

A few more 20 acre farms every year.



Yields in 2015

With 2 years of horrible temperatures, the MSU Clarksville plot was down 25% from 2014, but 2014's yield was the highest ever recorded at Clarksville. Even though it was down in 2015 compared to 2014, Clarksville still experienced its second highest yield ever at the Clarksville cultivar trial (most of the trees were Colossal and in their 14th growing season).

The average 'Colossal' tree produced 52 pounds in 2015 and 68 pounds in 2014.

Average number of pounds per tree by cultivar at Clarksville, Michigan for 14 growing seasons by year.

Cultivar	Species	Date planted	05	06	07	08	09	10	11	12	13	14	15
Colossal	Euro/Japanese	2002	2	3	31	27	8	36	30	40	32	68	52
BdB	Euro/Japanese	2006	-	-						11	19	20	18
LD	Japanese	2002	2	1	43	39	7	8	24	10	6	44	19
BH	Chinese	2002	1	1	42	5	5	11	2	23	12	19	30

Abbreviations: BdB = 'Bouche de Betizac'; LD = 'Labor Day'; BH = 'Benton Harbor'

Asian Chestnut Gall Wasp

2015

ACGW, *Dryocosmus kuriphilus* was found in Michigan in June 2015 despite a quarantine banning nursery stock from states with ACGW. It was found on Chinese chestnut trees at 10 sites in southwestern Michigan. The presence of new and old galls at multiple sites indicated it has been present for more than two years.

Also verified the presence of the parasitoid *Torymus* spp. in some galls using PCR techniques

Trapping studies revealed that the adults began emerging from the galls in late June/early July and abruptly ended emerging at the end of July.

2016

Expanded its range by 30 miles to the north moving toward South Haven.

European studies indicate that the European X Japanese hybrid cultivar 'Bouche de Betizac' is immune to infestation and the European X Japanese hybrid cultivar 'Colossal' is susceptible but infestations were considered minimal. Marigoule, Marsol and Maraval were heavily infested in Europe.

One year results from Michigan verify— 'Bouche de Betizac' is resistant, however, 'Colossal' has moderate to heavy infestations based on number of galls per branch (not based on yield loss, yet)

Marigoule, Marsol and Maraval have very light infestations

'Labor Day' is severely infested.

Chinese chestnut seedlings and grafted germplasm such as 'Benton Harbor' are variable. BH has lots of pollen

Rooted Cuttings of Chestnut

- **Began attempts to root cuttings in 2015**
- **Continuing with this work**
- **Will be limited to certain cultivars at first**
- **Will attempt to root other cultivars**
- **Combination of tissue culture and greenhouse work**

