New Hazelnut Cultivars for Midwest Growers

Jason Fischbach, UW-Extension

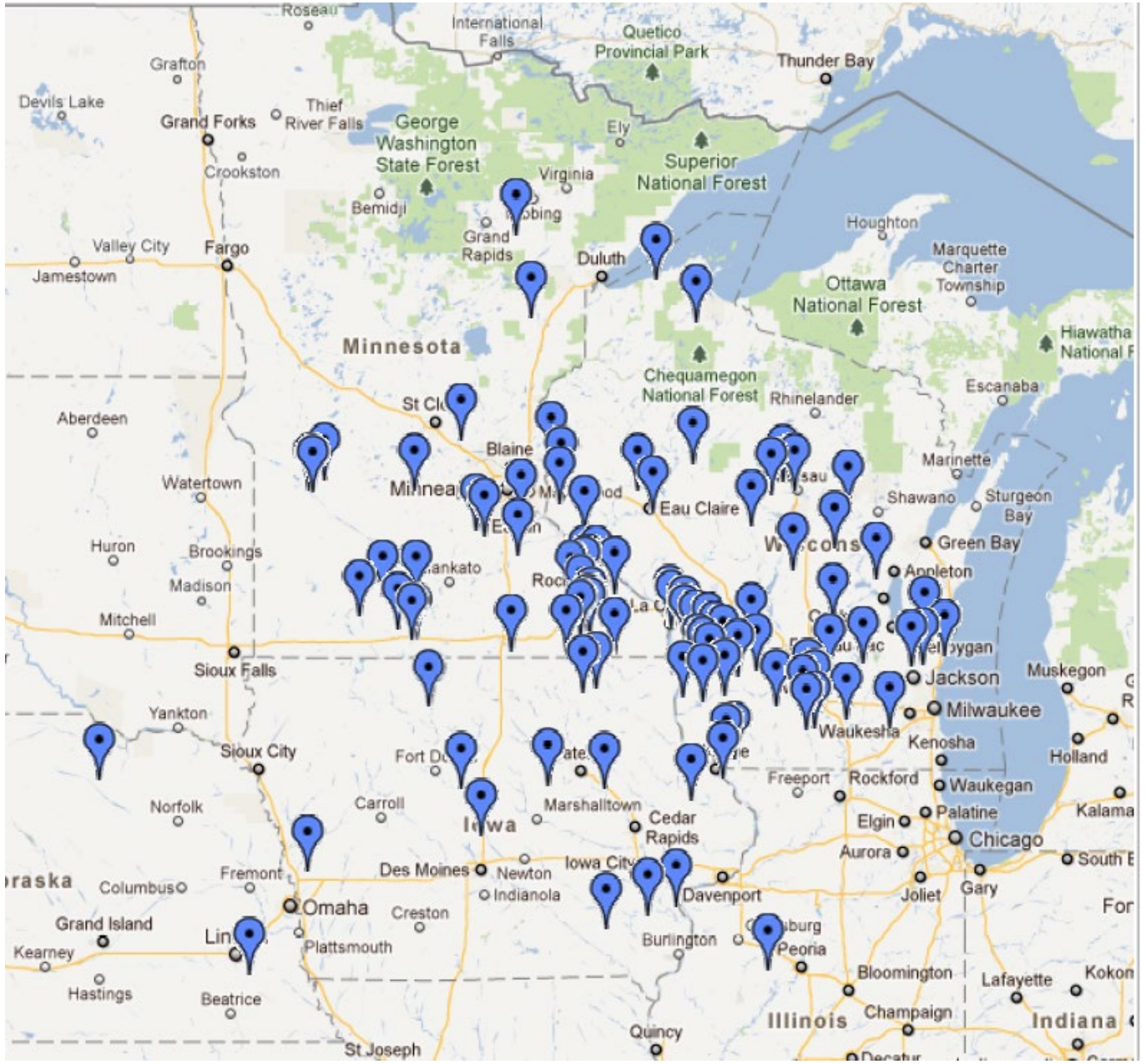
2024 UMHDI Conference

Extension
UNIVERSITY OF WISCONSIN–MADISON
BAYFIELD COUNTY

Upper Midwest Hazelnut Development Initiative

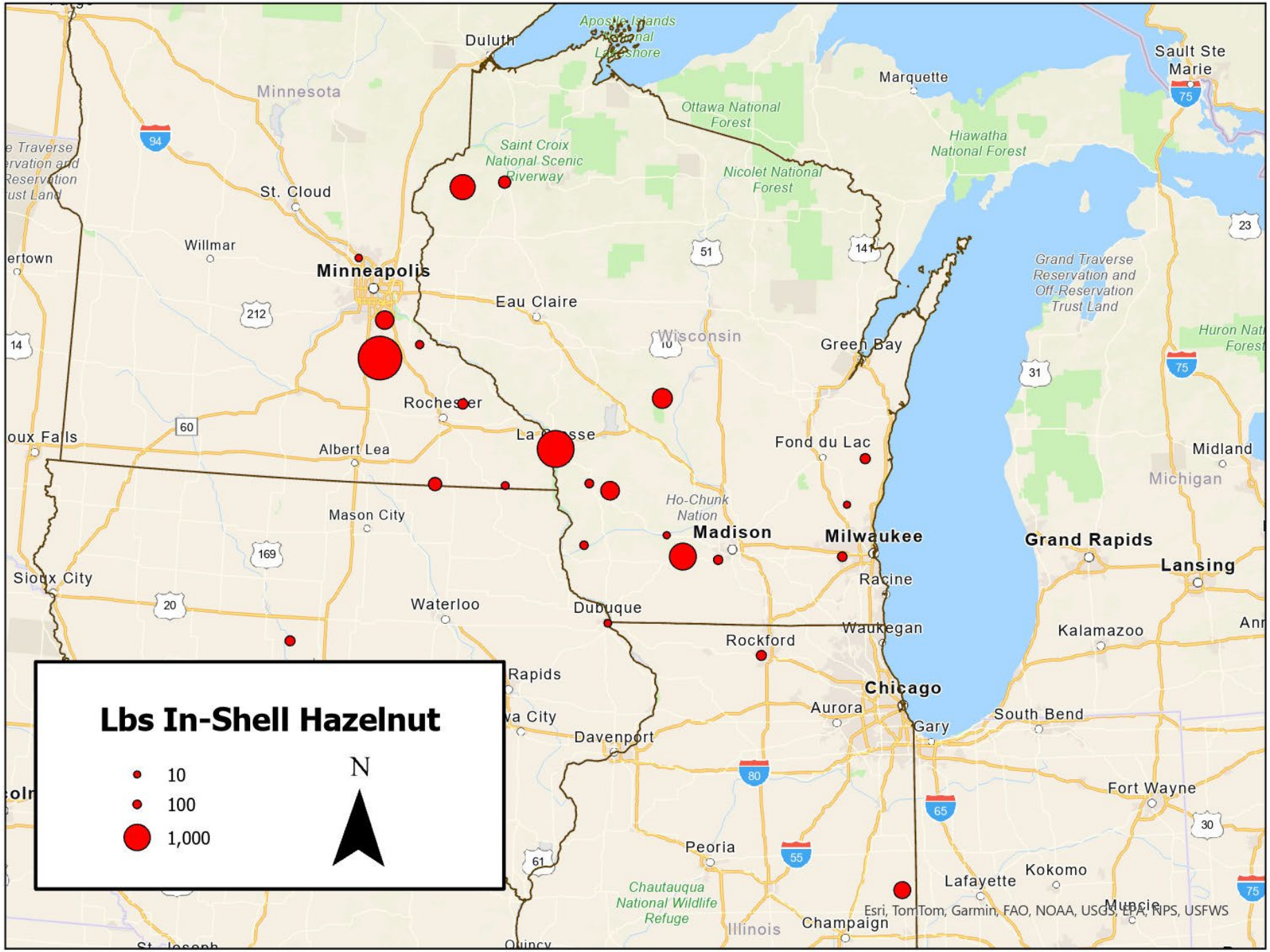
University of Minnesota
Driven to Discover℠

