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## *Third Crop Options* **Hybrid Hazelnuts**

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### **Background:**

Hazelnuts (*Corylus* spp.), also known as filberts, are a promising third crop in the Greater Blue Earth River Basin. Hazelnuts are high in protein (19%) and are nutritious, being an excellent source of vitamins E and B6. Hazelnuts are high in oil content (60%), and are 3 times the oil content of soybean (20% on average). Hazelnut oil is valued for its lightness and flavor and it is an excellent cooking oil with a long shelf life. Hazelnut oil is similar to olive oil, containing 70% monounsaturated fats.

The European hazel, a tree, provides most of the world’s supply of hazelnuts commercially. The European hazel, however, lacks sufficient cold hardiness and disease resistance to Eastern Filbert Blight for successful use in the Upper Midwest.

Hazelnuts native to Minnesota can form dense understories in forests and can be found along streams, in hedgerows, meadows, woodlands, roadsides, forest edges, and in remnants of oak savanna. Plant breeders have crossed European hazels to two American Hazel species, producing hybrid hazel bushes that are cold hardy and resistant to Eastern Filbert Blight.

Hybrid hazelnut bushes average six to eight feet in diameter and 10 to 12 feet in height. Hybrid hazelnuts are a perennial with an estimated life expectancy of at least 30 to 50 years and potentially into the hundreds of years. The extensive root system of hybrid hazelnuts can reduce or eliminate soil erosion problems once plants are sufficiently established.

### **Uses:**

It has been said that anything that can be done with a soybean can be done with a hazelnut. Table one lists a variety of uses for hazelnuts.

<b>Table 1: Uses for Hazelnuts:</b>	
<ul style="list-style-type: none"> <li>• Human food use:               <ul style="list-style-type: none"> <li>○ Additions to cereals, cookies, breads, and other staples</li> <li>○ Cooking oils</li> <li>○ Confections</li> <li>○ Desserts</li> <li>○ Flavoring in coffees, syrups, oils, beer</li> </ul> </li> <li>• Human non-food use:               <ul style="list-style-type: none"> <li>○ Massage oils</li> <li>○ Essential oils</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Wildlife habitat</li> <li>• Windbreaks, snow fences, and buffer strips</li> <li>• Livestock feed (meal remaining after oil extraction)</li> <li>• Other uses:               <ul style="list-style-type: none"> <li>○ Biodiesel</li> <li>○ Bioplastics</li> <li>○ Medicinal extractions (i.e. Taxol has been found in hazels)</li> <li>○ Biomass production</li> <li>○ Mulch</li> </ul> </li> </ul>

### **General Management Considerations:**

Hazelnuts are low maintenance compared to annual crops once they are established. Seedlings are the preferred choice for establishment. Spring is the best time to plant seedlings although hazelnuts may be planted through September. Plants are typically spaced three to five feet apart in 10 to 15 foot rows (about 1,050 to 1,200 plants/ac). Watering seedlings for at least the first year of establishment and possibly the second is critical. About one inch of water per week is needed unless rainfall is sufficient. Further details about planting can be found in the “Hybrid Hazelnut Handbook” (see below).

Weed control is critical in the seedling stage as weed competition can stunt growth and decrease stands. Mowing alleys aids in weed control and allows better rodent control by predators. Another crop could be grown between hazelnut rows to generate income before the hazels reach full production and to help with weed control as long as the crop isn't competitive with the hazels. Landscaping weed mats could also be used around plants to control weeds.

Hybrid hazelnuts respond to fertilizer applications. Insects tend to be of minimal concern to established plants although several weevils may attack the nuts. The main disease of hazelnuts is Eastern Filbert Blight and some Hybrid Hazelnuts are bred for resistance to this disease.

Instead of pruning, hybrid hazelnut bushes should be coppiced (cut to the ground) every eight to 10 years. Material removed from plants can be used for biomass energy production. Plants will grow back and produce within about two years. Plantings may be staggered to allow for a portion of the hazelnuts to be coppiced in a given year.

Cooperatives such as the American Heartland Hazelnut Association (AHHA!) may enable the purchase and use of hazelnut equipment among growers. High bush blueberry pickers have successfully harvested hazelnuts and huskers and shellers have been developed.

### ***Profit Potential:***

Hybrid hazelnuts typically start to bear nuts in about two to four years and reach near optimal production in about five years. With only moderate care, plants can average 1.5 pounds of nuts (unshelled) per year while superior plants can yield from three to four pounds up to a record of nine pounds of nuts per year.

Annual yields, when extrapolated to a per acre dry in-shell yield, average between 800 to 2,000 pounds of nuts. Hazels wholesale for 40 cents to \$1 per pound in the world market. Profit potential is likely greater in niche or value-added markets.

Seedlings can vary in price depending on quality, quantity, and size of nut (i.e. \$1.55 to \$6.98 per plant from Badgersett Research Farms, 2003). These and other costs should be considered along with intended markets when considering a hazelnut enterprise.

### ***Market Opportunities and Development:***

Hazelnuts are marketed either in-shell or shelled in raw, roasted, or salted forms. Turkey, Italy, Spain, France, and the United States produce most of the world's supply of hazelnuts. The United States produces only about 4% of the world's production. About 99% of the United States' production is from Oregon. The United States imports 10 times as much as it produces.

Most experts agree the United States is an untapped market for hazelnuts. For example, per capita consumption in Europe is about one cup per week while in the United States it is about two nuts per year. The biggest challenge in marketing hazelnuts in Minnesota is currently volume. More growers are needed to supply and further develop existing markets. Hazelnut use could greatly expand in the United States if enough volume was produced on a consistent basis.

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