

Growing Herbs as Bedding Plants

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Propagating Herbs

Herbs commonly grown by bedding plant producers are propagated by either seed or terminal stem cuttings (Table 1). Most herbs are sold as annuals, but some species may actually be perennials which survive in the garden from year to year in many hardiness zones.

Table 1. Propagation methods, life cycle, and winter hardiness of some popular herbs.

Herb	Propagation	Life cycle	USDA Hardiness Zone
Basil	Seed	Annual --	
Chives	Seed	Perennial	2-3
Coriander	Seed	Annual --	
Dill	Seed	Annual --	
Lavender	Cuttings	Perennial	5
Mint	Cuttings	Perennial	3-5
Parsley	Seed	Biennial	--
Rosemary	Cuttings	Perennial	6
Sage	Seed or cuttings	Perennial	3
Scented geraniums	Cuttings	Annual --	
Sweet marjoram	Seed	Annual --	
Common thyme	Seed or cuttings	Perennial	5

Table 2. Seed germination characteristics of some popular herbs.

Herb	Seeds/oz	Opt.(°F) Germ.	Light or Dark	Days to Germ.
Basil	20,000	70 +	D or L	10
Chives	22,000	60 ±	D or L	10
Coriander	1,240	70 ±	D	10
Dill	6,300	60 ±	L	10
Lavender	25,000	70	D	20
Oregano	130,000	70 +	D or L	10
Parsley	18,500	75 ±	D	15
Sage	3,250	70 ±	D	15
Thyme	96,000	75 +	D or L	10

Adapted, with additions, from Cathey, H. M. 1977. *Guidelines for germination of annual, pot plant and ornamental herb seed.* Florists' Review. 1 December issue.

Seedlings can be produced in plug trays or using traditional broadcast- or row-seeding methods. Plug growers normally sow about three to five seeds per cell to obtain adequate numbers of good-sized seedlings. Herb seedlings resulting from seed sown by broadcasting or in rows are transplanted in small clumps. Seeding and transplanting in this manner is particularly important for slow-growing perennial species because the final "plant" will be larger and fuller at the time of sale than if one seedling was used.

Hardiness zone classifications from Wyman, D. 1977. *Wyman's gardening encyclopedia.* Macmillan Pub. Co., New York.

An important factor in deciding which herbs to grow is whether or not to produce species and cultivars which must be propagated by cuttings. For propagation by cuttings, space must be provided for stock plants and a mist system and bottom heat bench must be available. Stock plants are generally maintained in the greenhouse. In some locales stock plants of perennial species can be grown outdoors, but cutting harvests are limited to the May to September period. In either case, the stock plants must be maintained and kept pest-free to produce good cuttings.

Most bedding plant growers choose herbs which can be grown from seed. The methods and materials used to start herbs from seeds are basically the same as those used for flowering bedding plants. Temperature, light requirements, and time required for germination are not greatly different from those of other plants (Table 2).

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Herb Selection

Hundreds of herb species and cultivars can be grown in the greenhouse for sale in the spring. An herb specialist can suggest types that can be grown compatibly using systems and techniques used to produce bedding plants. Here is a brief discussion of some of the most popular herbs grown today.

Basil. Two past All-America Selections of purple basil (*Ocimum basilicum*), 'Dark Opal' and 'Purple Ruffles,' are probably the most widely grown bedding plant herbs. Other possibilities include: common sweet basil (green leaves) and 'Spicy Globe' (dwarf foliage and plant). All types are good for bedding and container use and also are excellent edging plants. Basil grows rapidly from seed and may become overgrown if started too early. Many growers and gardeners remove the flowers to encourage branching and to keep the plants "fresh."

Chives. The grass-like foliage of chives (*Allium schoenoprasum*) makes an excellent textural contrast to broad-leaved plants in the garden. Rose-pink flowers appear in late spring to early summer. Chives are very easy to propagate from seed and, in fact, they self-sow all too readily in the garden! Chives should not be started too early; otherwise, the leaves may become too long and rather limp.

