

# HAZELNUTS 101

March 8, 2019

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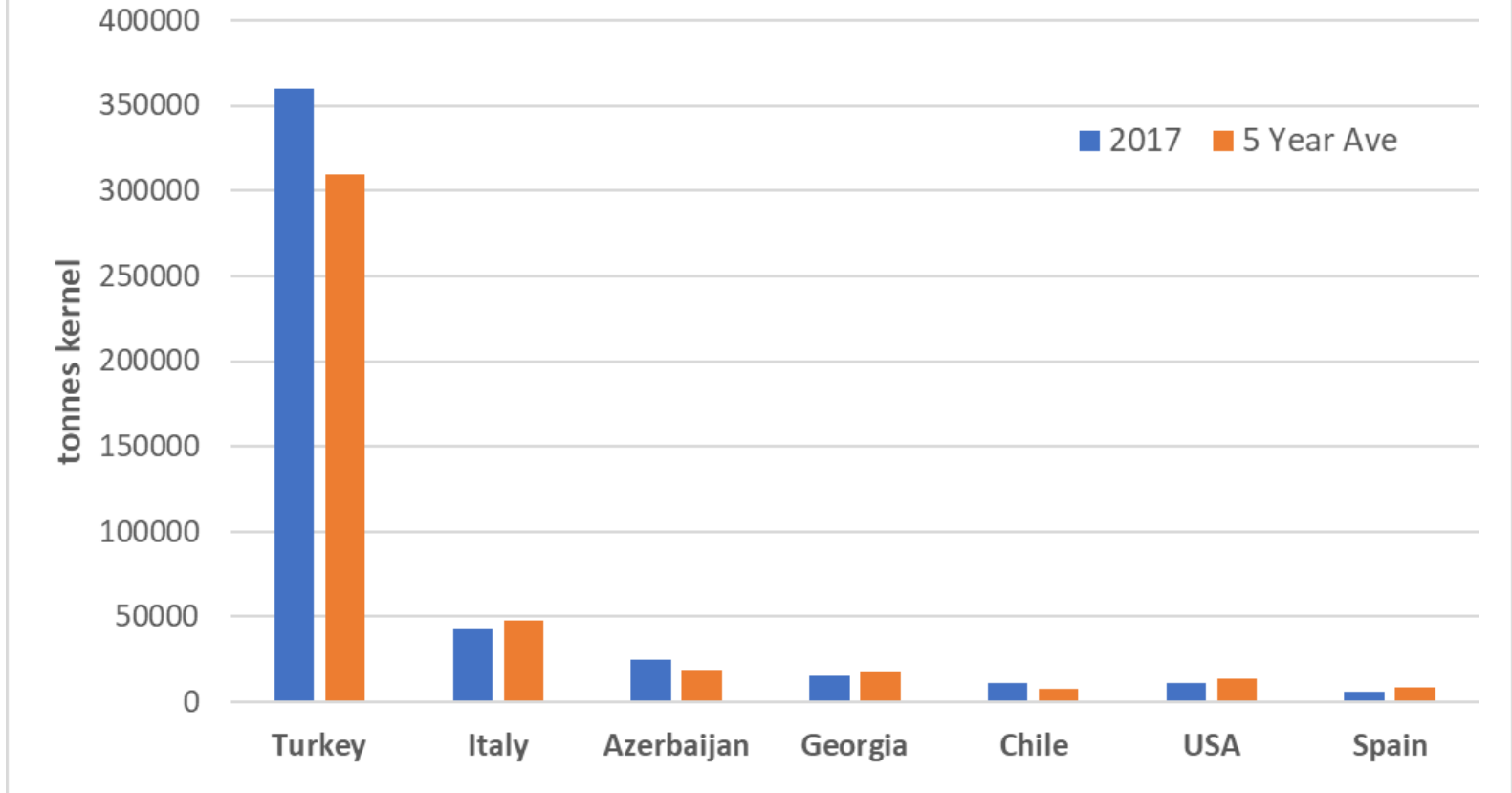


# Hazelnuts 101

- Quick overview of global hazelnut industry
- Quick overview of US and Midwest industry
- Plant selection
- Establishment
- Management
- Economics

