

# Nebraska Forest Service

## COMMERCIALIZING THE HYBRID HAZELNUT AS A BIOENERGY AND FOOD CROP FOR THE CENTRAL STATES



UNIVERSITY OF  
Nebraska

### INITIATIVE GOAL

To accelerate commercial development of the hybrid hazelnut as a profitable, environmentally friendly food and bioenergy crop for producers in Nebraska and the central United States.

### WHAT IS THE HYBRID HAZELNUT?

Commerically available hazelnuts, or filberts, are currently produced only in Oregon from the European hazelnut. This plant is not productive elsewhere in the U.S. due to disease susceptibility and lack of cold hardiness.

After nearly a century of breeding, cold-hardy, disease-resistant hybrids that produce commercial quantities of high-quality nuts in Nebraska are now available. A consortium of the Nebraska Forest Service (at the University of Nebraska), Oregon State University, Arbor Day Foundation and Rutgers University is leading the effort nationally to commercialize this new "third" crop.



### SUPERIOR HYBRID HAZELNUTS IN NEBRASKA:

- produce up to 3,500 lbs. nuts and 900 lbs. oil/acre/year (soybeans produce about 570 lbs./oil/acre/year);
- produce oil that is superior to soybean oil for biodiesel applications;
- have substantial, rapidly growing markets for biodiesel, valuable high-quality human foods, (nuts, whole and crushed kernels, flavorings, confections), livestock feed, cooking and lubrication oils, and soft abrasives;
- are mechanically harvested and processed with modified existing equipment;
- show great potential for continued genetic improvement through controlled breeding; and
- are ready for rapid scale-up and commercialization through strong regional partnerships.

### HYBRID HAZELNUTS SOLVE ECONOMIC, ENERGY AND ENVIRONMENTAL PROBLEMS BY:

- revolutionizing central states' agricultural production systems using woody perennials;
- diversifying and increasing producer income while reducing use (and costs) of fossil fuels, fertilizer and pesticides;
- contributing to local, regional and national energy independence through "green diesel" production;
- improving the environment by reducing agricultural runoff, improving surface and subsurface water quality;
- enhancing wildlife habitat; and
- generating additional on-farm income through fee hunting and carbon sequestration payments.





# REQUIREMENTS FOR LARGE-SCALE COMMERCIALIZATION OF HYBRID HAZELNUTS

## 1. Mass Production of Seedlings

- multiply via tissue culture, superior hybrid hazelnut plants
- initiate large-scale nursery production of clonally produced superior cultivars of hybrid hazelnut to support landscape-level plantings and industrial expansion.

## 2. Product and Market Development

- further analyze oil content and other nut characteristics to optimize applications for biodiesel, cooking, lubrication and cosmetics.
- work with private sector, non-profit and university partners to develop and market products.

## 3. Mechanization

- coordinate research and development to create and/or refine machines to harvest, husk, crack, sort and clean hazelnuts.

## 4. Cultivation/Production

- continue to identify and screen superior cultivars for yield, disease resistance, oil content and kernel percentage to support accelerated genetic improvement
- field test superior cultivars across the central and eastern states
- develop best-management practices for optimized yield.

## 5. Genetic Improvement

- conduct controlled cross-breeding and regional field testing to improve nut quality, oil production, pest resistance, yields and performance.

## 6. Promoting Producer Adoption

- promote hazelnuts as a new, profitable “third” crop via partnerships with the Resource Conservation & Development system, Natural Resource Conservation Service, UNL Extension, state departments of agriculture, nonprofits, producer groups and networks, the private sector and other outreach mechanisms.



## RESOURCES REQUIRED FOR RAPID COMMERCIALIZATION

Clearly, the hybrid hazelnut shows great potential to improve national energy security, enhance rural economies, diversify and increase farm income, and improve and protect the environment on a large scale. An investment of \$5-6 million will support a comprehensive seven-year research and development program that will accelerate the commercialization of the hybrid hazelnut.

**THE HYBRID HAZELNUT RESEARCH CONSORTIUM IS A COOPERATIVE EFFORT OF THE NEBRASKA FOREST SERVICE, ARBOR DAY FOUNDATION, RUTGERS UNIVERSITY & OREGON STATE UNIVERSITY.**

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**The Nebraska Forest Service: Improving peoples' lives by protecting, utilizing and enhancing Nebraska's tree and forest resources.**