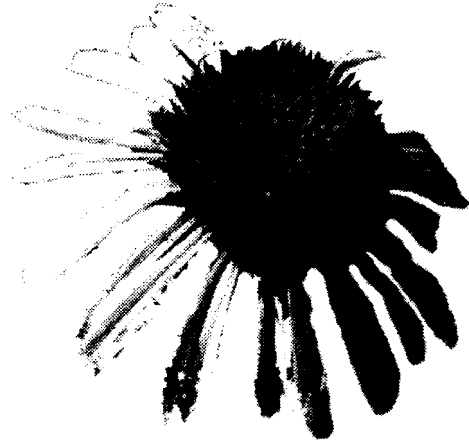


Growing Medicinal Herbs and Spices For Market

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Herbs have the potential to become economically important alternate crops for farm diversification in the upper Midwest. The interest in herbs is high because of the excellent potential the crops have for a profitable return. The interest is not limited to the U.S. but is literally world-wide. The value of herb production is estimated to be over \$32 billion in America, over \$1 billion in Canada, and another \$30 billion in European and Asian markets combined.

The market is tempting, with many herbs having potential for profitable production, but the opportunity to go broke from poor market research is very real. While most farmers are good at production, many in American agriculture have relatively poor marketing skills. To get something more than pin money for growing herbs, it is best to pool resources and skills and hire a consulting firm to do the marketing. This is not a "get rich quick scheme" nor is it adapted to a large acreage. Getting into herb production will require long hours of work, and excellent cost control skills.

The top five herbs currently are echinacea, American ginseng, St. John's-wort, ginkgo and saw palmetto. Close behind and ready to move to the top are valerian, peppermint, dill, chamomile, garlic, and cayenne. Beginners should try some on a small corner of unproductive land available. Most herbs do well with modest to poor soil fertility and won't compete with the more traditional crops for space. When you find a couple that can be successfully grown, check into the market potential, and if the demand is there, make plans to grow them.

These are not crops suited for large scale production. One to 4 acres at the most should be the initial consideration. It will take innovation, determination, and discipline, along with substantial time and labor to get the crop in, cultivated, harvested, and marketed.

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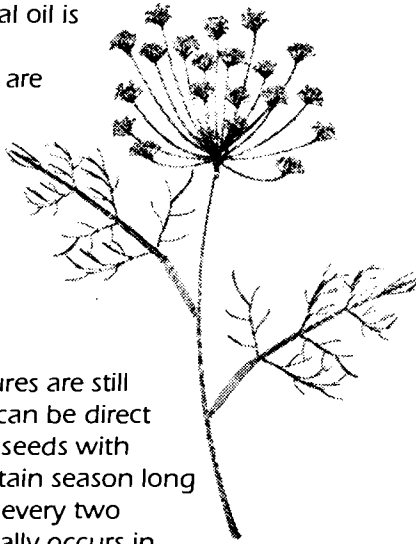
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Selected Herbal Crops

The following herb crops have been selected because of the data available on their production and possible adaptability to a wide growing area of upper Midwest.

Anethum graveolens - Dill

Dill is one of the most popular annual herb crops grown in North America. The foliage, seeds and seed heads (umbels) are grown commercially. An essential oil is extracted from both the herbage and seed. Both are rich in terpenoids and are used in the food processing industry for flavoring. Medicinally, it has been used as a stimulant, a carminative, and to aid in treating stomach disorders.



When the soil temperatures are still cool in early spring, dill can be direct seeded, barely covering seeds with 1/8-inch of soil. To maintain season long production, plant a plot every two weeks. Germination usually occurs in seven-10 days. Rate is about 1000 seeds per 1000 square feet. If allowed to set seed they will readily self-seed and possibly become a pest.

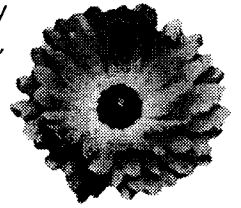
Dill will grow in just about any soil but performs best where drainage and fertility is good. A small amount of nitrogen will benefit production of dill. Apply a split application of nitrogen, 0.8 pounds per 1000 square feet before planting and another 0.8 pounds when the plants are about 4 inches tall. As with most herbal crops, irrigation, if necessary, should be via drip or hand watering, but not overhead, to avoid disease and lodging problems.