Dill. Dill (*Anethum graveolens*) is not normally thought of as a bedding plant because of its height (2 to 4 feet) and weedy growth habit, but the new cultivar 'Fernleaf' is much more compact (18 to 24 inches tall) and has potential for bedding plant production. 'Fernleaf' was an All-America Selections Winner in 1992. Dill has fine-textured foliage and it can be used with other plants of medium height in the garden. Plants are ready for sale when they are about 6 to 8 inches tall.

Lavender. Lavender (*Lavandula angustifolia*) is valued for its gray-green to white leaves, numerous blue or purple flower spikes, and compact mound shape. Herb specialists normally propagate cultivars from cuttings, but the 'Munstead' strain and 'Lavender Lady,' a 1994 All-America Selections Winner, can be grown from seed. 'Lavender Lady' will flower the first year following seeding.

Mint. Mints (*Mentha sp.*), depending on type, may be erect or trailing plants with a variety of foliage variants. Mints are prized for their aromatic foliage and culinary uses, but gardeners should be warned that many are very invasive. Popular mints include: variegated pineapple mint (*M. suaveolens* 'Variegata'), peppermint (*M. x piperata*), and spearmint (*M. spicata*).

Parsley. Curly parsley (*Petroselinum crispum*) makes an attractive, dark-green edging plant and it is often grown

in containers with other herbs. Parsley is classified as a biennial because it normally does not flower until the second season after seeding; however, parsley may survive for more than two years. Flowering may actually shorten the life of parsley.

Rosemary. Popular with the consumer, rosemary (*Rosmarinus officinalis*) is a problem for bedding plant growers because it must be propagated from cuttings rather than seeds in order to produce plants of saleable size quickly. Both erect and prostrate types are available and they can be used in containers, borders, or as small shrubs in locales where rosemary is winter hardy.

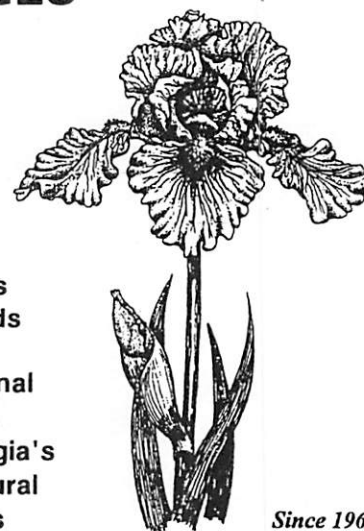
Sage. Common sage (*Salvia officinalis*) has grey-green foliage and is readily grown from seed. Other types have colored foliage, but they must be propagated by cuttings. Some of these are: 'Purpurescens' (purple leaves), 'Tricolor' (variegated white, green, and purple), and 'Aurea' or golden sage (green leaves with golden yellow edge). Sages are erect or spreading, small to medium-sized plants which can be used in containers or in the garden border.

Scented geraniums. Hundreds of cultivars of scented geraniums are available which differ in plant form; leaf size, shape and texture; and scent. The pungent scent of the foliage is often convincingly similar to the aroma of apple, rose, lemon, mint, or other plants. Popular types are the lemon-scented geranium (*Pelargonium*

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crispum), the peppermint geranium (*P. tomentosum*), and the rose geranium (*P. graveolens*). For the best plants, all types must be propagated from cuttings. Scented geraniums do flower readily, but the blooms are not as large or as showy as those of bedding geraniums.

Thyme. Most growers start common thyme (*Thymus vulgaris*) from seed. However, seedlings may be quite variable in foliage characteristics, intensity of aroma, flowering, or culinary value. For these reasons specialists propagate thyme from cuttings taken from stock plants with desirable characteristics. Lemon thyme (*T. x citriodorus*), creeping thymes (*T. praecox* ssp. *arcticus*), and many other cultivars and species are propagated strictly by cuttings. Thymes are commonly used as edging plants and in rock and wall gardens. Best flowering normally occurs after several years in the garden.

Growing Media for Herbs

Herbs can be grown in the same growing media currently used for flowering bedding plants - commercial soilless mixes or a mix formulated by the grower. Soilless media are the most common, but a mix could be a 1:1:1 (by volume) combination of disease disinfested field soil, sphagnum peat moss, and perlite. Composts can also be used for growing herbs. Since herbs are edible, composts containing heavy metals which could be absorbed

by the plants should be avoided. Composts prepared using farmyard wastes, leaves and landscape trimmings, and/or vegetable food wastes are the safest. In terms of physical properties, all growing media should be well-drained and well-aerated. These characteristics are particularly important when transplanting slow-growing seedlings and cuttings of some herb species.

