

Midwest Nut Producers Council Journal

The Newsletter for Professional Chestnut Growers in the Midwest

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 Rogers Reserve at Michigan State University

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This program was developed with support from the Sustainable Agriculture Research and Education (SARE) program, which is funded by the U.S. Department of Agriculture - National Institute of Food and Agriculture (USDA-NIFA). The USDA is an equal opportunity provider and employer.

Chestnut cultivars for Michigan

By Professor Dennis W. Fulbright, Michigan State University (MSU) Department of Plant, Soil and Microbial Sciences

The short history of the Michigan chestnut industry can be found in its germplasm. When I look back at the Michigan chestnut industry over the past three decades, I see three major and distinct generations of chestnut orchards in the state. The first generation orchard was the establishment of the Chinese chestnut seedling orchards (seedling meaning non-grafted tree, not an age or size category). These orchards were composed of wild Chinese trees, many of them better fit for a Chinese chestnut forest than an orchard. A few trees emerged from these orchards as winners, but they needed to be grafted to other trees in the orchard or remain as sound, individual trees surrounded by less than optimal trees.

The second generation orchard chestnut tree was the European X Japanese hybrid grafted cultivars, such as 'Colossal' and 'Nevada', where 'Nevada' made the pollen and 'Colossal' made the nuts. It was quite a production orchard, but we soon discovered that 'Nevada' was too winter-sensitive for most areas in Michigan. We were then quickly directed to try a new pollinizer for 'Colossal' called 'Okei'. This cultivar lasted longer than 'Nevada', but it, too, proved to also be winter-sensitive for sustained growth in Michigan. Early on, we began telling prospective growers that they should not plant 'Nevada' or 'Okei' in Michigan. Surprisingly, there are still farms with 'Nevada' and 'Okei' producing pollen for 'Colossal', but there are fewer 'Okei' trees remaining in orchards now after last winter. We searched high and low for good pollinizers of 'Colossal', but we could not find



anything special. This is when we discovered that the replacement would certainly not be Chinese chestnut trees as their pollen caused the dreaded internal kernel breakdown (IKB) problem in 'Colossal'.

That forced us into the third generation of chestnut orchard: 'Colossal' and another similar cultivar called 'Bouche de Betizac' pollinized with two new pollinizer cultivars, 'Labor Day' and 'Precoce Migoule'. You will notice that 'Colossal' is always part of a good orchard as it is robust, vigorous and comes back strong from spring frosts and winter tip dieback (see Figure 1).

There are several improvements with this third generation orchard. Let's start with the pollinizers. Both 'Labor Day' and 'Precoce Migoule' can pollinize both 'Colossal' and 'Bouche de Betizac' as well as each other. This will be the first time that pollinizers are capable of producing good quality nuts in Michigan orchards. This means no more wasted space for trees that do not produce nuts.

Continued on page 2.

Chestnut cultivars for Michigan (continued)

This situation causes us to reformat the orchard plan. Instead of scattering the pollinizers within the orchard, as you might have with the 'Nevada' and 'Okei' cultivars, you now want the pollinizers next to one another so they can pollinize each other. The pollen should also be able to blow across a row or two to the 'Colossal' or 'Bouche de Betizac' trees, patiently waiting for their turn with the pollen. The best way to do this is to establish a pollinizer row or rows on the windward side of the orchard allowing the pollen to move across the orchard. Of course, there is a limit as to how far the pollen will have an impact. For that reason, there should only be two or three rows of 'Colossal' and/or 'Bouche de Betizac' before you plant another pollinizer row.

Since we are focusing on the new pollinizers, you should notice that 'Labor Day', because it's a Japanese chestnut, is chestnut blight-resistant (neither 'Colossal' nor 'Precoce Migoule' are blight-resistant).

We have not said too much about the addition of 'Bouche de Betizac'. This tree appears to be much like 'Colossal' in that it is pollen-sterile, yields well, has good nuts and is sturdy and upright in its growth, thereby taking up less room than 'Colossal' in a row. We have seen chestnut blight infect 'Bouche de Betizac'; however, the blight was found on the rootstock and the actual 'Bouche de Betizac' scion wood portion of the stem never really became infected (it was at the graft union so it was hard to say if the fungus ever grew on 'Bouche de Betizac' tissue or not). This bodes well for our label "tol", or "tolerant", as listed in the table below.