# **Context: The Global Hazelnut Industry**

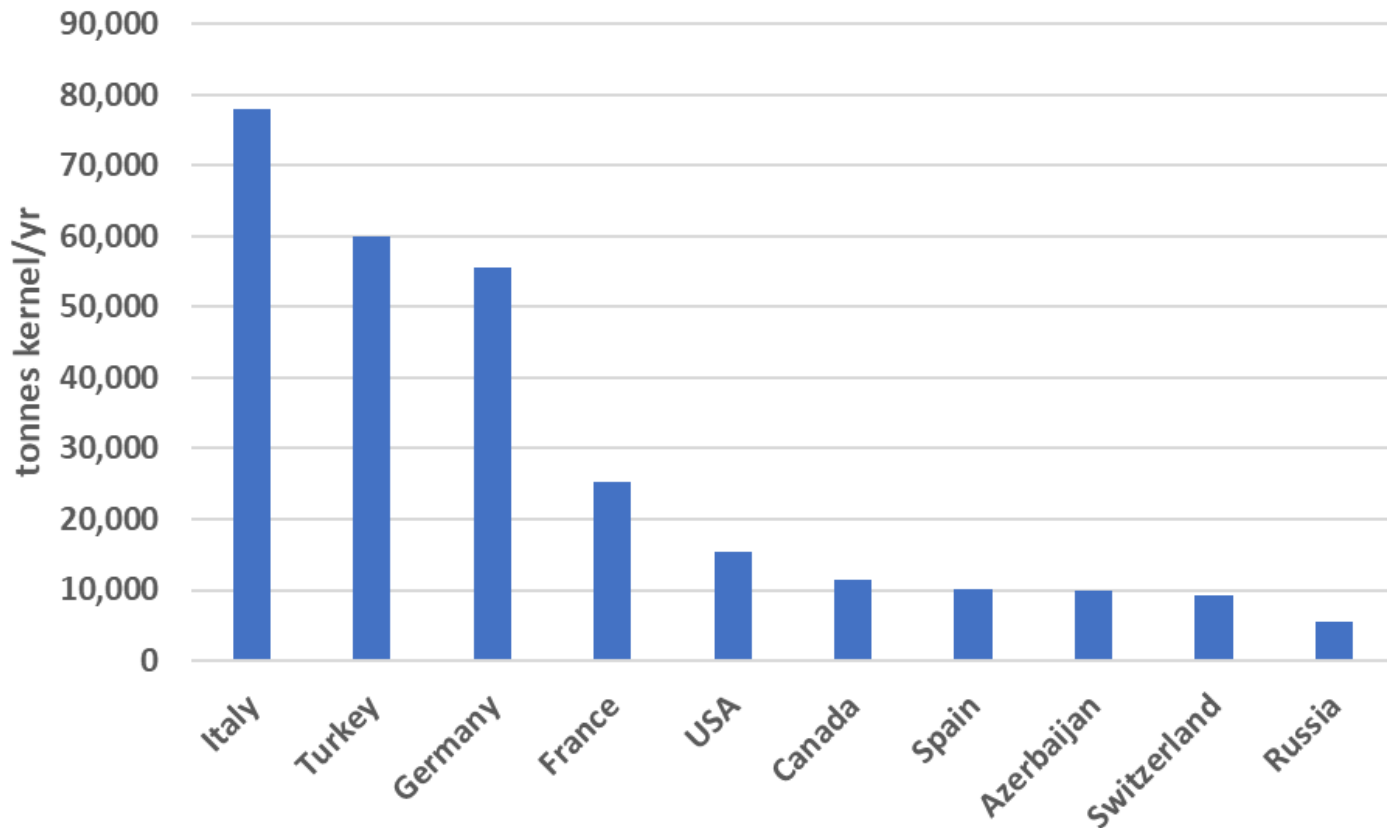
# Top Hazelnut Producing Countries - 2017



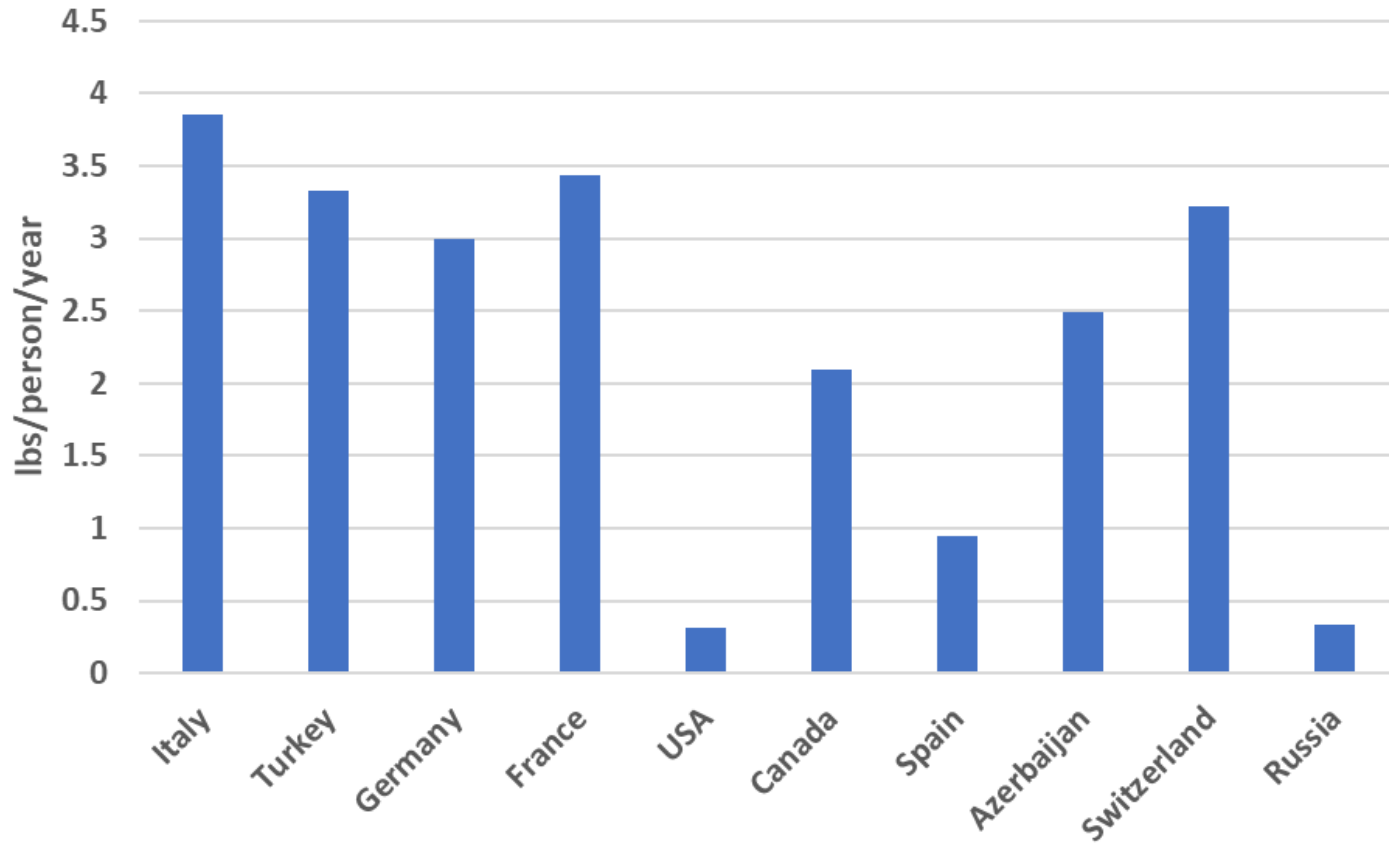
Turkey ~ 1.5 million acres;