Most herbs are native to regions having neutral or slightly alkaline soils, therefore, the pH optimum for herbs is 6 to 7. Ideally growing media should be limed to this pH range. While commercial soilless media typically range between 5.5 and 6.0, this pH level is generally not a problem as most herbs grow well at pH levels outside the optimum range. The difference in optimum pH and actual growing medium pH should not be, however, greater than 1.5 pH units.

Containers for Herbs

Herbs can be sold individually or in groups in a wide variety of container types. Most commonly seedlings or cuttings are transplanted to 2 1/4-, 3-, or 4-inch pots. These pots are sold individually or in groups of different herbs allowing the consumer to purchase a basic herb garden in one unit. "Shuttle trays" or "carry paks" holding six pots are excellent choices for selling herbs in groups.

Some growers transplant herbs to the same type of flat and cell pak system used to produce flowering bedding plants. This approach has met with mixed success as many retailers find consumers prefer a single plant of several herb types rather than four, six, or more plants of one herb. Herbs which have easily appreciated ornamental characteristics (e.g., colorful foliage, unique shape, or showy flowers) sell most successfully in cell paks. Purple basil is a good example. Displaying "green" herbs alongside vegetable transplants rather than flowering bedding plants could be a way of selling more herbs in cell paks.

Patio planters are another common container for herbs. Small rectangular planting boxes (12-16" long), clay or plastic pans (8-12" dia.), wooden or fiber pots, and strawberry jars are examples of some containers used to grow small herb gardens for patios, decks, and doorsteps.

Fertility and Irrigation Requirements

In general, herbs can be fertilized and watered using the same techniques and fertilizer materials as flowering bedding plants. Herbs, however, usually benefit from somewhat drier media at a slightly lower fertility than other types of bedding plants. Too much water and/or too much fertilizer may result in poor establishment of slow-growing young seedlings or semi-woody cuttings, excessive growth of species with rapid growth rates, or lower essential oil content resulting in diminished aroma or culinary value.

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Water-soluble, peat-lite fertilizers such as 20-10-20 and 15-16-17 or 15-15-15 applied at 150-200 ppm N is a general recommendation for herbs. An "organic" fertilizer can be used for growing herbs, but careful trials of any new fertilizer material should be conducted before putting into general use. As a rule, no more than 50% of the nitrogen supplied by any fertilizer should be in the ammonium form. As with other greenhouse crops, fertilizer choice should be based on the pH and alkalinity of the irrigation water and the pH and nutrient-supplying ability of the growth medium.

Growth Control

Herbs may be grown at about the same greenhouse temperatures as flowering bedding plants. In general, day temperature should be 70-75°F and night temperature should be 60-62°F. Warmer night temperatures may cause some herbs to stretch.

In addition to temperature, proper scheduling, adequate spacing, and adequate light intensity are important factors in producing herb plants of desirable height and shape. Fast-growing herbs such as basil, chives, and dill can easily become overgrown and unmarketable if started too early in relation to the sales season. This problem is compounded by too-close spacing and low light. Low light intensity causes stretching and may also reduce the essential oil content of some herbs with the same consequences as too much water and fertilizer. So in our region growers should attempt to maximize light intensity as much as possible during early spring.

No chemical growth retardants are labelled for use on herbs. Probably the "DIF" concept of growth control by day/night temperature manipulation can be applied to herb production, but at the present time general recommendations are not available.

