



# The Chestnut Grower

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## Selecting an Appropriate Pricing Strategy

*Nancy Giddens, Joe Parcell, and Melvin Brees, MU Dept. of Agricultural Economics*

*This publication is the second in a series on Managing for Profit in the Value-Added Business. This series was developed by the staff of the Missouri Value Added Development Center.*

The focus of this publication is the selection of an appropriate pricing strategy for value-added agricultural products. Selecting a pricing strategy for your product is critical, because price is the most highly visible element of all marketing efforts. Consumers and competitors easily can access pricing information on goods sold at the retail level.

Suitable pricing is important for price-quality signaling. Price-quality signaling occurs when the price of a good indicates the perceived quality of a good. Price-quality signaling is an observable incident that affects consumer purchasing behavior. **(cont. on page 6)**

## Getting Your Foot in the Door

*by Carolyn Young, Allen Creek Farm*

2010 was abnormally cool here in the northwest and pollination took place late accompanied by constant rain. The result was a small crop with late harvest. We've had a chestnut festival here at our farm for a number of years during National Chestnut Week and plan it to occur the same weekend as Ridgefield's Birdfest, a celebration of the fall return of waterfowl to the Ridgefield National Wildlife Refuge. **(cont. on page 3)**

## Fall Chestnut Harvests and Roasts

*Paige Pritchard, The Center for Agroforestry*



Around 7,000 pounds of chestnuts were harvested at the University of Missouri Horticulture and Agroforestry Research Center this year. Depending on the cultivar, some were harvested individually for specific research purposes and the remainder of the harvest was bulked for sale. Some of the bulked chestnuts were used to supply The Center for Agroforestry's chestnut roasting booth. UMCA faculty and staff members have operated the booth at multiple fall festivals and area events, such as the Great River Chestnut Roast at Forrest Keeling Nursery (see picture above). **(cont. on page 9)**

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## A Message from the President

MIKE GOLD  
UNIVERSITY OF MISSOURI  
CENTER FOR AGROFORESTRY

*My apologies to fellow CGA members for missing an entire quarterly issue of The Chestnut Grower. Dr. Ken Hunt of our Center retired at the end of August, a major loss for our chestnut research and outreach program. As a result, I was much more involved in the harvest, data collection, processing and sales of our Center's chestnut crop from mid-September until mid-December. As soon as I turned my thoughts to our fall CGA newsletter in late October, I became quite ill and missed work during most of the month of November (feeling better now). Catching up from that illness has led to a very long delay in getting the Fall 2011 newsletter published. With blessing from the CGA board, we are putting out a combined Fall/Winter newsletter (same size as usual) to catch up and we will be back on track for our Spring 2012 issue in April.*

*One of the interesting things about chestnut production that we still do not understand is "why do we have good years and bad years" in terms of yield. What triggers heavy flowering followed by excellent pollination carried through to heavy crop load? Based on a conversation with Dennis Fulbright, Michigan chestnut growers had a record harvest in 2011. Every chestnut tree, regardless of past history, seemed to bear a record crop load. Is it "heating degree days" and if so how many are essential? Is it "soil moisture levels" and if so how much and at what critical time(s) of the year? We still need more research, and more locations dedicated to chestnut research, to answer these and many other important questions on behalf of US chestnut growers.*

*The CGA board met via conference call on Feb. 15, 2012 and has given its approval to co-host the 2012 North American Chestnut Farm Workshop to be held in/near Jackson, Michigan August 30 – Sept. 2, 2012. CGA will co-host with Michigan State University and the Midwest Nut Producers Council. Details to follow in March and in our Spring 2012 newsletter. **Important:** CGA members will meet on Thursday, August 30, to vote on changes to our bylaws that will include authorization to approve this conference as our official CGA annual meeting for 2012. Mark your calendars.*

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### PUBLICATION DEADLINES

Fall issue deadline 9/15 mailed 10/15  
Winter issue deadline 12/15 mailed 1/15  
Spring issue deadline 3/15 mailed 4/15  
Summer issue deadline 6/15 mailed 7/15

## Getting Your Foot in the Door (cont. from front page)

What we got was a harvest so late we had no fresh nuts available. Our visitors were very understanding and we sold out of all our chestnut flour, dried chestnuts and chestnut mixes. If we thought last year was bad we didn't know what was to come this year – cooler weather, later pollination, and only a total of 3 weeks of summer weather

As I sit here chestnuts are falling in Missouri and other places east, but if you open our burs you'll find only dime-sized chestnuts inside. Harvest will be even later this year -- we're guessing not until Oct. 15 or so. We've cancelled our annual festival. If we scheduled it to occur when we have nuts we'll be into the rainy season and that wouldn't be good either. You've got to be a little creative here. How about selling our dried chestnut products at Birdfest? The only catch is they have to be bird-related. If you're not a food vendor you'll have wildlife paintings, drawings, photos, woodcarvings – anything bird-related.