International Nut and Dried Fruit Council Foundation, 2017

## Top Hazelnut Consuming Countries - 2016



## Per Capital Consumption of Top Countries - 2016



# Growing North American Demand



General Mills



Hershey Company



MARS, Inc.



Peer Ferrero



J.M. Smucker Co.



JB Sanfilippo

# Growing North American Demand



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Local Company



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# Growing Demand, Tightening Supplies

Global and US hazelnut demand estimates (mt)

Region	2018	2028	Differential
World	841,431	1,762,823	921,392
USA	45,482	103,490	58,008

# **OREGON HAZELNUTS**

**99% OF US PRODUCTION**

**70,000 ACRES TOTAL, 40,000 NEW SINCE 2015**

**(CA ALMONDS: 1,300,000 ACRES )**

# Willamette Valley of Oregon

- Major horticulture region of US
  - Nursery plants
  - Small fruits
  - Hops
  - Wine grapes
  - Hazelnuts
  - Grass seed
- Zone 8a (Mediterranean)
- Land prices \$15-\$20K/acre
- Dry autumn allows for sweeping nuts off floor





Historically a Back 40 Crop for the In-Shell Export Market



Eastern Filbert Blight – Decimation...and Revitalization



New EFB-Resistant Cultivars And Growing Demand Has Launched a Boom



40,000 New Acres in The Last 5 Years...Likely More

# OSU Field Days That Attract 800+ Attendees





# A New Processing Facility for the Hazelnut Growers of Oregon Cooperative (HGO) and Expansions at Other Processors



# **Hazelnut in the Upper Midwest**

# Hazelnuts for the Upper Midwest



**American Hazel**  
**(*C. americana*)**



**European Hazel**  
**(*C. avellana*)**



**Hybrid Hazel**  
**(*americana* x *avellana*)**

Interspecific Hybrids For Winter-Hardiness, EFB Resistance, Yield

# Endemic American Hazelnut



Moquah Barrens, Bayfield County, WI



**Lots of cluster production on small shrubs**

Tasty, but very  
small kernels



# European Hazelnuts







# European (Oregon) Cultivars

## Trialed at Simcoe Station in Ontario

- **Yamhill** - provisionally recommended in Canadian hardiness zone 7 only. Not recommended elsewhere. Shown some susceptibility to our strains of EFB.
- **Jefferson** - provisionally recommended in Canadian hardiness zone 7 only. Not recommended elsewhere. Only tolerant to our strains of EFB.
- **Theta** - pollinizer provisionally recommended in Canadian hardiness zone 7 only. Not recommended elsewhere.
- **Felix, McDonald, Wepster, York** – in 3<sup>rd</sup> year of trial, no recommendations, yet

# European (Oregon) Cultivars

## Trialed at Simcoe Station in Ontario

- Succumbing to EFB in New Jersey
- Oregon cultivars not recommended for the Upper Midwest
- If you try, include hybrids or *C. americana* for pollen
- Hardier and resistant *C. avellana* cultivars are in development

# **HYBRID HAZELNUTS**

**1<sup>ST</sup> GENERATION GENOTYPES SELECTED FROM EUROPEAN X  
AMERICAN CROSSES**

# On-Farm Hybrid Seedling Populations (2010)

State	Plants	Growers
IA	4044	16
IL	319	1
MN	22403	30
WI	39064	82
<b>Total</b>	<b>65830</b>	<b>129</b>



# 2010 Upper Midwest Hazelnut Growers Survey Report

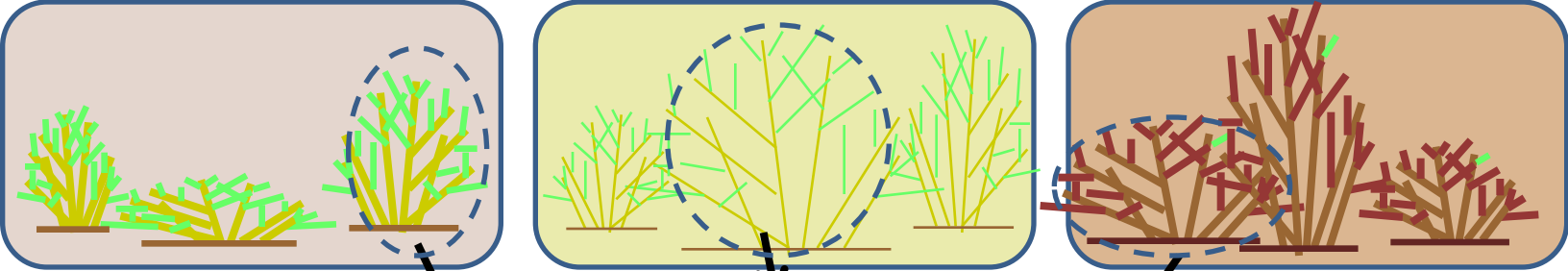
Plant Source	Planted	Alive	Mortality	# of Plantings
Arbor Day Foundation	41	19	54%	9
Audobon Society	12	12	0%	1
Badgersett Research Corporation	51458	15957	69%	41
Cascade Nursery	400	375	6%	1
County Agent	125	95	24%	2
Forest Agriculture Enterprises	15190	12470	18%	28
Grimo Nut Nursery	10	10	0%	2
Halsey, Nebraska	20	20	0%	1
Hazelnut Valley Farm	2250	2068	8%	4
Jungs	12	12	0%	2
Lincoln Oakes Nursery	25	24	4%	1
Ozaukee County	75	0	100%	3
Red Fern Farm	2460	2147	13%	7
<b>Total Plants</b>	<b>72078</b>	<b>33209</b>	<b>54%</b>	<b>102</b>