Locations of early-adopter seed-origin plantings circa 2009

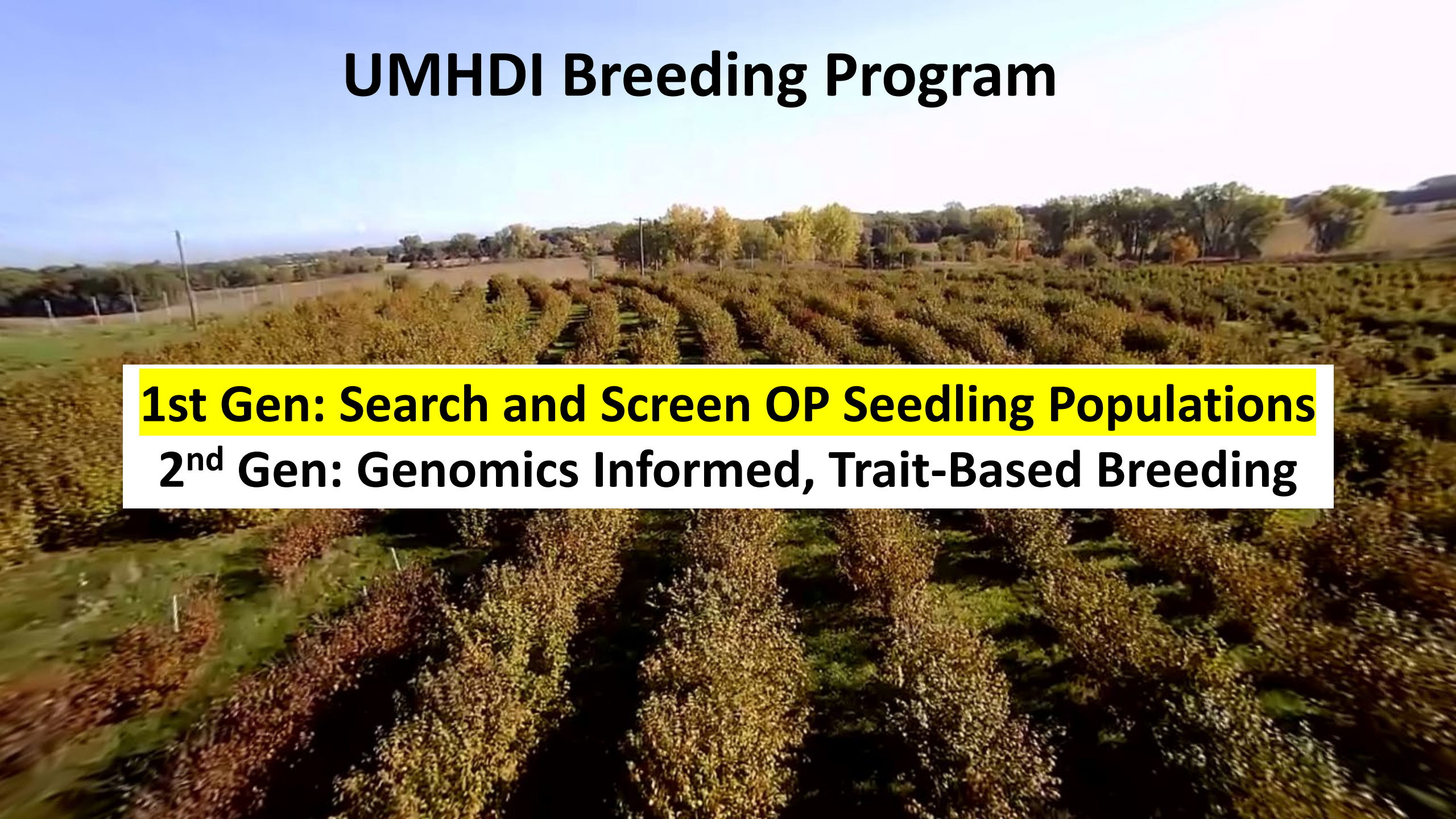


2023

(10,700 lbs)



UMHDI Breeding Program



1st Gen: Search and Screen OP Seedling Populations

2nd Gen: Genomics Informed, Trait-Based Breeding

UMHDI 1st Generation Selections

A Production and Economic Model for Hedgerow Hazelnut Production in the Midwestern United States

Jason Fischbach & Lois Braun

February 2017

Upper Midwest Hazelnut Development Initiative

UW Extension

Forever Green

Hazelnut Improvement Program

Plant Age	Canopy Coverage (sq ft)	oz kernel per sq ft	lbs kernel per acre	lbs kernel per plant	lbs in-shell per plant	lbs in-shell per acre
4	10890	0.02	13	0.01	0.04	32
5	14520	0.17	152	0.17	0.42	380
6	18150	0.28	320	0.35	0.88	801
7	21780	0.42	576	0.63	1.59	1441
8	21780	0.62	844	0.93	2.32	2110
9	21780	0.66	[illegible]	0.99	2.48	2252
10	21780	0.72	981	1.08	2.70	2452
11	21780	0.85	1162	1.28	3.20	2906
12	21780	0.72	981	1.08	2.70	2452
13	21780	0.85	1162	1.28	3.20	2906
14	21780	0.72	981	1.08	2.70	2452
15	21780	0.85	1162	1.28	3.20	2906

900-1200 lbs/ac kernel to make money growing hazelnuts in the Midwest (0.72 oz/sq ft)