So how do you make chestnuts bird-related? You make chestnut duck calls, of course. No one in the U.S. sells them. With the refuge just a mile from our farm we've got

lots of duck hunters in the area. It's a brand new market segment. Ray and I have always enjoyed wildlife art and occasionally attend the Minnesota Decoy Collector's Association show held in Minneapolis each February. You've never seen so many decoys and duck calls in your life. I decided if these men could make duck calls I could too. It's not exactly a rocket science skill. And so I began. I set a goal of having 30 of them available for the event, scheduled this year for Oct. 8. I've got 25 done so far. I haven't put them up on the website yet and that will occur within the next few weeks. How will they sell? I don't have a clue but I look at it this way, if I don't try I can't fail. Neither can I succeed.



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# Forrest Keeling's Great River Chestnut Roast

Paige Pritchard, The Center for Agroforestry

On Saturday, Oct. 8, Forrest Keeling Nursery had their second annual Great River Chestnut Roast. FKN staff estimated that over 1,000 people were in attendance. The event drew people from throughout the state to the nursery in Elsberry, MO. Some chestnut-lovers even came all the way from Kansas City and southern Missouri. This was no surprise though, given the wide variety of events that were offered at the roast. Local chestnut producers attended and offered samples. Guests could

also try other Missouri products from wine and chestnut beer to elderberry juice. With demonstrations of FKN's root production method® (RPM) and tours of the nursery, guests were guaranteed an educational experience at the nursery. Children's events such as storytelling and a petting zoo made for a fun, family-friendly event. FKN owner Wayne Lovelace said that he couldn't have asked for a better turn out and thanks everyone who attended and helped make the event a success. (photos cont. on page 5)



Above: (Top) A folk band provides lunchtime entertainment. (Bottom) Guests peruse the "pawpaw patch."



(Top) Chef Jina Yoo from Columbia, MO provided a cooking demonstration featuring chestnut recipes. (Bottom) Children enjoy petting goats and sheep, among other animals, at the petting zoo.



(Top) Linda Black from Chestnut Ridge of Pike County informs guests about her chestnut products. (Bottom) Wayne Lovelace directs a tour of his nursery in the sunny weather.





## Forrest Keeling's Great River Chestnut Roast (cont. from page 4)



Lunch is served under the shade of the bald cypress trees of Forrest Keeling Nursery during the Great River Chestnut Roast.



A representative from Elderberry Life Farms in Hartsburg, MO sells elderberry juice, cordial and jam.

## Eastern Washington Report

*Lee Williams, Trails End Chestnuts*

Mother nature is a fickle lady isn't she? In 2009 and 2010 we had really late frosts at the end of May. So bad, that all the young leaves froze off and everything had to rebud. After that, there was only spotted blossoming in some of the later producing trees. (All my trees are seedlings started from nuts from various trees.) In mid November of 2010 we had a real cold snap of -16 to -20 °F for two weeks. Out of 500 trees I lost about 25 twenty-year-old trees and had lots of trees with individual limb damage, that had not gone dormant. There were thousands of fruit trees lost in the area and moderate to severe damage to the wine grape vineyards. For the cherry growers that didn't lose their trees or have them damaged, the harvest was a month late.

This year starting on 1/1/11, was the third coldest year in Washington history. It was a cold wet spring. We didn't have a day at our location over 80 °F until about the first of June and it wasn't until then that any leaves started to develop. Blossoms started near the end of June. We had a good set, with good pollination. Only problem is that the weather has remained cool and it wasn't until mid August

that we started to get some 90 °F days for short periods of time and then again for the last couple of weeks. In the desert area where our farm is, the night time temperature drops to 40-50 °F at night and everything has to start "re-warming" the next day. Needless to say that our burs are all small with nuts a little smaller than a dime. I don't see the possibility for too much increase in nut size because "fall is in the air". Talked with a grower on the west side of the state and the small nut thing appears to be the same over there. Just like corn, you need so many heat unit days to develop good nuts. Next problem to face is leaf drop. If we get early frosts and leaf drop, our traditional hand harvest will be impossible under 2-3 inches of leaves. Under normal conditions, I would have already started harvesting good size nuts from early bearers.