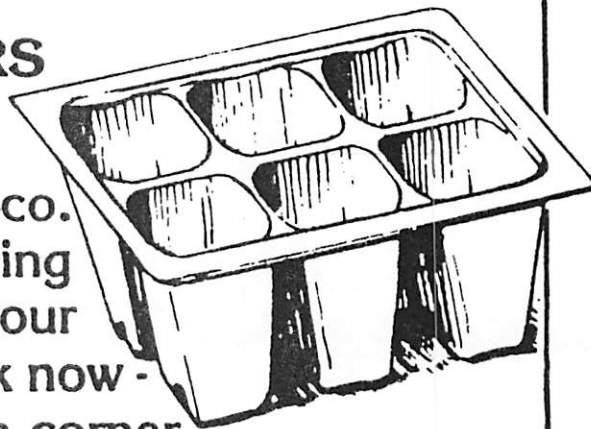
Scheduling Herbs

Most herbs propagated from seeds or cuttings require about 6 to 10 weeks to reach salable size after transplanting to the final container. Of course crop time may vary due to many factors ranging from local climate during production season to greenhouse light and temperature levels or container size. Cornell Recommendations for Bedding Plants (1989) suggests that to sell plants in May parsley, rosemary, sage, and thyme should be sown in March and anise, basil, borage, chives, coriander, dill, and fennel should be sown in April.

Thus, the first group takes about eight to ten weeks and the second group about six to eight weeks to reach salable size in our region. Container also affects crop timing (Table 3).

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Table 3. Approximate production times for selected herbs.

Herb	Weeks to pack sales (direct seed)	Weeks from sowing to plug transplt.	Weeks to pot sales
Basil			
Common	3 to 4	2 to 3	6 to 8
Dark Opal	5 to 6	3 to 4	8 to 10
Lemon	3 to 4	2 to 3	6 to 8
Licorice	2 to 3	1 to 2	4 to 5
Sweet			
marjoram	4 to 6	3 to 4	6 to 8
Oregano	4 to 6	3 to 4	6 to 8
Parsley	4 to 6	3 to 4	6 to 8
Sage	4 to 6	2 to 3	8 to 10
Thyme	4 to 6	3 to 4	6 to 8

Adapted from Belar, L. 1991. *Add herbs to crop mix.* Greenhouse Manager. August issue. Herbs were grown in Minnesota.

Disease and Insect Problems

Herbs are susceptible to the common diseases affecting flowering bedding plants. Fungi are the major disease-causing organisms of herbs. Herbs may damp-off or develop crown or root rots due to infections by *Phythium* and *Rhizoctonia*. Vascular wilts are caused by *Verticillium* and *Fusarium* and *Botrytis* can infect the foliage.

Diseases of herbs develop and spread for the same reason as they do on flowering bedding plants. Sanitation and other cultural methods of controlling diseases

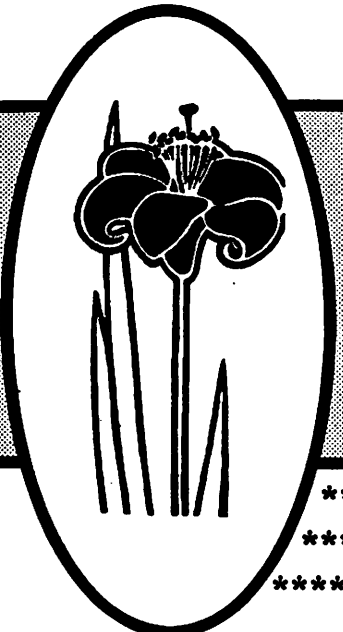
recommended for flowering bedding plants are just as effective for herbs. *Growers considering chemical fungicides should carefully consult the label of the material and state pesticide regulations.* Few, if any, fungicides are registered for use on herbs.

Whiteflies, aphids, fungus gnats, and thrips are the major insects pests of herbs. Whiteflies probably cause the most serious problem on herbs. Whitefly and other insect infestations are a major disadvantage to maintaining herb stock plants for cuttings.

Insect control for herbs is largely limited to practices which limit the introduction of insects initially and to control of later outbreaks before they become too large. A good IPM scouting and monitoring program should be implemented when growing herbs. Most chemical insecticides are not registered for use on herbs in the greenhouse because they are considered "minor" or "specialty" crops.

Growers can use Safer™ Insecticidal Soap on herbs. This insecticide is registered for all herbs including basil, parsley, chives, dill, marjoram, and sage. The manufacturer, however, recommends that growers treat a small number of plants of all herb species and types being grown to test for phytotoxicity before insecticidal soap is placed in general use. *Non-registered pesticides should never be used on herbs since they are an edible crop. Growers are cautioned to follow label instructions when considering the use of any insecticide for herbs.*

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