Harvesting depends on what part of the crop is intended for market. For pickling, the seed head should be harvested as the plants flower and any seed is still green in color. The seed should be harvested as soon as some of the seed tips begin to develop a brown color to prevent shattering. Dill for oil extraction should be harvested when the oil content is greatest, which is usually at flowering.

Yields are generally in the range of 60 to 100 pounds per 1000 square feet for the herb and 20 to 25 pounds per 1000 square feet for the seed.

Calendula officinalis - Calendula, Pot Marigold

An easily grown herb requiring only direct sun for maximum production, this annual herb can either be directly sown or transplanted from greenhouse starts about two months later. In some respects, the use of this plant is similar to that of echinacea — as a general immune stimulant and a healer of wounds. The flower petals also yield a strong yellow dye.



The plants should be spaced about 6 inches apart in a row and about 24 to 30 inches between rows. These plants will need irrigation attention up to twice a week if quality is to be maintained. Drip irrigation is best.

The flowers are harvested when color is showing and immediately dried for about 10 days at 90 degrees Fahrenheit. If not marketed immediately, make sure they are stored properly to avoid uptake of moisture from the air, which may lead to mold. Yields of dry flowers can be between 400 to 600 pounds per acre. Multiple harvests are common with this crop under typical summer weather.

This is an adaptable plant for growers. Sell it as a landscape flower, a medicinal plant, or as an enhancer of salads. Many progressive chefs will garnish their salads with the flowers of calendula and violas. While the leaves are non-toxic, they are not recommended for consumption.

Matricaria recutita - German Chamomile



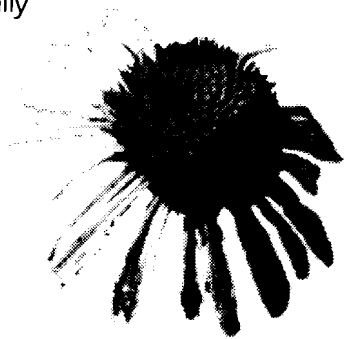
Perhaps one of the easiest annual crops to grow and market, chamomile flowers are used in sedative or relaxing teas. The essential oil is used pharmaceutically, mostly in Europe, during the preparation of anti-inflammatory products and in the production of cosmetics.

The seed is commonly sown in spring but commercial production will give a better yield if the seed is sown in the fall, with much greater uniformity in emergence and establishment. The flower heads can be harvested with a combine in late June or early July with fall sowing. Subsequent harvesting is possible, with the final one including the entire plant. The vegetation is used as a source of essential oil or as feed for livestock.

As with small grains, the weather should be dry and sunny when the flower heads are being harvested. The heads should be mechanically dried at about 110 F. Expect yields of 7 to 10 pounds of flower heads per 1000 square feet.

Echinacea spp. - Purple coneflower

E. angustifolia is the species that has the greatest history behind it, being one of the more important medicinal plants of the Plains Indians. The root was used as an antidote for all types of venomous bites and stings. A piece of the root was applied to toothaches to relieve pain (actually numbing the area temporarily) and the Kiowa Indians chewed the ground root slowly, swallowing the juice for sore throats and coughs. Even the bristly cone was adopted by the Sioux women as combs for their hair.



This perennial is native to our region. There are three species currently under study and cultivation in the prairie states and Canadian Provinces: *E. angustifolia*, *E. purpurea*, and *E. pallida*. Of these three, the *E. angustifolia* is native to the prairies and has been the subject of excessive wildcrafting. Unfortunately, this has been carried on to such an extent in the prairie states that in March 1999 the government of North Dakota passed a resolution making it illegal to wildcraft any echinacea without consent, from public or private property. The penalty includes impoundment of the vehicle the plants were being transported in and a fine of up to \$10,000. Of the three species, *E. purpurea* and *E. angustifolia* have known medicinal market value.

Echinacea can be grown via direct seeding or transplants. Direct seeding should be done in October prior to freeze-up. The seed should be sown on cultivated soil and gently firmed in, not covered to any extent. To germinate, echinacea seed needs sunlight and moisture, in addition to a cold treatment. To provide a cold treatment, stratify the seed in damp sand for a period of 90 to 120 days at about 41 F. If a greenhouse is available, better field establishment success can be realized by setting out transplants. Direct seeding tends to yield staggered emergence over the summer, resulting in plants in various stages of development.