Rooted cuttings

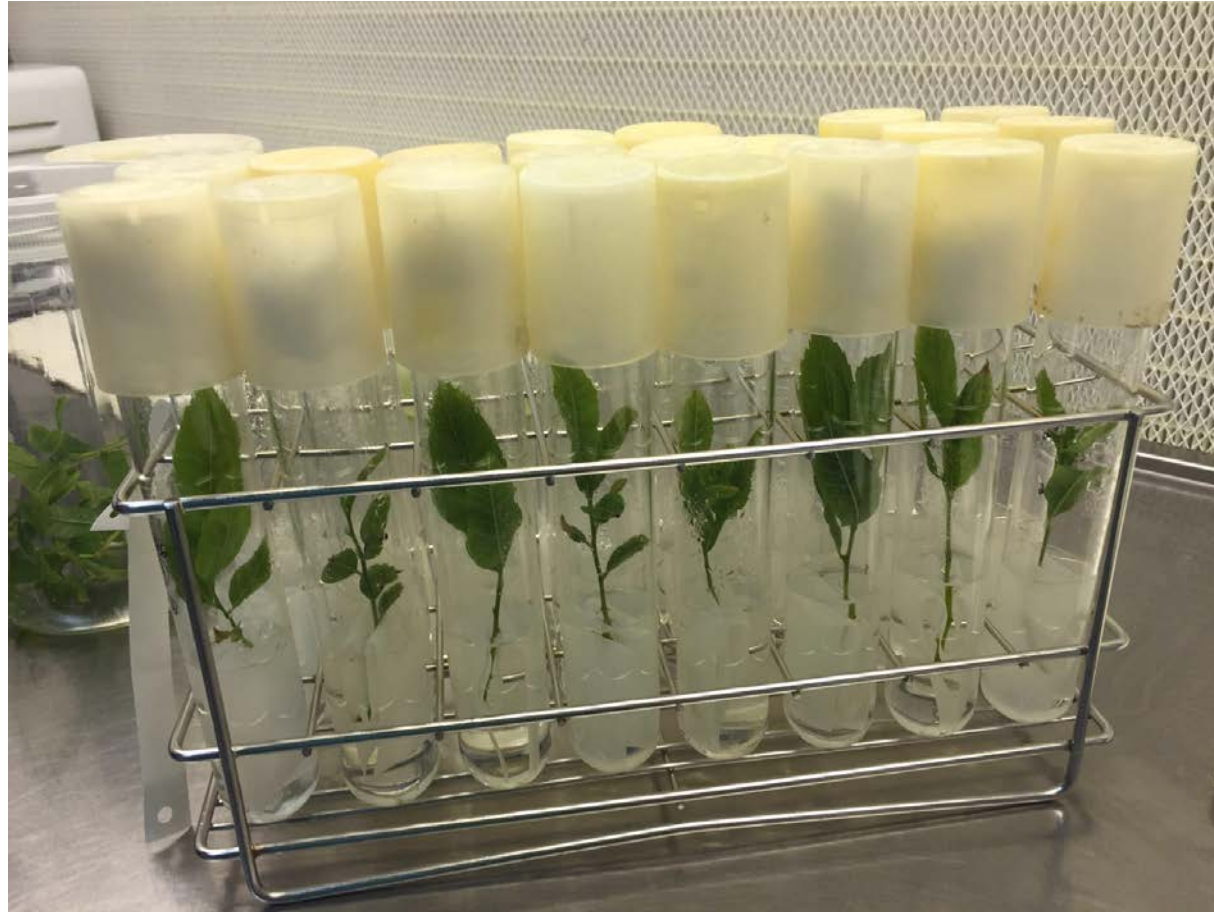


Dr. Carmen Medina is leading the tissue culture work





Rooting medium



Rooting the tissue cultured plants requires patience during acclimatization to the greenhouse



