



Truffle Association of British Columbia

Winter 2005

Greetings from the directors:

President: Sharmin Gamiet

Vice President: Quentin Wyne

Secretary: Richard Winder

Treasurer: Sue Gordon

Newsletter Editor: Shannon Berch

It's membership renewal time! Please complete and mail in the form on the last page to maintain your membership.

We Have Funding (Provisionally)!

In the fall 2005, the TABC applied to the Federation of British Columbia Woodlot Associations, Agroforestry Industry Development Initiative, for funds to support a project entitled *Establishing Périgord Black Truffle Production in BC*. In late November, we learned that our application had been provisionally approved.

The goal of this project is to determine whether a Périgord black truffle industry can be established in BC by carrying out a scientifically-sound research and development program in cooperation with producers in the province. If we determine that Périgord black truffles can be produced here, the TABC will provide continued support to the producers.

The specific objectives of the project are:

1. Development and distribution of a best practices guide on host tree seedling inoculation and monitoring for current and future truffle producers.

2. Development and implementation of a research framework for establishing, monitoring and publishing data relating to the establishment of truffle plantations.
3. Development and distribution of plant health protocols to minimize the risk of disease introduction or transfer.
4. Development and implementation of a certification process for the verification and classification of truffle species at planting, and for subsequent quality assurance reporting to industry and consumers.
5. Exploration and development of short term agroforestry products from truffle orchards.

More information on this project will be provided at the TABC AGM.

4th International Workshop on Edible Mycorrhizal Mushrooms held in Murcia, Spain, Nov 29 – Dec 2, 2005

www.iwemm4.com/bienvenida/bienvenidae.asp

Members of TABC (Sharmin Gamiet, Shannon Berch, Quentin and Cathy Wyne, Bill Stewart) attended this well-organized and fabulously informative meeting and brought back with them the latest information on truffle production world-wide.

Participants came from many parts of the world including Spain, Canada, Italy, Portugal, France, Australia, New Zealand, USA, England, Ireland, Switzerland, China, Mexico, Japan, Morocco, Korea, Hungary, Chile, and Finland.

There were presentations on the production of truffle-colonized plants, on the diversity of native North American truffles, on the inoculation of adult hazelnut groves with truffles, on the methods used in

France for truffle production, on the development of a truffière in Chile, and much more.

Shannon Berch made a presentation on the TABC and our plans for introducing the Périgord black truffle into British Columbia.

More on the conference will be discussed at the TABC AGM.

First Italian Lagotto Truffle-Scenting Dog in New Zealand

www.scoop.co.nz/stories/CU0601/S00008.htm

NZ Kennel Club member Robert Rangi and his family are overjoyed to welcome Marcello to their Papakowhai home, just north of Wellington. The 12-week-old puppy is the first purebred Italian Lagotto dog in New Zealand. The breed originated in the Romagna region of northern Italy in the 1300s. Originally a water dog hunting gamebirds, the breed is now used to sniff out truffles.

Lagotto Romagnolo are bred and therefore available in Canada, though the breed is not recognized by the Canadian Kennel Club.

Quality Evaluation of Inoculated Truffle Trees

These comments were contributed by Charles K. Lefevre, Ph.D of New World Truffieres to a discussion about seedling quality that came up around the last Truffle Association of BC meeting.

I know from my own results that it is possible to set the tolerance for contamination very low. I very seldom see contaminated trees. The standards for colonization rates are a bit more difficult. I see wide variation in colonization rates for individual trees, although in a good batch of trees that has not had serious problems there will be few poorly colonized trees.

I generally use a five point semi-quantitative scale that I can use to rapidly and non-destructively check seedling. The speed of the method allows me to check a large fraction of the seedlings. In fact, until this year I have checked every seedling I have sent

out rather than taking a statistical sampling. This year there are too many trees and I will have to sample them.

Any contaminated tree is automatically culled and is not evaluated for colonization. The five colonization levels are:

Zero: no mycorrhizae observed.

Poor: Mycorrhizae observed, but I have to look for them and the proportion of colonized root tips is low (~<15%)

Ok: Mycorrhizae present and I am able to find them within a few seconds, but colonized tips are substantially less abundant than non-colonized tips and/or mycorrhizal tips are not well distributed (~15-30% colonization).