I still have a very small inventory of dried in-shell nuts and shelled nuts ready for further processing, but won't be able to replace the inventory this year with any production from my trees.

## Selecting an Appropriate Pricing Strategy (cont. from front page)

Whether or not input materials are, in fact, higher quality does not matter necessarily, because the consumer believes the inputs to be of higher quality.

To price products appropriately, you need to know the following:

- **Costs and profit objectives** – MU publication G648, Break-even Pricing, Revenue and Units, explains the process used to determine break-even prices for products.
- **Customers (demand)** – What value and benefits do customers perceive in the product and how willing are they to pay for it?
- **Competition** – How many competitors and similar products are in the market and in what price structure?

A complete understanding of production costs, profit objectives, customers, competition, and other market information helps you determine the pricing strategy that best fits your product and company. With this information, you know the minimum price you can charge to break even and the maximum price you can charge based on an estimate of customer demand. Together, costs and demand estimates provide you with the amount of price flexibility available in pricing your product. Competition and profit objectives will then factor in to determine the price you can charge for your product.

To illustrate this process, consider pricing soybean candles. To establish an appropriate retail price for soybean candles, the initial information you need is the break-even asking price, or the minimum price to consider charging customers. MU publication G649, Break-even Pricing, Revenue and Units, explains this example in detail and determines a break-even asking price of \$3.69. This number represents the minimum price the soybean candle producer should consider charging. To establish a maximum price, the soybean candle producer needs to determine what value customers place on a soybean candle that burns longer and cleaner. Suppose that through surveys or focus groups the producer determines that the most customers would pay is \$7.14. Given these upper and lower price constraints, the price flexibility in this scenario is \$3.45 (\$7.14 - \$3.69). To determine the price to be charged given price flexibility, the producer will need

to factor in the effects of competition and profit objectives. This is difficult due to the subjectivity and estimates involved. To ease subjectivity, most companies subscribe to one of five main pricing strategies:

- Premium pricing
- Value pricing
- Cost/plus pricing
- Competitive pricing
- Penetration pricing

To compare these strategies, consider the following scenario. The soybean candle producer and marketer revisits the focus group mentioned earlier. This focus group consisted of nine potential customers who fit the selected demographic profile and who used the product for one month. This group reported that the soybean candles burned about 60 percent longer and had 100 percent less smoke than regular petroleum-based candles, the main market competitor. With these attributes in mind, the group reported they were willing to pay 43 percent more on average for a soybean-based candle than for a petroleum-based candle.

With consumer information, you begin to assess your competition and find that petroleum-based candles of the same size sell for an average of \$4.99. A 43 percent increase equals \$7.14 — the upper constraint of the price flexibility range. Now, use this scenario to further examine the five pricing strategies.

### Premium Pricing

Premium pricing is used when the product has one or more unique characteristics. This uniqueness differentiates the product greatly from competition and creates a significant competitive advantage. This strategy demands a high-quality item to merit the high price. Because of the extremely high price, premium pricing generally is a short-term strategy as competitors are attracted to markets with high-margin items. The length of time you can charge customers a premium price depends on the sustainability of the competitive advantage — the greater the sustainability, the longer time premium pricing is a viable option.

## Selecting an Appropriate Pricing Strategy (cont. from page 6)

A premium pricing strategy yields the highest product prices of the strategies available. It is best to use premium pricing when there are no substitutes for your product, substantial barriers to enter the market exist, and your potential customers are price insensitive because they value the benefits provided by the product. Also, economies of scale are not necessary for this strategy to work. The most important detail to remember is that you cannot use premium pricing when facing competition. Competition would undercut your price, leaving you with an ineffective pricing strategy and poor product sales.

In the soy-based candle scenario, the candle manufacturer could implement a premium pricing strategy effectively because of little or no competition. Research from the focus group combined with the candles' unique market position results in a premium price of \$7.14 per candle. Your candles merit the premium price because of longer burning time, reduced smoke, and no competition.

