UK COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY — COLLEGE OF AGRICULTURE

Pawpaw

Introduction

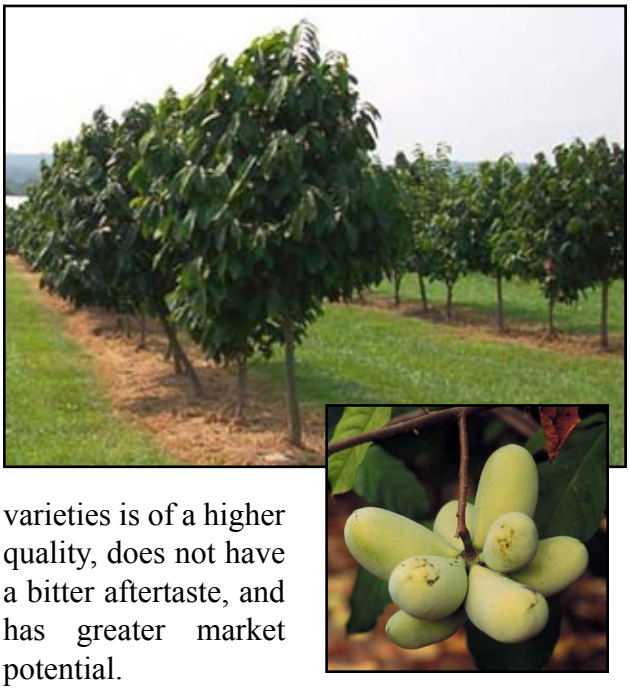
Pawpaw (*Asimina triloba*) is a unique tree fruit native to the eastern United States. Its highly aromatic fruit has a sweet, almost tropical-like flavor. The large fruit is oblong and typically produced singly or in clusters of two to nine. Pawpaw fruit pulp can be eaten fresh or prepared in a variety of desserts.

Marketing

At present the primary outlets for pawpaws are farmers markets. However, Kentucky growers could also explore various alternative opportunities and establish their own niche markets. For example, one Kentucky producer has developed a pawpaw ice cream which he markets. Restaurants, especially those serving Appalachian cuisine, may also be interested in purchasing pawpaw for various menu items. Processing pawpaws into pulp is viewed by many as a critical step into developing a greater food market for this native crop.

Market Outlook

Few pawpaws are being produced commercially in Kentucky; however, this fruit has longstanding potential as a new high-value crop. Pawpaw fruit sold at farmers markets is collected from natural stands in the forest or from small plantings. Because sellers often have difficulty finding sufficient wild pawpaws to meet the demand, there is a potential market for commercial production. In addition, wild fruit collected from some trees can have a bitter aftertaste. Fruit from grafted trees of named varieties is of a higher quality, does not have a bitter aftertaste, and has greater market potential.



There is also the possibility of pawpaw use in a variety of food products, including juices, wine, ice creams, and desserts. Researchers have recently found naturally occurring compounds with insecticidal and anti-cancer properties in the bark, twigs, and leaves. Harvesting pawpaw tissues to extract these chemicals may prove to be a profitable business in the future.

Production Considerations

Propagation

Pawpaws can be propagated by seed that has undergone either a natural or artificial cold treatment (stratification) for 90 to 120 days. Actively growing seedlings that are about pencil width in stem diameter can be chip-budded or grafted with dormant buds (scionwood) collected from named varieties or superior pawpaw trees.

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Transplanting trees from the wild or from the field is often unsuccessful because the deep tap root is easily damaged during digging. Plants grown in containers, however, transplant quite well. Container-grown trees purchased from nurseries are generally either seedlings or grafted named cultivars. Based on Kentucky State University research trials, the following cultivars produced large fruit (over 5 ounces) and performed well in Kentucky: 'NC-1,' 'Overleese,' 'Potomac,' 'Shenandoah,' 'Sunflower,' 'Susquehanna,' and 'Wabash.'

Site selection and planting

Pawpaws prefer deep, fertile soils that are well drained and slightly acidic. Heavy or water-logged soils should be avoided. Trees that are less than 1½ feet tall should be shaded the first year with tree guards or tree shelters. Trees that are 1½ feet or taller do not require shading upon planting. Fruit production in mature trees is greatest in full sun. Pawpaw trees will need regular watering during the growing season. Supplemental fertilizer should be added annually in late winter or early spring.

