



The Western Chestnut

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Small But Mighty: Iowa Chestnut Producers Process, Package Small Chestnuts for Sales to White-Tablecloth Restaurants

Like most chestnut growers, Tom Wahl of Wapello, Iowa, has a knack for trial-and-error processes and “figuring things out,” especially when it comes to meeting the challenges of harvesting chestnuts for a distinct market demand.

With the assistance of business partners and producers of the Southeast Iowa Nut Growers Cooperative, Tom has recently applied his sense of ingenuity toward processing smaller nuts into a packaged, peeled and frozen product that area chefs are asking for by name. Using a homemade sorter, a modified peanut sheller and a homemade machine for separating kernels from loose shell, the cooperative is carving a niche for itself from restaurant plates in Iowa City to four-star establishments in Chicago.

Starting small

Tom’s interest in chestnuts dates back to grade school, when he first heard about the American chestnut and became fascinated with the legendary trees. While in college in Ames, Iowa, he collected seed from a mature American chestnut tree and attempted to propagate it, though unsuccessfully, as the tree caught blight and died – but Tom’s chestnut experiments were just beginning.

Together with his wife, Kathy Dice, he purchased an 86-acre tract of land in southeastern Iowa in 1986. Four years later, he read an article in a magazine about the potential for the chestnut industry and his interest was again rekindled. Through the magazine article, Tom found contact information for Chestnut

Hill nursery and ordered a catalog. Soon after, he participated in a Great Lakes Chestnut Alliance meeting and attended a presentation there seeking chestnut tree growers. In the fall of 1992, Tom purchased his initial chestnut investment of \$1,000 worth of trees and planted them in a mix of heartnut, hazelnut, pecan, persimmon, paw paw, nut pine and some pinyon pine along flat ridge tops of his farm. (cont. page 4)

Delmarvelous Chestnuts featured on Food Network “Food Finds”

Nancy Pettitt’s efforts to continually build marketing relationships paid off in a big way in November with the airing of a special holiday edition of Food Network’s “Food Finds,” featuring Delmarvelous chestnuts from the 30-acre farm in the Delmarva peninsula.

The episode aired twice in November and twice in December, just in time to capture national viewers’ attention and interest in ordering chestnuts for the holiday season. The warm images of chestnuts being roasted and consumed may have looked simple on the television screen, but required almost a year’s worth of effort behind the scenes.

Nancy and Gary Pettitt began talking with the Food Network last year in response to a call from a producer who wanted to film a chestnut-themed episode in February. After informing producers there would be nothing to film in chestnut production in Febru-

ary, Nancy convinced the team to shoot the episode in October for airing in November. (cont. pg 3)

A Food Network camera crew documents chestnut processing in the newly remodeled packing room at Delmarvelous Farms.



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A Message from the President



WCGA PRESIDENT
HARVEY CORREIA
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ISLETON, CALIF.

At the time of this writing, 2004 is winding down and it is a good time for us to reflect back on the year.

Most growers I've talked with had significant increases in production in 2004, yet were able to market their crops in a timely manner and at favorable prices. It seems that U.S. growers are just "scratching the surface" in meeting existing consumer demand. 2004 was my first year of selling to more than 100 different customers, and the dozens of comments I received convinced me that there are still many consumers that are either unable to find chestnuts in their local markets or are dissatisfied with the quality of chestnuts available at their markets. Hopefully we can someday educate the market produce managers on the proper storage of chestnuts so that the consumer can grow accustomed to being able find good quality chestnuts. It will then be our challenge to find ways to increase consumer demand.

Last quarter I mentioned that a group of growers, including many WCGA members, had brought up the idea of either forming a new group of chestnut growers or changing the name of the WCGA to the Chestnut Growers of America. In the last newsletter I asked for members to share with me their ideas on the matter, and I would like to extend this invitation to you once again as the board is planning on taking up the issue and putting a formal proposal to be voted on by the membership.

Most of us do not anticipate a change in the focus of the association if we do change our name. However, the association does already represent growers from across the U.S. and some growers feel that the name change would be more accurately represent who we are. Please send me any comments or concerns you may have. You can either e-mail me at harvey@chestnuts.us or telephone me at (866) 492-4769.

Harvey J. Correia

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Food Finds Features Delmarvelous Chestnuts (cont.)

The network requires at least six months of advance coordination when making arrangements to tape an episode, and it took many "back and forth phone calls," according to Nancy, to determine what portions of their chestnut production, packaging and sales would be featured.

"They had it in their minds what they wanted to say and show before even speaking with us about it," said Nancy. "We worked with them to help capture their ideal footage of chestnuts being consumed in a restaurant, harvested, packaged, the farmers market, everything. They knew what they wanted, and we needed to help them make it work."

Nancy credits the continual high quality of their products and her efforts to build and maintain media relationships to securing the Food Network episode. National magazines including "Real Simple" and "Southern Living" have featured Delmarvelous chestnuts, as well as the Associated Press news wire and several regional newspapers. Last December, the *Philadelphia* magazine even listed Delmarvelous Chestnuts as one of the "50 Best Things About Winter."

"You start with a quality product, selling retail and on the web, and then once you get going on achieving new coverage it just seems to snow ball," said Nancy. "It's mostly accomplished through relationship building over time and having a product that becomes word of mouth. Then the process takes on its own synergy."

For example, the connection to *Real Simple* evolved when an employee of the magazine observed that her boyfriend's mother had received Delmarvelous Chestnuts for the holidays and felt they were the best she'd ever eaten. Soon Nancy's phone was ringing and the magazine was setting up the story.

