

## National Chestnut Week Provides New Marketing Opportunity

Sunday, Oct. 12 through Saturday, Oct. 18, was declared National Chestnut Week by WCGA members at the June, annual meeting. It will provide a marketing opportunity that growers have not had before -- a specific event for chestnuts nationwide. Newspapers and local radio hosts are much more interested in publicizing events than in covering a generic-type chestnut article, so we all need to take advantage.

There are only a few weeks left to plan if you haven't already done so but it's never too late to do something. Following are a few ideas you might consider:

- participate in a community celebration of any type with a booth
- send a press release about your orchard to your local newspapers
- post a sign at your farmers' market booth announcing the week
- host an event at your orchard

If you host an event at your orchard consider some of the following possibilities to draw folks in:

- tour of the orchard
- demonstration of equipment and processing
- offer samples of your chestnuts and chestnut products
- petting zoo of farm animals

*See National Chestnut Week, p. 4*

## NNGA Annual Meetings Just Keep Getting Better

It was with great anticipation that we attended the NNGA Annual Meeting in East Lansing, MI, at the Kellogg Center on the MSU campus July 13-16. Hearing about all the things going on in the Michigan chestnut industry made us want to see for our-

From November 29 through Dec. 4, temperatures in the area dropped to -22° F.

Bob Wallace of Chestnut Hill Tree Farm spoke. His grandfather, Robert Dunstan, was a professor at NC in romance languages. He developed the Dunstan hybrid. Wallace said



*A visit to Bill Nash's farm, homesteaded by his great-great grandfather in 1860, gave visitor's an opportunity to see how tree spades are used to move large trees. Nut trees that Bill's father planted 43 years ago grow there today.*

selves just how things were going. A number of rumors had circulated that the chestnuts had all died because of severe spring frosts. I've always told people I don't believe any rumor I haven't started myself, and that was certainly a good rule to follow in this case. Yes, there was significant damage in some orchards, but it seemed more related to the age of the trees rather than the cultivar planted, and it varied by location.

Bob Haack, an entomologist with the U.S. Forest Service, has chestnut property in northwest Michigan. His trees, Colossals with Nevada pollenizers, were planted in '96. He said that 94% of the Colossals came through the frost and all the Nevadas did. He attributed at least part of the loss to deer.

that they harvest by hand and use a Savage pecan shucker. They store their nuts in cold water, then at 35° F. until planting time.

John Ireland of Fowler Nursery spoke about the work going on there. He indicated that they began with chestnuts in 1985 and currently produce 10-20,000 trees a year, with two thirds of those going to California growers. Currently they are growing the Okei variety, developed by Kay Ryugo, retired UC Davis professor.

Sandra Anagnostakis talked about the absolute necessity of clonal propagation stating that is essential to creating an industry. She also made sure that all participants knew the difference between "variety" and

*See NNGA, p. 4*

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## A MESSAGE FROM THE PRESIDENT

With the coming season, I have already been receiving contacts from media people asking questions about chestnuts. Last week, a writer from a national magazine contacted me in my capacity as WCGA President. Her questions concerned an article she was writing comparing the nutrition of different "nuts". It started with a query about what species of chestnut might be offered on a New York City street corner. She seemed particularly interested in how heart healthy chestnuts were as compared to walnuts. I faxed her several charts I had, some listing as many as 50 measurable nutritional components found in chestnuts. I also sent along some research paper segments I

have collected over the years.

It is striking how differing some of the chestnut data is, particularly with regard to fat content; it ranged from 1.5% to 10%, of course depending on whether it was fresh, dried, roasted or boiled, but equally depending on the species and cultivar. Environment, tree nutrition, and pollen source may also play a role. When it comes to chestnuts, there are obviously many variables that go into a given nutritional chart.

I went on to describe a chestnut as more like a sweet "grain on a tree" than a real nut and mentioned its varied uses, the completeness of its nutrition, and the characteristics that made it much different than a walnut. I told her I was personally trying to cure myself of the habit of referring to them as "nuts" rather than chestnuts.

One of my conclusions from this encounter was that comparing chestnuts with nuts is often misleading. It only makes sense when the intended culinary use is similar. The common comparison with chestnuts and nuts sometimes encourages more trouble than it's worth, particularly when a grocer gets the idea that chestnuts should be stored, displayed and sold like a hard shell nut. Our conversation ended with the writer's intrigue over a nutritional chart I sent comparing chestnuts to apples. It will be interesting to see what she makes of all of this!

