501(c)3 organization

North American Truffle Growers' Association

Quarterly Newsletter

Summer 2018

TRUFFLE-HUNTING.

NATGA neither supports nor endorses any specific nursery, growing methods or approaches, business model or technology related to trufficulture. We endeavor to bring to the membership the breadth of knowledge available from multiple sources from which each member can choose. Membership by a nursery, scientist, vendor, etc. does not imply endorsement by NATGA.

A Letter From the President

Hi all!

I don't know about you all but we are getting quite a bit of rain up here in Virginia. I hope this means we will be seeing lots of big fat truffles in the ground come this winter! The Executive Committee is busy putting together the upcoming Winter Conference. So far we have our speakers: Marcos Morcillo of Micologia, Inc., Gavin Booth of Australian Truffle Traders, and Dr. Gregory Bonito from Michigan State. The conference will be in Asheville this year and will include a dog training seminar and truffle dog competition the Friday before the Growers' Forum. More info to come

—Olivia Taylor

Your Executive Committee

President—Olivia Taylor Vice President- Vitaly Baron
Secretary—Miriam Skinner Treasurer- ?

Don't Forget!!!!

Summer Meeting 2018

Saturday

August 18th, 2018 from12-4pm

The Garland's

3020 Ode Turner Road

Hillsborough, NC 27278

Bring your favorite dish and your bathing suit (THEY HAVE A POOL!)

If you are new to NATGA, come meet other members in an informal and fun atmosphere! We will be discussing topics for the 2019 Conference, the truffle dog database, seedling certification , and NATGA sponsorship

Attention !!!!!!

NATGA is still in need of a treasurer!!!!

Due to unforeseen circumstances Hindy could not continue on as treasurer

If you are interested please contact Olivia Taylor at livmartin50@hotmail.com

The latest in truffle science

CO-CROPPING TRUFFLES: RECENT RESEARCH ON USING PECAN TREES AS A HOST

The Pecan tree as a Potential Host

Co-cropping truffles with a product of the host tree has attracted attention in recent years (Marozzi et al 2017, p. 308).A frequent choice among American growers interested in co-cropping a truffle orchard is to plant the common hazelnut (*Corylus avellana*) inoculated with spores of the black Périgord truffle (*Tuber melonosporum*). In the western U.S., Douglas fir (*P.inus menziesii*), Grand Fir (*Abis grandis)* and Noble Fir (*Abis procera*) are inoculated with spores of the Oregon Winter truffle (*Tuber oregonense*). In the first case the companion crop is hazel nuts while, for the Fir trees, the commercial crops are Christmas trees and lumber [**fn 1**].

Another possible substitute host that has been the subject of a good deal of attention recently is the pecan tree (Carya illinoiensis). Native pecan trees range from south Indiana to Kentucky and Alabama and from Iowa south to Texas. Annual sales of pecan nuts (actually drupes) grown in the United States have totaled over $560 million in 2015 with eleven states having sales in excess of $1 million per year (USDA 2016). Pecan wood is also highly valued. Being native to the U.S, the pecan tree also exhibits some resistance to common diseases. Finally, pecan truffles (*T.uber lynoii)* have been widely reported to grow as volunteers in pecan orchards.

Evidence of Co-Cropping Potential

(Bonito, et al 2011) shows in clinical tests that pecan seedlings are receptive to the spores of native truffle species especially the pecan truffle. truffles. All of these studies employed inoculation and morphological and molecular testing procedures consistent with current protocols. Benucci et al (2012) and Marozzi et al (2017) followed this work to demonstrate the clinical feasibility of establishing ectomycorrhizae (ECMs) on pecan seedlings from the spores of non-native species such as the Périgord, the Burgundy (*Tuber aestivum*), the Bianchetto (*Tuber borchii*), and the winter black truffle (*Tuber brumale*)

In the Benucci et al. study, separate pecan seedlings were inoculated with the spores of the Burgundy, Bianchetto and smooth black (*T.uber macrosporum)* truffles. ECM levels were estimated both visually and with the relative abundance valuation methodology. Genomic DNA was then extracted and the ITS region of the nuclear ribosomal DNA was sequenced to verify the species identification.

Science continued. . ....

The test indicated a colonization level of 62% by Bianchetto spores and a 42% level for the Bianchetto. There was no indication of colonization by the smooth Black truffle.