The consumer response to the "Food Finds" episode has been incredible, say the Petitts. "They told us we would get 2,000 orders, on average, in response to the show. I started preparing a year ago, planning for this, and going out on a limb to arrange for that kind of business. It was a risk," said Nancy, "but well worth it."

We sold a tremendous amount of chestnut knives and roasters and all of our cookbooks are sold out."

Nancy estimates the average order in response to "Food Finds" is 4.4 pounds of retail nuts, with several 20 pound orders.

The "synergy" Nancy speaks of didn't just happen, however. The crew of Food Finds spent 14 hours on the farm, shooting the episode in one day. Those who attended the



Top: The film crew prepares to interview customers sampling chestnuts at the farmers' market.



Left: Chestnut harvesting is a topic of great curiosity and interest for the Food Network crew.

restaurant lunch for this portion of the episode received a beautiful menu and description of the farm. Menu items included a "Beggar's Purse," made up of a chestnut crepe with

homemade ricotta, chestnut honey and glazed chestnuts. The chef used his grandmother's recipe for chestnut soup and served a "red, white and green" salad with glazed chestnuts. Gary's daughter, Chimene Petitt, a New York performer, even entertained after the meal with a Marilyn Monroe impersonation. "We really tried to make it fun," said Nancy. "Fun is important when you are building these relationships."

In addition to planning for a business increase, Nancy decided to tackle a remodeling of the chestnut packing room for the show. She changed the flooring, added a fresh coat of paint and installed

Small But Mighty (cont. from pg. 1)

Eight years later, in January of 2000, Tom helped found the Southeast Iowa Nut Growers Cooperative (SING), a cooperative network of tree nut growers from Iowa, Illinois & Missouri who produce their crops with little or no chemical fertilizers or pesticides.

The “Wahldices” have come far since purchasing the land nearly twenty years ago. “We didn’t really have a plan then, we just knew we wanted some land to build a house,” he said.

Perhaps chestnuts were destined to be a highlight of the “Red Fern Farm,” located directly across the road from the state’s first chestnut planting. The area is in the process of being interplanted with paw paws and other nut and fruit crops. Tom purchased the land last year, bringing his acreage of chestnut production to approximately eight acres. The amount of total acreage planted in chestnut trees in Iowa has remained small, at only 100 acres, but interest is growing among landowners who decided to “wait and see” how the trees prospered before purchasing them.

“There’s not a large amount of chestnut acreage in Iowa,” said Tom, “but certainly it’s 100 acres more than there was in 1992.”

John Wittrig, fellow chestnut producer, cooperative member and business partner from Winfield, Iowa, compares the chestnut industry to soybeans in a recent article from the *Cedar Rapids Gazette*. “We may be about the same place as soybeans were in the 1930s when they cut and



Tom Wahl loads a batch of fresh chestnuts into the size sorter. The first bin has holes for tiny chestnuts to fall through, the next has small-sized holes, then large and extra large.

baled them for hay,” he said.

Today, Tom and his wife, along with Wittrig and Bill Broohiser, another local chestnut producer, are founders and co-owners of Winfield Tree-grown Foods LLP, a spin-off of SING that represents 40 chestnut growers from southeastern Iowa, Illinois and Missouri. The business purchases the nuts from growers who, as he says, “just want to grow the nuts but not the work of peeling, shelling or marketing them.” The larger nuts are sold on retail shelves in the shell, usually at local grocers and natural foods stores in Iowa City, Cedar Rapids, Des Moines and Ames, in addition to those processed by a mail order business from the Red Fern Farm web site, www.redfernfarm.com.



Chestnuts are poured into the chute (right), then a set of motors turns the plastic drums. Nuts fall through the appropriate sized holes into bins below. When nuts are no longer falling into the bin below, the machine operator flips a reverse switch and the nuts shift into the next size drum until all the chestnuts have been sorted by size: tiny, small, large or extra large.

The smaller nuts that are inadequate for in-shell retail sales are processed in a creative method of sorting, peeling and sifting on equipment modified or built by Tom and his business partners to help take advantage of the growing demand for chestnuts.

This year, Tom estimates the business will peel 3,000 pounds of smaller chestnuts. The price range

paid by chefs per pound of frozen kernels is \$7 to \$10.

Growing chestnuts from seedling stock, smaller chestnuts can be from 5 to 55 percent of a chestnut grower’s production, yet most consumers seek chestnuts larger than one inch in diameter (see related article pg. 11). “We decided we had to do something to market these nuts that are inadequate for fresh, in-shell sales,” said Tom.

The co-op includes two certified organic producers, though the majority of the members’ chestnuts are grown with organic methods. Approximately 1,000 pounds of the organic crop was sold to a Whole Foods grocer distributor in Indiana for sales in Chicago stores, who paid the growers \$4 a pound.

Developing the Process

Growers deliver nuts to Tom as part of the cooperative membership, but the peeling process is managed by the Winfield Tree-grown Foods LLP business. Nuts must be delivered to Red Fern

(next pg)

Farm without the burrs and rinsed, if necessary. Those needed to process orders will be sent through the size sorter machine, but if the chestnuts will not be processed right away, they are transported to cold storage in nearby Wever, Iowa.

Tom hand-fashioned a simple sorting machine using large plastic drums and pulley motors. Holes have been drilled in the drums according to extra large, large, small or tiny chestnuts. The motor turns the drums and the nuts are shaken and fall through the appropriately-sized hole into separate bins

“The cooperative membership wasn’t interested in processing, so we developed a system for getting it done,” said Tom.

The next critical step in chestnut processing is curing. Once sorted, the chestnuts are cured in plastic, stackable trays at room temperature for approximately a week and a half. Only a small percent of the chestnuts mold, about 1 to 3 percent. Tom reports they usually only stack the chestnuts two layers deep per tray to allow for adequate air space between the nut and shell.

