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FOR SUSTAINABLE AGRICULTURE

# Pawpaw trial maintenance

**Abstract:** Field trials were conducted to determine if the pawpaw could serve as a successful alternative crop for farmers in the central United States.

## Question & Answer

**Q:** What are the prospects for raising pawpaws in Iowa?

**A:** The pawpaw can be grown in the upper Midwest to fruiting stage. Yields at full maturity are still being determined, but estimates are 30 pounds per plant under optimum conditions. Fruit can be sold fresh at farmers' markets for approximately \$2.00/pound. Large-scale growth of pawpaws may have to wait until more progress is made on post-harvest handling and processing.

complement a sustainable farming system. Urban dwellers would have an alternate temperate tree fruit to grow that does not require as many chemical inputs as apple, pear, or plum.

Among the variables to be considered when assessing the pawpaw potential as an alternative crop:

- Pests—tolerance to attacks from insects and other pests
- Growth—height, damage from weather conditions
- Yield—totals, harvest dates
- Fruit—expect five to 10 per tree, weight, number of seeds

## Background

The pawpaw (*Asimina triloba*) is the largest tree fruit native to the United States and grows wild in 25 states, including Iowa. The fruit primarily ripens in September. In general, growth rates and potential yield north of Interstate 80 will be less than the more optimum conditions south of I-80.

The project explored whether the pawpaw can be a viable commercial crop for the upper Midwest. The first step was to grow a number of varieties and selections in a controlled setting and determine which, if any, of these varieties and selections produce pawpaws of high quality (good taste, large size, low seed count) and economic yield (pounds per acre). If suitable varieties and selections are identified, rural areas and small farms would have another crop to

## Approach and methods

In May 1999 pawpaw trees representing 28 selections were part of a replicated planting at the Louisa County



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**Budget:**  
\$1,750 for year one  
\$2,000 for year two  
\$2,250 for year three



Conservation Board Chinkapin Bluffs Recreation Area (CBRA) south of Columbus Junction, Iowa. Another 20 pawpaw trees of Iowa origin were planted at the ISU Northeast Research Farm near Nashua (NERF) in 2000. Replacement trees have been added as they become available from Red Fern Nursery.

### Results and discussion

There are currently 232 trees at CBRA, most of them from 4- to 8-feet tall. No fruit was produced in 2005, but the more mature trees began fruiting in 2006. In 2007, 40 of the 68 guard row trees bore fruit and half of the accession trees (82 of 164) produced fruit. The accession trees produced 228 lbs. of marketable fruit in 2007, a big improvement over the 2006 total of 130 lbs. of marketable fruit from 50 trees. Despite the sizable increase, it is suspected that the 2007 harvest was diminished by an Easter weekend freeze that damaged at least half the flower buds on the trees.

Eighteen of the NERF trees are 4- to 6-feet tall, with two other trees not performing well. One tree flowered in 2007 and four others had flower buds formed in fall 2007.

Fruit from the CBRA was evaluated in 2006 and 2007. Primary measurements were number of fruit per tree, weight per fruit, number of seeds per fruit, number of seeds per ounce of fruit, and ripening dates. Fruit weighing less than 3 ounces were considered unmarketable and were not counted.

The most fruit per tree was 29, and the heaviest individual fruit weighed 17 ounces. The lowest seed to fruit ratio was .75 while the highest was 3.39 with an average of 1.6. Ripening dates in 2007 ran from August 27 through September 30, with peak harvest occurring from September 2 to 20.

Some impressive performers in the trials included “Pennsylvania Golden,” an existing cultivar that ripens early and had the largest number of fruit, but each fruit was relatively small (about 6 ounces). Another variety has been released as “Shenandoah” and features midseason ripening, large fruit (many over 10 ounces), and low seed count. A late-ripening variety released later as “Susquehanna” bore large fruit (above 10 ounces) and had low seed count.

### Conclusions

Results show that pawpaw fruit can be grown in the upper Midwest and certain selections were shown to have the best potential for production. At least 10 years of growth are needed for trees to achieve full production, at which point each tree could produce in excess of 30 pounds of fruit.

### Impact of results

While it appears that pawpaws can be grown for fruit in the upper Midwest, yields at maturity have yet to be deter-

mined. Pawpaw that is unrefrigerated has a shelf life of just a few days, and refrigerated pawpaw will last about two weeks. The biggest hurdle for commercialization is devising a way to handle the processing to produce pulp. Currently there is no economic way to separate the pulp from the seeds and skin, and research is needed in this area.

#### **Education and outreach**

Results of the trial have been submitted to the Pawpaw Regional Variety Trial project at Kentucky State University. The principal investigator has given two talks on the

results. One was at the Iowa-Illinois Fruit and Vegetable Growers Symposium in November 2007, and the other occurred at the ISU Extension Horticulture Update in January 2008.

#### **Leveraged funds**

Labor valued at \$500 was donated by Tom Wahl of Wapello, Ray Grogan of Iowa City and Scott Ervin of Lisbon. Land use and grass mowing valued at \$1000 was provided by the Louisa County Conservation Board.

Photos courtesy of Patrick O'Malley.



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