

Status Report On The Eastern Black Walnut Nut Industry, Nut Markets, By-Products, And Future Challenges

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OVERVIEW

Eastern Black Walnuts are unique among the world's tree nuts. The native American nut, known among customers only in the United States, produces annual harvests that are only a fraction of all tree nuts including almonds, walnuts (English), pecans, hazelnuts, cashews, pistachios, brazil nuts, macadamias, and even pine nuts.¹ With the black walnut's much lower yield of nutmeats, the total annual consumption is about 2-3 million pounds, or less than .1% of the other tree nutmeats.²

While the production volume is relatively small, the rich, distinctive flavor of the Eastern Black Walnut makes it a true delicacy. That robust flavor enhances many foods as an ingredient (not snack) nut. Annual consumption is growing steadily, markets for nut shells and uses for other by-products are growing, interest is growing outside the United States, and the future looks bright.

The following paragraphs discuss these areas of the black walnut nut industry:

- Markets for Black Walnuts nutmeats;
- Uses for nut shells and other by-products; and
- Challenges and opportunities for future growth.

BLACK WALNUT NUTMEAT MARKETS

Eastern Black Walnuts are used all over the United States in baked goods, ice cream, and candies. While the strongest consumption is in the natural growing regions, the midwest and east-central states, consumption is also strong in places like Florida and Arizona with large numbers of people who come from the natural growing regions.

Presently about 2 million pounds of black walnut nutmeats are used each year. The greatest volume still is used in **home baking**. Traditional recipes such as cakes, cookies, pies, and nut breads, along with new recipe ideas that use the unique flavor in items such as salads, side dishes, and entrees, provide a stable base for usage of black walnuts. This is greatest during the fall months as holiday baking consumes almost half the annual usage. The trend for fall consumption provides opportunities for exposure and promotion, but it also makes the nut business very seasonal. Most

¹ 1997 Worldwide harvests for Tree Nuts were as follows:

Almonds - 969 million pounds (shelled); Walnuts (English) - 1,375 million pounds (in shell); Pecans - 375 million pounds (in shell); Hazelnuts - 1.406 million pounds (in shell); Cashews - 2,156 million pounds (kernels); Pistachios - 425 million pounds (in shell); Macadamias - 36 million pounds (shelled); Black Walnuts (Eastern) - 29 million pounds (in shell)

Source: "World Consumption and Production Trends", published by International Nut Council, July, 1998; Hammons Products Company.

² Black Walnuts average about 8% yield for wild nuts (based upon purchased wet weight). Other tree nuts average 40% to 60%. Applying these estimates, other tree nuts produce over 4.5 billion pounds of nutmeats.

of the baking nuts are sold in food stores under a variety of name-brand labels in package sizes from 2 ounces to 20 ounces. In the future, as people bake less and eat out more, the industry must promote increased usage of black walnuts in restaurants and other food service outlets.

Ice cream is one food in which people enjoy black walnuts year-round, especially during the spring and summer months. Black walnut ice cream is very popular in many regions of the United States. Some companies report it ranking as high as 3rd on the flavor list. About 40%, or 800,000 pounds, of black walnuts are used every year in black walnut ice cream. Familiar brands include Baskin-Robbins, Blue Bell, Braum's, Edy's, Hiland, Mayfield, Belfonte, Yarnell, Barber, and many others. The ice cream market is growing, as each year more companies make black walnut ice cream. New flavors such as black walnut fudge and black walnut oatmeal cookie ice cream will help further growth.

Candies including fudge, brittle, and high quality chocolates create a special blend of sweetness with the robust black walnut. Many small candy makers in the midwest and eastern U.S. have loyal customers who love their black walnut items, but the high cost of the nutmeat has kept most large confectioners away.