There is still one more very important characteristic that 'Bouche de Betizac' has that no other nut production chestnut tree has, and maybe you can tell what this characteristic is by looking at the table below. 'Bouche de Betizac' is the only chestnut cultivar resistant to Asian gall wasp. It's not just tolerant, but totally resistant (R). If chestnut trees in Michigan become infested with chestnut Asian gall wasp (some of you say it will happen, while



Figure 1. After the winter of 2013-14, some European X Japanese 'Colossal' trees sustained damage to their terminal buds. In this photo, you can see the dead terminal bud and new branches coming up from below the dead terminal with a female flower and typical male-sterile catkins on the new branch. In most cases, only a few inches of the terminal branches were killed. This caused the trees to push new growth from healthy buds six to 12 buds down the branch from the damaged terminal area. This is called lateral budding. Just like after spring frost, when the 'Colossal' trees are old enough, they will not only push the healthy lateral buds, but they will also flower on the resulting branches. That is not the end of the story, however. This flowering does not help if pollen is lacking in the orchard, so you must also think about the recovery and pollen production of the pollen-producing cultivars. Producing 'Colossal' female flowers without pollen is useless. Some growers have only one cultivar in their orchards. If the 'Colossal' flowers become asynchronous with the pollen from the single pollinizing source, trees and pollen may be too early or too late. Therefore, pollination may not occur due to this poor timing, or it may occur, but at such a late date as to not be effective and essentially resulting in partially filled nuts or floaters. Look at the table and all the new choices for pollen-producing cultivars that are or will soon be available. All this means is that an orchard must have controlled DIVERSITY – controlled by the grower who places the correct cultivars in the correct locations.

Chestnut cultivars for Michigan (continued 2)

others are more optimistic like me and don't think it will happen), those who plant 'Bouche de Betizac' will continue to harvest a crop of nuts. Those that don't plant this cultivar may get chestnut Asian gall wasp in their 'Colossal' and all other cultivars.

Another important aspect of this third generation orchard is that both 'Labor Day' and 'Precoce Migoule' produce early pollen, which is good for 'Colossal' and 'Bouche de Betizac' pollination, and they will also set mature nuts and drop them in mid-to late-September (hence the name 'Labor Day' because it's closer to Labor Day than Halloween!) This is important for two reasons. First, if you want nuts to take to market early, let's say you want to compete with the higher prices Ohio or Illinois might receive for getting their harvest to market earlier than you do, 'Labor Day' and 'Precoce Migoule' chestnuts should mature soon enough to help compete in that market. In a season like 2014 where nuts from every cultivar matured late, 'Labor Day' and 'Precoce Migoule' were still ready relatively early when compared to other cultivars. The second important reason to have early production is because of the threat of early fall frost. We know an early frost can come in the fall. If you still have nuts on your trees or on the ground when the nighttime low temperature drops to 26 degrees Fahrenheit, you are in serious danger of losing those nuts. Growers up north will have more trouble with this than southern growers, but it can happen in either location. Chestnuts will freeze at night and thaw with warming morning temperatures. In that period of time, the chestnuts will be ruined. It will not be noticed at first, but soon they will be leaky wet, gray, taste bad, and finally begin to stink. By having cultivars that come out of the orchard sooner, you will have some chestnuts available if an early fall frost hits.

Recapping, this third generation of chestnut orchards in Michigan will have more total cultivars, two pollinizers that will pollinize each other as well as 'Colossal' and 'Bouche de Betizac', and each tree has a set of

important characteristics that will help you when certain events occur, such as when chestnut Asian gall wasp finally appears or when we get a severe early winter frost. These are all important factors to keep in mind when establishing a new orchard, expanding an orchard or diversifying an orchard, which every grower should be doing.

The chestnut industry in Michigan is only about 15 to 20 years old. Some might argue that it is only 12 years old. It is hard to imagine that in such a short time we could have gone through three generations of chestnut cultivars. But when something is new, you must

learn about it and adjust. I have spoken to growers who set their orchard budgets and insist they will not add or change anything. This is the problem Europe faces right now with chestnut. Because they are happy with the cultivars they have grown for several decades (centuries?), they will not change to new chestnuts with better characteristics. For example, chestnut Asian gall wasp is rapidly spreading across Europe, yet it is hard to find growers who will plant 'Bouche de Betizac' because, as the growers say, "It is not what we grow here". Researchers find it difficult to work with the growers who do not want to change. Nature is always changing, and by manipulating genetic systems, we can change the orchards and keep up with nature while improving the crop.

