

# Medicinal Herb Production Guide

Jackie Greenfield, M.S.  
Jeanine M. Davis, Ph.D.



## **Pale Purple Coneflower** **[*Echinacea pallida* (Nutt.) Nutt.]**

### **Introduction**

#### Botanical Information

Pale purple coneflower or *Echinacea pallida* (Nutt.) Nutt. is a member of the Asteraceae family and has a natural range that is primarily located on the prairies and glades of the mid-western states east of the Rocky Mountains. It is a sun loving herbaceous perennial that grows to a mature height of three to three and one-half feet. The leaves are mostly lanceolate, and the flowers are cone-shaped disks with drooping pale purple ray flowers. The flowers bloom from August to September.

#### Bioactive Components

The bioactive compounds in *E. pallida* are very similar to *E. angustifolia* except this material is believed to contain higher levels of echinacosides than *E. angustifolia*.

#### Uses and Treatments

Like *E. angustifolia*, *E. pallida* was and still is used by the native people of North America to treat a variety of ailments. In Germany, *E. pallida* is more widely accepted than it is among the modern cultures in North America and the rest of Europe. Germany's *Commission E* recommends *E. pallida* for fevers and colds. Table 1 summarizes *E. pallida*'s uses.

**Table 1. Modern and traditional uses of echinacea pallida.**

<u>Modern Uses</u>	<u>Traditional/Folk Uses</u>
- Fevers and colds	- Snake bites
- Boosts the immune system	- Food poisoning
	- Sore throat and mouth sores

# Cultivation Practices

## Site Selection

*E. pallida* can be grown almost anywhere within the temperate zones and is quite cold hardy. It prefers a well-drained alkaline soil in a sunny location. Recommendations for pH range from 6.5 to 7.5. Extensive drought can reduce size and yields, so irrigation may be needed. Poorly drained soils should be avoided.

## Planting

Propagation of *E. pallida* can be from seed or transplants. Due to its taproot division of the crown is not recommended. Seed germination is often poor, sometimes yielding only 50% germination rates. Johnny's Selected Seed Co., Winslow, Maine, recommends the following guidelines for starting seeds indoors. Echinacea requires light as well as cold stratification (pre-chilling) for seed germination. Using deep containers to allow for good root development, fill with a prepared soil mix, and plant seeds in flats or pots, barely covering the seed with soil. Moisten, cover, and refrigerate at 40-50°F. *E. pallida* requires at least twenty-one days of cold stratification. After stratifying, expose flats or pots to warmer temperatures to allow for emergence of the seedlings. Germination generally occurs ten to twenty days after the stratification process.

When plants are several inches tall (usually eight to twelve weeks after germination), transplant seedlings in well-prepared, permanent, planting beds, in late spring or early summer. Space plants twelve to eighteen inches apart, making rows eighteen to thirty inches apart. Weed control is very important, as echinacea does not compete well with weeds. Plants will benefit from the use of mulch.

Although not recommended for commercial plantings, seeds can be sown directly in the ground in fall or early spring, but a fine seedbed needs to be prepared. Plant seeds just under the soil surface spacing them two inches apart. Keep bed moist and weed-free. When seedlings emerge, thin to the recommended spacing mentioned above.

## Insects and Diseases

Diseases that affect echinacea include the leaf spots *Cercospora rudbeckii* and *Septoria lepachydis*. A root rot, *Phymatotrichum omnivorum*, has also been identified. Another disease called "aster yellows disease" is a virus that is transmitted by a leafhopper feeding on echinacea. Other insects that feed on echinacea include Japanese beetles and thrips. Planting in well-drained sites can largely prevent root rots.

## Harvesting, Cleaning, and Drying

*E. pallida* root is harvested in the fall after the plant has gone dormant, usually after the third growing season. A spading fork or other hand digging tools can be used or a mechanized harvester, such as a modified potato digger can be employed. As roots are dug out of the planting beds, be careful to not damage or break the taproot. Shake the roots free of dirt and carefully remove other roots that may be mixed in with the echinacea. Put the roots in the shade until harvesting is complete. When ready for processing, it is

Produced for the North Carolina Consortium on Natural Medicines and Public Health,  
funded by a grant from the GoldenLEAF Foundation, Inc., copyright 2004 [www.naturalmedicinesofnc.org](http://www.naturalmedicinesofnc.org)

recommended to wash echinacea roots with a pressure hose. Richo Cech, author of *Growing At-Risk Medicinal Herbs*, recommends processing the echinacea as soon as possible after washing to minimize oxidation.

Once the roots are cleaned, spread on non-aluminum screens for the drying process. *E. pallida* roots can be dried whole. They need a warm location with adequate airflow. If a drying unit is not available, a large dehydrator, converted greenhouse, or converted rooms in a barn are areas that can be used for drying. According to Cech, "Dry for one day at 70°F, then turn the temperature up to 110°F, drying the roots until they snap (when broken)." Cech recommends, "storing the dried root in plastic bags in light-proof sacks or drums, in a cool, dark, and dry location for up to one year."