“It’s very important to have the nuts properly sized before curing, so that you can be sure you’re allowing the proper curing time,” said Tom. “If the moisture level of the nuts is off, it will be much more difficult to peel them and they won’t achieve the right freezing and cooking quality.”

Sprouting is deterred through this process as well, which reduces the moisture level needed for a chestnut to sprout. This is particularly helpful when storing seed nuts.

One attribute of cooperative membership is a set of guidelines for chestnut quality control, including the provision that batches with more than 2 percent defective nuts may be rejected. Defective nuts include those with mold, rot, splits, animal damage, insect holes or multiple embryos. Prices paid to growers by the co-op this fall were \$1.90/ pound for large nuts (greater than 1 1/8 inch in diameter); \$1.75 / pound for medium nuts (greater than 1 inch and less than 1 1/8 inch in diameter); and \$1.60 / pound for smaller nuts, (less than 1 inch in diameter).

Peeling Chestnuts for Market

The idea for Tom’s current peeling machine, like many growers’ ideas, came through trial and error. In 2001, Tom received a grant from the North Central Initiative for Small Farm Profitability, a four-state producer program based in Lincoln, Neb. Using sup-

port from this grant, the growers sent 1,350 pounds of chestnuts to Nebraska for a steam peeling process trial. They planned to distribute the peeled chestnuts to upscale restaurants in Lincoln



and Omaha, after surveying chefs to find out who was interested in experimenting with the nuts. The trial yielded only 250 pounds of shelled kernels, and the low efficiency was a major concern.

In addition to challenges presented through the steam peeling process, not one single chef in the Lincoln/Omaha area was interested in using the shelled, packaged and frozen nuts they had been offered for free in return for completing a survey. Not to be deterred, Tom contacted chefs in the Iowa City and Des Moines area, a total of 28 restaurants. All but two were interested, if not emphatic, about purchasing the nuts.

“Iowa City chefs were eager to try the Chinese chestnuts,” said Tom. “The response was really positive.”



Top: Fresh chestnuts are cured in stackable trays to bring them to the desired moisture level for peeling.

Left: The motor of the sorting machine turns the plastic drums to allow chestnuts to fall into sized bins below.

Seeking additional market information, the Southeast Iowa Nut Growers Cooperative completed a marketing and processing study on chestnuts in September 2002, conducted by the Food Processing Center at the Institute of Agricultural and Natural Resources, Lincoln, Neb.

A key recommendation presented to the co-op was to identify peeling methods in order to provide chefs with a frozen kernel product, and like cracking a case, the growers followed every lead.

Soon Tom and his partners learned about a machine for shelling chestnuts developed by an individual in the southeastern U.S. Hoping to purchase one of the machines, Tom applied for and received a Sustainable Agriculture Research and Education (SARE) grant to fund the project. Unfortunately, he learned the inventor of the machine had passed away and the only two machines in existence had been sold, one of them to a buyer in Ontario, Canada. The Ontario buyer generously (cont. next pg)

Small But Mighty (cont.)

offered to let Tom bring the sheller back to Iowa for a trial, but with only marginal success reported, and the complications of bringing the equipment across the border, this didn't seem a viable option for Winfield Tree-grown Foods. However, upon talking with the Ontario buyer, Tom determined the equipment closely resembled a peanut sheller. He purchased a hand-crank version of a peanut sheller and then modified and motorized it – finally achieving a successful piece of peeling equipment.

The results of Tom's modified peanut sheller are quite promising. Taking into account that the shell represents 15 percent of the chestnut weight, and losing an additional 25 percent of nut weight during curing, Tom reports a 99 percent return on nut kernels.

The nuts may be passed through the machine more than once, and as many as three times, but still achieve high results. Though not perfect, the sheller is more price efficient – costing around \$1000 for the parts (assembly not included), in comparison to imported commercial equipment that can reach \$100,000 or more. The nuts move through a cylindrical screen, and then rotating bars crush the shells. The kernel falls through the screen and a blast of air removes any shell fragments. Shelling is done in a licensed kitchen facility at a nearby community building in order to meet government requirements for food processing.

“The key is that the nuts cure to the point of perfect flavor, and then we can process them through the sheller,” said Tom.

Following shelling, the kernels are sifted by a machine (to size and separate shell from kernel) that consists of a series of trays set on a slant. Each tray has holes drilled in the bottom, and as the shelled kernels slide down the trays, various size holes allow kernel pieces to fall through while a fan blows the debris or shell fragments away.

Once this process is complete, they are vacuum packed in one-pound plastic bags using a basic vacuum sealer. From there, they are transported to a freezer warehouse in Iowa City, allowing the co-op to remain in accordance with the state's food laws.

These one-pound bags are a highly desired commodity among local restaurants, who often contact the business directly seeking more chestnuts.

Many of these contacts were established last March, when Tom and his partner attended an organic food trade show in _____↑

Chicago. They brought only 15 pounds of the processed, peeled nut kernels in hopes of receiving a response from some of the 500 chefs in attendance. To their delight, at least 40 chefs showed great enthusiasm for the chestnuts. “They were excited, and asking us how soon they could buy some, at any cost,” said Tom.

He pursued this interest when



Bottom: Winfield Tree-grown Foods uses a modified peanut sheller to peel chestnuts. Left: Tom Wahl, (far left) Mike Gold, Ken Hunt and John Wittrig discuss the peeling process. Top: The nuts move through a cylindrical screen, and then rotating bars crush the shells. The kernel falls through the screen and a blast of air removes any shell fragments.



he returned to Iowa, even express shipping 10 pounds to “Carlos,” a four-star Chicago restaurant. “They didn't bat an eye at the shipping expenses, they just wanted the chestnuts,” said Tom. The chestnuts were served in a \$140 plate dinner celebrating the 23rd anniversary of the restaurant, including chestnuts in two of the six main dishes. “The chestnuts we usually buy from China are poor quality, very bad,” said Carlos executive chef Eddie Mendoza. “These (from Iowa) are incredibly delicious. The sweetness is great, the flavor is supreme.”