By the time this reaches you, our harvest should be underway in the Pacific Northwest. For those growers that had adequate water and production age trees, it should be a bountiful year. Many growers with young, growing orchards are expecting significant gains in yield. Growers are reminded to keep up with their marketing efforts as overall production expands. In support, the WCGA has formally proclaimed the second full week of October (12th to 18th this year) as National Chestnut Week. We will be sending out a nationwide press release promoting National Chestnut Week to generate some media attention. Last year's press release resulted in several contacts and

articles. We hope Chestnut Week will build over the years into an opportunity for all to gain some exposure, and to boost the early season market. Certainly, there is significant market opportunity that is lost only because of the rather low profile of domestic production. Please consider utilizing some of the ideas mentioned in our editor's article. If you aren't quite ready for them all, keep them in mind for next year!

As always, please make your best effort to properly harvest, store, and deliver a high quality product.

*Christopher H. Foster*

## EDITOR'S NOTES

I think it's getting close to harvest. We've already got orders coming in for early delivery and people are asking for recipes. Meanwhile we've got other projects going. We're just finishing up our commercial kitchen and Ray's installed a fogger in the fridge.

We're planning an Open House here at our orchard on Oct. 12 to celebrate National Chestnut Week. I hope you'll do something special during the week as well. It's a great marketing opportunity and we all need to make use of it. Will it be successful? We don't have a clue, but if we don't try we'll never know. We see people as curious and anxious to get information about chestnuts in general, about how they're grown and about the people who grow them. In one of my former lives I was a teacher, and I used to tell my students, "If you don't try you can't fail. Neither can you succeed."

On another topic, and one that's near and dear to my heart: articles for this newsletter. I frequently get comments about an article that appears and how much the individual enjoyed it. It may come as a shock that these articles don't just jump out of the sky. (I think I've said this before.) This is your organization and we need YOU to contribute. If you've got an idea for an article how about sharing it with others. We all benefit, and your Editor will love you for it.

*Carolyn*

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Single membership is \$25 per year per person - household membership is \$35. Members receive The Western Chestnut quarterly. For foreign delivery contact the Editor for pricing. Back issues may be obtained by members. Membership applications may be obtained from the Secretary-Treasurer.

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### PUBLICATION AND DEADLINES

Fall issue	deadline 9/10	mailed 10/1
Winter issue	deadline 12/10	mailed 1/1
Spring issue	deadline 3/10	mailed 4/1
Summer issue	deadline 6/10	mailed 7/1

### EDITORIAL OPINION

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# The Ideal Soil Test?

by Ray Knowles  
Email: riknowles@hotmail.com

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Ever since we all started growing chestnuts commercially in orchard situations one of the most commonly asked questions from growers has been "what should the soil nutrient levels be for a chestnut orchard?"

Unfortunately no one knew, there was some very limited information available from overseas countries that grew chestnuts that often did not appear to make much sense for NZ conditions. So growers just planted their trees and left them alone to get on with the job -- for most orchards this approach has been successful, the trees have grown and produced crops and little money has ever been parted with for fertilizer. However, as the orchards have aged the most serious problem that now confronts most maturing chestnut orchards is the ever increasing percentage of nut rots caused by fungal contamination on the tree before nutfall.

The nut rot problem is often not that apparent until the nuts have been held in cool storage for a few weeks when what appear outwardly to be good nuts often show alarmingly high rot percentages when cut open. To date no one has been able to effectively grapple with this industry limiting problem despite years of awareness, research and effort. No matter which way you look at this it is the industry's most pressing production problem and has been for years. Without a way around this problem the industry will never thrive -- and many growers now realise this.

Last year I undertook a nationwide survey of chestnuts from commercial orchards looking at kernel nutrient levels (the results have been published in previous Chestnutz News editions). While preparing samples for analysis which involved hand peeling many nuts to remove the pellicle it was obvious that most regions that supplied nuts had significant rot problems following barely 3 months of coolstorage at 0-2° C after harvest. While this was not unexpected what was a surprise was the very good quality of the nuts from a Gisborne orchard (there are very few chestnut orchards in this region) where there were almost no rots at all -- better than any other region surveyed in both islands.