That brings us to our most dramatic orchard generation, the fourth generation. A couple of decades ago, French researchers recognized the need to find root rot-resistant trees. Obviously, the root rot resistance would need to be in the roots of the tree. Since the

rootstock is generally not well characterized in chestnut – certainly not clonal as it is in apple and cherry – it would make no sense finding root rot resistance in a cultivar that would be grafted on top of a rootstock. The resistance, of course, would be useless as scion. Since rootstock, which is generally just seedlings from germinated,

open-pollinated nuts, researchers needed a way to clone the new root rot-resistant cultivars. So, they set out to find cultivars that would root through "rooted cuttings technology" AND be root rot-resistant. They found resistance in trees that could not be rooted and they found trees that could be rooted, but had inferior characteristics. Along the way, they found

a few trees that could be cloned, had acceptable quality nuts and acceptable nut production and, very importantly, could be rooted. Today, these are called 'Marigoule', 'Maraval' and 'Marsol'. These three can be used as clonal rootstock and grafted to your favorite cultivar. They also can be left to grow on their own. There is no real need to graft them. You can have the entire tree, roots, stems, branches and nuts be 'Marigoule', 'Maraval' and 'Marsol' from the rooted cutting. However, most European chestnut growers will not plant these cultivars. Why? Because, "It is not what we grow here". This is an attitude that transcends logic. Root rot is decimating the Italian chestnut forest. It is occurring in other countries from Turkey to Georgia. I have seen it. It is worse than chestnut blight. If they act now, they could plant these "new" cultivars while trying to stop the root rot in their current orchards (which probably will not happen), but most growers will not.

We don't have enough root rot in Michigan for it to make sense to plant

Nature is always changing, and by manipulating genetic systems, we can change the orchards and keep up with nature while improving the crop.

Chestnut cultivars for Michigan (continued 3)

these cultivars for root rot resistance. The attraction of 'Marigoule', 'Maraval' and 'Marsol' is that they provide growers with a clonal rootstock. Is that good? Clonal rootstock might be valuable if it works. If it works, then each and every time you employ it, you will have certain expectations in its performance. That is the power of cloning, whether it be grafting cultivars or rooting cuttings. If you look at the table below, you should see some beneficial traits in these cultivars (figures 2 and 3). They all produce pollen and, therefore, can pollinize each other and perhaps all the cultivars already in your orchard (we still have to check out pollen timing). They are supposed to have chestnut blight tolerance. They do not have resistance to chestnut Asian gall wasp; only 'Bouche de Betizac' has that. Whenever we saw these cultivars had been grown in Michigan last winter, they

survived the cold, even in orchards up north. This makes them candidates for at least rootstock, if not for cultivars. What don't we know? We don't know their yield when compared to 'Colossal' the same age. We are just now beginning to determine that. Should you purchase some when they become available? By all means. At first, they will be grafted onto rootstock just to get them into orchards. In a few years, if things go well, we may have rooted cuttings that can be left on their own roots, or grafted, giving you choices in your orchard.

Those growing Chinese chestnut will never need to be concerned with chestnut blight or winter hardiness (although the yields are reduced even though the trees are generally not as badly damaged as 'Colossal'). Chinese chestnut growers need to be concerned with two important issues: the time to first nut production and

yield. I am not talking about the yield 35 years from now, but the important times such as seven to 15 years after planting. Our data from MSU suggests you will obtain about 50 percent yield, at best, when compared to 'Colossal'. The cultivar 'Benton Harbor' has been an excellent grafted tree for production in Michigan trials. There are many benefits when using grafted Chinese cultivars as compared to seedlings. On the MSU campus, we have 12 Dunstan Hybrids, which are seedling trees – they are not grafted cultivars even though they have a name. These trees were planted in the mid-2000s. Of those 12 trees, only three produced any nuts: two were mediocre for production and only one of those three trees had better than average production. Yet there was no noticeable winter damage to these trees after the bitter winter of 2013-14.



