



PAWPAW PICKIN'S



State Chapter:
Ohio Pawpaw Growers
Association

Contact the pawpaw discussion group:
<http://groups.yahoo.com/group/Ohiopawpaw>

NAPGA Facebook page:
<http://www.facebook.com/NorthAmericanPawpawGrowers>

Fall 2017

Volume 17, Issue 2

President's Patch by - Ron

As winter creeps along and I scramble to catch up on the newsletters, new handouts, correspondence, old promises of handouts, etc., I thought that I would again express some thoughts on one aspect of pawpaw cultivation. As a starting point, I have collected a large majority of the existing varied genetic material that is or has been commercially available, over 120+ cultivars.

Speaking with new members about the pawpaw cultivars that they are interested in, the conversation usually boils down to the largest fruit and sometimes taste. However, there may be other factors to be considered when selecting pawpaw cultivars to plant.

I am going to suggest a couple of additional characteristics that we should consider in selecting pawpaw cultivars to plant. The first characteristic that we should consider is when the fruit ripens, i.e., early or late. I need to go through my notes and publish the data that I have documented on when pawpaws ripen. In some years, I have fruit that will ripen the last week of July and some that ripens well into late

October. While "when they ripen" is subject to a large host of factors, it is the clear starting place to begin. Typically pawpaws ripen in southern Ohio from late August to early October, but by selecting early ripening cultivars, you can extend the harvest season on both ends of the "normal" season, early and late. This provides the grower with a longer harvest season and thus, a longer time to market your fruit.

Another important consideration is selecting pawpaws for different uses. We have very little, if anything, to select cultivars for specific uses but just lump them together as they are sold. We all know or should know that pawpaws do have different taste, texture, size, number of seeds, thickness of peel, etc. If this was not true then why are we selling so many different cultivars? Pawpaws can be eaten fresh, bread, pies, cakes, smoothies, salad dressing, sauces, puddings, wine, craft beer, drinking vinegars, etc.

Continued page 5

NAPGA & OPGA past newsletters are archived at
Ohio State University, Piketon, Ohio
<http://southcenters.osu.edu/horticulture/publications/newsletters/Ohio-pawpaw-growers-association-newsletters>

Mission Statement

NAPGA/OPGA

is an organization of pawpaw enthusiasts, backyard and commercial pawpaw growers, small and large, dedicated to promoting the superior traits of the pawpaw plant and fruit, developing a pawpaw industry and marketing plan, preserving and studying the wild pawpaw genetics.

Inside this issue

President's Patch	1
Ambrosia Beetle & Fusarium	2
Ambrosia Beetle. cont	3
Ambrosia Beetle, cont	4
Nyomi's Delicious	5
Asimina Webworm	6
Misc. Pictures	7
Recipe	8
NAPGA / OPGA Info	8

Please check with Ron (Botrytis@fuse.net) regarding your membership status.

Ambrosia Beetle and Fusarium Wilt, Part II

This is the third article on Ambrosia beetle, one written by Jerry Lehman ("Pawpaw Pickin's," Vol 17, Issue 1, Spring 2017) and one by Ron Powell ("Pawpaw Pickin's," Vol 15, Issue 2, Fall 2015). There is more to this complex than just injury and death caused by the feeding of Ambrosia beetles.

There is no explicit definition of "ambrosia" beetles; however, the following criteria are often used:

1. Fungi represent the main source of food consumed by both the adult beetles and larvae.
2. Fungi are transmitted by the beetles from one host to another and between generations.
3. Beetles are not able to survive and develop on a fungus-free diet composed only of plant tissue.

Since no research on ambrosia beetles attacking the North American pawpaw has been done, only non-specific comments can be made. Numerous species of beetles are known as ambrosia beetles or pin-hole borers, because in all cases, both the adults and larvae feed on a mold type of fungus, known as "ambrosia". The beetles introduce this fungus into tunnels bored into the sapwood and sometimes heartwood of trees. The female ambrosia beetles possess specialized pockets called mycangia. These structures are variously located in and on the body of the insect. In a few species, these organs are found in the male.

There are about 36 genera of ambrosia beetles, some of which include up to 200 species, have been recorded throughout the world. A number of species breed in living trees, but deteriorating, dying, or recently cut trees, logs, pulpwood or stumps are usually preferred. All species require a considerable amount of moisture for development. Seasoned timber is never infested.

There are three types of ambrosia beetle tunnels:

1. Simple
2. Branches
3. Compound



Simple tunnels are unbranched, often penetrating deeply into the wood.

