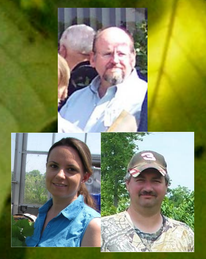
Hi1-4: A Unique Pawpaw Selection in the Kentucky State University Repository Collection



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Introduction

•The North American pawpaw [*Asimina triloba* (L.) Dunal] is a native tree-fruit that is in the early stages of a commercial industry (Pomper and Layne, 2005).
•Pawpaw fruit also have processing potential for the orange-yellow pulp which can be used as an ingredient in gourmet items such as ice cream, wine, and pies (Duffrin and Pomper, 2006; Crabtree et al., 2014).
•Annonaceae relatives of the pawpaw, such as cherimoya, sweetsop (sugar apple), soursop, and atemoya also have low yields, due to low rates of natural pollination (Peterson, 2003).
•Kentucky State University serves as the National Clonal Germplasm Repository for Pawpaw. Two goals of the Repository research efforts are germplasm acquisition and evaluation. The repository contains over 2000 accessions from 17 different states. The repository contains over 45 cultivars that are currently available from nurseries.
• As part of KSU pawpaw breeding and selection efforts, the KSU Horticulture Program released its first pawpaw variety 'KSU-Atwood™' in 2010. However, new high yielding cultivars with excellent fruit fresh market or processing quality would assist in the development of a pawpaw industry worldwide. (Pomper et al., 2008, 2011, 2014).

Objective

•To develop new pawpaw cultivars with excellent fresh market and processing potential for the emerging commercial industry.

Materials and Methods

•The National Clonal Germplasm Repository for Pawpaw was initiated in 1994 and contains over 2000 accessions from 17 different states. Most accessions were collected from wild pawpaw stands by enthusiasts. Some trees in the collection are the result of direct crosses and additional trees have unknown genetic backgrounds.
•The selection Hi1-4 has been identified through observations in the Repository collection with unique fruit characteristics and are promising as new potential cultivars. This genotype was selected based on observations of having fruit weights over 120g per fruit, which is considered to have a large enough fruit size for commercial sale and processing.
• The original tree Hi1-4 has unknown genetic background. Hi1-4 is from mixed seed collected from the KSU orchards for rootstock. The original Hi1-4 is now 10 years old.

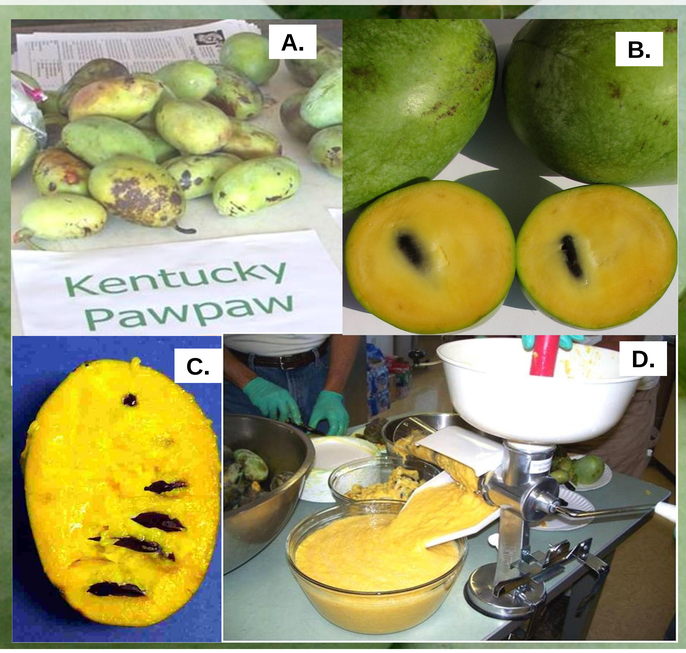

Figure 1. A. Pawpaw fruit at farmers' market; **B.** pawpaw fruit section ; **C.** Longitudinal section showing pawpaw seeds in the fruit; **D.** Pawpaw pulp processing;

Figure 2. Fruit of Hi1-4. Note the large size of this fruit.

Figure 3. Photo of fruit of Hi 1-4 (left), Hi 7-5 (middle), and KSU-

Results and Discussion

- The selection Hi1-4 has a large fruit size (360 g average) and a pleasing yellow-orange flesh (see Fig. 2).
- In 2014, the fruit size of Hi1-4 (317 g) was comparable to the pawpaw cultivars Sunflower (278 g), KSU-Atwood (345 g), and the advanced selection Hi7-5 (325 g).
- The fruit of this selection tended to have unblemished skin, suggesting that this selection may have some resistance to the fungus *Phyllosticta* (Pomper et al., 2014) which causes lesions on the epidermis of the fruit of many cultivars.
- This spring, this selection was grafted onto two year old field planted rootstock in a replicated block experiment for yield trials with other selections.
- Yield and fruiting characteristics for Hi 1-4 will be examined over the next several years.

Conclusion

•The pawpaw selection Hi1-4 has been identified in the Repository collection with unique fruit types and promising new characteristics as a new potential cultivar.

Literature Cited

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