(cont. pg 13)

Delmarvelous Featured on “Food Finds” (cont.)

new countertops and new cabinets, because as her husband jokes, “she has to make everything into a production.” Some of the work was completed as late as three days before the crew arrived, but the new cabinet doors for the lower level cabinets weren't ready on time. The Petitts improvised by filling them with cookbooks, roasters and other chestnut items.

“After all of that, they interviewed me in my own kitchen,” Nancy said. “They ended up rearranging all the nick knacks.”

Food Finds isn't the only recent large-scale media success for the Petitts. In November, they were also featured on a live cooking show for Comcast cable, which aired from Maine to Maryland and exposed thousands of viewers to a delicious chestnut soup recipe.

Nancy suggests chestnut producers can take some effective steps at cultivating strong media relationships. “When you have an event, send invitations to local media, including the radio and television personalities. Invite them over and over again to everything. Send out a barrage of press releases, good ones that are noteworthy.

“Develop a media ‘champion’ in your area that knows what you're doing and will keep up. The rest will fall into place. It's about actively courting the media,” she suggests.

Additional suggestions from the Petitts are to send food baskets to local food writers or invite them to your farm for a special chestnut-themed lunch.

“It's hard work to cultivate your presence with the media, but it will eventually pay off,” Nancy adds.

For more information, visit www.delmarvelouschestnuts.com or email chestnutsunltd@email.msn.com.



The Food Network crew adjusts the lighting in Nancy Petitt's kitchen in preparation for filming a segment of the holiday episode.

Regional Cultivar Selections: Midwest and Southeast Recommendations

Choosing the right chestnut cultivars for your soil, climate and crop preferences requires experimentation over time and a sense of curiosity. Advice from fellow growers can also be helpful, and this section is the first in a series to provide information about cultivars in the Midwest, West Coast and East Coast areas. The series begins with the Midwest and the Southeast, with the West Coast to be featured in the spring issue. If you have experience with cultivars you would like to share, we welcome your input. Please contact Michael Gold, editor, at goldm@missouri.edu or (573) 884-1448.

Cultivar Review: By Greg Miller

Source: A Guide to Nut Tree Culture in North America, 2003. Vol. 1. Pages 175-181. Dennis W. Fulbright, ed. (See page 10 for works cited)

Whether to plant seedling or grafted trees is a debate which is still not resolved. Many orchards of Chinese chestnut seedlings have been planted and have produced commercially acceptable crops. Nevertheless, it is expected that clonally propagated trees (i.e. grafted or self-rooted trees) are more desirable because of

uniformity and known quality. However, chestnuts often suffer from delayed graft union failure wherein a graft may die one or more years after grafting. Most adult chestnut clones are not easy to propagate by cuttings, layering, or tissue culture. Because of the difficulty in vegetative propagation, many people have elected to plant seedlings. Chestnuts are quite genetically variable and do not “come true” from seed. Even seedlings from the same tree are quite variable. However, for pure Chinese chestnuts, a large number of the seedlings derived from superior parents will produce nuts of acceptable size and quality. Because millions of seedling have been planted and brought into production over the years, there have been many good candidates for cultivars. Most of these good candidates have not been named or propagated. Those that have been named are not necessarily any better (and in some cases, worse) than superior unnamed seedlings.

There have been hundreds of cultivars named over the years. Due to the difficulty in vegetative propagation, and blight susceptibility of some selections, very few of the cultivars have been propagated to any great extent in the United States of America, and many have been lost. (cont. next page)

Regional Cultivar Selections (cont.)

The listing which follows includes the best known cultivars which are currently propagated, or are at least in existence in North America. A more extensive list of cultivars grown in the United States has been compiled by Nave (1998a). Many originators have named more than one cultivar from a similar genetic background. In these cases, the cultivars are described as a group. For the most part, cultivars have not been compared with each other in experimental field trials. Therefore, it is difficult to make valid comparisons among cultivars with respect to characteristics such as nut size, ripening date, and productivity.

‘Au-Cropper’, ‘Au-Leader’, ‘AU-Homestead’. A USDA cooperative planting of Chinese chestnuts of unknown origin was made at Auburn University, Auburn, Alabama, in 1935. From the original planting, ‘AU-Cropper’ was selected. ‘AU-Leader’ and ‘AU-Homestead’ were selected from progeny of the original planting. All were released in 1980 (Harris et al. 1980). Nut size of all cultivars is 10 to 12 grams. ‘AU-Homestead’ is reported to have some resistance to the gall wasp.

‘Colossal’. This old cultivar was selected early in the 20th century by Felix Gillet in California (Nave 1998b). It is thought to be of European-Japanese background. It produces very large (30 grams) nuts of good quality. Many seedlings of this cultivar have been and continue to be planted in California, causing some confusion of the original cultivar with its seedlings. Nevertheless, ‘Colossal’ is widely propagated and planted.

‘Crane’. This cultivar is derived from seed sent by Peter Liu from China to the USDA in 1936. Therefore, it is considered pure Chinese. The seedling was grown in Philema, Georgia, first grafted in 1947, and named in honor of H. L. Crane in 1963 by J. W. McKay of the USDA. The late ripening nuts are dark cherry red, almost hairless, averaging about 14 grams. The burs are large relative to nut size.