Branched tunnels penetrate deeply into the wood and then break up into several branches, which extend in various

directions in the same plane. Compound tunnels also branch off from a single entrance gallery but have egg niches extending from the sides of the tunnel. As these tunnels are excavated by the female beetles, the beetles push the excrement (frass) and sawdust backwards, or to the

Contact NAPGA or OPGA: <http://www.NAPGA.com> or <http://www.Ohiopawpaw.com>
Contact the pawpaw discussion group: <http://groups.yahoo.com/group/Ohiopawpaw>
NAPGA Facebook page: <http://www.facebook.com/NorthAmericanPawpawGrowers>

Ambrosia Beetle and Fusarium Wilt, Part II, cont.



outside. The sticky mixture clings together as it is extruded from the entrance holes and has been commonly described as “frass tooth picks”. There are a number of ambrosia beetles that produce the tooth pick-like” symptoms. Ambrosia beetle galleries differ from those of other wood boring insects in that they are:

1. Uniform diameter, throughout
2. Free of borings or other refuse

3. Their walls stained black or brown.

Ambrosia beetles differ from the bark beetles in several ways. While bark beetles burrow in the phloem or at the juncture of the bark and sapwood, ambrosia beetles bore through the bark and into the sapwood.



The first signs of injury by the ambrosia beetle are the drooping, wilting, yellowing of the foliage on the terminals of infected twigs and branches. Upon close inspection will reveal the

presence of a tiny (1/8”) entry hole (shot-hole) on the underside of the affect branch.

All stages of the beetle may be found in infested branches. Small infestations of the ambrosia beetle can be controlled by pruning out the infested twigs and branches. Spraying is of limited value due to the overlapping generations.

Maintaining healthy trees and shrubs is the first line of defense against the ambrosia beetles attacking weak hosts. Maintenance includes:

1. Proper fertility
2. Proper soil pH
3. Adequate soil moisture

Long-residual sprays, if used, must be made to trunks and branches at short intervals throughout the growing season to provide complete protection of trees. Jerry Lehman in his article on ambrosia beetles mentions that there is a spray that can be applied to control ambrosia beetles when they are active.

Just like the term ambrosia beetles, the term ambrosia fungi don't refer to a specific group of fungi. There are a number of fungi that were adopted by the beetles during their evolution. *Fusarium* sp. is one such fungus. There are three basic features that define ambrosia fungi:

1. There are mechanisms assuring that the fungi remain predominant associates of a given ambrosia beetle, transmitted horizontally between generations in mycangia.

Ambrosia Beetle and Fusarium Wilt, Part II, cont.

2. The fungi are polymorphic producing filaments in the wood and a yeast-like morphology in mycangia.
3. The fungi provide nutrition to the beetles.

The fusarium wilt fungi are difficult to control. Schemes to eradicate the fungus are limited by the ability of the fungi to survive in soil for long periods, with or without a host plant, and the colonization of the vascular tissues within the plant. Once the fusarium fungus is introduced into a garden, nursery or field, it can live indefinitely in a variety of soil types, independent of any host plant. This ability to survive eliminates, as an effective control measure, any normal rotation program or general sanitation.



Symptoms of fusarium wilt are easily confused with root or crown rots, stem cankers, borer injury, drought, compacted or poor soil and two other widespread wilt diseases: Verticillium and bacterial wilt. Overall symptoms are the same, a wilting, withering, and dying of the foliage. Only by close observation and experience can you determine the true cause.

The typical symptoms of fusarium wilt include a drooping and yellowing of the leaves,



often starting on one side, and stunting of the plant. The disease symptoms often begin at the base of the tree and progress upwards, causing the leaves to wilt, wither, and die.

References:

- 1). University of Illinois Extension. RPD No. 650. "Fusarium wilt diseases of herbaceous ornamentals."
- 2). Wikipedia. :Fusarium wilt."
- 3). Lehman, Jerry. "Ambrosia Beetle." Pawpaw Pickin's, Vol 17, Issue 1, Spring 2017.
- 4). Powell, Ron. "Fusarium, Part I". Pawpaw Pickin's, Vol 15, Issue 2, Fall 2015.

Contact NAPGA or OPGA: <http://www.NAPGA.com> or <http://www.Ohiopawpaw.com>
Contact the pawpaw discussion group: <http://groups.yahoo.com/group/Ohiopawpaw>
NAPGA Facebook page: <http://www.facebook.com/NorthAmericanPawpawGrowers>

President's Patch by Ron, cont.