To reinforce the significance of this was the fact that the tree from which the nuts had come was one of the oldest in the survey (20 year old 1005) and is growing in a severely crowded and shaded orchard with plentiful dead twigs and therefore nut yields are low. Advancing age, overcrowding, dead twigs and shading are all factors that contribute toward increased nut rot percentages, so the fact that these nuts were so rot free was an even bigger surprise. With all these fungi favouring environmental conditions the nut rot percentages would normally have been markedly worse -- as they are most everywhere else in NZ when these conditions occur. The obvious question then is why should this tree be the only old 1005 tree that I know of in NZ that produces such rot free nuts when all the environmental factors are supposedly conspiring against it? So far we do not know why. However, NZCC is now focussing on this tree in the hope of learning something from it that may benefit all NZ chestnut growers. Over this growing season just ended NZCC and has carried out extensive leaf analysis and soil testing from this tree with Hill Laboratories Ltd. in Hamilton.

These tests will help us to understand its growing conditions and across the season nutrient status and to see if this differs

markedly in any respect when compared to the more common chestnut growing regions of the country. So far the results are still not all in, but the soil tests have been completed and are published here for your interest.

The leaf analysis results will be published in future Chestnutz News editions.

## Gisborne orchard (Paul Dodghun): topsoil, sampled at ~15 cm depth around the dripline of 20 year old 1005.

Analysis (by Hill Laboratories Ltd)	Level Found	Medium Range	Low	Medium	High
pH	5.7	5.0-6.0		x	
Olsen P mg/L	20	15-50		x	
ASC/phosphate retention%	29	30-60	x		
Potassium (K) me/100mg	1.13	0.50-1.20		x	
Calcium (Ca) me/100g	13.6	6.0-12.0			x
Magnesium (Mg) me/100g	2.52	1.00-3.00		x	
Sodium (Na) me/100g	0.15	0.00-0.50		x	
CEC (cation exchange capacity) me/100g	24	12-25		x	
Base saturation %	72	40-60			x
Volume weight g/mL	0.81	0.60-1.00		x	
Sulphate-S mg/kg	4	20-50	x		
Organic sulphur mg/kg	6	12-20	x		
Boron (B) mg/kg	0.9	1.0-2.0	x		
Manganese (Mn) mg/kg	108	50.0-400		x	
Zinc (Zn) mg/kg	4.5	2.0-10.0		x	
Copper (Cu) mg/kg	3.2	1.0-5.0		x	
Cobalt (Co) mg/kg	2.0	2.0-4.0		x	
Reserve K me/100g 0.8	0.2-0.3			x	
reserve Mg me/100g	22..6	7.0-15.0			x
Available N kg/ha	132	100-150		x	
Organic matter %	5.1	7.0-17.0	x		
Nutrient element	K	Ca	Mg	Na	
Base saturation units %BS	4.7	56	10.4	0.6	
MAF cation units QT	19	14	46	6	

## Gisborne orchard (Paul Dodghun): topsoil, sampled at 50 cm depth at one point on the dripline of 20 year old 1005.

Analysis (by Hill Laboratories Ltd)	Level Found	Medium Range	Low	Medium	High
pH	6.2	5.0-6.0			x
Olsen P mg/L	8	15-50	x		
ASC/phosphate retention%	22	30-60	x		
Potassium (K) me/100mg	1.00	0.50-1.20		x	
Calcium (Ca) me/100g	18.3	6.0-12.0			x
Magnesium (Mg) me/100g	2.06	1.00-3.00		x	
Sodium (Na) me/100g	0.16	0.00-0.50		x	
CEC (cation exchange capacity) me/100g	24	12-25		x	
Base saturation %	88	40-60			x
Volume weight g/mL	0.87	0.60-1.00		x	
Sulphate-S mg/kg	2	20-50	x		
Organic sulphur mg/kg	2	12-20	x		
Boron (B) mg/kg	0.3	1.0-2.0	x		
Manganese (Mn) mg/kg	149	50.0-400		x	
Zinc (Zn) mg/kg	1.1	2.0-10.0	x		
Copper (Cu) mg/kg	2.0	1.0-5.0		x	
Cobalt (Co) mg/kg	3.2	2.0-4.0		x	
Reserve K me/100g 0.8	1.1	0.2-0.3			x
reserve Mg me/100g	33.7	7.0-15.0			x
Available N kg/ha	<10	100-150	x		
Organic matter %	1.0	7.0-17.0	x		
Nutrient element	K	Ca	Mg	Na	
Base saturation units %BS	4.1	75	8.5	0.6	
MAF cation units QT	18	20	40	6	



**NNGA, cont'd from p. 1**

"cultivar". She used the Qing cultivar as an example:

Genus: castanea  
Species: molissima  
Form: spreading  
Variety: mid-season  
Cultivar: 'Qing'

In terms of the Colossal cultivar we would have:

Genus: castanea  
Species: crenata x sativa  
Cultivar: 'Colossal'  
Variety: mid-season in the mid-west -- may be early-season in the northwest

cards of thanks that she includes with orders. She asks people if they want to be contacted. She offers not only chestnuts for sale, but those things that go with them - roasters, cookbooks, etc. Couple what she does, with her overabundance of energy and you can see why she's successful.

