

# **Background on Cultivated Hazelnuts in the Upper Midwest**



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**1<sup>st</sup> Biennial  
Upper Midwest  
Hazelnut Conference  
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## **European hazelnut**

- **Basis of nut industry**
- **Bred for high yield**
- **Not hardy in MN & WI**
- **Highly susceptible to Eastern Filbert Blight**

**x**

**American  
hazelnut**

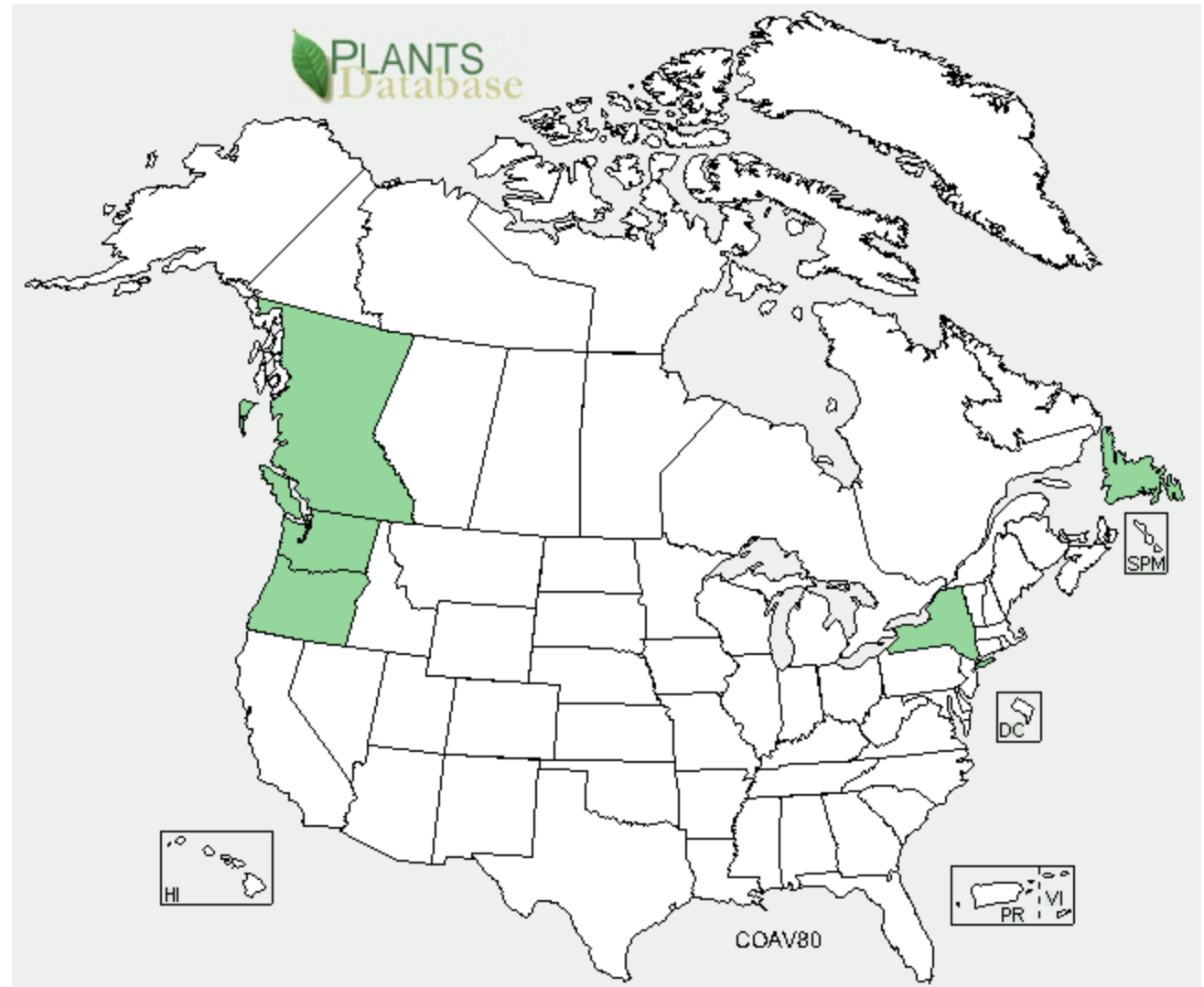
**beaked  
hazelnut**

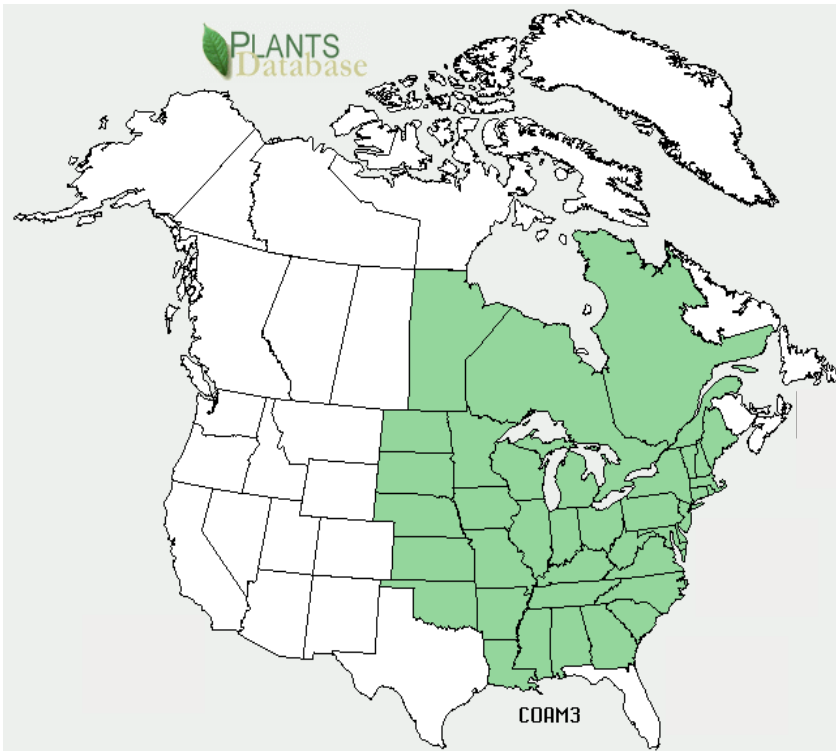