It is important and noteworthy to select fruits for specific purposes to help educate the public that a pawpaw is not just a pawpaw but a whole new world of "pawpaw" tastes and textures.

I prefer to plant different pawpaw cultivars from many different states and locations and let the results do the talking. I encourage all pawpaw growers to keep notes on ripening, productivity, unusual characteristics, uses, etc. of your pawpaw trees. I plan to continue to collect data from my farm and from the growers to add to my data base to be published in "Pawpaw Pick-in's."

The OPGA Annual Meeting is scheduled for May 19, 2018 at Wilmington College.

Nyomi's Delicious

By Blake Cothron

Hailing from Berea, KY (Madison County) is an interesting pawpaw cultivar worthy of more



attention. Nurseryman and NAPGA member Cliff England met an elderly woman named Nyomi who had this beloved tree growing in her backyard, and subsequently introduced it into the nursery trade.

It is early-ripening, usually ripening fruit in Berea by late August. Fruits show a light color break to yellow at ripening, and it tends strongly towards single-fruit bearing. Fruits are plump, of good size, medium-large, around 6-12 ounces or so. The fruits are delicate, so would need careful handling. Behind the thin skin is a delicious, thick and custardy flesh that is light-yellow, with a mild, agreeable and very pleasant, sweet flavor. The mild flavor would widely



appeal to people that are turned off by strong pawpaw flavors. I've never seen any sign of *Phyllosticta*, so the tree is possibly resistant; the fruits and leaves are very clean and attractive.

Overall, this cultivar deserves wider recognition as it has so many outstanding qualities being sought after these days. Commercially it would be an excellent choice, but does need careful handling. Overall it deserves greater recognition and is worth planting.

Blake Cothron is the owner of Peaceful Heritage Nursery, Crab Orchard, KY and can be reached at www.peacefulheritage.com.

Contact NAPGA or OPGA: <http://www.NAPGA.com> or <http://www.Ohiopawpaw.com>
Contact the pawpaw discussion group: <http://groups.yahoo.com/group/Ohiopawpaw>
NAPGA Facebook page: <http://www.facebook.com/NorthAmericanPawpawGrowers>

Asimina Webworm

Omphalocera munroe

This insect pest has the potential to become a serious pest of the North American Pawpaw (*Asimina triloba*). So far, the insect has been found in Florida, Indiana, West Virginia, Kentucky, North Carolina, Georgia, Alabama, Mississippi, Ohio and a few additional states.



The moth is a member of the Pyralidae family. The larvae feed on the leaves, buds, and twigs of *Asimina* species. The larvae create a leaf shelter from within they feed. The larvae full grown can be up to 2 inches in length. The female moth lays



eggs on the underside of mature pawpaw leaves in masses of up to 45 flat, yellowish eggs. The young larvae begin feeding in cohesive groups on the mature foliage at or near the top of the plant, as the larvae grow, the mass of larvae splinter into progressively smaller subgroups as the larvae grow. If the larvae strip the plant of foliage prior to completing development, they abandon their original plant in search of another pawpaw on which to complete development. The larvae consistently inflict severe

damage to their host plant, usually making such dispersal events common.

The feeding behavior has two survival techniques, i.e., leaf tying and gregarious feeding, which reduce the impact of natural enemies. The leaf shelters built of old leaves were more effective at reducing predators than those shelters built of young leaves. It is suspected that the old leaves maintain their shape where the young leaves wilted following feeding by the larvae. Because of the rigidity of the old leaves, it requires at least 20 caterpillars feeding in groups to pull and tie the leaves together.



In southern Ohio, I begin to look for evidence of the *Asimina* webworm caterpillar feeding late July. Once the caterpillars have tied the leaves together to create a shelter, it becomes very difficult for any chemical control to penetrate the shelter of caterpillars. Removing the caterpillar nests by pruning have been the most effective. I have been able to control the *Asimina* web worm population with this method.



References:

- 1). https://en.wikipedia.org/wiki/index.php?title=Omphalocera_munroe&oldid=691853315.
- 2). Damman, Hans. "Oviposition behavior and clutch size in a group-feeding Pyralid moth, *Omphalocera munroe*". *Journal of Animal Ecology* (1991), Vol 60, pp.193-204.
- 3). Damman, Hans. "Leaf quality and enemy avoidance by the larvae of a Pyralid moth." *Ecology* (Feb., 1987) Vol 68, No 1, pp. 88-897.
- 4). Chmiel, Chris. "Omphalocera muneoei: Leaf Rolling Caterpillar." *From the Pawpaw Patch*, Vol 10, Issue 2, Winter 2002.