Echinacea spp. are poor competitors with weeds. Since there are no registered chemicals for use on this crop, weed control becomes a major cost factor because of the labor intensity. Once past the first year of establishment, echinacea appear to hold their own against weed pressure.

All parts of the plant contain biostimulants. In North America, the root of the *E. angustifolia* is harvested after the third year; in Europe (Germany mostly) the herbage of the *E. purpurea* is harvested late in the first through third year, then the ground can be rotated into another crop.

Be sure that you understand what the market wants before going headlong into this or any other herbal crop.

Yields vary widely — from 7,000 to 14,000 or more plants per acre at the end of three years.

Hydrastis canadensis - Goldenseal

This plant that is not widely known by produce and flower growers in our region. It is a rhizomatous perennial in the buttercup family found in the understory of forests from Vermont to eastern Iowa and Minnesota. This herb has a rich history with Native Americans, similar to that of echinacea.

The plant is grown under the same basic conditions as ginseng and requires similar investment in time to bring a crop to market, about three to four years. While it can be planted by seed, better results are obtained from planting rootlets purchased from a nursery in the fall. This crop has been over-harvested from the wild. Consequently, herbal companies are looking for cultivated stock. To be sure of identity, cut a root or rhizome to reveal the bright yellow color caused by the hydrastine present.

Present-day use of goldenseal is to fight sinus and flu-like infections, where the mucus membrane is infected. It is most effective when taken for short periods of time. Pregnant and nursing women and people with heart problems should not use goldenseal because few toxicity studies have been done.

It is estimated there are 1800 seeds per ounce. Seed-sown plants can be harvested after four to five years; plants grown from root divisions may be harvested after just three years. Harvest is in the fall, September or October. At 6 inch spacings, average yields of 1500 pounds per acre can be expected. Shrinkage of the root is high during drying, roughly 70 percent from fresh weight.



Mint Family -
Nepeta cataria -
Catnip and
Mentha X
piperita -
Peppermint

The mint family has many uses. It is used as a tea for headaches, colic, and sleeplessness. It's an old home

remedy for colds, nervous tension, and nightmares. It is often found in "herbal infusions" (otherwise known as tea) purported as a sleep aid. Peppermint flavors chewing gum, medicine, and toothpaste, to name just a few common uses.

Just about every gardener knows catnip to be a major cat attractant, which comes from the volatile oil the foliage contains. The counterculture claim that catnip is a psychedelic drug said to produce a sense of well-being or euphoria when smoked like marijuana is entirely false. The only animals that respond to the aroma from the crushed leaves are members of the cat family.

Both mints have market potential, with catnip currently being in rather high demand, because of the 78 million cats as household pets in America. They are both hardy perennials and can be grown from seed or vegetatively from offshoots or rhizomes. The largest organic farm in North America, the Trout Lake Farm in Trout Lake, Washington, has about 50 acres of various mints, including these two.

Mints are harvested like hay. As they reach full bloom they are harvested with a cutter bar, then windrowed with a hay rake and allowed to dry in the field for another day. After the dew has dried from the leaves, the rows are turned and allowed to dry for another day. They are then bagged for processing into teas or other dried value-added products. Yields can vary from 800 to 1000 pounds of mint leaves per acre.

For the essential oil (1.5% volatile oil), the mint can be harvested and brought immediately to a distiller where the essential oil is separated and marketed in dark colored glass containers.

Valeriana officinalis - Valerian

A hardy perennial, valerian is grown extensively throughout Europe and to a limited extent in the United States. Valerian is easily grown by direct seeding in the spring or by divisions in the fall. Plants spread slowly by root and self-seeding. Commercial plantings have produced a ton per acre.

Harvest the roots after the second year, when the foliage has begun to yellow and die back. While a rich folkloric history exists for this herb, it is used today as a mild sedative to aid in sleep, with no addictive or hangover side effects.

It will do well in full sun or under partial shade in a wide range of soils, although better if the soil has good drainage.

Herbal Glossary

Carmative: A substance that relieves digestive gas and bloating

Wildcrafting: The harvesting of uncultivated plants, either ethically or unethically, from public or private properties. Once popular because it was thought the wild herb would possess greater potency, it has now fallen into disfavor because of habitat destruction.

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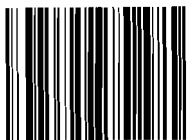
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