Figure 2. Bill Nash standing next to the European X Japanese hybrid chestnut cultivar 'Marigoule' growing above the 45th parallel in Michigan in early September 2014.



Figure 3: Pictured is Dr. Dennis Fulbright standing next to a 'Marigoule' tree in July 2014 in northern Michigan. Winter-damaged trees can be seen in the background and on the right side of the photo. No winter damage was observed in 'Marigoule'.

A quick guide to cultivar characteristics found in Michigan orchards

Cultivar	Species	Pol	Yield	Quality	Blight	Gall wasp	Winter/Frost	Root rot
'Colossal'	ExJ	–	++++	+++	S	S?	R/S	S
'Nevada'	ExJ	+	–	–	S	S?	S	S
'Okei'	J x chinq	+	–	–	S?	S?	S	S
'Bouche de Betizac'	ExJ	–	+++	++++	Tol	R	R	S?
'Precoce Migoule'	ExJ	+	++	+++	S	S	R	S?
'Marsol'	ExJ	+	+++	+++	Tol	S	R	R
'Maraval'	ExJ	+	+++	++++	Tol	S	R	R
'Marigoule'	ExJ	+	+++	++++	Tol	S	R	R
'Labor Day'	J or Korean	+	++	++	R	S?	R	R?
'Benton Harbor'	Chinese	+	+++	+++	R	S?	R	R?

'Nevada' and 'Okei' were planted as pollinizers for 'Colossal' and are no longer recommended for planting in Michigan because of winter sensitivity

Blight: Tol = tolerant, the blight fungus grows, but it does not kill; R = resistant, no natural establishment of cankers; S = susceptible, natural establishment of cankers leading to branch, stem and tree death

Chestnut Asian gall wasp: R = resistant; ? not observed, but our best guess

Winter/Frost: S = will die in severe winters; R = not damaged during winter, but may be damaged in spring frosts; R/S = may die, but it's probably due to rootstock and not the cultivar

The more +, the better; – = poor

E = European chestnut; J = Japanese chestnut; ExJ = European/Japanese hybrid cultivar; chinq = chinquapin

Quality = quality of nut in terms of size, taste and peeling

Pol = pollen production; + = copious pollen; – = male sterile

Harvesting Michigan orchards

By Professor Dennis W. Fulbright, Michigan State University (MSU) Department of Plant, Soil and Microbial Sciences

I helped harvest my own field plots on campus this year and we obtained more than 1,000 pounds by Nut Wizard technology – it was slow and horrible work, just ask the undergraduates who helped – because the FACMA Italian harvester was out harvesting orchards during this time.

The FACMA harvester, which has now been purchased by Florida and Missouri growers, worked like a charm for us even though it was a wet harvesting season. One grower, who had about 16,000 pounds of nuts to pick up this year, picked up 8,000 pounds by hand (Nut Wizard) and 8,000 pounds by FACMA harvester. The difference was that the 8,000 pounds picked up by hand took about one week to do and the 8,000 pounds by FACMA took a day and a half. During that week of hand harvesting, the quality of nuts goes down while the nuts lay on the ground because they are preyed upon (sometimes only

half-eaten) and get walked on making them more difficult to harvest. Two people using the FACMA harvester can do, most years, in one or two days what it takes a crew to do in one week. There should be a way to share one of these harvesters among a few large growers in one region of the state. Ours is used exclusively for research, and I think that next year the FACMA harvester will be harvesting the research plots first.

FACMA has new technology available and it will be showcased at the Michigan Nut Producers Council (MNPC) annual meeting on Saturday, March 14, in Clarksville. I keep telling FACMA that they are missing out on an advertising opportunity by not emphasizing the most important aspect of the FACMA harvesting system. They like to point out what they think is important, but I tell them the most important thing about the

machine is that it not only picks up the nuts, but it separates the full nuts from the flat nuts, as well as the nuts from the burs and other debris. It will not open up closed burs, but if the bur is open and a nut or two are still inside, there is a good chance the nuts will fall from the bur. A two-person operation, debris cleaned from the nuts, flat nuts separated from full nuts, and a very fast harvest time. What more can you ask for?