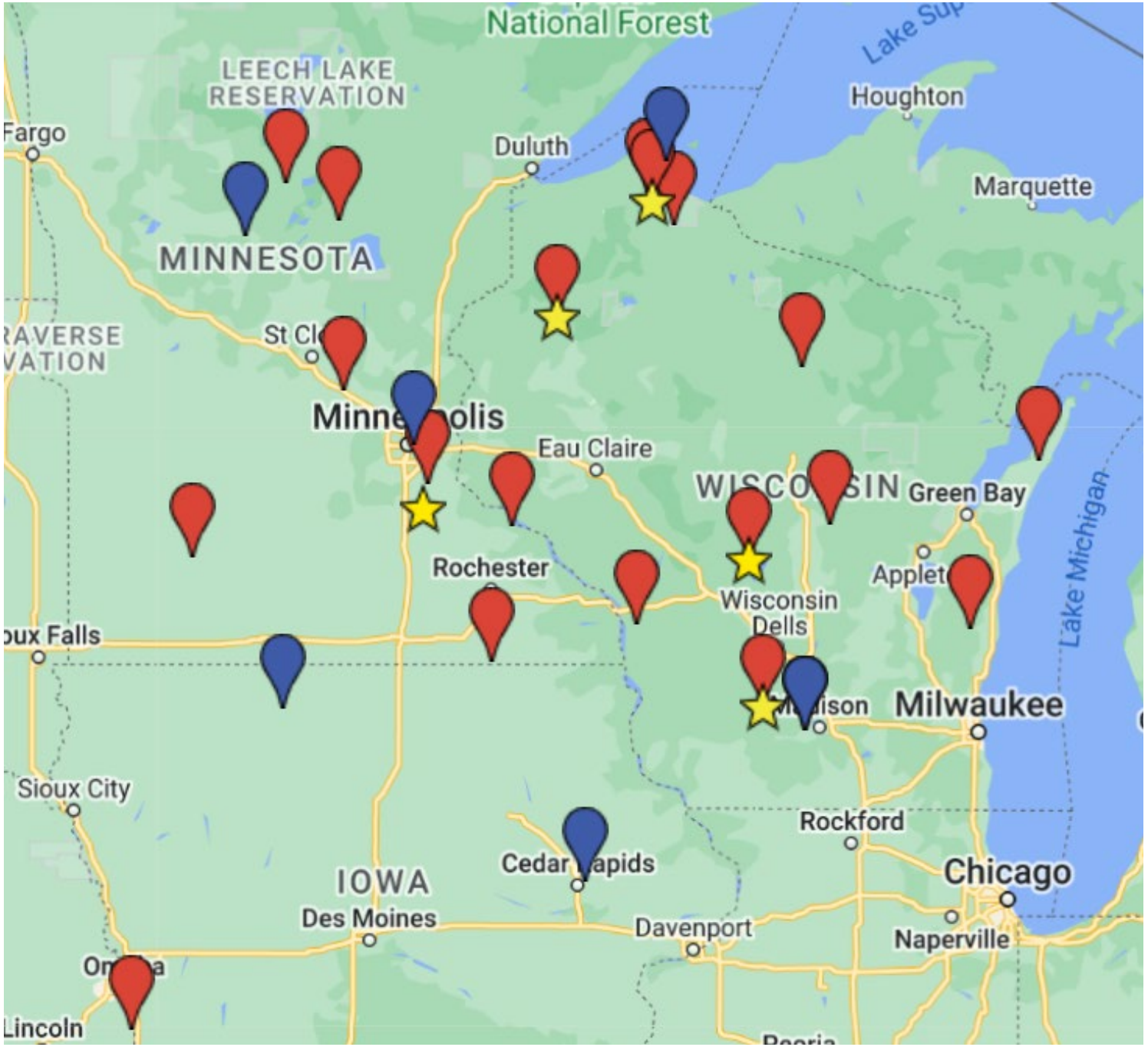

Eric 4-21
Rose 9-2
Price W41
Arb 7-1
Stap N7-6

UMHDI Trial Plantings
(As of March 2024)

UMHDI 1st Gen Selection Performance Trials

Joint Performance Trials

Go-First Farms



Joint Performance Trial (JPT) Locations

State	Nearest City	USDA Hardiness Zone	Soil Type
Wisconsin	Bayfield	5a	705B - Cublake-Croswell-Ashwabay complex (sand)