Most pawpaw cultivars are believed to be self-incompatible, requiring at least two genetically different trees for cross pollination and fruit set to occur. Flies and beetles are thought to be the pollinators; however, since they are neither efficient nor dependable, hand pollination can be helpful to ensure plentiful fruit set.

Pest management

Pawpaws are relatively disease-free and have few insect pests, which could make this a potential crop for organic production. Occasionally, Japanese beetles can damage vegetation. Sooty mold, a complex of several fungi, may produce a black, superficial growth that covers fruit and detracts from its appearance. Sooty molds grow on the honeydew secretions of certain insects and can be especially troublesome on pawpaws in years of frequent rainfall.

Harvest and storage

Trees started from seed will normally begin to bear fruit after 5 to 8 years, while grafted trees may bear fruit 3 or 4 years after planting. The fruit is ripe when it is soft and gives slightly when gently squeezed. Ripe pawpaws also have a very strong aroma. Skin color, which is not a reliable indicator of ripeness, can vary from green to bright green, eventually turning black or brown.

When fruit on an individual tree begin to ripen, pawpaws from that tree will need to be hand harvested a minimum of every other day for a 1- to 2-week period. Tree-ripened fruit has a shelf life of 3 to 5 days at room temperature, but can be stored from 1 to 3 weeks if refrigerated.

Labor requirements

Labor needs for pawpaw production are approximately 90 hours per acre (20 hours for mowing and management, and 70 hours for pruning). Harvest requires a minimum of 250 hours per acre.

Economic Considerations

Initial investments include land preparation, purchase of plants, installation of an irrigation system, and tree establishment. The recommended density is 295 pawpaw trees per acre. Grafted trees may cost more than $15 each. For grafted cultivars, partial crops may be obtained 3 or 4 years after planting; trees will bear a full crop 5 years after planting. As with other tree fruits, operators will usually not recover the full cost of establishing pawpaws until at least 7 years after planting.

Production costs (2009) for a mature pawpaw planting are estimated at $1,260 per acre, with harvesting and marketing costs at $5,460 per acre. Total variable costs per acre come to approximately $6,720. Presuming gross returns of $9,000 per acre, returns to land, capital and management are approximately $2,280 per acre. These returns could be substantially higher than

the $1.50 per pound wholesale price used in estimates; pawpaws sold at the Lexington farmers market for $3 per pound in 2009. However, profitability estimates for a minor crop such as pawpaws can vary widely, as marketing new crops is dependent on emerging market channels and superior product quality.

Selected Resources

- Container Production of Pawpaw Seedlings (Kentucky State University, 2003)
http://www.pawpaw.kysu.edu/PDF/PomperHT03c.pdf
- Cultivars (Kentucky State University, 2009)
http://www.pawpaw.kysu.edu/pawpaw/cvsrc98.htm
- Organic Pawpaw Production (Kentucky State University, 2007)
http://organic.kysu.edu/Pawpaw.shtml
- Organic Production of Pawpaw (Kentucky State University, 2010)
http://www.pawpaw.kysu.edu/PDF/OrganicPawpawPBI-004.pdf
- Pawpaw Information Website (Kentucky State University)
http://www.pawpaw.kysu.edu
- Pawpaw Research at KSU (Kentucky State University)
http://www.pawpaw.kysu.edu/KSUstory.htm
- Pawpaw (Kentucky State University, 1998)
http://www.hort.purdue.edu/newcrop/cropfactsheets/pawpaw.html
- Pawpaw: A "Tropical" Fruit for Temperate Climates (Kentucky State University, 1993)
http://newcrop.hort.purdue.edu/newcrop/proceedings1993/v2-505.html
- Growing Pawpaws, HO-220 (Purdue University, 2001)
http://www.hort.purdue.edu/ext/HO-220.pdf
- Pawpaw — A "Tropical" Fruit for Temperate Climates (ATTRA, 2010)
https://attra.ncat.org/attra-pub/summaries/summary.php?pub=9

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Fruit cluster photo by Desmond R. Layne, Clemson University
Orchard photo by Kirk Pomper, Kentucky State University
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