MSU Farm Manager Mario Mandujano tests the FACMA Cimini 180 chestnut harvester on a Michigan chestnut farm. A total of 8,000 pounds of nuts were harvested in a day and a half. (Photo credit: MSU Department of ANR Communications Video Unit)

Chestnut weevil, a potential pest of Michigan chestnuts

By Erin Lizotte, Michigan State University (MSU) Extension Integrated Pest Management Educator

The most important insect pest of chestnut trees in the central-eastern United States is the lesser chestnut weevil (*Curculio sayi*). Large chestnut weevil (*C. caryatrypes*) is also an important pest, but is less prevalent. These pests have not yet been a significant problem for Michigan producers, but as acreage expands in the state, growers need to be actively scouting for chestnut weevil. Large and lesser chestnut weevil are native weevils and are host-specific, only infesting tree species in the genus *Castanea* (American chestnut, Chinese chestnut, European chestnut and chinquapin). Lesser and large chestnut weevil both lay eggs on developing nuts and the larvae feed within the nut, compromising the kernel. If left unchecked, these weevils can infest and destroy the majority of nuts produced in an orchard. The natural range of these pests mirrors the natural range of American chestnut (*Castanea dentata*) in the Central and Eastern United States. When the American chestnut stands collapsed due to chestnut blight (*Cryphonectria parasitica*), the populations shrunk to small pockets of the United States where chestnuts are present. The prevalence of these pests in Michigan is unknown at this time, but weevil larvae have been found in chestnuts at harvest.

Lifecycle

Michigan producers have had very little experience with chestnut weevil and at this time no formal research has been done on the lifecycle of this pest in Michigan. However, based on research out of Kentucky and Missouri as well as the experience of Michigan growers, we can make some educated estimations about the chestnut weevil's lifecycles under Michigan conditions.

Lesser chestnut weevil adults likely emerge from the soil during two separate periods in Michigan, once in spring around bloom (May-June) and again in late summer and early fall just before burs open (September-October). Weevils that emerge in the



Larger chestnut weevil is 3/8-inch long, the snout is 3/8- to 5/8-inch long. Photo credit Todd Leuty OMAFRA.

spring can be observed feeding on catkins. When the catkins decline, the population disappears. It is unknown if these spring weevils return to the soil or move off to feed on other plants. In September-October, a second wave of lesser chestnut weevil emerge. As burs begin to open, the majority of egg-laying occurs for both the spring- and fall-emerging adult weevils. Eggs are typically deposited in the downy lining surrounding the nut and hatch in approximately 10 days, at which time the larvae feeds on the kernel and develops within the shell. After two to three weeks, larvae chew an exit hole in the nutshell and drop to the soil. The majority of the weevils will overwinter as larvae the first year, pupate in the soil the following fall and overwinter as adults. The total lifecycle is completed in two to three years.

Large chestnut weevil adults likely emerge in August or September under Michigan conditions and begin laying eggs in immature burs almost imme-

diately after emergence (well before lesser chestnut weevil begin laying eggs). Eggs hatch in five to seven days and the larvae feed and develop within the nut for two to three weeks before chewing a small exit hole and leaving the nut. The large chestnut weevil larvae usually exit the chestnut before the nuts drop to the ground and overwinter in the soil. Pupation and adult emergence takes place the following summer, a small population of larva may overwinter a second winter before pupation. The total lifecycle is completed in one to two years.

Identification and Detection

Lesser and large chestnut weevil both have robust bodies and are dark brown or tan with brown mottling or stripes. Lesser chestnut weevil is 1/4-inch in length, with a snout of equal or greater length. The body of the large chestnut weevil is 3/8-inch long, the snout is 3/8- to 5/8-inch long.

Scouting for chestnut weevils should begin just before bloom. Pas-

Chestnut weevil, a potential pest of Michigan chestnuts (continued)

sive traps (circle traps on the trunk or pyramid traps, one per acre) can be used to capture ascending weevils; these traps should be set well before bloom occurs and checked twice a week. Scouting for weevils using a limb-tapping technique can also be done. Place a light-colored sheet under the limb you are sampling and tap the branch with a padded pole or stick. Jarring the branch causes the weevils to drop from the tree onto the sheet. Weevils "play dead" when disturbed, so don't be fooled if they all appear dead; they will reanimate within a few seconds. Chestnut weevils are substantial in size and should be easily visible if present. Growers should sample at least 10 branches per acre. Scouting locations should include both the edges and interior of orchards as well as any hotspots that are identified.