# Selection Process

Farm A: clay soil

Farm B: sandy soil

Farm C: loam soil



Select the best from each farm



Replicate and evaluate in five performance trials:

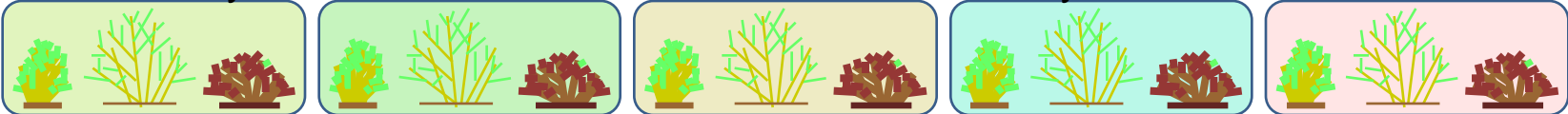
Lake City

St. Paul

Lamberton

Bayfield

Tomahawk



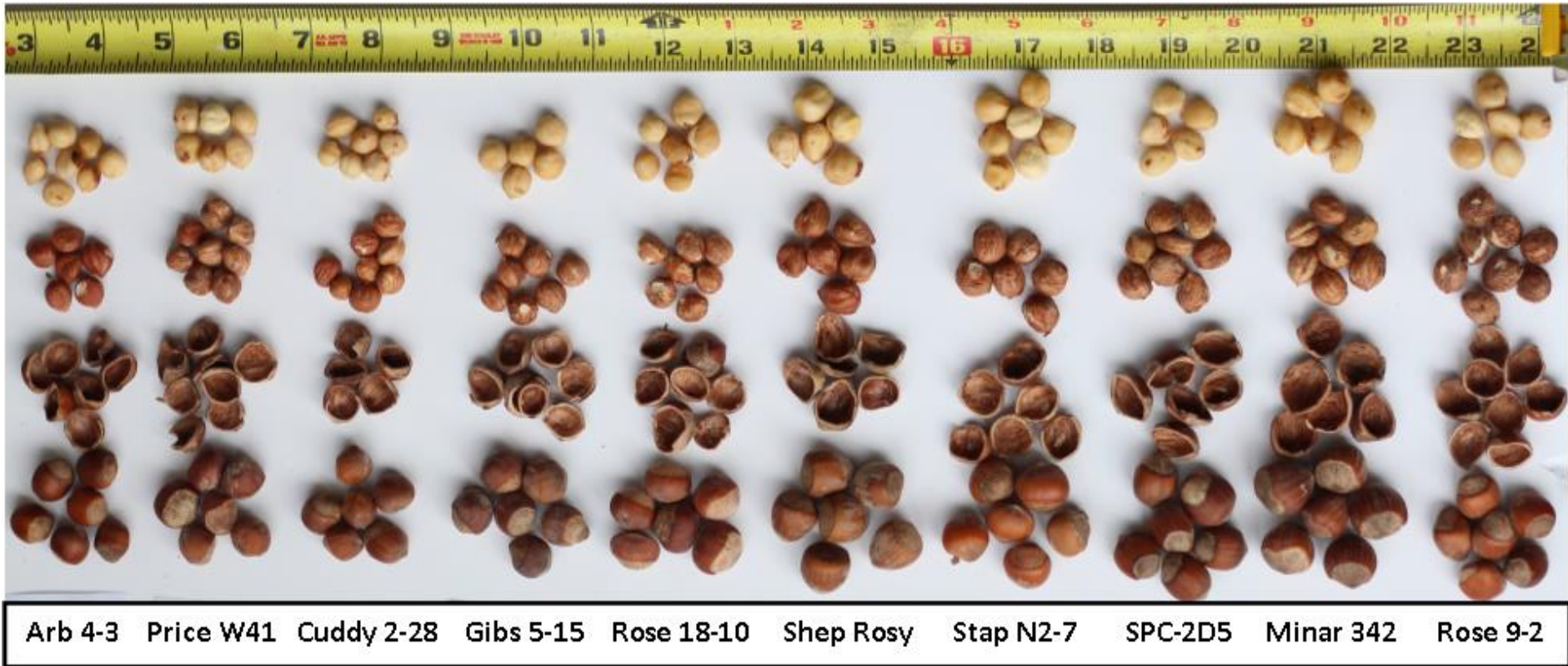




“Eric 4-21” Bayfield, Sept 2016



# UMHDI 1<sup>st</sup> Generation Selections



How Are They  
Grown?

