

Trials, Tribulations, And Thoughts On Nebraska's Hazelnut Cultivar Trial

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An Update On The Hazelnut Consortium

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The Trial

- **Spring of 2001**
 - 1st replicated hazelnut planting
- **Plot Size**
 - ~ 2 acres on University of Nebraska –East Campus, Lincoln, NE
- **Plants**
 - 8 hazelnut cultivars available in the trade



Building the foundation

- Elizabeth Hammond conducted her masters thesis on the Arbor Day Foundation planting of hazelnuts consisting of approximately 5000 plants



Establishment of The Plot

- **Intent**
 - **To form a replicated trial of 8 hazelnut cultivars**
 - **All: Report to have high yields and EFB resistance**
- **Plot Layout**
 - **2 guard rows surrounding the cultivar block**
 - **Badgersett Research Corporation F2**



Nebraska's Cultivar Test Plot



Choice of Cultivars

- **Traits we were looking for**
 - **Resistance to EFB (Eastern Filbert Blight)**
 - **Cold hardiness (stem and flower)**
 - **Bud mite resistance**
 - **Good yields**
 - **High quality**
 - **Moderate size nuts**



The Chosen Cultivars

- ‘Gellatly 502’
- ‘188P’
- ‘G17’
- ‘Box 1’
- ‘88BS’
- ‘FE2A’
- ‘Skinner’
- ‘Grand Traverse’



- WHAT HAS WORKED????????????



Preliminary Results of Two Cultivars

- **Weight Data**
 - **Currently taken from**
 - ‘Grand Traverse’ & ‘Skinner’ cultivars
- **EFB Resistance**
 - ‘Grand Traverse’: Resistant
 - ‘Skinner’: Tolerant
- **No. of True Plants**
 - ‘Grand Traverse’ significantly < ‘Skinner’
 - Common problem with ‘Grand Traverse’



Preliminary Results of Two Cultivars

- **Initial Thoughts**
 - Use ‘Grand Traverse’ & ‘Skinner’ for commercial plantings
 - Both yield relatively well



Characteristics of 'Grand Traverse'

- **Advantages**
 - Good shell color
 - Good kernel taste & color
- **Disadvantages**
 - Can be somewhat difficult to harvest



Characteristics of 'Grand Traverse'

- **EFB Resistance**
 - Shown to be very good (NE & Rutgers trials)
- **Frost Resistance**
 - Low to moderate dieback from 2007 freeze
- **Nut Production**
 - Yield .57 - 8.16 lbs
2010
 - Very uniform nuts



Characteristics of ‘Skinner’

- **EFB Resistance**
 - Shown to be tolerant (NE trial plot)
- **Frost Resistance**
 - Very little dieback from 2007 freeze



Characteristics of ‘Skinner’

To plant or not to plant?

- **Nut Production**
 - **Yield .77 - 7.52 lbs 2010**
 - **Medium size nuts**
 - **Not very uniform in size**
 - **Dark shelled**
 - **Slight off-taste to nut**
 - **Later maturing than others in trial**



Characteristics of ‘Skinner’

- **Plant Features**
 - **Only grafted cultivar in trial**
 - **Semi-dwarf growth habit**
 - **Thick involucre**



WHAT HAS NOT WORKED!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!



Molnar, 2010

Characteristics of ‘GELLATLY 502’

- EFB Resistance
 - NOT resistant
- Frost Resistance
 - Moderate dieback from 2007 freeze
- Nut Production
 - Large uniform nut
- Cultivar Confusion



Characteristics of '188P'

- **EFB Resistance**
 - **NOT** resistant
- **Frost Resistance**
 - Little dieback from 2007 freeze
- **Nut Production**
 - **LARGEST** nut in trial
 - Does **NOT** fill properly



Characteristics of 'G17'

- **EFB Resistance**
 - **NOT** resistant
- **Frost Resistance**
 - **Moderate to high dieback from 2007 freeze**
- **Nut Production**
 - **SMALLEST** nut in trial



Characteristics of 'BOX 1'

- EFB Resistance
 - NOT resistant
- Frost Resistance
 - Moderate to high dieback from 2007 freeze
- Nut Production
 - Small nut
 - Lacks uniformity