‘Dunstan Hybrids’. The most recent releases include ‘Revival’, ‘Heritage’, ‘Carolina’, and ‘Willamette’, selected by R. D. Wallace in Alachua, Florida, and derived from selections produced by R. Dunstan in Greensboro, North Carolina (Wallace 1987). These recent releases are third generation offspring of an original hybrid involving an American chestnut pollinated by ‘Kuling’, ‘Meiling’, or ‘Nanking’. Both tree and nut characteristics of the cultivars are predominantly Chinese. Nuts are high quality and very large, up to 25 grams.

‘Eaton’. The original seedling was from the Connecticut Agricultural Experiment Station, given by A. H. Graves to F. S. Eaton of Wallingford, Connecticut. It was named in his honor in 1970 by R. A. Jaynes. The parentage is unknown, but it is suspected to be an offspring of ‘Sleeping Giant’ (see below). Although it may be of hybrid origin, its tree and nut characteristics are predominantly Chinese. The nuts, which average about 12 grams in size, have excellent flavor and sweetness.

‘Kuling’, ‘Meiling’, ‘Nanking’. The original seedling of these cultivars came from seed collected by Peter Liu in China, the same collection that produced ‘Crane’. The seedlings were planted at Philema, Georgia, in 1936. These cultivars were released by the USDA in 1949. ‘Nanking’ became the most widely propagated of the three. ‘Meiling’ is popular because its nuts are slightly larger than ‘Nanking’. ‘Kuling’ produces dark brown nuts, about 12 grams in size, while ‘Nanking’ and ‘Meiling’ produce lighter colored nuts in the 13 to 15 grams range.

‘Myoka’, ‘Layeroka’, ‘Skioka’, ‘Skookum’ (and others). The selections of J. U. Gellately, Westbank, British Columbia (Gellately 1964), have shown value in the colder chestnut regions. According to Mr. Gellately, the selections are Chinese, the earliest selections from seed imported directly from China. However, the characteristics of the cultivars, including growth habit, leaf, twig, and nuts, all indicated that they are at least part European. All are vigorous, productive, timber-type trees, which produce medium to large sized nuts with white kernels. They are not fully blight resistant. ‘Myoka’ and ‘Skioka’ first came into production in the 1940’s and 50’s. ‘Layeroka’ is a seedling of ‘Skioka’ reportedly named for its ability to be propagated by layering. ‘Skookum’ and some numbered selections are more recent Gellately cultivars that show promise.

‘Orrin’. This cultivar originated as a seedling in the orchard of Orrin S. Good in Lock Haven, Pennsylvania. The seedling was obtained from Leeland Farms Nursery, Leesburg, Georgia, whose stocks had an origin similar to that of ‘Kuhling’, ‘Meiling’, and ‘Nanking’. The cultivar was named in 1963 by J. W. McKay of the USDA. The nuts of ‘Orrin’ have a slightly hairy tip and a distinctive dark mahogany shell which contrasts with the light-colored hilum scar. The bur is relatively small for the 14 gram nut which it contains. Graft union failure has been a problem.

‘Silverleaf’. An orchard of at least 40 years of age owned by D. Judd in San Joaquin County, California, has the original ‘Silverleaf’ (Bergantz 1987). The origin of the tree is unknown. It was named ‘Silverleaf’ by B. Bergantz because of the whitish undersides of the leaves at flowering time. It forms a round, bushy tree and appears to be pure or predominantly Japanese. The 15 to 16 gram nuts are sweet, easy to peel, and dry well.

‘Sleeping Giant’. This cultivar originated from the Connecticut Agricultural Experiment Station as a 1937 cross of a Chinese mother tree with pollen from a Japanese-American hybrid. It was named by A. H. Graves in 1960. It is a potentially large tree producing 11 gram nuts.

‘Qing’. The original seedling is a yard tree growing in Hickory, Kentucky, planted circa 1960, of unknown origin. It was brought to the attention of several chestnut enthusiasts by John Borntrager, evaluated and named by Mike Nave (1998a), and first propagated in 1998. It appears to be pure Chinese. The original tree consistently bears large crops of (cont. pg 11)

Chestnut Marketing through Events and Surveys: Examples from Missouri and Michigan

In the ongoing effort to educate consumers about chestnuts, face-to-face contact through planned events proves effective time and time again. Through visitor surveys at the annual Missouri Chestnut Roast and a recent national market-based survey, the University of Missouri Center for Agroforestry is assessing the knowledge level of consumers toward chestnuts and seeking to understand the breadth and scope of the industry. Michigan State University is also generating consumer interest in chestnuts through the fun, family-oriented experience of the annual Chestnut Festival in Cadillac, Michigan. Both chestnut festivals were held on Oct. 16, 2004, at the conclusion of National Chestnut Week. The following information offers the event highlights and an overview of the market research efforts at the University of Missouri.

Second Annual Missouri Chestnut Roast Offers Taste of Tradition; Achieves Record Attendance During National Chestnut Week

Nearly 3,000 people enjoyed samples of some of the best of Missouri’s agricultural bounty at the second annual Missouri Chestnut Roast on Oct. 16th -- from crisp local wines and sweet Missouri-grown pecans, to black walnut ice cream, homemade pepper jelly and of course, hot roasted chestnuts.

Held annually in October, the Roast is a key event designed to generate awareness for this unique tree nut. “The chestnut is not yet in the market mainstream, like pecan, but we’re working to move it up through events like the Chestnut Roast. It’s a versatile, healthy nut that has been important in European and Asian diets for centuries,” said Michael Gold, associate director, Center for Agroforestry.