### Value pricing

Value pricing is an abbreviated version of the premium pricing strategy. Put simply, value-priced products are priced a bit lower than premium products because they face moderate market competition. A value pricing strategy is used best when only a few competitors exist, barriers to entering the market are relatively high, and potential customers value the benefits provided the product. A business should select a value pricing strategy when its product has a competitive advantage that is unsustainable because of the likelihood that competitors will enter the market. Generally, value priced products attract many competitors because the price for products is high in relation to the barriers to entering the market

Returning to the soy-based candle scenario, the manufacturer may choose a value pricing strategy if competitors can easily enter the market by simply changing a few inputs. The candle would be priced at \$5.69 to compete more effectively with new market players.

### Cost/plus pricing

Cost/plus pricing is used when a company has a two-tiered focus: costs and return on sales. Companies implement

cost/plus pricing when market share and profit are the objectives. To establish a price using a cost/plus strategy, the company needs to determine its break-even price by calculating all costs involved in the production and distribution of the product. MU publication G648 explains the calculation of break-even price.

Once the break-even price is known, the firm establishes a markup for each unit to be sold. The markup must be large enough to provide a sufficient profit, but should not exceed what customers are willing to pay. Suppose that the firm decides on a 12 percent margin for its soybean candles. Since it already knows the breakeven price is \$3.69, it sets the price at \$4.13 ( $\$3.69 \times 1.12$ ). The \$4.13 price tag better enables the candle manufacturer to focus on costs, to reach its gross sales objectives.

### Competitive pricing

Competitive pricing is a basic pricing strategy focused on cost reduction. Costs of production, marketing, and distribution are kept to a minimum. To determine a price using a competitive pricing strategy, a firm can simply identify and record competitors' prices and price its product accordingly – a little more or a little less depending on differentiation. Competitive pricing maintains price status quo in product categories that use this strategy. Consider the cereal industry for example. There are many competitors with many brands to offer cereal consumers. However, cereal manufacturers have reached a delicate balance over time by pricing their products competitively. No manufacturer would benefit greatly by undercutting the prices of its competitors. Undercutting competitors' prices would result in price wars that would lower profits for each company involved.

Obviously, competitive pricing is not appropriate for soybean candles given the added benefits valued by customers.

### Penetration pricing

Penetration pricing is used when a company launches a product in a market with several competitors. Initially, the price for the product is set low to grow product sales and increase market share. (cont. on page 8)



## Selecting an Appropriate Pricing Strategy (cont. from page 6)

Doing this attracts new customers more quickly and easily than other strategies. Once market share is gained, price is increased. This strategy is effective when potential customers are price sensitive and economies of scale can be exploited. Although this strategy might seem to work for small, value-added enterprises, few will have the infrastructure and size to operate at economies of scale.

Like competitive pricing, penetration pricing is not appropriate for soy-based candles. Soy-based candles offer a competitive advantage in longer burning times and less smoke than other candles. Targeted customers value these qualities and are willing to pay for them. This willingness to pay reduces price sensitivity and, consequently, the effectiveness of penetration pricing

### Guide to strategy selection

Knowing and understanding production costs, profit objectives, customers and competition will help you select an appropriate pricing strategy. Pricing is difficult but should reflect the value and benefits your product provides customers. The following table can be used to select appropriate pricing strategies in specific market situations.

*This publication can be found online at <http://extension.missouri.edu/p/G649>.*

Strategy	Substitutes	Entry barriers	Price sensitivity	Economies of Scale	Goal
Premium	None	Very high	None	None	High/unit margin
Value	Few	High	Low	Low	Profit
Cost/plus	Some	Medium	Medium	Medium	Market share and profit
Competitive	Many	Low	High	High	Protect market share
Penetration	Many	Low	High	High	Market growth and leadership

Selecting an appropriate pricing strategy depends on market conditions.

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– Kit Bond

For more information, contact Forrest Keeling Nursery at  
800-356-2401 or [info@fknursery.com](mailto:info@fknursery.com)

Or join us at the Missouri Chestnut Roast Oct. 16, New Franklin, Mo.