	Verona	5a	PnC2 - Plano silt loam
Minnesota	Staples	4a	567A - Verndale sandy loam
	St. Paul	4b	411C - Waukegan Silt Loam
Iowa	Marion	5a	8B - Judson silty clay loam
	Fenton	5a	107 - Webster clay loam

JPT
Cultivar Entries
(26 genotypes)

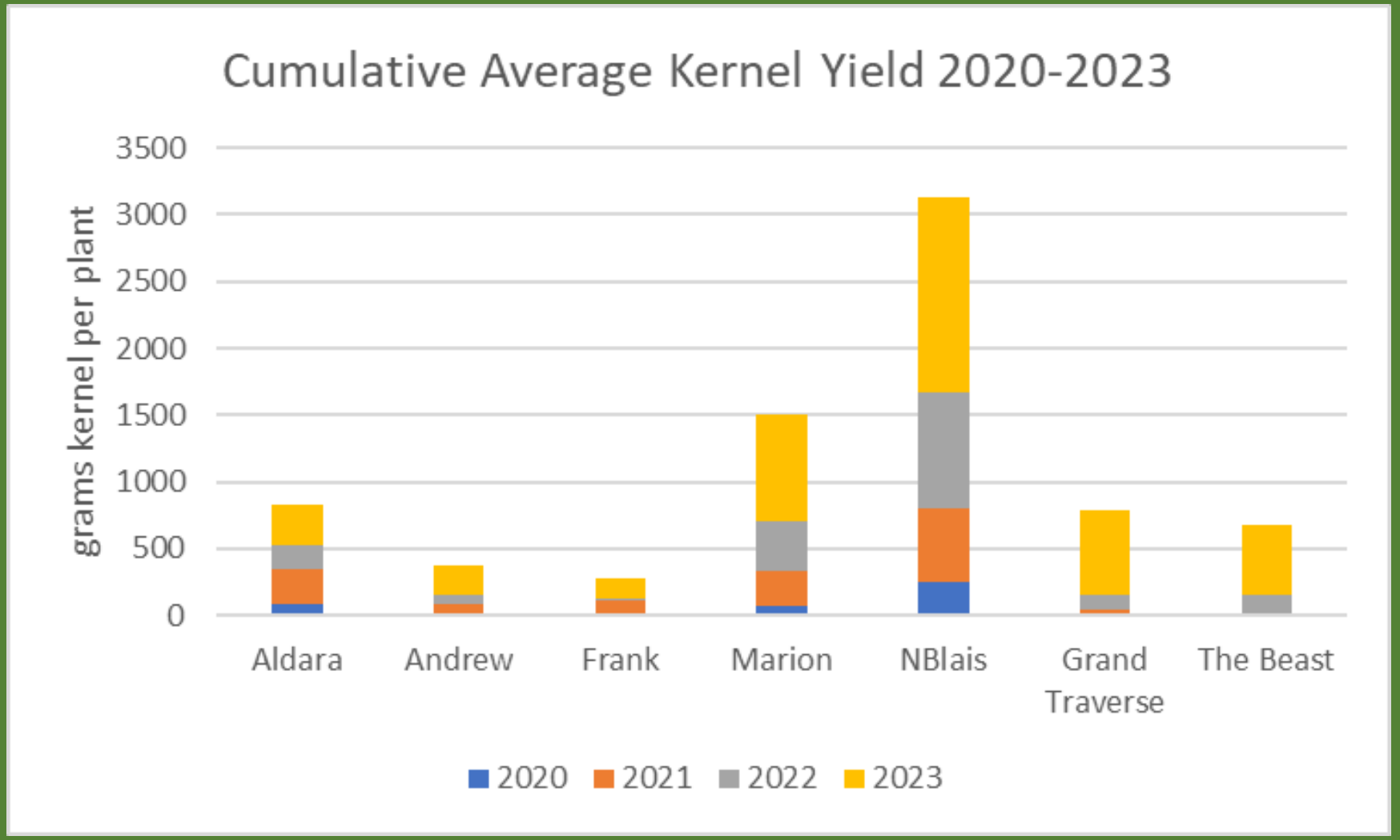
All of these were winners from prior replicated performance trials

