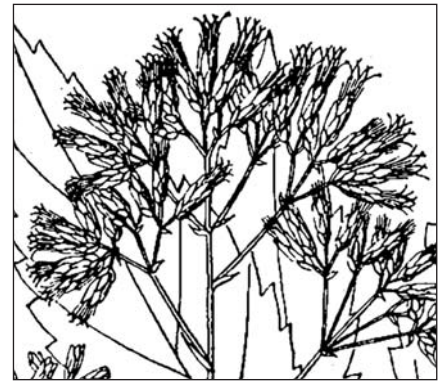


A Grower's Guide

Joe Pye Weed

Eupatorium purpureum

This herb is named after a New England medicine man who used it to induce sweating in people with typhus fever. Another common name is “Gravelroot” because it is often used in folk medicine as a diuretic and to clear urinary stones. The flowers and seeds yield a pink or red textile dye. The fragrant flowers have a light vanilla scent that becomes more intense when crushed.



Family: *Composite/Asteraceae*

Life cycle: Herbaceous perennial (Zone 3)

Native: Found in thickets throughout the eastern half of North America.

Height: 3 to 12 feet

Sun: Full sun to partial shade

Soil: Prefers moist soil, but does well with moderate water.

Water: Natural habitat is wet sites, and it prefers regular, deep watering. Joe Pye also appears to withstand Kansas heat and drought fairly well.

Flowers: Pale pink-purple flowers in a rounded cluster July through September

Propagation: To propagate from seed, stratify for 10 days at 40°F. Do not cover. Seeds need light for germination. Germination time is typically two to three weeks with up to 80 to 90 percent germination. Older plants can be divided and replanted in the fall or spring. Root cut-

tings can be taken in the spring. Plant on at least 24-inch centers, because the plant will form large clumps.

Pests: No major pests mentioned in the literature or observed in the field.

Harvesting: The root is the primary part of the plant sold today, though historically the whole plant was used. Harvest the root in the fall with a spade or mechanically. The somewhat fibrous root system is most dense right under the plant, so it is not too hard to get most of it with one shovel. Harvest aboveground portion when flowers are starting in early to midsummer. Dry tops quickly because they may start to decompose.

Parts used: Primarily roots.

Used as: Tea, tincture, decoction

Medicinal benefits: Not currently listed in the *Physicians Desk Reference for Herbal Medications*, but folk uses include treatment for urinary tract and kidney stones, prostate problems, menstrual pain. It is also used to ease childbirth and as a diuretic.

Market potential: Low to medium. Probably most of the herb on the market is wildcrafted. This crop appears to have potential for large-scale production, so it wouldn't take much to saturate the market unless the market grows significantly. Retail prices range from \$9.50 to \$28 per pound (lb) dry weight for the root.

Summary of field trial data: Though Joe Pye Weed was only tested at Wichita as a second- and third-year crop, it shows promise as a crop for Kansas. We have data from two sites as a first-year crop, and it seems to do well on sandy and silt loam soils. It appears to do best when water is plentiful from rain or irrigation, but can withstand some drought. The plant can get very tall and form large clumps, so don't plant adjacent to smaller plants or crops that would be crowded out. The flowers are very nice and it would do well as a background plant or against a fence in a flower garden.

K-State Field Trial Data 2000-2002 *Eupatorium purpureum*

				Average	Comments
Age of plants in years	1	2	3		
Number of test sites¹	2	1	1		
Survival rate (%)	89.0	75.0	91.0	85.0	The higher percent survival in year 3 as compared to year 2 probably represents clumps that are multiplying and getting double-counted.
Vigor rating²	3.8	5.0	5.0	4.6	This was one of the highest vigor ratings of the herbs tested.
Height (cm)	45.0	133.0	147.0	108.3	This plant can get quite tall, even under only semi-irrigated conditions.
Dry weight herb (g/plant)	41.0	347.4	216.0	—	Lower aboveground dry weight in year 3 is probably due to a combination of the plant being more mature and the hot, dry weather in 2002.
Dry weight root (g/plant)	14.9	252.9	264.5		Root biomass only increased slightly from year 2 to year 3.
Maturity rating³	3.5	5.0	5.4	4.6	
Insect damage rating⁴	0.7	1.5	1.4	1.2	Only moderate insect feeding was noted.
Disease rating⁵	1.5	1.8	0.0	1.1	
Estimated planting density (number of plants/A)	10,890	10,890	10,890	—	Assume 2- by 2-ft. spacing.
Plant density⁶	9,692	8,168	9,910	—	
kg/acre dry weight (g/plant x plant number) – roots	144	2,066	2,621	—	
Estimated marketable yield (dry weight lbs/A) – roots	318	4,550	5,773	—	
Yield x ½ of low price¹	\$1,511	\$21,613	\$27,422	—	
Yield x ½ of high price¹	\$4,452	\$63,700	\$80,822	—	

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. Cultivating four plots 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.

Rhonda Janke, sustainable cropping systems specialist
Jeanie DeArmond, extension assistant

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

Publications from Kansas State University are available on the World Wide Web at: <http://www.oznet.ksu.edu>

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Rhonda Janke, *Farming a Few Acres of Herbs: Joe Pye Weed*, Kansas State University, May 2004.