Greg Miller, Carrollton, Ohio, talked about the marketing of large quantities of nuts which he described as orders of 1000 pounds or more of nuts to one buyer. He said that he produced 30,000 pounds of nuts in 2001 and 20,000 in 2002. His wholesale price is \$1.10 - \$1.80 per pound.

Bridget Behe, of MSU, talked about foods that can be prepared with chestnuts

tion of her operation in California. She has 9000 trees on 85 acres (20 acres of Colossals) and produced 4 tons last year. She uses Okei pollenizers. Of the cultivars she grows, she said she has a preference for Bouche de Betizac. She said that among the the important things she has learned, the need to cool the nuts immediately ranks at the top. She uses water curing and says that there is a theory that says the tannins may prevent fungus.

Janice Harte, a sensory specialist at MSU, conducted taste-tests with chestnuts held under different conditions. She stated that Chinese chestnuts that were not cured had the best texture and general overall qual-



*Sandy Anagnostakis addresses members at NNGA's 94th annual meeting, held at the Kellogg Conference Center on the Michigan State University campus, East Lansing, MI.*

Nancy Pettit, Delmarvelous Chestnuts, gave a lot of tips on marketing that any grower can use. Their orchard was planted in 1991, and it is obvious that Nancy and husband Gary began with a global view of their orchard. It wasn't just about growing the trees; it was about growing the trees and marketing the nuts.

She begins each season with an email campaign in late August. She hand writes

including chestnut praline ice cream chestnut bonbons, chestnut paté, bacon-wrapped chestnut appetizers, pesto, risoto, pheasant, root vegetables, encrusted salmon, chestnut gnoche, puree and crumbles.

Tom Kalchik, a specialist at MSU in value added management encouraged growers to form co-ops and had helped organize the Chestnut Growers Inc. co-op in Michigan. The co-op has 30 members.

Lucienne Grunder gave a brief descrip-

ity after storage for six months at -2 to 0° C. C. Chestnuts cured for three days prior to storage were closest in quality to the noncured samples. Those cured for seven days prior to storage were unacceptable after four months' storage. She stated that high initial respiration rates indicated that a considerable amount of heat was produced during respiration and should be removed immediately after harvest.

The effect of post-harvest storage on the quality of Colossal chestnuts showed weight losses of 2-3% over 4 months for 0 and 3 day curing and 1.5% over 4 months for 7 day curing. However, the Colossals with no curing had the best overall fresh and cooked appearance and texture.

Harte summarized by saying that the optimum method of storage for fresh chestnuts is rapid cooling before placing the nuts in

perforated polyethylene bags and storage at low refrigeration temperatures.

In terms of packaging, Harte said that sensory scores for flavor, uncooked and cooked appearance were higher for chestnuts stored in an oxygen barrier film, and that vacuum packaging provided additional quality preservation and helped to prevent freezer burn. She concluded by saying that freezing shelled chestnuts in oxygen barrier bags under vacuum is the optimum method

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to best preserve the color and flavor of the chestnuts for long-term storage.

Of great interest to the chestnut growers in attendance were the visitations to chestnut orchards in the greater Lansing area and in western Michigan.

Monday's tours visited the orchards of Mo Veenstra in Willamston, Michigan and that of Bill Nash in Owosso. Nash's 200 acre farm consists of a 75-acre nursery. The original 89-acre farm was originally settled by Bill's great-great-grandfather in 1860.

The chestnut peeler that MSU obtained with a USDA grant is currently housed at the Rinkel Farm in Leslie, Michigan, which was on the Wednesday tour. Dan Guyer, MSU, gave a demonstration of the machine using chestnuts that been stored just for the event. Growers were impressed with the quality of the product.

From the Rinkel farm the tour continued to the Foncannon Walnut Farm, and then on to the MSU experimental orchard in Benton Harbor, where each cultivar was discussed with the pros and cons the staff has found.

The 4-day event concluded with a barbecue at South Haven. Anyone who missed this NNGA meeting, missed a lot. Dennis Fulbright and his staff deserve a huge vote of thanks for their efforts in organizing this on relatively short notice. Every detail was carefully thought through even down to the TP that might be needed for the picnic lunch at the Russ Forest site. Now that's planning!