Entry Name	Breeding Program	Established
OSU 541.147 (The Beast)	Oregon State University	2017/2018
Grand Traverse	Cecil Ferris	2017/2018
Aldara	Grimo Nut Nursery	2017/2018
Andrew	Grimo Nut Nursery	2017/2018
Frank	Grimo Nut Nursery	2017/2018
Marion	Grimo Nut Nursery	2017/2018
Northern Blais	Grimo Nut Nursery	2017/2018
Dermis	Grimo Nut Nursery	2018/2019
Arb 4-3	UMHDI	2018-2021
Arb 7-1	UMHDI	
Cuddy 2-28	UMHDI	
Gibs 5-15	UMHDI	
Heas B	UMHDI	
Price W41	UMHDI	
Rose 9-2	UMHDI	
Shep Rosy	UMHDI	
SPC-2D5	UMHDI	
Gibs 2-30	UMHDI	
Gibs 6-23	UMHDI	
Eric 4-21	UMHDI	
Gunth GF	UMHDI	
Stap N7-6	UMHDI	
Raritan	Rutgers University	2021
Monmouth	Rutgers University	2021
Somerset	Rutgers University	2021
Hunterdon	Rutgers University	2021

Joint Performance Trials
Madison, WI Location Planted Spring 2017 8ft in-row spacing

2017 Entries

Kernel Yield (Age 4-7)



Northern Blais Stats
Madison Planting

- 8’ x 15’ (363/acre)
- 2021 (age 5)
  - 36.2% kernel
  - 0.76 g/kernel
  - 397 lbs kernel/acre
- 2022 (age 6)
  - 36.9% kernel
  - 0.71 g/kernel
  - 816 lbs kernel/acre
- 2023 (age 7)
  - 35.9% kernel
  - 0.61 g/kernel
  - 1174 lbs kernel/acre