• [kitbond.com](http://kitbond.com) •





## Fall Chestnut Harvests and Roasts (cont. from front page)

Paige Pritchard, *The Center for Agroforestry*

Other Missouri-based roasting events have included Clover's Natural Food Market's 46th Anniversary Party and the Columbia Center for Urban Agriculture's Harvest Hootenanny in downtown Columbia, MO. The roasting booth also attended a chestnut roast at the Urban Chestnut Brewing Company in St. Louis (<http://urbanchestnut.com/home>). UCBC makes 'Wingnut' - a chestnut beer that is now one of their signature microbrews. Finally, the roasting booth appeared at the Columbia Farmer's Market on Nov. 12. Some chestnut recipes and guides for how to roast chestnuts can be found on the UMCA website at <http://www.centerforagroforestry.org/pubs/recipes.php>.



(Top) UMCA Associate Director Mike Gold and John Thompson help sort through harvested chestnuts. (Bottom) UMCA faculty member Ina Cernusca hands out roasted chestnuts at the Columbia Center for Urban Agriculture's Harvest Hootenanny.)



(Top) Kenny Bader helps process the chestnut harvest at the Horticulture and Agroforestry Research Center. (Bottom) Larry Godsey roasts chestnuts while Paige Pritchard hands them out to visitors at Forrest Keeling's Great River Chestnut Roast.



# A new high-tannin, high-health feed supplement for alpacas in NZ

David Klinac, New Zealand Chestnut Council

**Background:** Chestnuts and chestnut trees have an especially high tannin content. While these tannins are astringent to humans they actually seem attractive to most livestock...which is why chestnut growers will tell you that horses, cattle, sheep, etc., are all bad news in a chestnut orchard...eating not just the nuts but also the leaves, the bark and even the whole tree given half a chance!

An Italian company ("Silvafeed Ltd") has successfully capitalised on this by producing a powdered, dried stockfeed supplement made from chestnut trees which has the following beneficial properties....

- acting as an appetite stimulant and promoting faster weight gain when added to normal stockfeed
- providing natural deworming (via the tannins present), reducing or eliminating the need for chemical drenches
- reducing other internal parasite levels (e.g., Salmonella), reducing or eliminating the need for antibiotics
- preventing and curing diarrhea
- improving animal health generally
- with independent trials showing significant benefits on a range of animal species, especially cows, pigs, deer and poultry

There have also been some less obvious benefits reported, such as "protein protection" (in which the tannins in the animal's gut bind to protein consumed as food, keeping it in the digestive system longer so that the digestion process is more complete by the time that excretion occurs, meaning that less nitrates, phosphates, methane, etc., are "lost" to the environment)...which can also mean less runoff into waterways and, potentially, less pollution and perhaps even less global warming, long-term.

SCION, part of the ex-NZ Forest Research Institute at Rotorua, has done some independent trials using chestnut shell/pellicle/burrs to help reduce N and P runoff into waterways and found that it was over 97% effective in reducing this sort of pollution. Agresearch has also had a long-running programme to breed and establish a high tannin-content clover species for pasture use, hoping to

maximise the natural deworming effect of condensed tannins in particular. However, the use of high-tannin tree byproducts in animal husbandry hasn't really been taken up in NZ yet....apart from small-scale trials with organic dairy goats, which have looked very promising and suggest that the concept could well be worth pursuing further.

So can we copy the Italians and do something similar here in NZ?

## Why alpacas?

Alpacas are, reportedly, the one large stock animal you can put in chestnut orchards that won't totally destroy all the trees! But they seem to like eating chestnuts and they seem to be especially partial to the shell and pellicle (inner skin), which is where most of the chestnut tannins are concentrated. And because of their tendency to sometimes pig out on too much lush grass and get eczema, worms etc....they may be an ideal candidate species for further trial work.

## Why chestnuts?

A lot of different plant and tree species contain tannins.... but chestnuts and oaks are probably the 2 species in which they are most "concentrated" and readily accessible (which has traditionally led to commercial tannin extraction in the past focusing on these 2 species). But whereas stock eating too many acorns can cause real problems, even death, there's never been a similar report (to my knowledge) on chestnuts.

Chestnuts grow very easily in NZ, much faster than oaks, (unfortunately often producing a "glut" we can then have trouble selling!) and NZ is free from many of the serious pests & diseases that affect chestnuts overseas....so we can grow them chemical/spray-free and organically.