In addition to chestnuts, the annual event also raises awareness for black walnut and Missouri pecan, offering nutritional information, recipes and a variety of Missouri-made nut products to visitors. This year, complimenting the popular treat of free fresh roasted chestnut samples was hearty chestnut soup, made with chestnuts harvested from the research farm. Two Midwestern chestnut growers kept busy during the entire festival selling the mild, sweet-tasting nuts to curious visitors.

New this year in the exhibit tent was a chestnut cooking demonstration with Craig Cyr, executive chef and owner of Cherry Street Bistro and Wine Cellar. Chef Cyr prepared a series of gourmet chestnut dishes while more than 200 guests looked-on, asking questions and sampling the dishes, many eating chestnuts for the first time.

“We’re excited about the consumer interest emerging for these nuts and for the production of value-added products, such as jellies and candies that contain the nuts,” said Julie Rhoads, event coordinator.

For more information about the Missouri Chestnut Roast, visit www.centerforagroforestry.org. Mark your calendars — next year’s Chestnut Roast will be Oct. 29, 2005.

UMCA is currently analyzing visitor surveys from the 2004 Chestnut Roast to determine the level of consumer knowledge and awareness about chestnuts, as well as preferences for price and packaging. Results of the surveys and the Center’s national marketing survey will be published on the UMCA web site at www.centerforagroforestry.org. Results of the 2003 Chestnut Roast survey were published in an article in *HortTechnology*, Oct-Dec. 2004, 14(4), p. 583-589.



Top: Charles NovoGradac, known as “Chestnut Charlie” from Lawrence, Kan., sells fresh chestnut products to visitors.

Bottom: Gourmet chef Craig Cyr prepares chestnut dishes for a crowd of nearly 200 guests, who received samples of each dish.

Cadillac, Michigan Chestnut Festival Draws Curious Crowd

by Bill Nash

In spite of rain, wind and cold weather, several thousand people turned out for the Fourth Annual Cadillac Chestnut Festival on Oct. 16, 2004 in the city of Cadillac located in Northern Michigan. Festival goers were treated to everything from delicious chestnut dishes, food and craft vendors, live entertainment and even a fall color tour on a local train. The Chestnut Growers Inc. (CGI) along with the Midwest Nut Producers Council passed out samples of roasted chestnuts and chestnut soup, which hit the spot on that chilly day. CGI also sold several pounds of their member's chestnuts. One local downtown restaurant, Chef Herman's, gave a chestnut cooking demonstration in the entertainment tent and featured special chestnut dishes at the restaurant for the weekend. The city of Cadillac is promoting this festival, and people attended from Detroit, Chicago and other major Midwestern cities. The Cadillac Chestnut Festival has given chestnuts a good deal of publicity here in Michigan and the Midwest. It has also benefited the downtown merchants and the City of Cadillac by bringing in crowds of people and economic stimulus. Everyone is looking forward to many more successful Chestnut Festivals.



Above: Guests sample homemade chestnut soup and complete a visitors' survey.

Left (top): Visitors line up for fresh roasted chestnuts, despite the rainy weather.

Left (bottom): Packages of fresh chestnuts sold well at the festival.



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Cultivar Selections (cont. from page 8)

large-sized (20-25 grams), easy-peeling nuts that have excellent flavor. Compared to other cultivars, it is outstanding; it has good commercial prospects.

'Amy', 'Gideon', and 'Peach'. These cultivars were selected by the author from a 1972 planting of Chinese chestnut seedling near Carrollton, Ohio, which were derived from trees sold by Ackerman Nursery in Michigan in the late 1950's. These cultivars display more cold-hardiness than many Chinese chestnuts. All bear consistent, high yields of easy-peeling nuts with excellent flavor. 'Amy' (10 to 15 grams) first designated as seedling number 72-400, is the earliest of the three, ripening several days before 'Eaton' and 'Sleeping Giant'. 'Gideon' (12 to 18 grams), first designated as seedling number 72-283, is mid-season ripening, slightly later than 'Peach' with very uniformly-shaped attractive nuts. 'Peach' (15 to 22 grams), first designated as seedling number 72-52, is also mid-season maturity, bearing light-colored (at harvest), characteristically fuzzy chestnuts.

Chestnut Cultivar Selection for the Midwest, by Ken Hunt

Currently most orchard plantings in the Midwest are Chinese chestnut seedlings. But, as an industry begins to develop, grafted cultivars should become more prominent. To help encourage this shift the Center for Agroforestry has established a grafted repository at the Horticulture and Agroforestry Center at New Franklin, Mo., to evaluate long-term promising cultivars. Dennis Fulbright at Michigan State University and Hill Craddock at the University of Tennessee at Chattanooga have also established chestnut cultivar trials.

Grafted cultivars have several advantages over seedling trees, primarily more uniform nut ripening, higher nut quality, larger nut size and more consistent yields. However, as Greg Miller mentions on his web site there are several negative aspects of grafted chestnuts. Grafted trees are more likely to grow poorly or die due to delayed graft union failure. Greg mentions this is a frustrating problem that has hindered the development of a grafted chestnut industry in the Midwest.

In my opinion, we must continue our cultivar evaluations and orchard management research to find out which cultivars can be proven successful in order to make the industry viable in the Midwest. I believe delayed graft incompatibility can be reduced to a minor problem by practicing good orchard management, good site selection, performing evaluations for graft compatible rootstocks and screening for cultivars that show good graft compatibility.