Like  
highbush  
blueberries,  
in  
hedgerows





# **Growing Hazelnuts**

The Next Presentations Will Cover: Marketing, Harvesting, and Processing

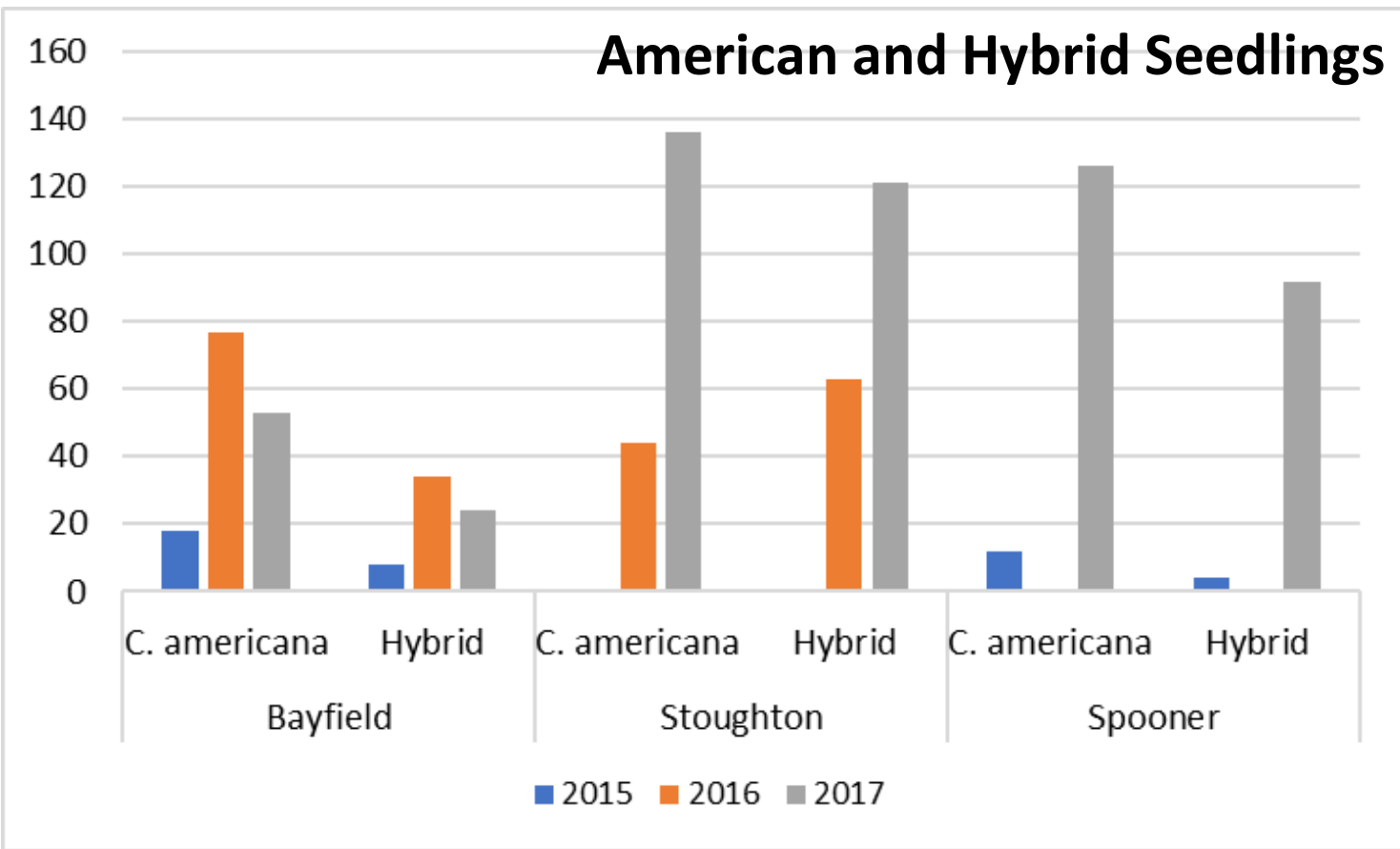
# Choosing Plants

Seedlings or Cultivars?