Northern Blais

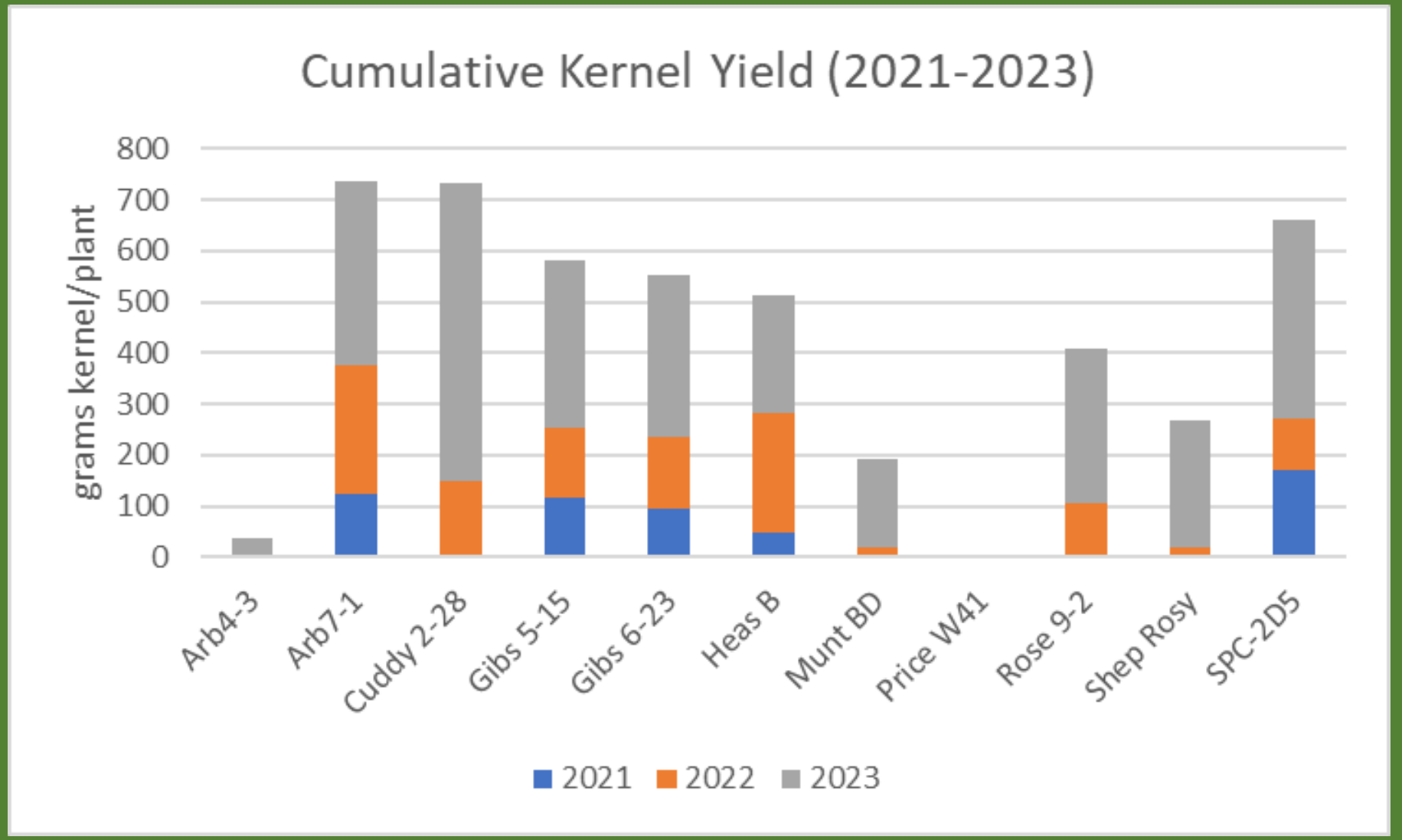
Percent Kernel and Kernel Weight

	Average (2021-2023)	
Grand Traverse	46%	A
The Beast	41%	AB
Marion	38%	BC
Frank	38%	BC
Andrew	37%	BC
NBlais	36%	BC
F1	36%	C
Aldara	35%	C
	p < 0.0001	

	3 yr Avg Kernel Weight (g)	
Grand Traverse	1.05	A
Frank	0.93	AB
Marion	0.89	BC
Andrew	0.89	BC
The Beast	0.79	CD
NBlais	0.72	DE
Aldara	0.62	EF
F1	0.53	F

2019 Entries

Kernel Yield (Age 3-5)



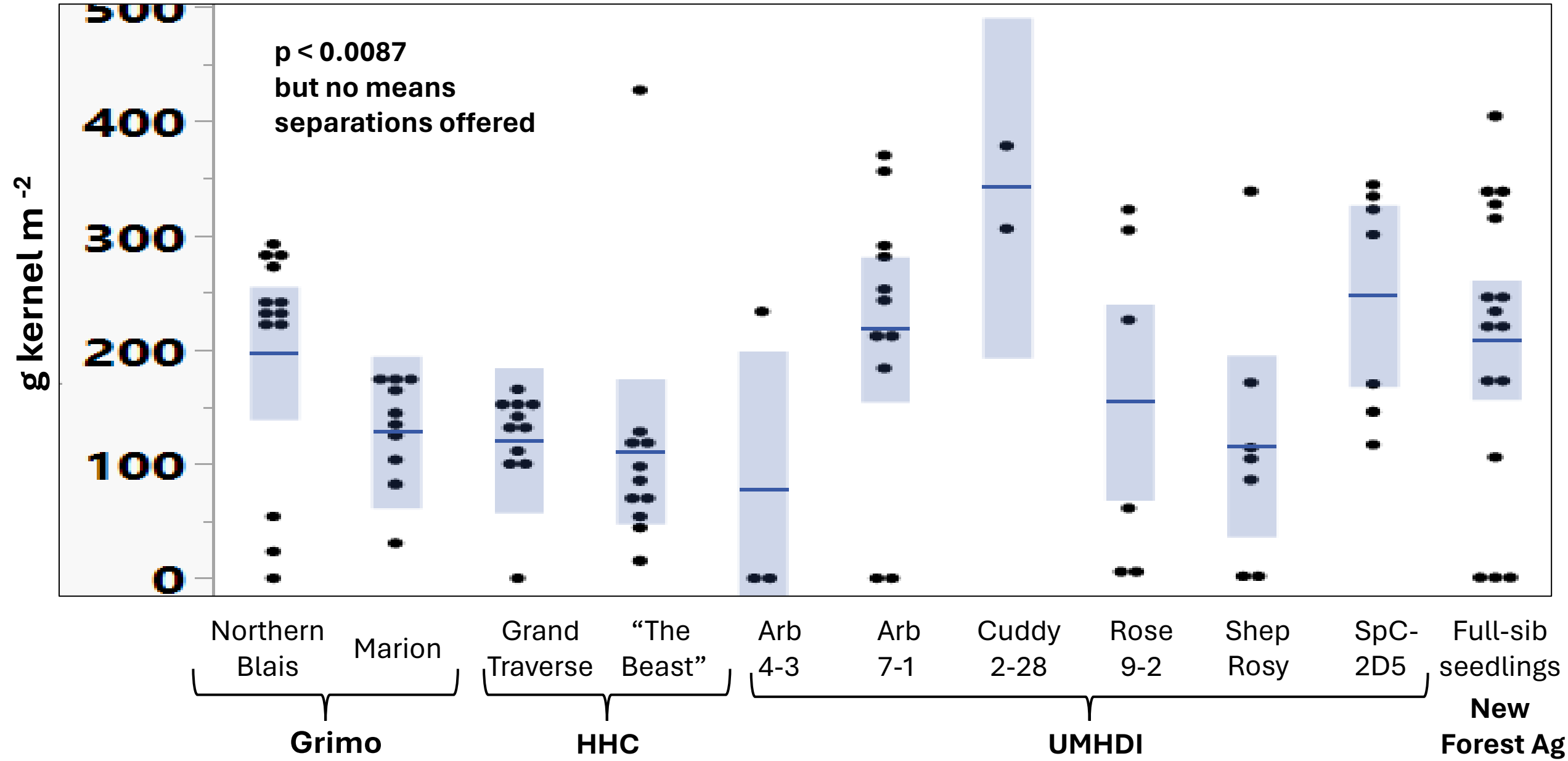
Northern Blais Kernel Yield (age 3-5) = 740 g