Characteristics of '88BS'

- **EFB Resistance**
 - **NOT resistant**
- **Frost Resistance**
 - **Moderate to heavy dieback from 2007 freeze**
- **Nut Production**
 - **Small to medium-sized nut**



Characteristics of 'FE2A'

- **EFB Resistance**
 - NOT resistant
- **Frost Resistance**
 - Low to moderate dieback from 2007 freeze
- **Nut Production**
 - Medium, uniform nut
 - Shy to bear



Harvest Data

- **Data Collection**
 - **Discontinued on all cultivars not resistant to EFB**
 - ‘Gellatly 502’
 - ‘188P’
 - ‘G17’
 - ‘Box 1’
 - ‘88BS’
 - ‘FE2A’



A Closer Look

- **The Semi-Dwarfing Effect**
 - Further investigation is needed in the future



A Closer Look - In Comparison



An Update On The Hybrid Hazelnut Consortium

- **Formed in 2008**
- **Partners**
 - **Nebraska Forest Service/ Industrial Agriculture Products Center, IAPC**
 - **Rutgers University**
 - **Oregon State University**
 - **Arbor Day Foundation**



An Update On The Hybrid Hazelnut Consortium

- **Goals**
 - Develop cold hardy, EFB resistant cultivars for commercial & hobby growers
 - Expand the limited climatic growing area that existing cultivars have



livingwhileworking.com



Focus of Research – NFS / IAPC

- **Field Testing**
 - Stem and flower
- **EFB resistance**
- **Application of oils**
- ***C. americana* evaluation**



Focus of Research – Rutgers University

- **Field Testing**
- **Make controlled crosses**
- **EFB resistance testing**
- **International seed collection**



RUTGERS

Focus of Research - Oregon State University

- Establish map-based cloning of EFB
- Make controlled crosses
- International seed collection



Responsibilities of The Arbor Day Foundation

- Outreach
- Project facilitation
- Coordination
- Solicitation of *C. americana* for seed from members