I have compared my list of Chinese chestnut cultivars to others here in the Midwest, namely Tom Wahl, Greg Miller, and Hill Craddock. Tom lists 'Qing', 'Eaton', 'Sleeping Giant', 'Mossbarger', 'Peach', 'Amy', 'Orrin', and 'Gideon' as his best cultivars on his website. Greg lists 'Amy', 'Eaton', 'Gideon', 'Payne'

(formerly Byron 3-3), 'Peach', 'Qing', 'Shing', and 'Sleeping Giant' as his outstanding cultivars that he propagates. Hill lists 'Amy', 'Payne', 'Eaton', 'Gideon', 'Byron' (formerly Lindstrom 67), Lindstrom 99, 'Meiling', 'Mossbarger', 'Nanking', 'Peach', 'Qing', 'Revival', 'Shing', 'Sleeping Giant', 'Smith', and 'Willamette' that are grafted in his Chattanooga chestnut cultivar trial.

My short list is 'AU Homestead', 'Eaton', 'Gideon', 'Peach', 'Qing', and 'Sleeping Giant'. My list of less tested but promising cultivars are 'Perry' (formerly Lindstrom 93), 'Payne', 'Shing', 'Byron', 'Mossbarger', 'AU Super' (AU-91-P1-26), and 'Kohr'. 'AU Super' has not been released to the public. 'Sleeping Giant' is a hybrid tree, but is not male sterile and has been around long enough to be proven blight resistant. The nuts of 'Sleeping Giant' do exhibit a pointed top and are not as plump as typical Chinese chestnuts. 'Eaton' is a supposed seedling of 'Sleeping Giant' but from my observations, it exhibits predominately Chinese chestnut characteristics. I have experienced above average graft union failure with 'Qing', so I plan to look at a comparison of rootstocks of 'Qing' seedlings and unrelated Chinese chestnut seedlings to see if that will improve the problem. Greg Miller has told me that 'Kohr' has been difficult to graft compared to most other cultivars, otherwise I like the quality and size of the nuts of 'Kohr'. There are several cultivars that have good performance and quality nuts, but have nuts that don't make the cut for good size for in-shell retailing. If peeled processed nuts become a standard, then these cultivars will need to be considered. Examples are 'AU Cropper', 'Amy', 'Jersey Gem', 'Meiling', 'Revival', 'Crane', and 'Ford's Tall'. I do not have any experience with 'Nanking', 'Smith', or Lindstrom 99, so I will not comment on these cultivars.

Given that the majority of cultivars under test in Missouri have yet to begin bearing commercial quantities of chestnuts, the following general observations are presented: First, it appears that commercial yields do not begin until cultivars are in their sixth to ninth year from graft (See Table 1, Insert). Second, with limited data, both in terms of numbers of trees per cultivar and only one year approaching commercial sized yields (2004), there was a general trend toward decreased nut size as yields increased. This has been dramatically demonstrated in the cultivar Willamette that has shown a drop in nut size from 27.7 g in 2002 (average yield/tree 1.6 kg) to 10.4 g in 2003 (average yield/tree 4.3 kg) and 5.5 g in 2004 (average yield/tree 3.9 kg). Qing also showed a major drop in nut size as yields increased: from 21.1 g in 2003 (average yield/tree 1.5 kg) to 13.2 g in 2004 (average yield/tree 12.8 kg). Similar trends were found with the cultivar Peach (See Table 1).

(cont. page 14)



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Small But Mighty (cont. from page 6)

Meeting the Demand Challenge

The co-op has had very little challenge in identifying potential customers – but rather finding ways to supply the demand and the time required for processing.

The first week the growers used the shelling equipment, it took 5 hours to shell, remove unshelled kernels and shell fragments, and then package 118 pounds. The following week the process took 12 hours for only 60 packaged pounds. Once the new shifting machine was deployed, the process accelerated to about 28 pounds per hour. Approximately 10,000 pounds were produced by the cooperative this year, which includes the smaller nuts that were processed into kernels.

“Right now, we’re counting our processing in pounds per hour,” said Tom. “Some day, we would like to have enough production to process in tons per hour using commercial equipment.”

Through trial and error, the growers encountered another challenge – the nuts shift from room temperature storage to outdoor cold air conditions during transportation from the Red Fern Farm to cold storage to await processing. This allows the shells to collect moisture and humidity, causing complications in running them through the sheller.

To solve this challenge, the growers set up storage racks in an enclosed area with a space heater. Using forced air flow, they warm up and dry out the chestnuts to ensure the proper level of crispness for shelling. Bringing the area to a temperature of 100° F for a couple of hours is sufficient to prepare the chestnuts for processing.

In addition to preparing chestnuts for restaurant sales, Tom continues to nurture and care for his orchards, including reviving the chestnut planting across from his farm. The original grower applied wood chip mulch after planting the trees and then essentially no care. “There was no pruning, and little mowing, except for mowing hay between tree rows,” said Tom. “This continued for 8 years or so, with very little or no nut production, and then I suggested that if he mowed around the trees he would get nuts that year. I was right.” The trees began to grow rapidly following the mowing, averaging 30 to 36 inches of growth each year. Growth has jumped from approximately 4 feet tall to 12 to 14 feet tall in just four years.

“Maintenance makes a huge difference,” said Tom. “Some growers would like to plant a few trees and then retire to Florida, and



that makes for almost a total failure.”

Tom is also experimenting with a rare breed of French hens in a free range silvopasture setting within an orchard of chestnut trees. The hens help reduce any

pest problems and fertilize the soil, and their eggs bring a high price due to their quality, uniqueness and natural growth cycle. The Red Fern Farm, named for the rare red ferns found in its woods, is also considering ways to meet the growing demand from chefs for fresh paw paws and persimmons in addition to chestnuts.

Reflecting on the nut growers’ cooperative’s efforts during the past 12 years, Tom is pleased with the progress toward chestnut cultivation. “I’m satisfied with the work we’ve accomplished so far, but there’s still a lot of room for more growers who are interested in maintaining their crop,” he said. “The demand is definitely there – now we have to figure out how to meet it.”