Good: Mycorrhizae abundant throughout the root system (30-75%)

Excellent: Mycorrhizal tips dominate the root system, non colonized tips in low abundance or localized (>75%)

I obviously do not sell 'zero' or 'poor' trees. I will only sell "ok" trees if they are a minor component of the batch. I should probably call this category something else. I have also sold 'ok' trees at half price, although I am no longer willing to do that. I am happy with trees when they fall in the good category. This approach is similar to the French system in that it is based on "visual estimates", but by making the 'good' category large it facilitates very rapid screening. It is usually possible to evaluate a tree in about 30 seconds unless there are problems. 'Poor' and 'zero' trees consume a lot of time. One major advantage of this approach of checking large numbers of trees is that the rare contaminated trees are much more likely to be caught and discarded than with a small sample. This has allowed me to guarantee that none of my trees are contaminated. As I shift to a sampling scheme, I will have to figure out the statistical approach and sample sizes necessary to guarantee with X (high) % certainty that contamination rates are less than Y (low)%.

I have only measured the actual % colonization of a batch of trees once. The average root tip colonization

rate was 65% with the lowest at 16% and the highest at I believe somewhere around 80%. The distribution was definitely skewed toward the high end. I believe this is a good result by any standard, but I am continuing to work on the methods to try to improve the colonization rates. My personal standard is 'impeccable quality' and I will not be completely satisfied until I can reliably provide seedlings with nearly complete colonization of the root system. I do see results like this in some of my current experiments and I don't think an average percent colonization somewhere in the 90's is out of the question. Achieving this may require quite a different and more expensive approach to producing the trees.

Measuring colonization rates is very labor intensive and it requires sacrificing the tree. The typical method is to chop the entire root system into small pieces, mix it together and let the root fragments settle out over a tray with a grid of separate wells...a muffin pan works. A sample of the wells is selected randomly and all root tips in each selected well are counted and evaluated for presence or absence of mycorrhizae.

There are judgment calls that the evaluator must make. These include: is the root tip alive, and is the tip mycorrhizal; it is often difficult to make a clear determination. Establishing criteria for living vs. dead roots is helpful, as are criteria for mycorrhizal vs. non mycorrhizal. For example, there are often roots with a dead cortex, but the vascular tissue and apical meristem are not necessarily dead. I think there needs to be some evidence of turgor in the roots. I do not include roots that are blackened or desiccated throughout in the tally, even if they were obviously mycorrhizal before they died. A root tip can also have a surface texture and color like that of a mycorrhizal root, but no evidence of swelling associated with a well developed mantle. There are all degrees of this from a smooth surface, but no color to a nice plump brown sausage shaped mycorrhiza. There is also color variation with age of mycorrhizal root tips from something quite close to the color of the root tissue itself (probably hyaline hyphae) on very young mycorrhizae to a dark brown opaque mantle with a surface frosting of what looks like fine crystals on old mycorrhizae. The criterion I use is the swelling of the root tip, even if the color

and texture are right. This criterion will tend to err on the side of counting fewer mycorrhizae.

Positively identifying the truffle species on the roots is a major challenge. There are some diagnostic morphological features that can be used to make a visual determination, but that approach is slow and non-definitive. Molecular methods are probably a better way to go, both because they are probably less prone to error and they are undoubtedly cheaper to process large numbers of samples. There are specific probes to identify all of the important truffle species, including the major contaminant species.

A question that needs to be addressed as part of any quality certification program will be the sample sizes. I don't normally do a quantitative measurement, even on a small scale because of the cost in terms of truffle trees. They are very expensive to produce and the demand I have experienced is so high that I find it difficult to grow extras that I will end up killing when there are already people lined up to buy them. The sample sizes required in a certification program will have to take that expense into account. I believe Chris Fischer and Carlos Colinas use a sample size of just 12 trees regardless of the lot size, with a second round required if the first 12 don't measure up. This approach also has risks since with small sample sizes it is possible for an otherwise good batch to fail simply from the luck of the draw. There will need to be ways for producers to request and perhaps pay for further checking if they feel that the sampling was non-representative.

There are also other seedling criteria to consider: damage to the stem, contorted stems or taproots, overall size and evidence of disease or infestation.