- **Widely distributed in wild**
- **Inconsistent nut yield**
- **Hardy in MN & WI**
- **Resistant to Eastern Filbert Blight**

Farris, 2000

# Distribution of *Corylus avellana* in North America

**European hazelnut, called “filbert” in the older literature.**

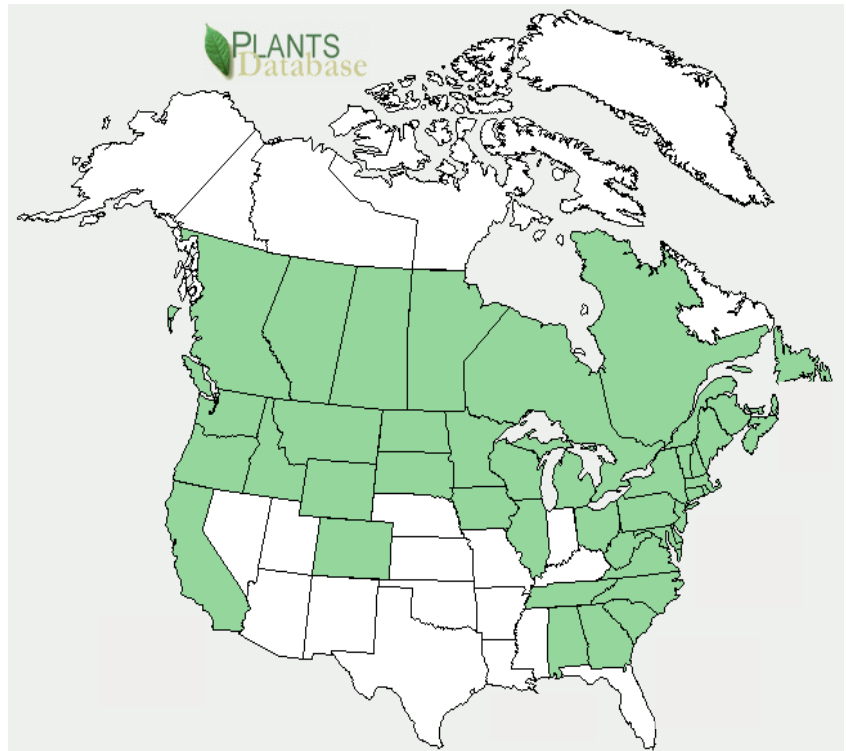




## ***Corylus americana***

### **American hazelnut**

Found in more open woods, such as oak savannah.



## ***Corylus cornuta***

### **Beaked hazelnut**

Found in denser woodlands, associated with aspen and pine.