*Right: The peeler line is shown here as it is currently installed in the barn of Bob and Ginger Rinkel in Leslie, MI. It will be moved to its permanent location in the next year.*



### **National Chestnut Week, cont'd from p. 1**

- corn maze
- cooking contest
- face painting
- guess how many chestnuts in a jar contest
- farm brochure for people to take with them
- music -- live or recorded
- dress in mode of early Americans
- make up a booklet for adults and children alike with all kinds of facts, figures, puzzles and things
- have recipes available
- offer chestnut dishes for sale -- cake, cookies, soup, etc.
- serve a chestnut pancake breakfast
- get a local winery to host a tasting at your orchard
- have a storyteller for the children who can tell them the story of chestnuts

*In Memory of Walter Pope*

*Grower and Member since 1996*

*Our sympathy to his family*

**Make sure to visit the WCGA website at:**

**<http://www.wcga.net>**

# WCGA CLOTHING ORDER

Here's another opportunity to promote the Association. The following clothing items are available with the WCGA logo for association members.

Please complete the order form and mail with your check payable to WCGA, or VISA/Mastercard number to Sandy Bole, Ladd Hill Orchards, 15500 SW Roberts Rd., Sherwood, OR 97140 or Fax your order to 503-625-1937.

Item No.	Description	Sizes available	Colors available	Unit price
K420	Pique Knit Short-sleeve Polo Shirt	Unisex sizes XS-4XL	White, Ivory, Oxford, Stone, Yellow Faded Blue, Red, Faded Olive, Burgundy Forest Green	\$34.00
K420P	Pique Knit Short-sleeve Polo Shirt w/Pocket	Unisex sizes XS-4XL	White, Stone, Faded Blue	\$38.00
L420	Ladies Pique Knit Short-sleeve Polo Shirt	Sizes S-XL	White, Stone, Yellow, Faded Blue, Red	\$34.00
PC61	Men's/Women's Cotton Knit T- Shirt	Sizes S-2XL	White, Ash, Yellow, Natural, Stonewashed Blue, Stonewashed Green, Violet, Colonial Blue, Red, Spruce	\$16.00
SP10	Long-sleeve Denim Shirt	Sizes XS-4XL	Faded Blue	\$31.00
SP11	Short-sleeve Denim	Sizes XS-4XL	Faded Blue	\$31.00
L600	Ladies Long-sleeve Denim Shirt	Sizes S-XL	Faded Blue	\$34.00
83062	Crewneck Sweatshirt 80/20 Cotton/Poly	Adult sizes S-2XL	Ash, Heather, Bluegrass (slate blue), Wine	\$46.00
CP82	Brushed Twill Baseball Cap adj. closure		Khaki, White, Red, Royal	\$15.00
AP34	Butchers Apron 34" long		White, Vanilla, Butter, Sage, Hunter, Red, Royal	\$19.00

Note: All items are 100% cotton, unless otherwise noted.

**ORDER NOW!** Clip the order form below.

# WESTERN CHESTNUT GROWERS' ASSN. CLOTHING ORDER FORM

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

<u>Item #</u>	<u>Qty</u>	<u>Description</u>	<u>Size</u>	<u>Color</u>	<u>Unit Price</u>	<u>Total Price</u>
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Shipping	\$ 5.00
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Total Order  $\$$

Payment Method: ☐ Check ☐ VISA ☐ Mastercard

Credit Card No: \_\_\_\_\_ Expiration Date: (Mo/Yr) \_\_\_\_\_

Signature: \_\_\_\_\_

MAIL YOUR ORDER WITH CHECK ENCLOSED **PAYABLE TO WCGA TO SANDY BOLE, LADD HILL ORCHARDS, 15500 SW ROBERTS RD., SHERWOOD, OR 97140, OR FAX IT WITH CREDIT CARD INFO TO 503-625-1937.**

1/03-10/03

**Produce Facts**  
**Chestnuts**  
**Recommendations for Maintaining Postharvest Quality**

**Adel A. Kader**  
**Department of Pomology, University of California, Davis, CA 95616**

*Note: Dr. Kader requested that this corrected version of his handout from the annual meeting be distributed. Respiration rates for chestnuts have been corrected.*

**Maturity Indices**

The burrs begin to dehisce between mid September and early October (depending on the cultivar and production area) shedding the nuts. Chestnuts should be picked up daily during the harvest season to minimize fungal infection and growth (if infection occurred while the nuts are still on the tree) and loss of quality due to excessive drying and/or sunburn. Use of a tarp below the tree can reduce contamination of the nuts due to direct contact with the soil. Alternatively, a mechanical shake-catch harvester can be used. Following harvest the remaining burrs should be removed. Fresh chestnuts contain 40 to 60% moisture and should be handled with care to avoid mechanical damage.