Contact NAPGA or OPGA: <http://www.NAPGA.com> or <http://www.Ohiopawpaw.com>
Contact the pawpaw discussion group: <http://groups.yahoo.com/group/Ohiopawpaw>
NAPGA Facebook page: <http://www.facebook.com/NorthAmericanPawpawGrowers>

Looking back, I have a few pictures to share with you of some past activities.



Neal Peterson using the side bark graft on NA pawpaw trees at Fox Ridge Farm (top and bottom).



A deer fawn that we jumped along the road and immediately dropped to the ground.



Greg Hoertt and Tony Russell the NAPGA's two vice presidents digging holes and planting seedling pawpaws at the Gwynn Conservation Center in London, OH.

Contact NAPGA or OPGA: <http://www.NAPGA.com> or <http://www.Ohiopawpaw.com>
Contact the pawpaw discussion group: <http://groups.yahoo.com/group/Ohiopawpaw>
NAPGA Facebook page: <http://www.facebook.com/NorthAmericanPawpawGrowers>

Fruit Cocktail cake (unfrosted)

Serves 12 depending on how you cut it.

1 (18 1/4 ounce) box yellow cake mix (preferably with pudding in the mix, Betty Crocker)

1 (16 ounce) can fruit cocktail, including all but 1/4 cup of the juice

1/2 cup pureed pawpaw

1 cup coconut, plus

1/2 cup coconut for topping

2 eggs

1/2 cup brown sugar

1 cup chopped pecans (optional)

1. Preheat to 325*.

2. Combine cake mix, fruit cocktail with juices, 1 cup of coconut and eggs in a large mixer bowl.

3. Blend, then beat at medium speed for 2 minutes.

4. Pour batter into greased 9x13 pan, or two 8x8 pans.

5. Sprinkle batter evenly with remaining 1/2 cup of coconut, and then 1/2 cup of brown sugar.

6. 6. Bake at 325 degrees for 45 min for 9x13 pan; (about 30 to 35 min for two pans).

7. Serve warm or room temp; stays moist for several days. Refrigerate.

Baker's note: Diabetic Friendly: Use a sugar free cake mix, and use Splenda brown sugar mixed with 2 Tablespoons melted butter.

Gluten Free Friendly: Use white gluten free cake mix, bake at 35 min. at 350 degrees.



Greg Hoertt collecting scion wood for the members.

NAPGA/OPGA Dues

Please check with Ron (Botrytis@fuse.net) regarding your dues status or be sure to read the reminder in your E-News correspondence. Your membership dues are now collected on your anniversary date.

Please renew your membership in NAPGA/OPGA to show your support. Your continued support is needed to further the education and the promotion of North American pawpaws.

Go to www.Ohiopawpaw.com, for a membership form.

Membership dues are: **\$20.00 — family membership**
\$5.00 — student membership

Send dues to: **NAPGA / OPGA, Dr. Ron Powell**
6549 Amelia Dr., Cincinnati, OH 45241

NAPGA/OPGA Editor

visit us at our web sites:

www.NAPGA.com

www.Ohiopawpaw.com

Pawpaw Pickin's is published bi-annually by the NAPGA/OPGA, organizations dedicated to advancing the education and knowledge of North American pawpaw culture, encouraging the planting of pawpaws, the management of native pawpaws, and perpetuating the utilization of all NA pawpaw products.

Ron Powell..... President, Ohio
Greg Hoerrt..... 1st - Vice President, Ohio
Tony Russell..... 2nd Vice President, Ohio
Dave Simpson..... Treasurer, Ohio
Terry Powell..... Secretary, Ohio
Karen Sandorf..... Web Mistress, Pennsylvania
Dale Brooks.....Alabama
Mark Boone.....Michigan
Cliff England..... Kentucky
Gary Gottenbusch... Ohio
Jerry Lehman.....Indiana
Jason Neumann.....Ohio
Marc Stadler.....Ohio
Gene Pouly.....Ohio
Ron White.....Ohio

**Board of
Directors
& Officers
NAPGA/OPGA**

Contact NAPGA or OPGA: <http://www.NAPGA.com> or www.Ohiopawpaw.com
Contact the pawpaw discussion group: <http://groups.yahoo.com/group/Ohiopawpaw>
NAPGA Facebook page: <http://www.facebook.com/NorthAmericanPawpawGrowers>