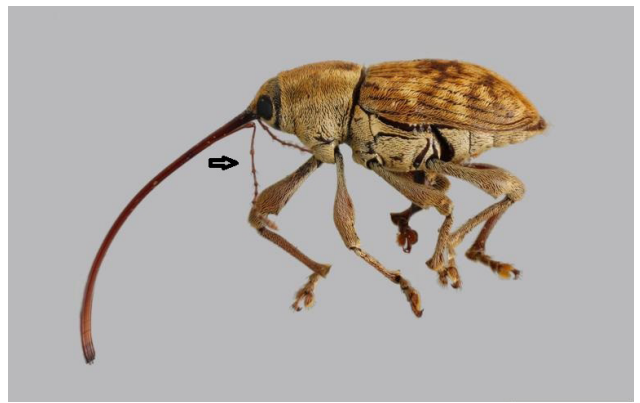
Management

There are chemical, cultural and postharvest treatments available to control chestnut weevils. Ideally, a combination of cultural and chemical management would control the pest and eliminate the need for postharvest treatment which can diminish quality and the marketable yield.

Sanitation is an important part of managing these pests. Collecting and destroying fallen nuts will remove developing larva from the orchard. Insecticide applications for control should target the two later windows of potential adult activity: August-Sep-

tember (large chestnut weevil adult emergence) and September-October (lesser chestnut weevil fall adult emergence). Growers are cautioned against applying pesticides during adult activity in May-June (lesser chestnut weevil spring adult emergence) as bees are often foraging in the orchard at that time. Carbaryl (Carbaryl 4L, Sevin 4F, Sevin 80S, Sevin XLR Plus, Sevin SL) is the only insecticide labeled against chestnut weevil. The manufacturer recommends making four weekly applications beginning in late July to control adults when the burs are present and vulnerable. However, based on the development of chestnuts under Michigan conditions, growers may want to wait until August to begin applications. Growers will have to carefully budget the three to four applications of carbaryl available as the period of bur exposure is long. Applications should only be made in response to positive identification of the weevil with regular scouting.

Thorough and frequent scouting is essential for optimal management, particularly with the lack of information regarding chestnut weevil behavior and prevalence in Michigan. Well-



Lesser chestnut weevils are ¼-inch in length and appear orange to brown in color with a snout longer than the length of their body. Photo by Jennifer C. Giron Duque, University of Puerto Rico, Bugwood.org

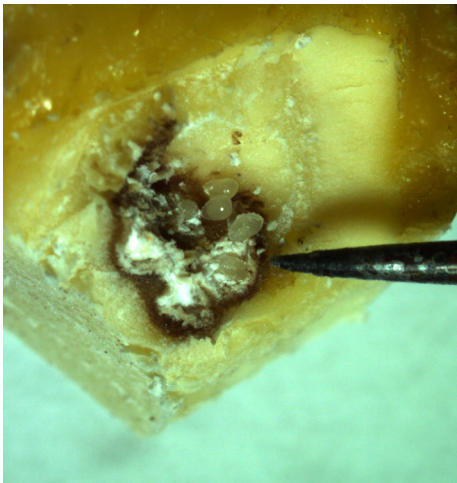
timed applications, good sanitation practices and scouting will be the key to successful chestnut weevil management in Michigan.

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Left: Lesser chestnut weevil eggs.

Right: Chestnut weevil larva emerging from the chestnut shell.

Michigan chestnut industry is still No. 1

By Professor Dennis W. Fulbright, Michigan State University (MSU) Department of Plant, Soil and Microbial Sciences

After the 2012 Ag Survey results were released, Michigan still leads the nation in total acreage of chestnut farms and number of growers. Though

the last survey done in 2007 showed the same results, this time Florida is right on our heels. Florida actually has more acreage and more farms of nut-bearing age, but when you add in our non-bearing age trees, Michigan has more farms and more acreage. In addition, Michigan survey numbers did

not include a 70-acre parcel planted in fall 2013. This orchard near Pawpaw will soon be the largest single chestnut farm in Michigan with more than 5,000 trees.