**Quality Indices**

Size (larger nuts are preferred for fresh consumption); shell color uniformity (tan to light-brown or dark-brown, depending on cultivar) and gloss (bright and shiny); plump and fresh kernels (optimum eating quality at 25-30% moisture after roasting); freedom from defects, such as bruising, cracking, sprouting, and decay; ease of pellicle removal (peelability) from the kernel; sweetness is a very important taste factor; chestnuts contain 40 to 45% carbohydrates-mostly starch which is converted to sugars when the chestnuts are kept at 20-25°C (68-77°F) for 3-4 days just before sale to consumers; absence of off-flavors.

**Optimum Temperature**

-1 to 0°C (30 to 32°F); highest freezing point is -2°C (28°F) for European chestnut and -5°C (22°F) for Chinese chestnut; prompt cooling to 0°C (32°F) is strongly recommended to stop decay development and preserve quality.

**Optimum Relative Humidity**

90 – 95%; packaging in microperforated plastic film is highly recommended to minimize water loss from fresh chestnuts.

**Rates of Respiration**

2.5-3.5 ml CO<sub>2</sub>/kg-hr at 0°C (32°F)

7.5-10 ml CO<sub>2</sub>/kg-hr at 20°C (68°F)

\$To calculate heat production multiply ml CO<sub>2</sub>/kg@hr by 440 to get Btu/ton/day or by 122 to get kcal/metric ton/day.

**Rates of Ethylene Production**

<0.01 il/kg-hr at 20°C (68°F)

**Responses to Ethylene**

Preharvest or postharvest exposure of burrs to 50-100ppm ethylene gas or 500-1000ppm ethephon (ethylene-releasing liquid) accelerates dehiscence. There are no reported effects of ethylene on the nuts.

**Responses to Controlled Atmospheres (CA)**

An initial exposure to 40-50% CO<sub>2</sub> for 5-7 days at 0°C (32°F) followed by storage in a CA of 2-3% O<sub>2</sub> + 15-20% CO<sub>2</sub> is very effective in preventing mold growth, sprouting, and other quality deterioration factors. Exposure of fresh chestnuts to < 1% O<sub>2</sub> results in fermentative metabolism and off-flavor development. Under optimal temperature of -1 to 0°C (30 to 32°F), relative humidity (90-95%), and CA (2-3% O<sub>2</sub> + 15-20% CO<sub>2</sub>), fresh chestnuts can be stored for up to 4 months.

**Physiological Disorders**

Sprouting results from exposure to high temperature and humidity and can be avoided by using optimal storage conditions.

**Pathological Disorders**

Several fungi (including Alternaria spp, Aspergillus niger, Botrytis cinerea, Fusarium spp, Penicillium spp, and Phomopsis castanea) can infect chestnuts and result in significant postharvest losses in quality and marketability. Control strategies include the following:

1. Use of effective preharvest integrated pest management program to control incidence and severity of insect infestations and fungal infections. This IPM program should include strict orchard sanitation which can also help in terms of food safety by minimizing microbial contamination.
2. Minimizing the time during which the chestnuts are on the orchard floor and avoiding their direct contact with the soil to reduce fungal infection and growth as well as possible contamination with human pathogens.
3. Washing the nuts with chlorinated, or otherwise disinfected, water followed by a hot water dip: 50°C(122°F) for 30 minutes or 55°C (131°F) for 15 minutes or 60°C (140°F) for 5 minutes. Following the heat treatment, the nuts should be cooled to 0°C(32°F) using forced-air cooling, which will also remove any surface moisture from the nuts.
4. An alternative to heat treatment is exposure of the nuts to air enriched with 40-50% CO<sub>2</sub> for 5-7 days at 0°C (32°F) since CO<sub>2</sub> is a fungistatic gas. This treatment can be followed by storage either in air (for up to 3 months) or CA (2-3% O<sub>2</sub> + 15-20% CO<sub>2</sub>) for up to 4 months at -1 to 0°C (30 to 32°F) and 90-95% relative humidity.