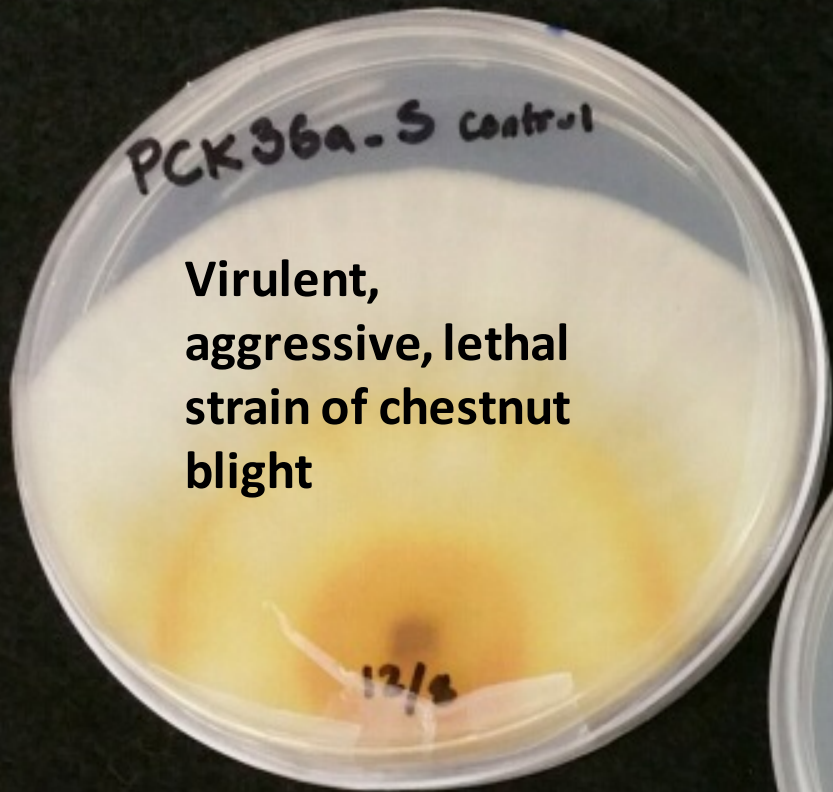
Mario Mandujano is doing this work



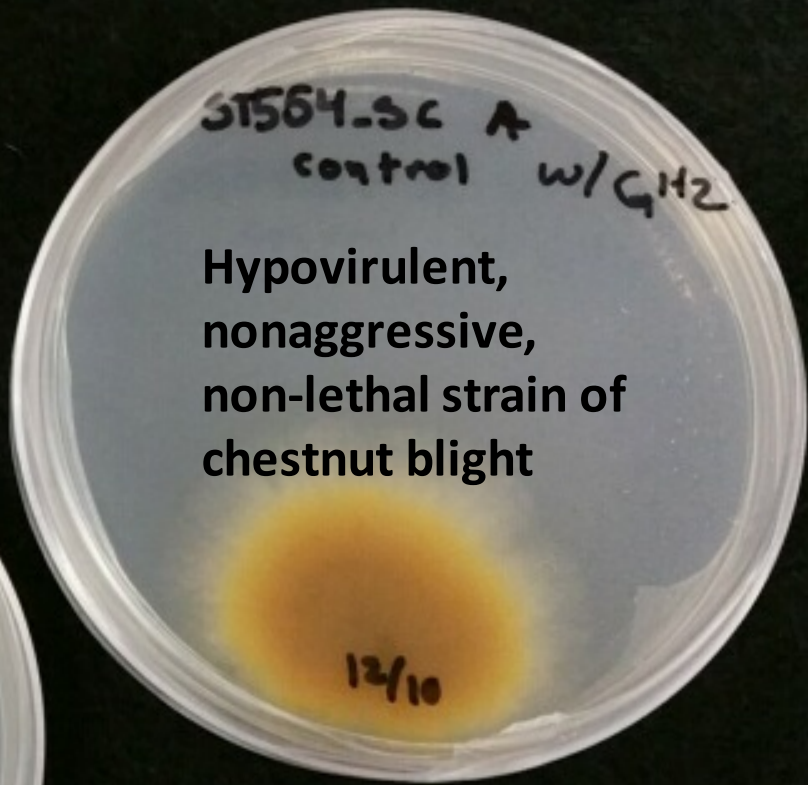
We are attempting to turn the biological control called hypovirulence into an EPA registered biopesticide for public use

Canker treated with hypovirulence has callus at the edges. We use on American chestnut and in the Colossal orchards.

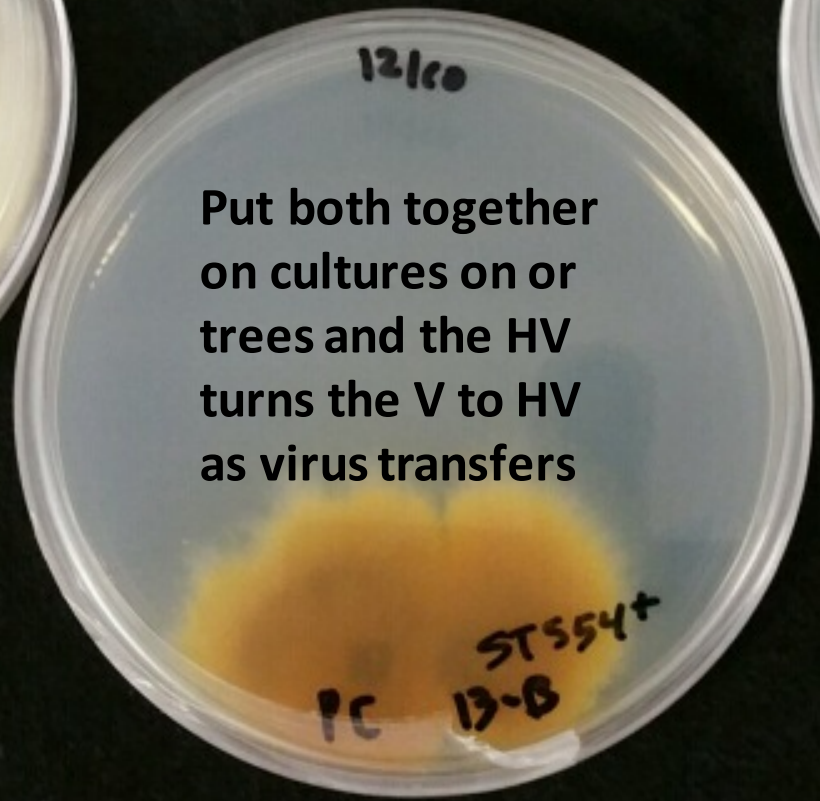
Funded by USDA IR-4 program



Virulent,
aggressive, lethal
strain of chestnut
blight



Hypovirulent,
nonaggressive,
non-lethal strain of
chestnut blight



Put both together
on cultures on or
trees and the HV
turns the V to HV
as virus transfers



Dr. Josh Springer, treated Bill Nash's American chestnut trees with hypovirulence. You should see some treated cankers on the trunks and the top of the tree is intact.



Harvesting

FACMA Harvester self propelled

- It is now a relatively old fashioned unit as FACMA has made new designs
- Relies less on vacuum and more on mechanical pick up. Brushes push nuts into head that moves the nut to a conveyor. Conveyor takes nuts into the cleaner where vacuums are still used to sort and clean.
- Growers should understand that FACMA units both pickup and clean/sort.
- Still use it, and plan to use again in 2016
- Not too useful in rain
- Sand can build up in the unit. A flat orchard floor with short grass is required.
- Our small self-propelled model can harvest about 3 to 4 tons in a day

