



COOPERATIVE EXTENSION SERVICE

UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

Kenaf

Introduction

Kenaf (*Hibiscus cannabinus*) is a warm-season annual row crop in the same plant family as okra and cotton (Malvaceae). Kenaf plants are capable of growing to a height of 20 feet under favorable conditions; however, heights generally average 8 to 14 feet in a growing season of 4 to 5 months. The stalks consist of two kinds of fiber: an outer fiber (bast) and an inner fiber (core). The bast is comparable to softwood tree fibers, while the core is comparable to hardwood fibers. After harvest, the plant is processed to separate these fibers for various products.

Kenaf was first investigated in the U.S. as a source of twine in the 1940s. Since that time it has been used in a wide variety of products that include rope, twine, bagging, carpet backing, packaging materials, various grades of paper and cardboard, and decking and fencing products. This versatile plant is also being used by concrete manufacturers and the plastics industry. The absorbency of kenaf fibers has made it useful as animal litter (e.g. horse bedding) and as a product for cleaning up chemical and oil spills. In addition, kenaf has been investigated as a possible livestock feed, with very favorable results. U.S. research into the production and development of kenaf continues primarily in several southern states.

Marketing and Market Outlook

Most of the world's kenaf is produced in India and China. The domestic demand for kenaf is currently limited. Early predictions that kenaf would replace trees for papermaking have not come to pass. Instead, kenaf has become a niche crop used in the making of specialty products that are promoted as an 'environmentally friendly' and



'treeless' product. Because the harvested stalks are too bulky to ship any distance, kenaf production necessarily must be located near a processing plant. At this time, the only known commercial processing plants in the U.S. are located in Georgia, Mississippi, North Carolina, and Texas. All acreage is contract-grown for these companies. Despite this crop's apparent promise as a ready source of fiber, the lack of any nearby processing plant makes kenaf an uncertain alternative crop for Kentucky.

Production Considerations

Site selection and planting

Kenaf is well adapted to a wide range of soil types; however, best yields occur on well-drained fertile sites. While abundant soil moisture is necessary, waterlogged or poorly drained soils are a detriment to growth. Kenaf's sensitivity to frost is an important consideration when selecting a suitable site.

Seeds are broadcast or drilled after all danger of frost has passed. It is important to plant into a fine, well-prepared seedbed to provide good seed-to-soil contact for germination. This crop is grown in dense stands to limit branching and promote the development of long fibers in the main stem.

Pest management

Relatively few insect and disease

problems occur on kenaf. Diseases include anthracnose and root knot nematode. Cotton bollworm and aphids are potential insect pests but do not generally result in yield losses. The rapidly growing kenaf plant generally competes effectively with weeds. Cultivation and registered herbicides provide additional tools for weed management.

Harvest and storage

Kenaf is harvested at optimum fiber content, generally at the beginning of flowering. Harvesting is accomplished either by hand or mechanically with farm equipment adapted for kenaf. Yield potential has been reported between 2½ tons per acre (Minnesota) and 15 tons per acre (Texas). Previous research by the University of Kentucky showed yields of 6 to 8 tons per acre may be possible here.

Economic Considerations

Initial investments include land preparation, purchase of seed, and installation of an irrigation system.

Economic estimates for kenaf production in west Tennessee were published in 2007. Under a 2013 Kentucky production scenario, pre-harvest variable costs for kenaf production were estimated at \$168 per acre. Custom harvest and hauling costs were estimated at \$100. Fixed costs were estimated at approximately \$25, resulting in a total estimated cost of \$293 per acre. Tennessee budgets assume a return of 7.2 tons of kenaf at \$55 per ton for gross revenue of \$396 per acre. These estimates indicate possible positive per acre returns to land, labor, capital and management for kenaf in the Mid-South.

Variable harvest costs for kenaf may be substantial due to 1) the ongoing development of harvest systems and 2) the transportation cost to market. Producers investigating the production of a fiber crop such as kenaf should be able to estimate their harvest costs and obtain production contracts that cover their entire cost of transportation to market.

Selected Resources

- About the Kenaf Plant (Vision Paper, 2005) <http://www.visionpaper.com/kenaf2.html>
- Alternative Field Crops Manual: Kenaf (University of Wisconsin and University of Minnesota, 1991) <http://www.hort.purdue.edu/newcrop/afcm/kenaf.html>
- Economic Feasibility of Kenaf Production in Three Tennessee Counties (University of Tennessee, 2007) <http://purl.umn.edu/34911>
- Kenaf (Agricultural Marketing Resource Center, 2012) http://www.agmrc.org/commodities_products/fiber/kenaf.cfm
- Kenaf (Mississippi State University, 2002) http://www.agmrc.org/media/cms/kenafb_A4216AB52B96F.pdf
- Kenaf (Mississippi State University, unknown year but latest reference is 2003) <http://www2.msstate.edu/~bsb2/kenaf.html>
- Kenaf — A Possible New Crop for Central Florida (University of Florida, 2006) <http://edis.ifas.ufl.edu/pdffiles/AA/AA22000.pdf>
- Kenaf Production: Fiber, Feed, and Seed (Purdue University, 2002) <http://www.hort.purdue.edu/newcrop/ncnu02/pdf/webber-327.pdf>
- Kenaf Project (Omni Ventures, Illinois) <http://www.omniventures.org/kenaf.htm>
- New Uses for Kenaf (USDA-ARS, 2000) <http://www.ars.usda.gov/is/AR/archive/aug00/kenaf0800.htm>
- The Rise and Fall of Kenaf as a Fiber Crop in North Carolina (Purdue University, 2000) <http://www.hort.purdue.edu/newcrop/proceedings1990/v1-297.html>
- Question of the Week: Kenaf (ATTRA, 2008) http://attra.ncat.org/calendar/question.php/2008/05/05/what_information_can_you_give_me_on_kenaf
- Vision Paper (2009) <http://www.visionpaper.com/index.html>

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Photo: David Nance, USDA ARS, Bugwood.org

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