In the Marozzi, et al. study, separate pecan seedlings were inoculated with the spores of the Périgord and Brumale ruffles. Mycorrhization rates were recorded for two years. In the first year, well-formed ECMs had a level of root colonization of 37.7% for the Périgord and 34.5% for the Brumale truffle. After twenty four months, however, the level of mycorrhization decreased for the Périgord to 11% while increasing for the Brumale truffle to 49.4%.

With co-cropping income from one companion crop might help to offset an unexpected decline of income from the other. It is advisable to consider the closing comments in Benucci, et al , "...we have shown that...important European truffle species...formed healthy well-colonized ECM with *C. illinoiensis* in a nursery setting. Additional studies are needed to address whether Tuber ECMs are maintained when seedlings ae planted out in an orchard setting, and whether these truffle species will fruit with pecan.", which remind readers that the results reported are for a clinical study only and that the compromises necessary to produce two crops might lower, rather than increase, profits:

Another important consideration is whether the management of commercial truffle and pecan orchards is compatible....[Some] trees may be at risk of foliar, fruit or root disease and may require the use of biocides....In some cases fertilizers are used to boost production or reduce disease symptoms. These applications are likely to adversely affect the truffle symbionts and other belowground microbes...." (p.390)

FOOTNOTES

fn1: This common hazelnut - Périgord combination makes economic sense since both the truffle and the nut are highly valued. Early plantings of this species, however, proved susceptible to the Eastern Filbert Blight caused by the fungus *Anisogramma anomala*. This Blight has now reported to also be present in some Western states as well. The response of prospective growers to this problem has been to either choose hybrids of the common and American hazelnuts (Corylus Americana) which appear to offer greater resistance or to substitute the less valuable American hazelnut as the host.

American hazelnut trees are native to the eastern half North America from Louisiana to Georgia in the south, to Manitoba and Quebec in the north. They are hardy, disease resistant and are very tolerant of a wide range of growing conditions. The native nuts tend to be small and are not as tasty as the common hazelnuts grown in Europe.

fn2: Studies of the Périgord have demonstrated it to be an obligate outcrosser and that the fruiting body is the result of a union of haplotypes belonging to opposite mating strains. This implies gamete fertilization is required for the fruiting of this truffle (Rubini et al. 2011). Details pertaining to fertilization events, however, are not completely resolved at this time.

REFERENCES

Benucci, Gian M.N., et al. "Mycorrhization of Pecan Trees (C. illinoinensis) with Commercial Truffle Species: T. aestivum Vittad. and T. borchii Vittad." *Mycorrhiza* (2012) 22: 383-392.

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Grupe, Arthur C., et al. "The Pecan Truffle (T. lyonii): A Gournet Truffle Native to the Southeastern United States" University of Florida IFAS Extension (2016) Doc. PP330.

Marozzi, Giorgio, et al. "Mycorrhization of Pecan (C. illinoinensis) with Black Truffles: T. melanosporum and T. brumale" *Mycorrhiza* (2017) 27: 303-309.

Rubini, A. et al. "Isolation and Characterization of MAT Genes in the Symbiotic Ascomycete T. melanosporum" *New Phytol* 189:710-722.

USDA. *Non-Citrus Fruits and Nuts 2015* 2016

Article review by Raymond Price

Truffle Dog Application

Now available on the website! Register your trained truffle dog with NATGA . NATGA is developing a database of trained dogs local to growers who do not have dogs of their own. This of course is voluntary

NATGA Trained Truffle Dog Application

Owner Information

Owner(s) Full Name _____ Date_____
Last *First* *M.I.*

Address _____
Street Address *Apartment/Unit #*

_____
City *State* *ZIP Code*

Phone _____ Email_____

Company Name (if applicable) _____ Active Member of NATGA (if yes, since)_____

Certification/ License(s) held associated w canine training or search related activities _____

Willing to travel? YES ☐ NO ☐

If yes, please list max distance or areas willing to travel _____

Dog(s) Information

Dog Name _____ Age_____

Breed _____ Neutered/Spayed/Intact (please circle which applicable)

Trained on truffles? YES ☐ NO ☐ Variety of truffle(s)_____

Years trained _____

Experience searching truffiere(s)? YES ☐ NO ☐ If yes, please explain _____

Other pertinent info regarding this dog _____

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