## Marketing and Economics

### Annual Consumption and Dollar Value

The size of the market in terms of harvested pounds is small for *E. pallida* compared to the other species of Echinacea used as medicinals. In 2001, 14,000 pounds to 15,000 pounds of dried root were sold on world markets. This is approximately four times the amount sold in 1997. The dollar value of consumption in 2001 was \$150,000. This amount is over seven times the value of the 1997 consumption for this material.

### Supply and Demand

Very few forces are exerting themselves consistently on either the supply or demand side of the equation for this botanical. Buyers are located worldwide for this material but generally represent very low-volume interests. They are not overly committed to purchasing this material and lack any real conviction to bid up prices. European nations, particularly Germany, are using *E. pallida* in place of *E. angustifolia* in some herbal products.

Purity and high levels of echinacosides are the main requirements for *E. pallida* buyers. They are looking for "true" *E. pallida* and not cross-hybrids with other strains. In the past, wild-harvest *E. pallida* and *E. angustifolia* were mixed together and sold as "Kansas Snake Root". This practice has made buyers of this material very attentive to whom they buy from and what they are buying.

### Pricing

The lack of liquidity in this market makes it very susceptible to large price fluctuations with only modest changes in supply or demand. In 2001, prices traded in the \$7-\$14 range.

### Distribution Channels

Distribution channels for this product are specialized and rely on experienced brokers and professionals to differentiate *E. pallida* from other species of the Echinacea genus. Most new growers of this material operate on a contractual basis with a single buyer. Cultivation has begun in South America on a small-scale basis. There are small acreage growers and collectors dispersed throughout North America.

Produced for the North Carolina Consortium on Natural Medicines and Public Health,  
funded by a grant from the GoldenLEAF Foundation, Inc., copyright 2004 [www.naturalmedicinesofnc.org](http://www.naturalmedicinesofnc.org)

### Commercial Visibility

Although *E. pallida* is somewhat popular in Germany, many producers will not consider using this product due to its unfavorable price structure as compared to *E. purpurea*. Its unknown medicinal comparison to *E. angustifolia* is another detriment. Of the top nutraceutical/botanical companies in North America and Europe, 13% offer this material as a stand alone product, and 17% make this product available as either a stand-alone product or as part of a multi-constituent supplement.

## Conclusion

To succeed commercially, *E. pallida* needs positive differentiation from other Echinacea strains. This material must be able to distinguish itself in clinical trials from other species in the genus, particularly *E. angustifolia*. Over the next three-to-five years, demand for this botanical may decrease five-to-ten percent on an annual basis. Prices will remain volatile due to a lack of commitment by growers to stabilize supplies with cultivated material and inconsistent demand by a small number of buyers in this market.

*This Medicinal Herb Production Guide includes excerpts from, Analysis of the economic viability of cultivating selected botanicals in North Carolina. Strategic Reports. 2002.*

## References

Adam, Katherine L. 2002. Echinacea as an alternative crop. ATTRA - National Sustainable Agriculture Information Service. <http://www.attra.org/attra-pub/echinacea.html>. 14 pp.

Cech, Richo. 2002. Growing At-Risk Medicinal Herbs. Horizon Herbs. Williams, Oregon. 314 pp.

Fernald, M. L. 1970. Gray's Manual of Botany. D. Van Nostrand Company, New York, NY. 1632 pp.

Hwang, Sheau-Fang, Chang, Kan-Fa, and Ron Howard. 2001. Yellows diseases of echinacea, monarda, and caraway. Agriculture, Food and Rural Development. Crown copyright. Alberta, Canada. 6 pp.  
[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex616?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex616?opendocument)

Jensen, Beth. 2004. Johnny's Selected Seeds. Winslow, Maine. Personal communication.

Strategic Reports. 2002. Analysis of the economic viability of cultivating selected botanicals in North Carolina. A report commissioned for the North Carolina Consortium on Natural Medicinal Products by North Carolina State University, Raleigh, NC. 244 pp.

Produced for the North Carolina Consortium on Natural Medicines and Public Health,  
funded by a grant from the GoldenLEAF Foundation, Inc., copyright 2004 [www.naturalmedicinesofnc.org](http://www.naturalmedicinesofnc.org)

Sturdivant, Lee, and Tim Blakley. 1999. Medicinal Herbs in the Garden, Field, and Marketplace. San Juan Naturals. Friday Harbor, Washington. 323 pp.

US Department of Agriculture, Crops Research Division Agricultural Research Service. 1960. Index of Plant Diseases in the United States, Agriculture Handbook No. 165. Washington, DC. 531pp.

Westcott, Cynthia. 1960. Plant Disease Handbook. D.Van Nostrand Company, Inc. Princeton, NJ. 825 pp.