

A Grower's Guide

Mullein

Verbascum thapsus

Medieval Europeans dipped this plant in suet and used it as a torch. The leaves make a mild tea that soothes the throat during the cold season. Science has confirmed mild expectorant and antiviral activity in mullein. The plant also contains verbascoside, which has antiseptic, antitumor, antibacterial and immunosuppressant properties. Boy Scouts and other avid campers sometimes call mullein the “toilet paper plant” because of its large, soft, furry leaves. Pioneers also used the leaves for soft cushions for their shoes.



Family: *Scrophulariaceae/Figwort*

Life cycle: Biennial (Zone 3)

Native: Europe, naturalized in North America

Height: 1 to 8 feet

Sun: Full sun

Soil: Well-drained soil, but does better with moderate water. pH 6.5 to 7. Doesn't require much fertility.

Water: Low to moderate

Flowers: Flowering does not occur until the second year. The flowers are a spike or spikelike panicle with small, yellow flowers along the upper portion of the stalk. Blooms in mid- to late summer.

Propagation: Sow seed directly in the field or start indoors for better germination. Seed is very small, so do not cover with soil. Germination occurs in about two weeks at a rate of 80 percent. Space 24 inches apart in the row. Mullein takes up a lot of space because of the size of the lower leaves.

Harvest: Leaves can be harvested by hand at any time, preferably in the late spring or early summer when in bloom. For the largest crop, harvest leaves in the fall of the first year or the spring of the second year, because quality deteriorates after that. The lower leaves may need to be discarded because they may be covered with dust and have more insect and wind damage than middle and upper leaves. The roots are harvested with a needle-nose spade in the fall of the first year or in the spring of the second year. Flowers can be harvested individually or by cutting a stalk in heavy flower/bud stage. Lay on screens to dry in a shady location or in forced air oven. Make sure to dry leaves well, to prevent mold.

Parts used: Flowers, leaves and root, fresh or dried. Most of the market seems to be for leaves. One source recommends growing *V. olympicum* for flower harvest because they are easier to pick.

Used as: Tincture, infusion, syrup, ointment, salve, cream, balm, infused oil

Medicinal benefits: Flowers and leaves are used for skin, ears and respiratory tract. The roots are used for the urinary tract. Approved for use in Europe for cough and bronchitis. The plant contains up to 3 percent mucilage, in addition to saponins, flavonoids and other biologically active compounds. The mullein alleviates irritation and acts as an expectorant due to its mucin and saponin. The flowers are infused in olive oil over a period of weeks, which is used traditionally for earache, eczema of the auditory canal, middle ear infection and inflammatory skin diseases.

Market potential: Moderate for leaves to high for flowers. Prices range from \$3.50 to \$20.43 for leaves. No prices found for flowers or roots. Flowers are often sold fresh, not dried.

Summary of field trial data: Mullein does very well under Kansas conditions. There are often healthy stands near roadsides, ditches, riverbanks and other non-mowed areas. Mullein does not appear to

like too much mulch, especially if the mulch is applied over the top of the plant or gets into the inner whorl, which we saw where we applied wood chip mulch for weed control. Many of the whorls began to rot from the center, and the plants did not do well if too much water was retained close to the base of the plant. The optimal time to harvest leaves seems to be in the fall of the first year. In

the second year, the plant begins to put its energy into the flower stalk, and the leaves were smaller. This would be a good crop to grow in Kansas, as long as there is enough of a market for the leaves. The flowers would be very labor intensive to harvest, and might be good for a market to local herbalists or for home use. This is a lovely plant for the home garden, and some seed sources seemed to grow

exceptionally large plants, with multiple flower stems, which would be very impressive in the backyard garden. We don't recommend harvesting this plant from wild stands along roadsides because they may be contaminated with dust, car fumes and other pollutants.

K-State Field Trial Data 2000-2002 <i>Verbascum thapsus</i>					
				Average	Comments
Age of plants in years	1	2	3		
Number of test sites ¹	6	1			Biennial crop.
Survival rate (%)	81.7	8.3			Poor survival due to mulch.
Vigor rating ²	4.2	5.0			
Height (cm)	47.0	90.0			
Dry weight herb (g/plant)	237.4				
Dry weight root (g/plant)	75.7				
Maturity rating ³	1.0	4.8			
Insect damage rating ⁴	1.1	0.5		0.5	
Disease rating ⁵	0.5	0.5		0.5	
Estimated planting density (number of plants/A)	7,260				Assume 2- by 3-ft. spacing.
Plant density ⁶	5,931				
kg/A dry weight (g/plant x plant number) – tops	1,408				
Estimated marketable yield (dry weight lbs/A) – tops	3,105				
Yield x ½ of low price ¹	\$5,433				
Yield x ½ of high price ¹	\$31,718				
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

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