

# A Grower's Guide

# Burdock

*Arctium lappa*

The Latin name comes from the Greek “arktos,” or bear, suggesting rough-coated fruits, and “lappa,” which means to seize. Burdock, also known as gobo, is a main root vegetable in Asian cooking and a medicinal herb. Burdock is common along streams in the shade. It is also common in waste grounds with alkaline soil. The wild relative is *Arctium minus*.



**Family:** *Compositae/Asteraceae*

**Life cycle:** Herbaceous biennial (Zone 3)

**Native:** Eurasia. Introduced to North America and elsewhere.

**Height:** 2 to 9 feet

**Sun:** Full sun, partial shade, shade

**Soil:** Loamy soil and neutral to alkaline pH is preferred.

**Water:** Moderate water is preferred. Likes damp places.

**Flowers:** Late in the summer of the second year. Flowers are immature green burs with a pink center. As the seed matures, the burs turn tan or brown.

**Propagation:** Stratified seed will have an 80 to 90 percent germination rate; unstratified seed will be less. Germinates in one to two weeks. Seed can be sown directly in the field in the spring, or they can be started indoors planted 1/8-inch deep and transplanted out in the late spring. Seedlings grow very rapidly. Space

plants at least 18 inches apart and water moderately. Burdock will reseed itself readily so spreading will occur.

**Pests:** No significant insects or diseases. Some general leaf feeding occurred in our field plots.

**Harvesting:** Roots are harvested in the fall of the first year growth or in the spring of the second year. Burdock has a very deep, long taproot that requires a needle nose spade or a garden fork to dig. The seed pods should be harvested in the fall of the second year.

**Parts used:** Roots, leaves and seed, either fresh or dried.

**Used as:** Medicinal food, decoction, tincture, syrup, compress, poultice, elixir, ointment, salve, cream, balm, foot soak, bath herb, infused oil, tea (cancer treatment – seed).

**Medicinal benefits:** In vitro, burdock shows mild antimicrobial activity. Folk uses include ailments of the gastrointesti-

nal tract and for blood purifying. Externally used for many skin and scalp problems, sores and infections. In China, seeds are used for common colds and cough.

**Market potential:** Moderate to high for root and seed. Moderate to low for leaves. In addition to medicinal market, fresh root may be sold as a vegetable (check local market for prices). Prices found include leaf for \$10.05 per pound (lb) dry weight, root for \$3.60 to 33.60 lb dry weight, and seed for \$26.13 to 95.34 lb dry weight.

**Summary of field trial data:** This is a vigorous, hardy plant in Kansas. The only limitation may be harvesting technique and securing a market for the products. Plots were transplanted in our research trials, but the seed is large enough that direct seeding should be possible.

**K-State Field Trial Data 2000-2002 *Arctium lappa***

				<b>Average</b>	<b>Comments</b>
<b>Age of plants in years</b>	1	2	3		
<b>Number of test sites<sup>1</sup></b>	6	2	0		
<b>Survival rate (%)</b>	77.3	59.3	—	68.3	
<b>Vigor rating<sup>2</sup></b>	4.1	4.8	—	4.4	
<b>Height (cm)</b>	54.5	104.0	—	79.3	
<b>Dry weight herb (g/plant)</b>	123.8	175.7	—	—	Leaves lose condition in second year.
<b>Dry weight root (g/plant)</b>	60.8	102.0	—	—	Usually sold in fall of first year.
<b>Estimated seed yield (g/plant)</b>	—	8.8	—	—	Estimated as 5 percent of top biomass.
<b>Maturity rating<sup>3</sup></b>	1.0	5.4	—	—	This is a biennial crop.
<b>Insect damage rating<sup>4</sup></b>	1.7	0.5	—	1.1	
<b>Disease rating<sup>5</sup></b>	0.2	0.5	—	0.4	
<b>Estimated planting density (number of plants/A)</b>	19,360	19,360	—	—	1.5- by 1.5-foot plant spacing.
<b>Plant density<sup>6</sup></b>	14,965	11,480	—	—	
<b>kg/A dry weight (g/plant x plant number) – tops</b>	1,852	—	—	—	
<b>kg/A dry weight (g/plant x plant number) – roots</b>	910	—	—	—	
<b>kg/A dry weight (g/plant x plant number) – seeds</b>	—	101	—	—	
<b>Estimated marketable yield (dry weight lbs/A) – tops</b>	4,801	—	—	—	
<b>Estimated marketable yield (dry weight lbs/A) – roots</b>	2,004	—	—	—	
<b>Estimated marketable yield (dry weight lbs/A) – seeds</b>	—	223	—	—	
<b>Yield x ½ of price<sup>1</sup> – tops</b>	\$20,526	—	—	—	Only one price listed in sources checked.
<b>Yield x ½ of low price<sup>1</sup> – roots</b>	\$3,607	—	—	—	
<b>Yield x ½ of high price<sup>1</sup> – roots</b>	\$33,667	—	—	—	
<b>Yield x ½ of low price<sup>1</sup> – seeds</b>	—	\$2,913	—	—	
<b>Yield x ½ of high price<sup>1</sup> – seeds</b>	—	\$10,630	—	—	

<sup>1</sup> See "How Data Were Collected" on page 3.

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

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

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

<sup>5</sup> Disease rating (scale of 0 to 5 with 0=no damage and 5=severe damage)

<sup>6</sup> 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](http://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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