Having said all of this, I have found that colonization rates alone don't tell you how well an orchard will perform. The first batch of trees I inoculated was by far the worst batch despite all of my experience inoculating trees with pine mushrooms in graduate school and all of my familiarity with the literature. The average percent colonization was probably somewhere in the single digits. Nevertheless, five years later, every one of those trees that I have sampled (about 20 so far) is very well colonized by truffle mycorrhizae. I would not dream of selling trees with such low colonization rates now, but I am confident that the trees from that first batch are

capable of producing a good crop of truffles. My only concern is whether truffles form long lasting dikaryons or whether they need to have compatible mating types established together on the same tree, in which case a poorly colonized tree may end up with only one truffle strain that is therefore incapable of fruiting. If this question is ever answered satisfactorily and it turns out that multiple compatible mating types on each tree are required, then that would become a major quality factor to consider.

I hope you find that discussion useful for your thinking about quality evaluation of inoculated seedlings. It is something that I think about all the time and I would be glad to work with you and TABC to set standards for Canadian truffle trees if you end up doing that.

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541-513-4176

Dear fellow members,

*Many of you are by now aware that Cathy and I, Quentin Wyne, have launched production of truffles and truffle inoculated trees here in the beautiful Okanagan. (Did you hear that it reached 10 degrees here yesterday?) In doing so, we have engaged the assistance of Dr. Charles Lefevre of New World Truffieres and have been working in association with him. Our production is still experimental, but we are looking forward to having samples of our first batch tested for presence/quantification of *T. melanosporum* at the UBC Okanagan campus later this month. If all goes well, we may have some hazelnut trees and a few oak trees available for sale this spring. That having been said, we're also planning our production for this year, including a wider variety of truffle and trees species. If any members or anyone else for that matter would like to order trees for spring 2007, please let us know so that we can incorporate you into our planning. We can be reached at quentin@cablelan.net or by calling (250) 808-0991.*

Cathy and Quentin Wyne



Upcoming Events

(Cut out for your fridge)

January 27 - 29

Oregon Truffle Festival & Cultivation Seminar

1st annual celebration of Oregon truffles from their hidden source in the forest to their glory on the table. For more information see:

www.oregontrufflefestival.com

or call/fax 1-503-296-5929

April

Truffle Association of British Columbia Annual General Meeting for 2006

Victoria - Location to be announced.

Hi Truffliers:

In case you're not aware of it, one fruiting body of an Italian White Truffle was recently auctioned off for \$112,000 US. It weighed in at 1.3Kg. Last year a fruiting body sold for \$54,000 US.

This year's fruiting body was sold to a group of bidders in Hong Kong who donated it to a local charity that works with pregnant girls and adopted children. The charity in turn sold it to a Taiwanese.

With the sale of this single fruiting body, truffles have become the most expensive food product. Hail to the truffle!

Cheers, Sharmin



Web Sites of Interest to the Truffle Community

New World Truffieres, Inc.
Truffle Cultivation Specialists
www.truffletree.com

To view a report on '**French lack truffle: establishment and production in Tasmania**':
www.rirdc.gov.au/reports/NPP/01-084.pdf



**Ministry of Agriculture and Lands
Personal Information Protection Policy**

Effective January 1, 2004 the BC PIPA Act came into effect. Ministry of Agriculture and Lands has always taken great care in protecting the confidentiality and privacy of our customers, suppliers and vendors.

The ministry collects and uses personal information about individuals as needed and will only collect, use and disclose such personal information in a manner that would be considered reasonable under the circumstances.

If you wish to become a member or submit an article for the next newsletter, please direct a phone call, letter, fax or email to:

Sue Gordon, Office Manager
Ministry of Agriculture and Lands
Access Centre - 5785 Duncan Street
DUNCAN BC V9L 5G2

Phone: (250) 746-1210 **Fax:** (250) 746-1292
Email: Sue.Gordon@gems2.gov.bc.ca

**Truffle Association of British Columbia
Membership Information**

Memberships are yearly to be renewed by the end of April and mailed to:

Ministry of Agriculture and Lands
Access Centre - 5785 Duncan Street
DUNCAN BC V9L 5G2

Name:

Business Name:

Mailing Address:

Phone Number:

Fax Number:

Email Address:

Web Site Address:

Yearly Membership \$20 _____

Yearly Family Membership \$25 _____