**Chestnut Harvesting and Postharvest Handling Technologies**



# Chestnuts in Vietnam: Part 2

by David Klinac

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Chestnuts in Vietnam have already been the subject of one article in an earlier “Chestnutz News”, where NZCC was asked to advise the province of Cao Bang on the prospects of developing a chestnut industry in a rather remote, mountainous area on the northern Vietnamese/Chinese border.

The outcome of that first trip, two years ago, was that prospects looked very good. The chestnut trees already grown there produced a good quality nut that sold exceptionally well (at prices even NZ growers would envy!); demand was high; labour costs were low; and local chestnut growers could well consider themselves among the “richer” farmers in the region.

On the minus side however: conditions were fairly basic; infrastructure was limited; access in and out of the province was poor; the general standard of tree health and care was not especially high; and chestnuts had to “compete” for resources against higher priority crops such as rice. Rice took up all the better flat land, and chestnut harvest demands often clashed with the more important rice harvest. Water buffaloes roamed freely amongst the rest (eating chestnuts and trees alike) and most harvest labour was provided by children: not a problem in itself (cheap to run and good at tree climbing) but with a pronounced tendency to knock off burrs and nuts before they were really ready. Any coolstorage space available tended to be monopolised by more important “cold

beer” requirements, and so fresh nut shelf-life/storage life tended to be very short. Grading and sorting was fairly rudimentary, and processing nonexistent.

The Vietnamese Government had recognized the crop’s potential, however, and was actively supporting much-expanded plantings (an extra 3000 trees in 3 years). The bottleneck was, of course, then finding sufficient quantities of good quality trees and good land to put them on. They’d tried cheap and nasty seedlings on cheap and nasty land before, and got badly burned. The emphasis this time was on quality, and NZCC was again asked to come and help: this time to demonstrate good nursery practice and help in site selection.

The project was jointly funded by the EU and the NZ Department of Foreign Affairs, allowing for both John Leileveld (see elsewhere in the newsletter) and myself to visit and hold a series of field days, demonstrations and grower seminars throughout the region. These were a big hit. John’s height (2m+) and my advanced age (at least 70+, with beard) were added drawbacks.

Standard Vietnamese nursery practice was to sow seed, densely, in raised beds immediately after harvest (no stratification in a coolstore here) and then bud or graft as soon as they were big enough in the Spring. Very fast and very successful. What usually let them down, however, was in their subsequent budding and grafting technique.

This was mainly due to the simplest of all reasons: poor availability of good secateurs, grafting knives, grafting tape, etc. The biggest hit of the whole trip was John’s pruning saw. Most local cutting and chopping was done with axes or machetes (resulting both in poor tree pruning and nursery management). With a proper pruning saw they were now able to confidently tackle topworking, stub removal, remedial tree pruning and a whole range of similar jobs which would previously have resulted in more harm being done than good. John may have actually created a monster here. Normal tree pruning, before his arrival, was pretty much nonexistent resulting in many multi-stem, glorified chestnut “bushes”, looking more like an NZ hazelnut or even a feijoa. Once they got his pruning saw though, some of those same trees were rapidly pruned to within an inch of their life, with John having to sometimes step in and “rescue” them from further care and attention.

Intercropping with vegetables was common, as was the growing of chestnuts on terraced slopes. One of the best performing “orchards” seen was a small, steep conical hill, (with panoramic views across the Chinese border), heavily terraced and covered with chestnut trees. It was also heavily fortified, with several rows of army-style trenches and the remains of a bunker on top. (I told you chestnuts were a valuable cash crop, worth protecting).

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Chestnut orchards, in the NZ sense of nicely laid out rows and blocks on flat land didn't really exist. Instead, there were many small chestnut groves, single rows or even single trees scattered throughout the village communities. Most were simply seedlings, the best of which had been selected and marked as mother trees for future scionwood collection. There were many older trees, which had been good in their prime, but were now old and tired and badly in need of fertiliser and/or John's pruning saw. Good trees, though were excellent, producing high quality, easy-peel, beautiful tasting nuts that I wish grew in NZ.

We took along a range of NZ processed products (mostly from the Kiwi Chestnut cooperative Company of NZ) for the local growers to sample. Any sort of processed chestnut product was a novelty there (except chestnut beer and spirits), and it was interesting to hear their comments. In a part of the world heavily deficient in junk-food and lollies, it was the bitter, sour and plainer flavours that appealed most. Some of the other products (the ones most NZers would like, I think) came across as simply too sweet. Chocolate was a big hit though, whether it had chestnut in or not. Bring more please.