Black Walnuts are not just tasty, but they also can be very nutritious. While most of the calories are from the oils and fat, there is no cholesterol.³ Almost all the fat is unsaturated, both mono- and poly-unsaturated, which are associated with a healthy diet. Black Walnuts are nutritionally similar to other tree nuts, for which research is demonstrating some very positive health benefits including reduced risk of heart disease⁴ and reduced levels of blood cholesterol, particularly LDL ("bad") cholesterol.⁵ Much research remains to be done to support the positive health benefits of nut consumption. As that research is undertaken and the results are publicized, the market potential for all tree nuts, including black walnuts, will increase significantly.

NUT SHELLS AND BY-PRODUCTS

Black Walnut Shell is among the hardest of all nut shells or seeds.⁶ About 60% (wet weight) of the purchased raw black walnuts is shell, which results in about 12-18 million pounds of shell each year. Obviously, an economical use for the shell is critical to the success of the black walnut nut industry.

After the nut is cracked and the nutmeats removed, the raw shell is ground into six basic sizes for industrial uses. The primary use where hardness is important is **abrasive blast cleaning and polishing**. Jet engines, electronic circuit boards, jewelry, gun casings, musical instruments, engine parts, ships, and submarines all are cleaned with black walnut shell as a "soft grit abrasive." Cosmetics and soaps often contain nut shell for its abrasive action. The shell also is used extensively in **oil well drilling** as lost circulation material seals in fracture zones, which prevents loss of

³ A ¼ cup serving of Black Walnuts contains 190 calories, 150 of which are from fat, and no cholesterol. Of the 16 fat grams, 10 are polyunsaturated, 5 are monounsaturated and only 1 is saturated.

Source: Dr. Milton Bailey, University of Missouri, Department of Food Science & Nutrition.

⁴ See Fraser, G.E., Sabate, J., Beeson, W.L., Straham, T. M. : "A Possible Protective Effect of Nut Consumption on Risk of Coronary Heart Disease". Arch. Internal Med., 1992; 152: 1416-24.

⁵ Sabate, J., Fraser, G. E., Burke, K., Knutsen, S. et al. "Effects of Walnuts on Serum Lipid Levels and Blood Pressure in Normal Men" N. Engl. J. Med., 1993; 3 28:603-07.

⁶ Black Walnut shell has a hardness (Moh's) rating of three and a Modulus Elasticity of 170,000 p.s.i. Other shells and seeds have a much lower elasticity of 10,000 + p.s.i., so they are not as durable.

pressure and drilling fluid when cracks develop in rock around the well. Finely ground black walnut **shell flour** is used as a filler in many products such as glue for plywood, dynamite, plastic and rubber products, and in castings to make figurines.

The market for black walnut shell is good. It is known by many users as the best media for abrasives and lost circulation material. English walnut, pecan, or other shells can supplement the supply when black walnut shell is not available, which keeps the prices competitive. Still, the hard shell is a very important product of the black walnut nut industry. As Gus Rutledge used to say, because of the shell “the black walnut affects every man, woman, and child in the United States every day.”⁷

Oil Stock is a by-product of the nut cracking and processing that is used in animal feeds. The meal and dark nutmeats from the black walnut provide a feed that is high in energy because of its fat content, and also is a good source of protein. About 2 million pounds is produced each year and used by farmers and feed producers located near the black walnut shelling plants.

Hull, or the green/black outside husk of the black walnut, is not presently marketed extensively. The hull is typically removed at the nut buying stations and is spread on pastures or other land areas where it oxidizes quickly. It can be used as a natural stain, but the water-weight and handling make transportation unfeasible. There are some interesting potential uses for black walnut hulls that could create markets for some of the hull, including medicinal applications or nutrition supplements. More research is needed, however, before the benefits can be proven and any markets developed.

Black Walnut Oil has potential but is not being produced or marketed at this time. Research has been done on extracting edible oil, and preliminary surveys show some interest in the flavorful nut oil for use on salads and other foods, much like olive or other nut oils. The nutrition profile is positive and the flavor seems to have some appeal. More extensive market research will determine whether black walnut oil has real potential as a profitable by-product of the black walnut nut industry.

