



Malabar Spinach

Matt Ernst¹

Introduction

Malabar spinach is a leafy vine native to tropical Asia and is a commonly cultivated vegetable in Asia and Africa. Malabar spinach – also called Indian spinach, Ceylon spinach, climbing spinach and vine spinach – is a member of the Basellaceae family. (Spinach commonly grown for market in North America is a member of the family Chenopodiaceae.) According to the University of Florida, Malabar spinach is also known as basella, gui, acelga trepadora, bretana, libato and Malabar nightshade. Red and green leaves occur in different Malabar spinach species: green leaves in *Basella alba* and red leaves in *Basella rubra*.

Malabar spinach thrives in hot, humid climates. This makes it a suitable summer green for cultivation in places like Kentucky, where summer temperatures exceed ideal conditions for most lettuce, spinach and other greens. It is particularly good when sautéed or used in soups and stir-fries as the leaves tend to be slightly mucilaginous. It is high in soluble fiber and Vitamin A, Vitamin C and calcium.

Marketing

Malabar spinach could be a fit for farmers marketing to customers seeking locally grown food crops, including restaurants sourcing seasonal local ingredients. Malabar spinach may also be a suitable crop for farmers market consumers, roadside stands, on-farm markets and community supported agriculture members, especially consumers seeking more unique and ethnic vegetables.

There are good marketing possibilities at smaller-volume wholesale markets, especially restaurants and grocers specializing in seasonal, ethnic and local products. Attributes of Malabar spinach



Red Malabar Spinach

may favor certified organic production, and additional wholesale markets may be available at grocers and chefs specializing in the organic category.

Point-of-purchase materials, like recipes and educational brochures, can help educate customers unfamiliar with Malabar spinach. Product sampling and cooking demonstrations at farmers market and retail locations can significantly increase the likelihood of consumers purchasing a less familiar crop; always follow local and state requirements when conducting product sampling or cooking demonstrations. For information about offering samples at Kentucky farmers markets, Kentucky Farm Bureau Certified Roadside Markets



¹Matt Ernst is an independent contractor with the Center for Crop Diversification.

and on-farm markets, see the Kentucky Department of Agriculture's Kentucky Farmers Market Manual and Resource Guide and additional resources at <http://www.kyagr.com/marketing/farmers-market.html>.

Market Outlook

Fresh spinach use per capita doubled in the U.S. in the 1990s, from about one-half to one pound per person per year, as consumers increased consumption of fresh spinach and other leafy greens in salads, sandwiches and wraps. Fueled in part by the growing popularity and convenience of bagged spinach, fresh spinach use increased during the 2000s, peaking at 2.3 pounds per capita in 2005. Fresh spinach use per capita remained at 1.6 to 1.8 pounds from 2010 to 2015.

Broader consumer trends favor production of more diverse leafy green varieties. Leafy greens are used in salad mixes, and both fresh and cooked leafy greens are used in ethnic cuisine around the world. Consumers are interested in trying new products and expanding their taste palate to include more ethnic cuisine like Malabar spinach. Nearly all types of greens may be grown profitably in Kentucky, under typical market conditions, and there is potential for niche leafy greens like Malabar spinach.



Malabar spinach growing on an arbor.

Production considerations

Site selection and planting

Soils should be well-drained and rich in organic matter. Planting in raised beds is popular for spinach, which should not be planted on sites where herbicide carryover could be a problem. Weed control is important, with mulching or hand weeding necessary to limit weed pressure.

Both red- and green-leaf Malabar spinach is readily available from seed sources. Malabar spinach may be direct seeded in rows spaced 1 foot apart, with seeds spaced 1 to 2 inches and thinned to 6 inches between plants. Seed may take up to one month to germinate, even at the ideal germination temperature of 65 to 75°

F. Prime growing temperatures exceed 80° F. Malabar spinach may also be propagated from cuttings.

Irrigation that provides continuous moisture will help maximize yields and quality. Continuous watering will also prevent flower formation, which may cause leaf bitterness. Malabar spinach requires a trellis for growth, and trellising will also aid in harvest.

Pest Management

Malabar spinach is favored by home gardeners and landscapers for tolerating many common insect and disease pests. Malabar spinach prefers a hot and humid growing temperature but may still be susceptible to some foliar diseases, including various fungal leaf spots, which can reduce the quality and marketability of leaves. Potential pest problems include leafminers, tarnished plant bugs and nematodes. Scouting to monitor populations can help the grower determine when and how often insect controls should be applied.

Harvest and Storage

Young stems and leaves are most marketable with the most desirable flavor. Malabar spinach is hand harvested. Like other fresh

market leafy greens, it has a high respiration rate and should be sold as quickly as possible. Leaves, including young stems, may be sold as a standalone green or in salad mixes. Malabar spinach is best stored at temperature and humidity levels similar to other tender leafy greens and salad mixes.

Labor requirements

Labor needed to produce a Malabar spinach crop will vary based on weed control techniques, trellising type and harvestable yields. If mulch or herbicides are not used for weed control, up to 80 additional hours of weeding labor (or more) could be required per acre. Harvest and packing labor could fall in the range of one to five 18- to 20-pound boxes per hour, depending on harvester expertise and production culture.

Economic considerations

Startup investments may include specialized bed

shapers, plastic layers, trellising, irrigation and transplanting equipment. Post-harvest washing and cooling equipment may also be required, depending on the scale of production and intended market. Major annual expenses include seed, plastic mulch and drip tape and labor.

A small-scale (100-foot row) production budget estimate was developed for Malabar spinach using 2017 input costs. Total pre-harvest costs were estimated at \$89, with harvest and marketing costs at \$70. Total variable costs per 100-foot bed were \$159, with fixed costs (irrigation system, equipment and land) estimated at \$22. A total production value of \$300 (50 to 75 marketable pounds at \$4 to \$6 per pound) would result in a \$140 return to variable costs and \$118 return above all costs. The breakeven price per pound, based on 50 pounds of production, was \$3.19 for variable costs and \$3.53 for all costs.

Selected Resources

- Vegetable Production Guide for Commercial Growers, ID-36 (University of Kentucky)
<http://www.ca.uky.edu/agc/pubs/id/id36/id36.htm>

- Malabar Spinach (Cornell University)
<http://www.gardening.cornell.edu/homegardening/scene9529.html>
- Spinach, Malabar (University of Florida, 2015)
<http://edis.ifas.ufl.edu/pdffiles/MV/MV13800.pdf>
- First Report of a Leaf Spot on *Basella alba* Caused by a *Bipolaris* sp. in Florida. *Plant Disease* 95 (7): 880 (July 2011). Accessed at <http://dx.doi.org/10.1094/PDIS-04-11-0276>
- Influence of Different Drying Methods and Storage on the Quality of Indian Spinach (*American Journal of Food Technology* 4 (2): 66-70 (2009). Accessed at: <http://scialert.net/abstract/?doi=ajft.2009.66.70>
- Common Diseases of Leafy Greens (Alabama Cooperative Extension, 2000)
<http://www.aces.edu/pubs/docs/A/ANR-1189/>

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Reviewed by Shawn Wright, UK Horticulture Specialist

*Photos courtesy of Josh Fuder, Agriculture and Natural Resources Agent,
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