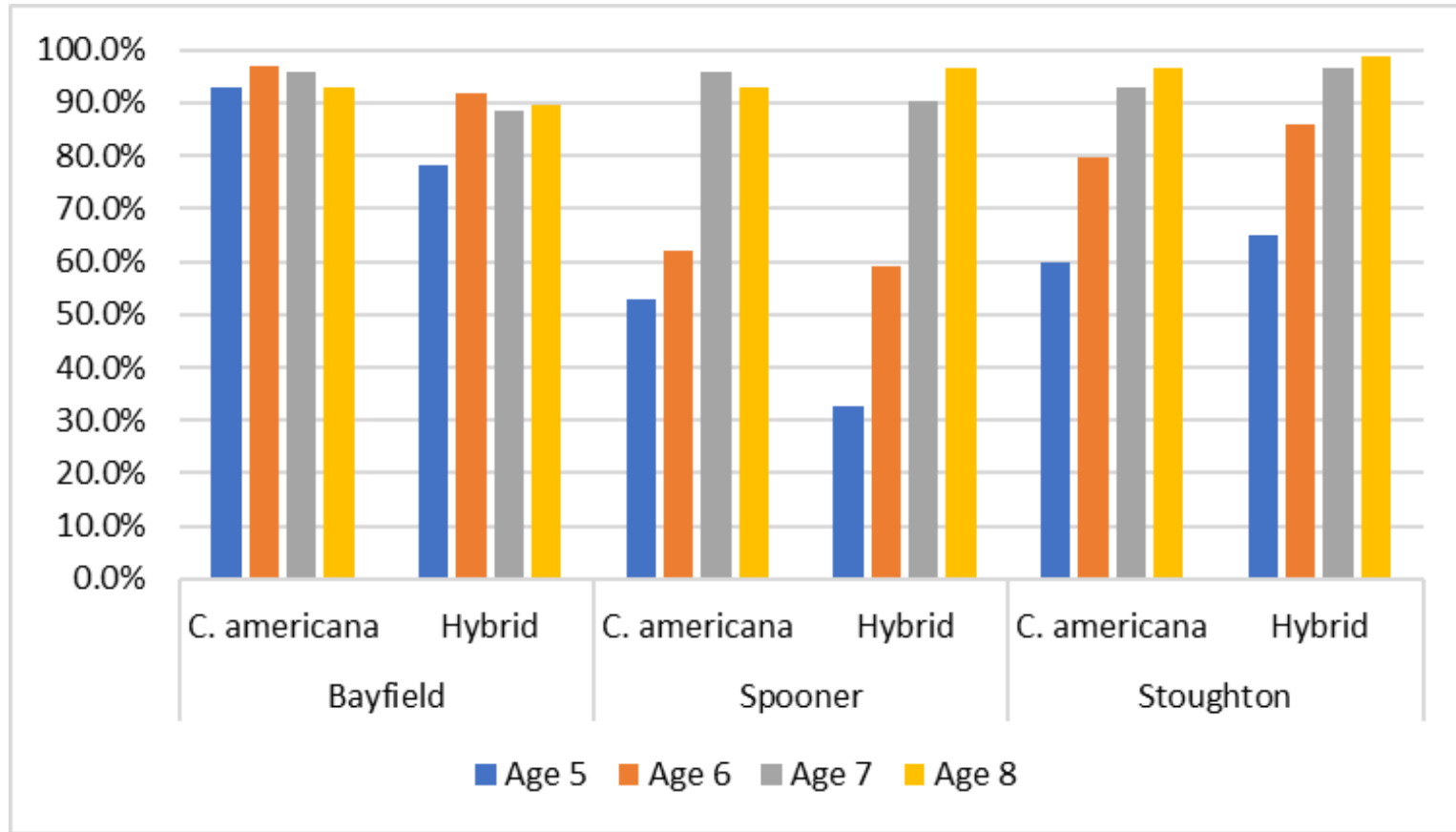
See Fact Sheet #1 – Choosing Plants

Average yields from seedling plants are too low for commercial hazelnut production. Mix seedlings with something else.

