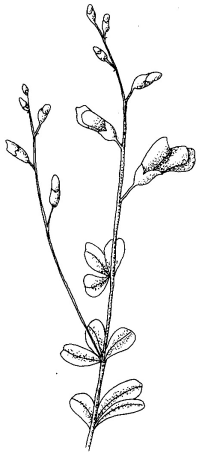


# Medicinal Herb Production Guide

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



## ***Wild Indigo [Baptisia tinctoria (L.) R. Br.]***

### **Introduction**

#### Botanical Information

*Baptisia tinctoria* (L.) R. Br., commonly called wild indigo or false indigo, is native to North America with a natural range extending from Georgia north to southern Quebec and west to Minnesota and Iowa. It is usually found in dry open woods and clearings. As a member of the Fabaceae family, it is a multi-branched, herbaceous perennial with smooth, clover-like leaves. The yellow, pea-like blooms begin to appear in late spring and continue flowering into early autumn. Wild indigo grows to a mature height of three to three and one-half feet. The medicinal part of the plant is the root, which is harvested in the fall.

#### Bioactive Components

The main bioactive components of wild indigo are the alkaloids cytosine and anagyryne, as well as a number of isoflavanoids. The main physiological effects of these bioactives are an improvement in the endogenous defense reaction and a mild estrogenic response.

#### Uses and Treatments

Wild indigo was a favorite medicine of the indigenous people of North America and was used as a topical antiseptic for burns and wounds to the skin. In western cultures of North America and Europe, it is still used for its antiseptic properties, but has also found use in drugs stimulating the immune system. Yellow and blue dyes have been produced from wild indigo in the United States and Europe. Figure 1 summarizes the uses of *B. tinctoria*.

**Table 1. Modern and traditional uses of wild indigo.**

<u><b>Modern Uses</b></u>	<u><b>Traditional Uses</b></u>
- <i>Creates an estrogen-like effect</i>	- <i>Topical antiseptic</i>
- <i>Stimulates the immune system</i>	- <i>Common colds</i>
- <i>Dye component</i>	- <i>Fever</i>

# Cultivation Practices

## Site Selection

Wild indigo grows in dry open woods, but needs adequate moisture to get established. Choose a well-drained soil in full sun or partial shade. According to the 2004 Richter's Herb Catalogue, wild indigo is hardy from zone four to zone nine and can grow in a range of soils from average to deep fertile soils. Jeanine Davis, co-author of *Green Gold*, prefers growing wild indigo in sandy soil and says when growing in soils that stay moist for a long time root rot will develop and can kill the plant. To avoid that, Davis recommends planting on a slope, making raised beds, and adding organic matter.

## Planting

Wild indigo plants can be started by seed, roots, or cuttings. Tim Blakley, co-author of *Medicinal Herbs in the Garden, Field, and Marketplace*, recommends starting seeds in deep nursery pots, but due to low germination rates, he suggests scarifying (a process where the outer seed coat is nicked to allow the uptake of water) the seed, then soaking it for twenty-four hours before planting in the pots. It may be three months or longer before plants will be ready to be transplanted into the field.

Karen Hardy, former research assistant at NC State University, tested seed germination using sandpaper (for scarification) and 24-hour soaking methods. Hardy found that germination increased when wild indigo seeds were exposed to scarification first, then a 24-hour soaking method right after. Germination did not improve in treatments using only scarification or only soaking methods.

Davis divides the roots into two- to three-inch pieces, either in spring or fall, then transplants them into beds, spacing the plants eighteen inches apart. Top-dress with a heavy layer of bark mulch or leaves, and keep the beds weeded. Cuttings can also be made from the plants. Blakley takes his cuttings in late spring or late summer, then transplants to the field twelve weeks later.