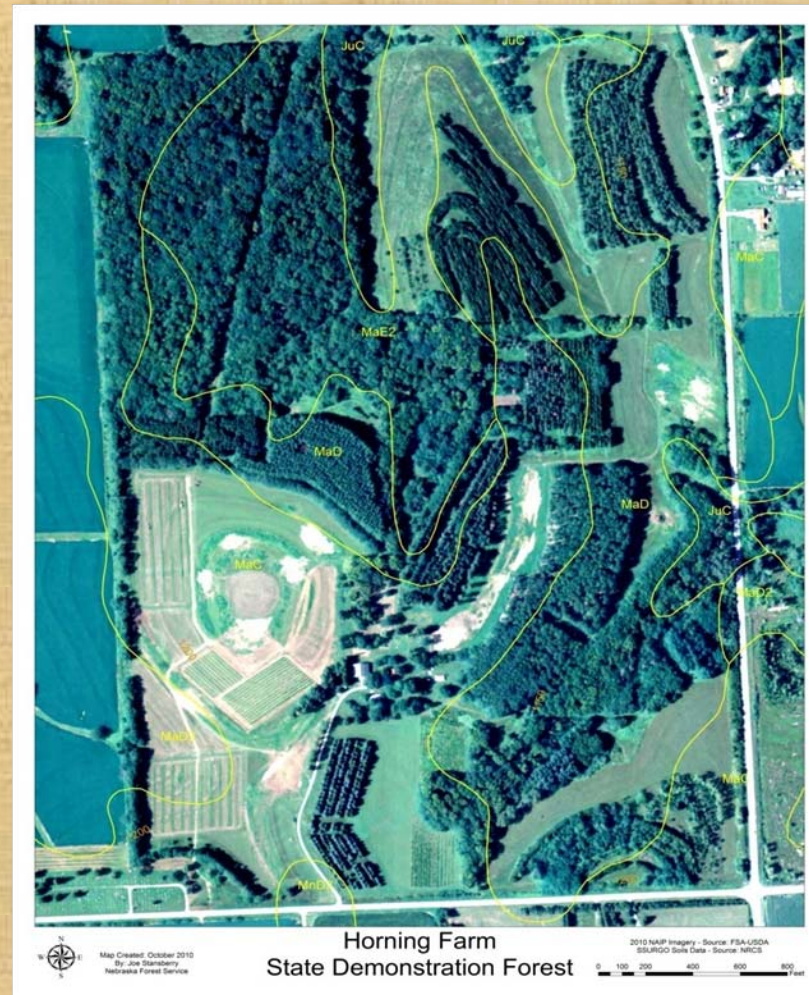


Update On Hazelnut Consortium Work In Nebraska

- **Plantings at Horning Demonstration Farm**
 - **Spring of 2008**
 - **Planted 650 seedlings from Mr. Verne Luvall**
 - **Spring of 2009**
 - **Planted 140 hazelnut layers from Dr. Thomas Molnar**
 - **Spring of 2010**
 - **Established 420 liners and layers**



Horning Demonstration Farm



Update On Hazelnut Consortium Work In Nebraska

- **Greenhouse activities**
 - **This spring**
 - **Plant ~ 650 seeds from crosses made by Dr. Shawn Mehlenbacher & Dr. Thomas Molnar**
 - **Graft scion wood supplied by Dr. Shawn Mehlenbacher**



Update On Hazelnut Consortium Work In Nebraska

- Industrial Agriculture Products Center (IAPC)
- Oil tests on Nebraska hybrid hazelnuts:
 - 51.4% - 75.1% oil
- Oil tests on Oregon cultivar hazelnuts:
 - 64% - 66% oil
- Antioxidant & anti-cancer properties
- Will continue work on tissue culture of hybrid hazelnuts



Update On Hazelnut Consortium Work In Nebraska

- **Growing Season 2011**
 - **Establish ~ 1,700 seedlings**
 - **Crosses between *C. avellana* & *C. americana* made by Dr. Shawn Mehlenbacher and Dr. Thomas Molnar**



Update On Hazelnut Consortium Work In Nebraska

- **Growing Season 2011**
 - **Begin growing 1500 seedlings of *C. americana***
 - **Evaluation and screening project from several different regions of the U.S.**



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Hazelnuts in Nebraska

Processing equipment



Savageequipment.com



snr.pecan.com

Update On Hazelnut Consortium Work In Nebraska



Update On Hazelnut Consortium Work In Nebraska



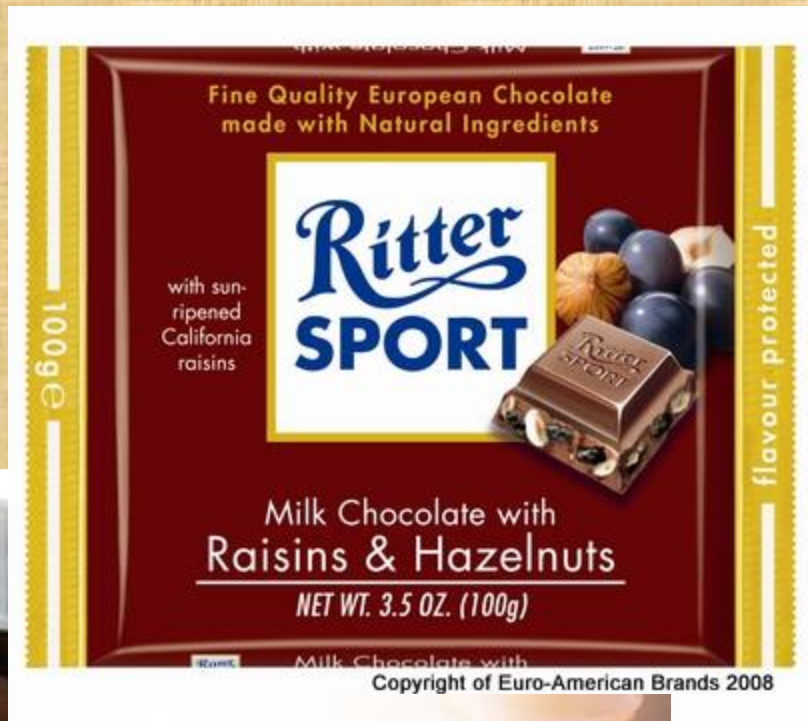
Update On Hazelnut Consortium Work In Nebraska



QUESTIONS????????????????



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