The other new "discoveries" for them were rootstock incompatibility and the oddities of chestnut pollination. Incompatibility had never been a problem when all they grew was seedlings, but with the recent shift to budded and grafted plants, this was becoming

a major concern and they were very interested to learn more. Similarly, pollination had never been something they'd thought twice about before, but now even a cursory glance at the orchard floor showed a lot of unpollinated "pennies" amongst the leavings. The thought that maybe they were missing out on potential yield really attracted their attention.

We took soil samples while we were over there, and these were then analysed by Roger Hill Labs, here in NZ. We were looking for anything that might explain why chestnuts grow well in that one province (Cao Bang), compared to both the rest of Vietnam, and with China just across the border. We didn't find it.

We did find a very unusual (to me at least) hazelnut tree. It was as high and straight as a tall pine tree (great for timber) and produced a great crop of tiny hazelnuts, with paper shells that you could rub off between your fingers. The nuts were collected and sold but the price was low and the trees themselves were scattered throughout the forest, rather than growing in orchards. Could we cross it with a NZ hazelnut, perhaps?

There were many other "unknown" NZ crops that I think would grow well there and which I tried to popularise while I was there: feijoas in particular. I think there's a range of NZ Tree Crops Association-style crops that would be excellent in Cao Bang, either inter-planted with the chestnuts or as cash crops

in their own right. This is an area of interest we'll try to develop further.

Leaving chestnuts behind, land switching to tourist-related activities, there was certainly no shortage of entertainment during our stay. I had a lot of fun watching John watching the oncoming traffic, especially when it was (often) on the wrong side of the road coming around blind corners on a muddy road on the edge of a gorge. John, being so tall, always had to sit in front, to get enough leg room and so had much closer contact with indigenous driving habits throughout our stay than I did, safely distanced from it all in the back. Because of our excessive Western weight, our driver also insisted we always sit on opposites of the 4WD to stop it rolling on corners.

Lots of fresh produce for sale in the markets, of course, and no problems with drive-in fast food: just pull up on your motorbike and buy it then and there, without getting off the seat or stopping the engine, or even getting out of the way of the truck right behind you. Crossing the roads was still the worst though. You just step straight out into traffic and it's the responsibility of all the cars, trucks and bikes to avoid hitting you, rather than vice versa. It really works! Food, shopping and accommodation is great, and cheap. The scenery is beautiful and the people are really friendly. Literacy is 100% and English is being spoken more and more, everywhere. And we got back to NZ just before the SARS scare.

# Celebrate National Chestnut Week

October 12-18, 2003

- Host an open house at your orchard
- Participate in a community event to popularize chestnuts
- Volunteer to speak to organizations
- Submit an article to your local paper
- Get your local food editor to write an article about your orchard or about chestnuts

*... and then -- write an article for The Western Chestnut to let others know how NCW works for you. How many unique ways can growers popularize this super food of foods?*



## 2003 Membership Renewal / Application Western Chestnut Growers Assn., Inc.

\$25.00 individual member  
\$35.00 household membership  
\$26.50 Canadian individual member  
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The following information is **voluntary** on your part, but will help your association better understand the growth and status of the chestnut industry. Check those boxes that apply:

- ☐ Commercial Grower    ☐ Prospective Commercial Grower    ☐ Researcher/Educator    ☐ Hobbyist  
☐ Nursery    ☐ Consultant    ☐ Vendor

Acreage in chestnuts:

- ☐ < 1 Acre    ☐ 1-5 Acres    ☐ 6-20 Acres    ☐ 21-50 Acres    ☐ 51 + Acres

Chestnuts first planted:

- ☐ Pre-1990    ☐ 1990-1993    ☐ 1994-1997    ☐ 1998-2001    ☐ Not yet planted

Percentage of seedlings: .....

- ☐ Sell grafted trees    ☐ Sell seedlings    ☐ Sell scion wood    ☐ Sell seed nuts  
☐ Sell nuts retail    ☐ Sell chestnuts whole    ☐ Sell mail order    ☐ Sell on-line  
☐ Sell at farmers' mktks    ☐ Sell at farm stand

Cultivars grown: .....

2002 Production: ..... lbs.

Photocopy this form and send with your check for \$25.00 (individual member), \$35.00 (household membership) or \$26.50 (Canadian individual membership) made payable to Western Chestnut Growers Assn., Inc. to Ray Young, Secy/Treas, PO Box 841, Ridgefield, WA 98642.



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