## Insects and Diseases

The following diseases are listed for *Baptisia tinctoria* in the *Index of Plant Diseases in the United States*: powdery mildew, *Erysiphe polygoni*; rust, *Puccinia andropogonis*; stem diseases, *Diaporthe arctii*, *Mycosphaerella baptisiicola*, and *M. granulate*. According to Blakley, root rot is a problem in poorly drained soils. Blakley also states that he has not had any pest problems with *Baptisia* spp.

## Harvesting, Cleaning, and Drying

Wild indigo is harvested in the fall after the plants begin to die down, usually after the second or third growing season. A spading fork or other hand-digging tool can be used to harvest small plantings. Harvesting large plantings will require a mechanized digger to undercut the roots and bring them to the soil surface, such as a modified potato digger. As roots are dug out of the planting beds, shake the roots free of dirt and carefully sort out any roots that are not wild indigo. Keep the roots in the shade until harvesting is complete.

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When ready for processing, Blakley recommends cutting the lateral roots and dividing the crown before washing. This will aid in the drying time. Once the roots are thoroughly washed, place in an herb dryer. If a dryer is not available, rooms in a barn can be modified for drying. The roots should be spread on non-aluminum screens and arranged so that air circulates freely. Dry the roots in normal seasonal temperatures by circulating air rather than adding heat to complete the drying process. If humidity levels are high, it may be necessary to introduce some heat while maintaining good air circulation. Store dried roots in lightproof sacks, burlap bags, or polybags in a cool, dry, dark location.

## **Marketing and Economics**

### Annual Consumption and Dollar Value

Approximately 12,000 pounds of wild indigo were consumed in 2001. This amount equaled the 1997 amount and was 8% higher than the level reached in 2000. The dollar value in 2001 was between \$54,000 and \$58,000. This was a 42% decrease from 1995 levels but was 7% higher than 2000 levels.

### Supply and Demand

Moderate interest exists from herbalists for wild indigo for its medicinal attributes. Future demand for wild indigo as a medicinal is dependent upon research currently being conducted as to its effectiveness as a component of immuno-stimulating drugs. There is also interest from organizations that use wild indigo as a dye component for industrial uses.

Requirements as a dye plant include correct identification within the genus as well as high levels of dye compounds.

Wild indigo is wild harvested in its North American natural range. Only 5% of the material on the market in 2001 came from cultivated sources. Some very small pockets of cultivation are currently located in the United States, Germany, France, Italy, and the Netherlands.

### Pricing

Trading of wild indigo is within a very narrow range at low price levels. Wild indigo dropped into a lower price band in 1998 and showed no signs of recovery in 2001. During 2001, this botanical traded for roughly \$4.50-\$5.00 per pound of dried root.

### Distribution Channels

Buyers rely on experienced brokers and professionals for supplies of wild indigo. They represent mainly small North American concerns. European buyers have shied away from wild harvested material in North America due to quality issues.

### Commercial Visibility

Wild indigo does not have a great deal of visibility with consumers. It is more of an herbalist specialty product. Of the top nutraceutical/botanical companies in North America and Europe, 8% currently use it only as a stand-alone product and 10% offer wild indigo as a stand-alone product or as part of a multi-constituent supplement. Confusion identifying

"true" wild indigo from other species in the genus continues to hurt its marketability. In 1997, some products were found to contain "mixed" *Baptisia* species. What resulted was a general recall of all products containing wild indigo. Wild indigo has been widely replaced in the dye industry by cheaper and more consistent artificial compounds.

## Conclusion

Wild indigo will grow on suitable sites at lower elevations in the eastern region of North Carolina and can be grown as a row crop in the foothills, piedmont, and eastern coastal plain. Seed stock is not commercially available and asexual propagation is often difficult, requiring a long-term commitment. Any future demand in Europe for this material will more than likely be satisfied by cultivated sources, as Europeans prefer growing their own wild indigo on small-acreage plots in Europe. It is estimated that wild indigo will experience a decrease in annual growth from 1% to 5% annually over the next few years. Prices will remain low as interest in this material continues to decline.

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

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