The chestnut itself is also quite a high-health food..... uniquely amongst all the nut crops it is virtually cholesterol/fat/oil-free, high in vitamin C and E (more than oranges) and sometimes used as a specialist animal feed in its own right.....the classic example being acorn-fed pork, which is a very high-priced delicacy in Europe. **(cont. on page 11)**



## A new high-tannin, high-health feed supplement for alpacas in NZ

(cont. from page 10)

Of more relevance to alpaca farmers, however, may be the fact that commercial chestnut processing in NZ (which starts with shelling/peeling) produces a mountain of high tannin shell/pellicle byproduct which mostly just goes to waste at present. This could be an ideal starting point for animal/alpaca applications....both helping with animal husbandry and helping the NZ chestnut industry develop a useful byproduct of its own.

### Hasn't it been done before by others?

Yes and no. The Italians make their stockfood supplement from whole ground up chestnut trees, using only the “hydrolysable tannins” from the bark, while the Agresearch clover approach focuses only on “condensed tannins”. The Italian “whole tree approach” is also a one-off, expensive business and not really sustainable long-term (and not actually much help to chestnut growers themselves, either in Italy or NZ!) By focusing on “hydrolysable” tannins (easily leached out in water), it also largely ignores the “condensed tannin” fraction which Agresearch has found to be very useful. It also overlooks the fact that even more tannins are concentrated in the shell and pellicle than in the bark, along with some very useful antioxidants as well.

Therefore, it may be possible to make a much better stockfood supplement (more efficiently and more sustainably as well) by focusing on the chestnut processing waste...which you can simply “harvest” every year anyway....and which contains both condensed and hydrolysable fractions.

However, this would be a new and novel process, worldwide, and a new and novel application for both chestnuts and alpacas in NZ. There would need to be some trial work done first. I think this would be a good project that could be eligible for significant funding from organisations such as “TechnologyNZ” (who have funded a range of chestnut R&D trials in the past....including the development of the patented NZ chestnut shelling/peeling process by the NZ Chestnut Council that would be used to generate the shell/pellicle byproduct for alpaca use).

**The proposal:** Would the NZ alpaca industry be interested in taking part with the NZ chestnut industry, the NZ Chestnut Council, and other interested parties, in a joint research trial? The chestnut industry could supply all the “feedstuff”: chestnut shell/pellicle and/or chestnut kernel....

in either fresh, frozen or dried form. If alpaca growers were willing to participate we could then test...

- palatability
- deworming effectiveness
- weight gain
- other animal health effects

...preferably with DairyNZ and/or local veterinarians providing an independent evaluation of the effects, and carrying out analyses of the nutritional content of the feedstuffs used (including tannin contents and quality).

Other interested parties participating could include the NZ Tree Crops Association (which has an “umbrella” interest in all the other nutcrops grown in NZ as well as other high-tannin species, such as edible oaks) and stockfood companies (who may be interested in developing a commercial product if trial results look promising).

### Other possible test species:

The NZ Tree Crops Association may be able to suggest several other species that could be of potential benefit to the alpaca industry. One such species could be the native NZ karaka nut (*Corynocarpus laevigatus*) which shows several similarities to NZ chestnuts in terms of potential commercialisation and processing. The karaka nut contains a toxin (so I definitely wouldn't recommend feeding any to alpacas yet!) but some ruminants such as cows seem to have no trouble digesting karaka nuts and actually seem to deliberately seek them out to eat, especially when sick, and some dairy farmers now deliberately feed their stock karaka nuts for this very reason (to the horror of some vets!) ....so this may be another crop well worth investigating.

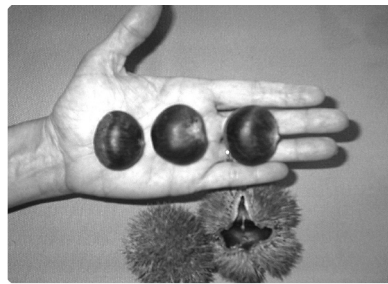
There is also a successful “precedent” in NZ in the use of grape wastes (lees) as a stockfood supplement for sheep where the tannins and antioxidants present have been shown to provide good gastrointestinal parasite control and even improve meat quality, colour and shelf-life. This could make a good “benchmark standard” for comparison.

Worth a try?

*For more information on this subject, contact David Klinac at [dklinac@xtra.co.nz](mailto:dklinac@xtra.co.nz).*



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