American  
*C. americana*

UGA0008207



European  
*C. avellana*



American  
*C. americana*



Beaked,  
*C. cornuta*

USFS

# Initial Crosses in 1920s

- J.F. Jones of Lancaster, PA
- S.H. Graham of Ithaca, NY
- William Bixby of New York City
- C.A. Reed of the USDA
  - *C. avellana* x *C. americana* hybrids.
  - Several varieties of *C. avellana* were used as pollen parent.
  - *C. americana* parent was “Rush”, reputedly a seedling variety of *C. americana*, but some think it was itself a hybrid.
  - Rush is highly susceptible to Big Bud Mite (BBM).
- J.U. Gellatly of Westbank, British Columbia
  - *C. avellana* x *C. cornuta* hybrids called “Filazels”.
    - Extremely cold hardy
    - Ripened much earlier than *C. avellana*.
    - Highly resistant to EFB.
    - Highly susceptible to BBM.

Source: Cecil Farris, 2000

# Carl Weschcke, River Falls, WI

## “Growing Nuts in the North”, 1953

**1921-1932:** Purchased a total of 226 seedlings of various European, American, and hybrid hazelnuts from these other breeders. Almost all were eventually either winter-killed or killed by EFB. Even some Winkler pure *C. americana* from Iowa were winter-killed.

But before they died...

# Carl Weschcke

- 1934:** Pollinated an “unusually fine” (large nuts) wild hazel growing in the woods on his farm with pollen from a Gellatly “filbert” (implies pure *C. avellana*). Got 4 seedlings he called “Hazilberts”.
- 1940:** Pollinated the Hazilberts with a mix of pollen from surviving Winklers, European hazels and Jones hybrids.
- 1942-1945:** Pollinated another 4 wild hazels from his woods, chosen for early maturity and thin shells.

# Carl Weschcke

**1945:** Had 2000 hazels on farm, of which he kept detailed records on 650 for five years.

- Best yields equivalent to 2 tons/acre (shelled or in-shell?)

**Characteristics of Hazilberts** were highly variable, but in general:

- Bush growth form, like *C. americana*.
- Involucre covers the nut, like *C. americana*.
- Smaller nuts with thicker shells than Europeans.
- Kernels mostly free of pellicles, with good flavor.
- Trade-off between thin shells and nut yield.

# Phil and Mary Rutter

## Badgersett Research Corporation

**1981:** Collected seeds from Weschcke's farm and planted them at Badgersett Farm, in SE Minnesota.

**1991:** Mary Rutter reported to NNGA:

Compared to Rush hazels, the progeny of these Weschcke hybrids had:

- Much lower incidence of EFB
- Much smaller EFB pustules
- Much lower mortality due to EFB.

# Eastern Filbert Blight (EFB)

## *Anisogramma anomala*



Photo: Tom Molnar

# Opinions Regarding EFB Resistance in *C. americana*

- Fuller (1910): “from a very careful search, I have not been able to find any clumps of these bushes of any considerable size that was entirely free of pustulous stems.”
- Weschcke (1954): “One salient feature which definitely separates the species *C. americana* from others of its genus is its resistance to hazel blight, a native fungus disease of which it is the host. *C. americana*, through long association, has become comparatively immune to its effects and quickly walls off infected areas while filbert plants (*C. avellana*) are soon killed by contact with it. Hybrids between filberts and hazels will usually be found to retain some of the resistance of the hazel parent.”

# Mary Rutter attributed high EFB resistance in Weschcke hazels to:

1. More *C. americana* in genetic mix, deduced from their morphological traits.
2. Extremely stringent selection for resistance: “Be resistant or die!”
3. Better adaptation to winter conditions  
→ less winter injury less likely to leave the vulnerable to springtime infection by EFB. (I question this one.)

# Weschcke/Badgersett

## Hybrid Hazelnuts

Mark Shepard  
New Forest Ag

Norm  
Erickson

Arbor Day  
Foundation

Tom Wahl  
Red Fern Farm

Others  
Sources  
(Gellatly,  
Cornell,  
OSU)

Sales to  
the public.

1995

2004

1995

1993

1993

# Other Sources of Hybrid Hazelnuts

	<b>Nut Quality</b>	<b>Yields</b>	<b>Winter Hardiness <u>here</u></b>	<b>EFB Resistance</b>
<b>Grimo Nut Nurseries,</b> Niagara on the Lake, ON	Beautiful large nuts	?	Appear to be.	Skinners, Winklers, Heterophylla are not. Others might be.
<b>St. Lawrence Nurseries,</b> Potsdam, NY	Beautiful large nuts	?	Appear to be.	?
<b>Grinnell Nut Nurseries,</b> Perry, MI	?	?	Some appear to be.	Variable