 lbs</b>	<b>5-6 lbs</b>	<b>More than 7 lbs</b>
Basil	50%	0%	10%	3%
Chives	40%	3%	0%	3%
Dill	40%	0%	0%	0%
Mints	33%	3%	0%	0%
Thyme	33%	0%	0%	0%
Rosemary	27%	3%	0%	0%
French Tarragon	27%	0%	0%	0%
Oregano	23%	0%	0%	0%
Parsley	20%	17%	0%	13%
Sage	17%	0%	0%	0%
Sweet Marjoram	7%	0%	0%	0%
French Sorrel	3%	0%	0%	0%

The survey shows that the top 12 commonly used herbs in food preparation were parsley, basil, chives, dill, mints, rosemary, thyme, oregano, French tarragon, sage, sweet marjoram, and French sorrel. Some chefs also use lemon basil, chervil, and cilantro.

The top 12 herbs that chefs anticipated purchasing were parsley, basil, mints, dill, chives, rosemary, thyme, French tarragon, oregano, sage, sweet marjoram, and French sorrel. Several chefs indicated they will also buy cilantro.

Twenty-one chefs would consider purchasing herbs from local growers. Ten other chefs currently purchase herbs from local herb growers. In brief, chefs were eager to purchase locally grown herbs. Their reasons for purchasing herbs

from local growers included fresher products, competitive price and quality, consistency, helping boost local economy and farmers, and a good source of marketing and advertising.

Most chefs surveyed planned to purchase 1 to 2 pounds of their commonly used herbs each week. Some chefs anticipated purchasing more than 3 pounds of parsley and 5 to 6 pounds of basil per week.

The size of packaging is also critical if farmers were to deliver fresh herbs to restaurants. More than 73% of the chefs would prefer packages of 2 pounds or less.

Culinary herbs are high value crops. The table below gives the cash values of various basil sold at Hillsboro Farmers' Market. They were sold in bunches of 12 or 30.

<b>Retail Cash Values of Fresh Basil at Hillsboro Farmers' Market</b>			
<b>Crop</b>	<b>Pounds per acre</b>	<b>Market price</b>	<b>Gross per acre</b>
Sweet Basil	2,820	\$4.00 lb	\$11,280
Green Ruffles	2,820	\$4.00 lb	\$11,280
Cinnamon Basil	2,580	\$4.00 lb	\$10,320
Dwarf Bush Basil	1,900	\$4.00 lb	\$ 7,600
Lemon Basil	1,560	\$4.00 lb	\$ 6,240
Green Bouquet Basil	1,540	\$4.00 lb	\$ 6,160

## Conclusions

Growers should consider growing culinary herbs on a small scale on potential cash crops, and expand acreage as their market expands. Many restaurant chefs would like to purchase locally grown vegetables and herbs because it is a great advertising tool and helps the local economy. If you already supply restaurants with vegetables, it is definitely a good idea to add culinary herbs. Even though most culinary herbs are not suited for large acreage, innovative growers can generate a substantial amount of income from herb production. In addition, growers can also explore the possibility of producing value-added herbal products such as herbal vinegar, butter, mustard, and jelly. For additional information on the production and marketing of herbs, please contact Gary Gao, OSU Extension, Clermont County, P.O. Box 670, Owensville, Ohio; Phone: 513-732-7070; Fax: 513-732-7060; E-mail: yugao@postoffice.ag.ohio-state.edu, or Brad Bergefurd, OSU Extension, Enterprise Center for Economic Development and Alternative Agriculture, 1864 Shyville Rd., Piketon, OH 45661-9749; Phone: 614-289-3727 or 1-800-860-7232; Fax: 614-289-4591; E-mail: bergefurd.1@postoffice.ag.ohio-state.edu.

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