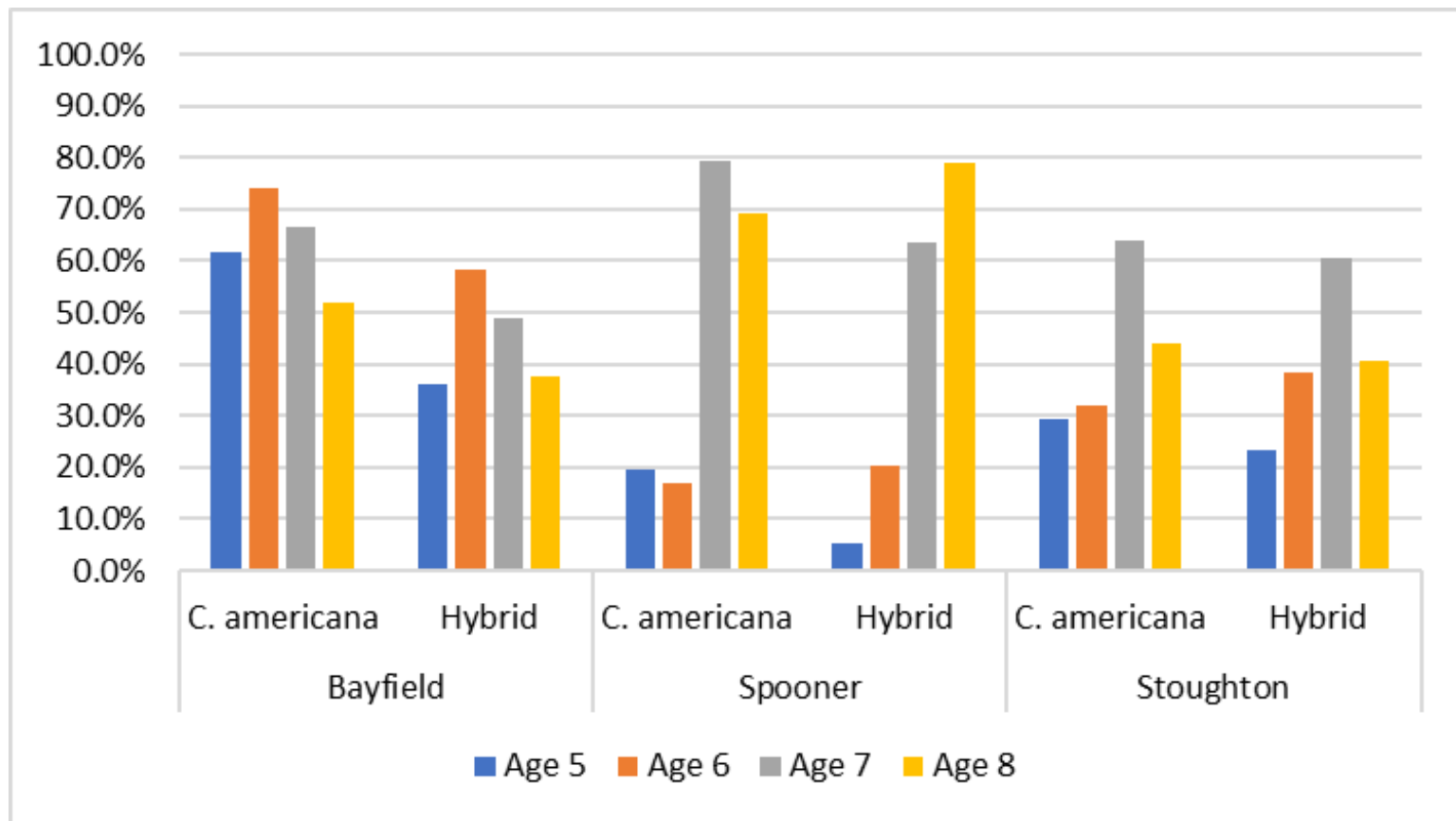




**Figure 3.** Extrapolated per acre yields (lbs kernel per acre) for the *C. americana* and hybrid plants in each of the last three years at each location.



**Figure 1.** The percentage of *C. americana* and hybrid seedlings plants that produced nuts at age 5 (2015), age 6 (2016), age 7 (2017), and age 8 (2018) at each of the three trial locations.



**Figure 2.** The percentage of *C. americana* and hybrid seedling plants with a nut load rating of 3 or higher at ages 5-8.



# Which cultivars should I grow?

## Good question.

Breeder	Cultivar	Species	USDA Hardiness	Nursery Supplier	Estimated Availability Date
Upper Midwest Hazelnut Development Initiative	Rose9-2	selected hybrid seedling	Zone 3	Knight Hollow Nursery, TBD	spring 2020
	PriceW41	selected hybrid seedling			2020
	Minar342	selected hybrid seedling			spring 2020
	Rose18-10	selected hybrid seedling			2020
	SpC-2D5	selected hybrid seedling			2021
	StapN2-7	selected hybrid seedling			2021
	ShepRosy	selected hybrid seedling			2021
	Cuddy2-28	selected hybrid seedling			spring 2020
	Arb4-3	selected hybrid seedling			TBD
	Gibs5-15	selected hybrid seedling			spring 2020
	Eric4-21	selected hybrid seedling			2020
HandFats	selected hybrid seedling	spring 2020			
Hybrid Hazelnut Consortium	HHC1	selected hybrid seedling	Zone 5	Arbor Day Foundation, Great Plains Nursery	fall 2020
	Grand Traverse	hybrid from C. Ferris	Zone 5		fall 2020
	HHC2	selected hybrid seedling	Zone 5		TBD
Rutgers University	4 cultivars	All are C. avellana selections	Zone 6, for trial in Zone 5	TBD	Fall 2020/Spring 2021
Grimo Nut Nursery	Andrew	(Asian x American) x open	Zone 4	Grimo Nut Nursery	spring 2020
	Aldara	(Asian x American) x open			spring 2020
	Marion	(Saskatchewan American x NY hybrid) x open			spring 2020
	Northern Blais	(Asian x American) x open			spring 2020
	Dermis	Skinner hybrid seedling			spring 2020
	Dawn	(Asian x American) x open			spring 2020
	Frank	(Saskatchewan American x NY hybrid) x open			spring 2020
	Kiara	(Saskatchewan American x NY hybrid) x open			spring 2021
Z's Nutty Ridge, LLC	Photon	selected hybrid seedling	Zone 4	TBD	fall 2021
	Nitka	selected hybrid seedling			fall 2021
Martin Hodgson, Butternut Farms	Chelsea	selected hybrid seedling	Zone 4	TBD	2021
	Norfolk	selected hybrid seedling			2021



# Establishment

# Planting Density

For now:  
6x15 rich sites  
5x12 poor sites



Cuddy 2-28



Stap N7-6



Planting  
Density Will  
Depend on  
Site, Growth  
Habit, ROI,  
Equipment

# Site Preparation and Weed Control



















# Management

# Deer Browse



# Row Middle Management

Mow it or grow it, just  
don't till it or kill it









# Size Management



**Whole Plant Coppice?  
Prune to Standards?  
Renewal Pruning?  
Enforced Row Width?  
We don't yet know the  
best option.**



# Nut Theft



Photos: Gary Wyatt

# Economics

# Economics

- We don't have commercial plantings yet in the Upper Midwest so we are estimating at best
- Positive cash flow doesn't start until year 4 at best
- Breakeven sometime after year 4, probably year 8/9
- It depends on many variables – you need to build your own budget, the only one that matters

This spreadsheet tool helps you build an enterprise budget for your hazelnut enterprise one step at a time. Starting with Step 1, complete each Step in order by filling in the yellow boxes. The completed enterprise budget can be seen in the budget tab.