FUTURE CHALLENGES AND OPPORTUNITIES

The future of the eastern black walnut nut industry is exciting. The industry is small but is seeking to improve in all areas from tree cultivation and nut production, to nut hulling, handling, drying, and processing, to promotion and marketing of black walnut nut products. Due to the small size and lack of large economic rewards, progress is slower than for other tree nut industries with much larger crops and yields.

One major challenge is **nutmeat yield**. The average wild-crop yield is only about eight percent (8%). This means that 100 pounds of nuts that cost \$16-\$18 (\$.16 - \$.18 per pound including hulling and freight) will produce about 8 pounds of nutmeats. By the time shelling plant costs and selling expenses are added, the market price of the black walnut is much higher than other nuts, which inhibits both market growth and ability to pay more to the grower or harvester. The yield is even worse in some years, as low as 6.5% on purchase weight, which makes the economics even more challenging. The major opportunity from this is to increase the nutmeat yield, which can be done

⁷ Gus Rutledge is a former Vice President of Hammons Products Company, promoting Black Walnuts since 1972.

with careful nut procurement practices, better hulling/handling systems, improved shelling plant efficiency, and harvesting nuts from managed trees that produce superior-yielding nuts.

Another major challenge is **nut supply instability**. From 1994 through 1998 the supply of wild eastern black walnuts was adequate to meet the increasing market demand. The industry was blessed with an average of 27 million pounds in-shell during those five years, a dramatic increase from the previous three years. The 1998 wild crop, however, was only about 11 million pounds, putting pressure on supply until the fall 1999 harvest. The ability to procure consistent and ever-increasing supplies of nuts from wild trees is a very real long-term challenge to continued growth of the industry. The challenge is met partially by procuring wild nuts from a wide area. Although Missouri produces the most nuts, up to 18 states produce enough wild black walnuts to support buying stations. The long-term opportunity is to develop managed orchards that can consistently produce significant harvests of superior-yielding nuts. For those higher-yielding nuts a higher price could be paid which would produce a better incentive and return on the investment for the orchard growers. For example, if a grower produced black walnuts that averaged 20% hand-test yield, all fancy grade, and if all nuts were cleaned with moisture less than 4.5%, then that grower could be paid perhaps \$.20 to \$.25 per pound, a much more attractive price than the current \$.10.

A third major challenge is the **lack of familiarity with the flavor of the nutmeat**. This is partially due to the regionality of the wild nut and partially to the small size of the industry with few marketing/promotion funds. Also, traditional consumers who loved the distinctive flavor lived in the black walnut growing regions, and perhaps picked up nuts themselves, but have succumbed to mortality (many have grown old and died). However, efforts to educate new generations of consumers through package design, recipe promotion, new product formulation, and public relations are meeting success as shown by the increased consumption over the past 8 years. Food trends moving toward rich, robust flavors and interest in “new” flavors with some tradition, also present opportunities for eastern black walnuts. Finally, overseas markets present fascinating new possibilities, as people in Germany, Japan, and other countries have shown interest in the flavor - - but this will take some time and market development.

SUMMARY

The eastern black walnut nut industry is relatively small and obscure among tree nut industries of the world. It only exists in the United States. Its source of supply is wild nuts harvested by hand. Its product often is confused with the more common “walnut” even by people in the natural growing regions. These are not problems; rather, they are opportunities for the industry to grow and develop further.

Those who work with black walnuts are entrusted with stewardship of an amazing resource. The industry traces back to the first native Americans who ate the wild nuts. It has grown with foresight, ingenuity, and leadership. And it will continue to thrive and grow into the next century, facing challenges and opportunities with the same spirit and optimism that fueled its early years.

The status of the eastern black walnut nut industry is good. The greatest is yet to come!

For more information, check the black walnut website on the internet at:
www.hammonsproducts.com