

A Grower's Guide

Blue Vervain

Verbena hastata

The blue vervain, or *Verbena hastata*, is the most popular *Verbena* today, but its European cousin, *V. officinalis*, known simply as 'vervain,' also has medicinal properties and is used widely. If collecting seed locally, get a positive identification on the plant, because blue vervain also has several wild relatives in the Great Plains, including hoary vervain (*V. stricta*), narrow-leaved (*V. simplex*), pink (*V. pumila*), nettle-leaved (*V. urticifolia*), and fanleaf (*V. plicata*). The Dakota name for blue vervain translates as the word "medicine," and the Omaha and Ponca name translates as "herb medicine."



Family: *Verbenaceae*

Life cycle: Herbaceous perennial (Zone 3)

Native: North America, including Great Plains region. Found in prairies and meadows, low open woodlands, stream banks, springs, seepage areas and roadsides.

Height: 3 to 5 feet

Sun: Sun, partial shade

Soil: Prefers well drained soil high in organic matter

Water: Moderate

Flowers: Flowers are blue to purple spikes that stretch from spike base to the tip bloom from mid- to late summer.

Seeds: Stratify seeds for two weeks then plant seed two times their thickness. Germination occurs in 14 to 21 days, with about 75 percent success. Transplant by mid- to late spring, spacing 12 inches apart.

Pests: In some locations and seasons, this plant can be riddled with insect damage and foliar diseases that cause leaves to discolor. During other growing seasons, insect and disease damage were low. More research needs to be done on the effect of seed source, weather and timing of pest controls.

Harvesting: Harvest the aerial parts while the plant is in bloom.

Parts used: Flowering aerial parts, fresh or dried.

Used as: Infusion, traditional tincture, cider vinegar tincture, syrup, elixir, lozenge, ointment, salve, cream, balm, foot soak, bath herb, honey

Medicinal benefits: The European vervain (*V. officinalis*) is listed in the *Physicians Desk Reference for Herbal Medications*, which mentions a variety of folk uses ranging from relief for sore throat, coughs, asthma, whooping cough, treatment for nervous disorders, digestive

disorders, and to promote lactation. It should not be taken during pregnancy, because it is a uterine stimulant. The *Peterson Field Guide* (Foster and Duke) also lists these effects, and says that the European vervain is milder than the blue vervain. Animal studies have demonstrated the anti-inflammatory, cough-suppressing and milk-stimulating activity of *V. officinalis*. Blue vervain was used by Native Americans for colds, coughs, fevers, bowel complaints, dysentery and stomach cramps. The root was considered more active than the leaves.

Market potential: Moderate. Prices range from \$4.50 to \$22.25 per pound (lb) dry weight. Certified organic blue vervain should bring a higher price in the market than wild-harvested.

Summary of field trial data: This species was planted in Wichita and Olathe in 2001, and did relatively well with an average survival rate of 92 percent and vigor rating of 4.6 on a 5-point scale. The

aboveground biomass, which would be the marketable yield, was estimated at more than 3,000 lbs/A dry weight. Insect and disease pressure was relatively high that year, with a 2.4 insect rating due to heavy insect feeding by an undetermined pest, or by general leaf eaters (i.e. grasshoppers). In the second year of the trial, plants were evaluated at Wichita, with a second year survival rating of 49 percent. Aboveground biomass yields

were also down, possibly because of the extremely hot weather. This species is a potential crop in Kansas, so evaluations continued in 2003 in old and new plots. New biotypes need to be examined, and related species of vervain should be tested for biological activity and medicinal components. We cautiously recommend this as a cash crop, based on first-year data, but more screening is needed.

K-State Field Trial Data 2000-2002 *Verbena hastata*

				Average	Comments
Age of plants in years	1	2	3		
Number of test sites¹	2	1	0		
Survival rate (%)	92.0	43.0	—	67.5	
Vigor rating²	4.6	4.3	—	4.4	
Height (cm)	60.5	98.0	—	79.3	
Dry weight herb (g/plant)	81.3	48.8	—	—	
Dry weight root (g/plant)	25.6	58.5	—	—	
Maturity rating³	4.8	5.1	—	5.0	
Insect damage rating⁴	2.4	1.8	—	2.1	
Disease rating⁵	1.0	1.9	—	1.5	
Estimated planting density (number of plants/A)	21,780	21,780	—	—	Assume 1- by 2-ft. spacing.
Plant density⁶	20,038	9,365	—	—	
kg/A dry weight (g/plant x plant number) – tops	1,629	457	—	—	
Estimated marketable yield (dry weight lbs/A) – tops	3,588	1,007	—	—	
Yield x ½ of low price¹	\$8,073	\$2,266	—	—	
Yield x ½ of high price¹	\$39,934	\$11,208	—	—	

¹ See "How Data Were Collected," on page 3.

² Vigor rating (1=very poor, 3=slightly above average, 5=very good, well adapted)

³ Maturity rating (1=vegetative, 2=early bud, 3=early flower, 4=full flower, 5=seed production, 6=senescence)

⁴ Insect damage rating (scale of 0 to 5; 0=no damage and 5=severe damage)

⁵ Disease rating (scale of 0 to 5 with 0=no damage and 5=severe damage)

⁶ Calculated as starting plant density x survival rate.

How Data Were Collected

The plants described in this fact sheet were grown in K-State test plots in Hays, Colby, Wichita, or Olathe, Kan. Generally, four replications of each species were included at a site. Not all species were screened at each site or each year. The number of locations is noted in the table. Depending on the location and year, either five or 10 plants per plot were established in each of the replications. Details can be found at www.oznet.ksu.edu/ksherbs. Plants were grown from seed in the greenhouse and transplanted in the field in May or June.

All plants at each location were used to determine survival percentage, vigor rating, insect damage rating, and disease rating as described above. Three plants per plot were measured for height, and only one plant per plot was harvested to measure yield each year. Because there were four plots, this allowed us to estimate yield from four plants at each location per year.

Plants were dried, and top and root weights recorded in grams. Grams per plant were converted to kilograms per acre (kg/A) and pounds per acre (lb/A) to estimate field-scale yield. The population density used to calculate field yields was the optimal population density (determined by the average size of the plants) times the actual percentage survival as measured in the field. There was generally some loss due to transplant shock and, for some species, significant winter loss as well.

Plant spacing recommendations on each fact sheet are for spacing within a row. Distance between rows will depend on the particular farming operation and equipment used. The minimum row spacing will be the same as the plant spacing recommendation. For example, if the recommendation is to set plants 12 inches apart, rows should be a minimum of 12 inches apart as well. However, if cultivator or root-harvesting equipment is on 5-foot centers, plant rows 5 feet apart to facilitate cultivating and harvesting. Adjust estimated plant density per acre on the worksheets to estimate gross yield and net income.

Prices were taken from Appendix B of K-State Research and Extension publication S-144 *Farming a Few Acres of Herbs: An Herb Growers Handbook*. To calculate a rough gross income potential for each herb, estimated yield was multiplied by the lowest and the highest retail price, divided by two. This is a rough estimate of wholesale price. Actual prices would be determined based on a contract obtained from a buyer.

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