Total USA	Totals		Bearing Age Trees		Non-bearing Age Trees	
	Farms	Acreage	Farms	Acreage	Farms	Acreage
2007	1200	3334	845	2072	538	1262
2012	919	3784	591	2406	526	1378
Some states						
California	59	507	53	428	20	79
Florida	111	592	89	447	50	146
Illinois	17	55	9	24	12	31
Iowa	35	191	13	47	30	144
Missouri	34	199	25	76	24	124
Ohio	41	239	21	128	28	111
Oregon	70	358	61	274	34	84
Washington	18	57	13	(D)	12	(D)
Michigan	115	617	79	442	54	175

Clarksville Yields Up After Bizarre 2014 Growing Season

By Professor Dennis W. Fulbright, Michigan State University (MSU) Department of Plant, Soil and Microbial Sciences and Farm Manager Mario Mandujano, MSU Rogers Reserve

Since 2002, we have been monitoring the yield of chestnut trees planted at the Michigan State University (MSU) Horticultural Research Station in Clarksville. Not known for its superior weather conditions or soil type, Clarksville was completely different than our Benton Harbor and

Traverse City plots. Over the years, the Clarksville plot has provided us with good information as to how well the European X Japanese hybrid chestnut cultivar 'Colossal' yields in a "typical" farm-like setting. We have kept track of the yield by collecting and then taking the average of the nuts on the ground around two, three or four trees adjacent to one other. For example, if four trees were planted together and dropped 200 pounds of nuts total, the average yield would be 50 pounds

per tree for those four trees. Last year (2013), the yield took a small dip from the yields obtained the previous year, a first since the plot was established. This year (2014), after the horribly long and cold winter, cold spring, and wet and cold summer, we were wondering how the trees would yield. Here we provide you with a preliminary report on the yield at Clarksville compared to the previous two years.

Description of trees	2012 pounds/tree	2013 pounds/tree	2014 pounds/tree
1st row, 'Colossal' trees 7 & 8	45	45	86
1st row, 'Colossal' trees 13-16	33	22	55
2nd row, 'Colossal' trees 9 & 11	40	44	58
3rd row, 'Colossal' trees 5, 7 & 8	55	44	80
3rd row, 'Colossal' trees 13-16	28	25	68
4th row, 'Colossal' trees 2-4	37	22	67
4th row, 'Colossal' trees 9-12	50	50	70
3rd row, 'Labor Day' trees 9-12	10	3	22
4th row, 'Benton Harbor' trees 5-8	23	12	19
5th row, 'Bouche de Betizac' trees 13 & 15 2006 planted	11	18	20

UPCOMING EVENTS

Dec. 9-11

Great Lakes Fruit, Vegetable and Farm Market EXPO

DeVos Place Convention Center, Grand Rapids, Mich.

Visit with experts at the Roger's Reserve booth (#1536 on the trade show floor) about chestnut and pawpaw cultivation. An afternoon chestnut educational session on Tuesday afternoon, Dec. 9 will feature the following topics and speakers:

- **Chestnut Germplasm Update**

Dr. Dennis Fulbright, MSU Department of Plant, Soil and Microbial Sciences

- **The ABCs of Cultivating Ginseng (as an understory crop for chestnut)**

Drs. Mary Hausbeck and Blair Harlan, MSU Department of Plant, Soil and Microbial Sciences

- **Pesticide Considerations for Chestnut Growers**

Erin Lizotte, Michigan State University Extension Integrated Pest Management Educator in Cadillac, Mich.

March 14, 2015

Midwest Nut Producers Council Annual Meeting

Clarksville, Mich.

A Saturday in May 2015 (TBD)

Chestnut grafting will be demonstrated at a grower's farm.

This will not be a grafting class or school, but an excellent opportunity to see how top working of chestnut nut trees is done.

Saturday, June 20, 2015

How to produce rooted cuttings of chestnut.

Location and times to be announced. Spanish and Italian researchers will come to Michigan to share how they root chestnut cuttings for orchard-style chestnut farms.

MIDWEST NUT PRODUCERS COUNCIL JOURNAL

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Editor: Sara Long Write Way Creative, LLC - Lansing, MI

Design and layout: Celeste Harned Celeste Communications - Paducah, KY

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