“The chestnut business needs growers, especially those with the ability to ‘make-do.’”



Once peeled, chestnut kernels (top) are sized and cleaned by this machine. Each tray has holes drilled in the bottom, and as the shelled kernels slide down the trays, various size holes allow kernel pieces to fall through while a fan blows the debris or shell fragments away.

For more information, visit www.redfernfarm.com, or contact Tom Wahl, Southeast Iowa Nut Growers Cooperative, at (319) 729-5905 or by email at redfernfarm@lisco.com.



The peeled, frozen kernel chestnut product is popular with chefs. Due to partial dehydration and high sugar content, the kernels don’t actually freeze, and therefore maintain a fresh quality.

Portions of article information from *The Gazette*, Cedar Rapids, Iowa, Nov. 15, 2004.

Cultivar Selections (cont.)

Cultivar Recommendations: Hill Craddock, Biologist, University of Tennessee at Chattanooga

The cultivar list that I am working with includes mostly Chinese chestnut cultivars available commercially in the eastern USA, and a few varieties of European, Japanese and hybrid chestnut trees available from California, Oregon and Washington. Based on my preliminary results from a trial established by Scott Schlarbaum in McMinnville, Tennessee in the early 1990s (but terminated prematurely), and based on conversations with Ken Hunt (U. of Missouri Agroforestry Research Center) and with Greg Miller (Empire Chestnuts, Carrollton, Ohio) I chose 20 cultivars for my current test orchard:

Chattanooga Chestnut Cultivar Trial:

- Amy
- Bouche de Betizac
- Payne (Byron 3-3)
- Colossal
- Eaton
- Gideon
- Byron (Lindstrom 67)
- Lindstrom 99
- Meiling
- Mossbarger
- Nanking
- Peach
- Qing
- Revival
- Shing
- Sleeping Giant
- Smith
- Willamette
- Castanea henryi
- Paragon

I have 20 trees of each of 20 cultivars (400 trees total in the trial) in five-tree plots in four randomized complete blocks (the orchard was planted in the spring of 2003). I am also building my "Germplasm collection" (so far, another 50 or so cultivars and hybrids and other species) by planting guard rows all the way around all four experimental blocks.

Auburn University has released several cultivars that may be well adapted to southern Mississippi: 'AU Homestead,' 'AU Cropper,' 'AU Leader.' I would also include 'Bouche de Betizac' and 'Colossal,' respectively the main cultivars in southern Europe and California. Greg Miller and Ken Hunt are both tremendous sources of info (real data on production, yields and nut sizes) and sources for germplasm.

International Chestnut Congress Showcases the Chestnut in Portugal

by Mike Gold

The International Chestnut Congress was held from Oct 20-23, in Chaves, an ancient Roman City of about 12,000 located in the extreme north of Portugal practically bordering Spain (to the north). Chaves ham is the most famous food product of the region and the trademark of the city. The meeting location was at the Forte de S. Francisco Hotel, a restored old fort, with commanding views of the city and surrounding countryside.

More than 160 people from 24 countries attended the congress, representing Europe, Turkey, Japan, Korea, China, Australia, the USA, Chile and several others. Representing the University of Missouri Center for Agroforestry were Mike Gold, Ken Hunt and Michelle Warmund. The International Chestnut Congresses are held roughly every 5 years and are sponsored by the International Society of Horticulture Science plus a host of individuals and organizations in the host country and surrounding areas. The host of this year's congress was the University Trás-os-Montes e Alto Douro (UTAD), Vila Real, Portugal.

More than 80% of chestnut production in Portugal is located in the extreme north of the country within 100 miles of Chaves, called "The Chestnut Country." Orchard tours took place on Oct. 21 when the attendees went to the Padrela Mountain Region and Terra Fria. An amazing white tablecloth lunch loaded with delicious chestnut dishes was held at Quinta de Vila Boa de Arufe, a small remote village in the heart of northwest Portugal's chestnut producing region. On the tour the bus traveled through valleys filled with olive orchards, chestnut groves and vineyards.

In Italy and throughout many localities of central and southern Europe, chestnuts and chestnut forests are an integral part of history and culture, even described as "the soul of our people." Chestnuts, in many different forms, are found everywhere, simply as part of the normal dietary and physical landscape. They are eaten in dozens of different ways, from appetizers to main courses and desserts. The chestnut wood has also been used widely. Ancient chestnut trees pictured in the photos of Prof. Elvio Bellini (all poster photos are c/o Prof. Bellini) are centuries old.

Prof. Elvio Bellini, working as a tree breeder at the University of Firenze (Florence) brought a set of 25 remarkable posters to the 3rd International Chestnut Congress. The posters contained a remarkable display on the A to Z of chestnut, including many images of the chestnut forests in all seasons of the year and many delicious pictures of chestnuts in cuisine. For more information about the region, visit www.rt-atb.pt (English translation available soon). The next chestnut congress is tentatively scheduled to take place in China in 2008.

(See photos next page.)

International Chestnut Congress, Portugal



Top to bottom, from left: 1. Large quantities of chestnuts were roasted in huge hanging metal baskets over hot coals by the local chestnut producer association at Carrazedo Montenegro. 2. A mature chestnut tree, approximately 50 years old. 3. An ancient chestnut tree in Italy, large enough for a door carved in the trunk. 4. Chestnut researchers discuss Chestnut Ink Disease during the Oct. 21 orchard tour. 5. Chestnuts are sold at markets daily, along with common market items like fruits and vegetables. 6. A mechanical, tractor-powered chestnut harvesting machine that also removes debris and deburs the nuts.



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