### Establishment Phase Years 0-1



Steps 1-5

Steps 6-7

### Pre-Production Phase Years 2-4



Step 8

### Early-Production Phase Years 5-8



Step 9

### Renovation Year 8



Step 10

### Full-Production Phase Years 9-15



Step 11

### Harvest Data



Steps 12-13

**Hazelnut**  
Development Initiative

**UW**  
**Extension**

#### Developed By:

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Ashland and Bayfield County UW-Extension

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#### Helpful Tools

View  
Enterprise Budget

[Iowa Custom Rate Guide](#)  
[Machinery Cost Calculator](#)

View Cumulative Net  
Income Graph

Home

Steps 1-5

Step 6-7

Step 8

Step 9

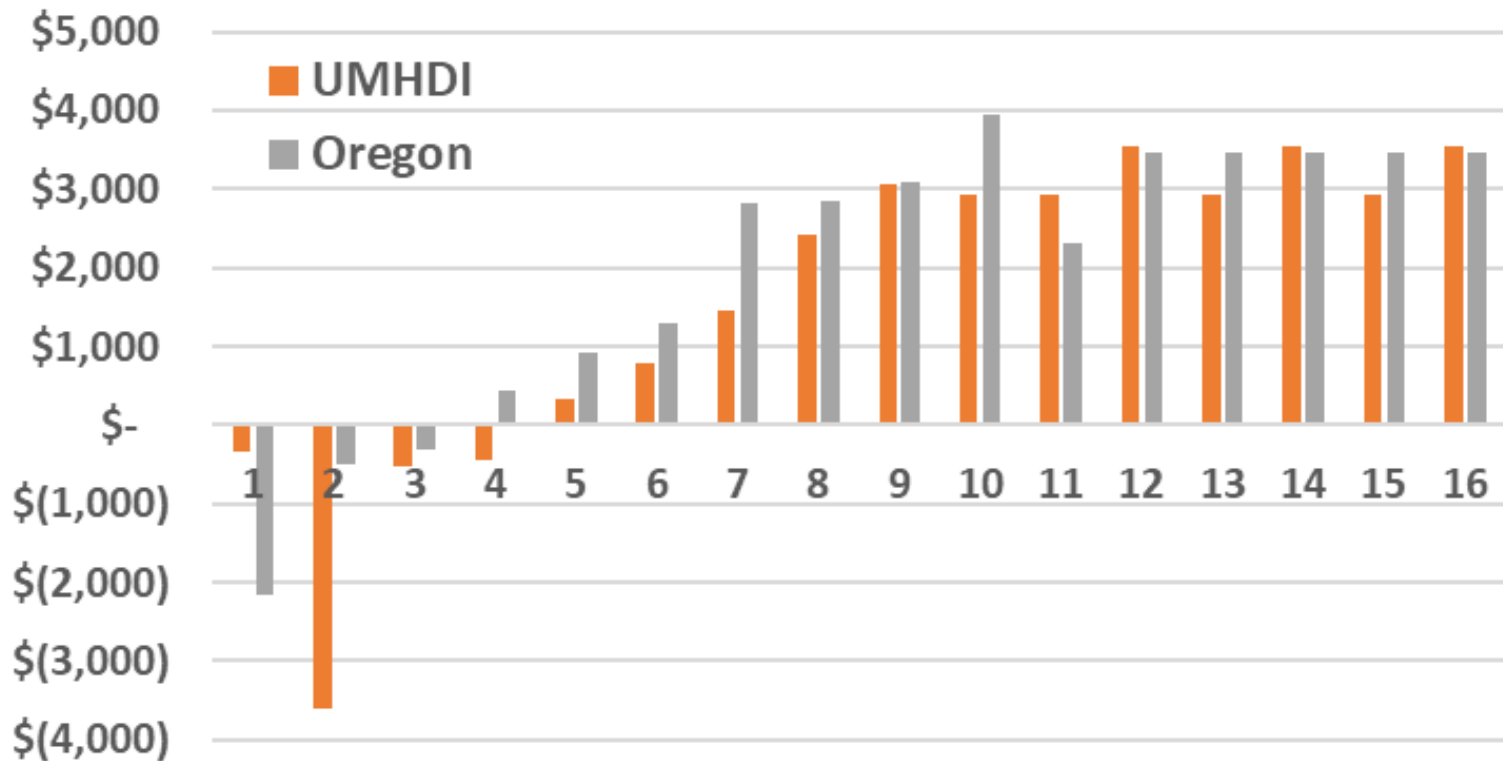
Step 10

Step 11

Step 12-13

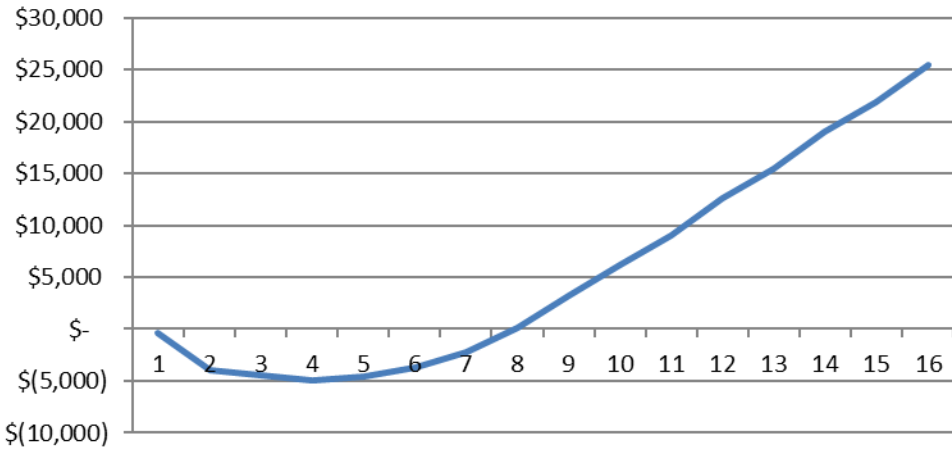
budget

## Annual Net Income Before PITI



# Current Cash Flow Projection – Hazelnut Hedgerow System Before Principal, Interest, Taxes, Insurance (PITI)

## Cumulative Cash Flow



## Establishment Years Cumulative Cash Flow