Arb 7-1

Rose 9-2 (age 4)

West Madison 2023 Kernel Yield Density

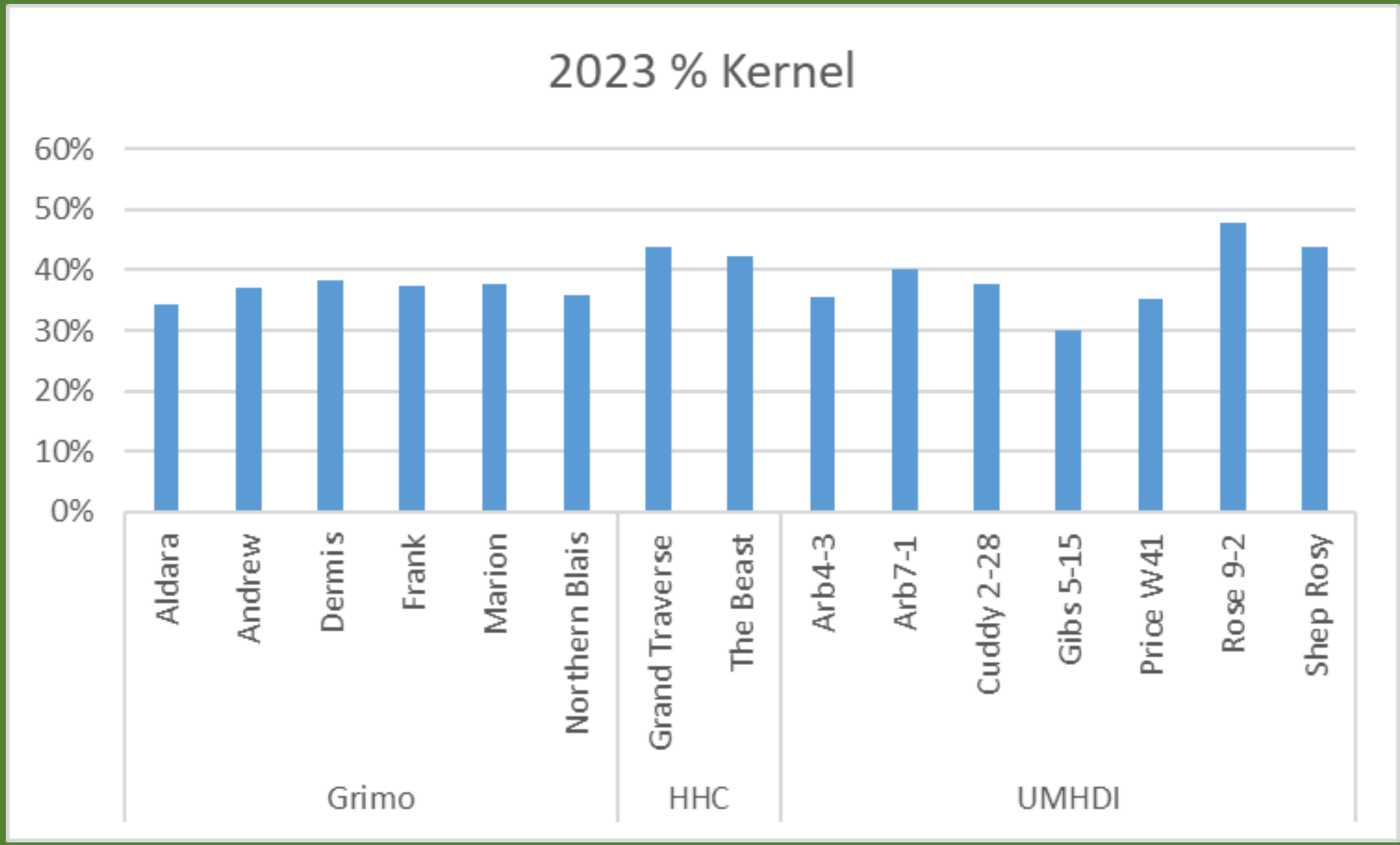
top eleven entries

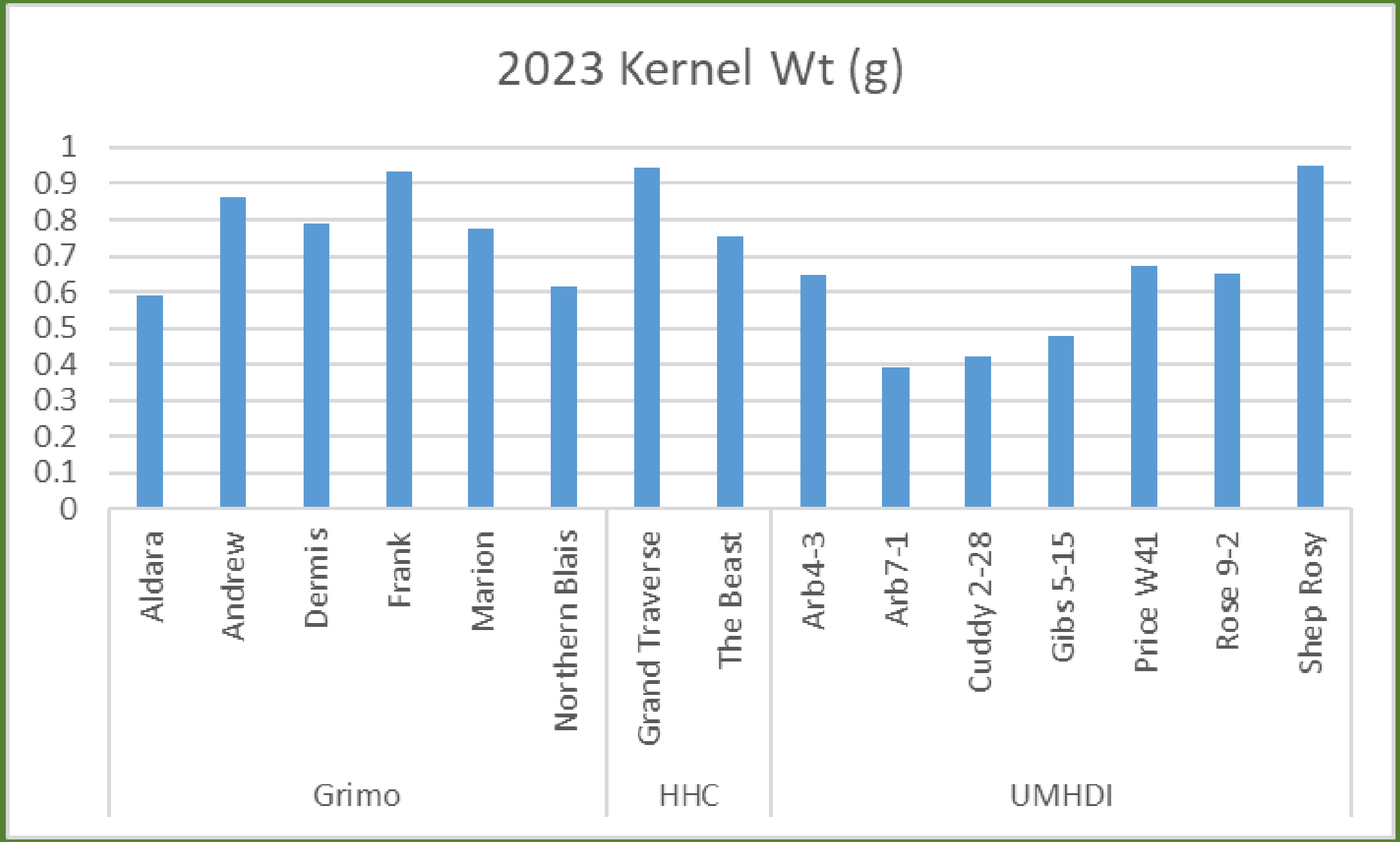


Yield Densities

Goal is 0.70 oz kernel/sq ft

Genotype	Age	n	Yield Density (oz kernel/sq ft)
Cuddy 2-28	5	9	0.88
Arb7-1	5	9	0.71
Northern Blais	7	11	0.70
SPC-2D5	5	10	0.65
Gibs 5-15	5	6	0.57
Gibs 6-23	5	4	0.53
Rose 9-2	5	15	0.50
Marion	7	11	0.41
Grand Traverse	7	10	0.40
The Beast	7	11	0.36
Arb4-3	5	7	0.32
Heas B	5	3	0.28
Spc-2c7	4	8	0.27
Shep Rosy	5	9	0.26
Dermis	5	7	0.23
Eric 4-21	4	3	0.17
Aldara	7	11	0.17
Andrew	7	8	0.15
Frank	7	10	0.12


2023 % Kernel
60%
50%
40%
30%
20%
10%
0%
Aldara
Andrew
Dermis
Frank
Marion
Northern Blais
Grand Traverse
The Beast
Arb4-3
Arb7-1
Cuddy 2-28
Gibs 5-15
Price W41
Rose 9-2
Shep Rosy
Grimo
HHC
UMHDI


2023 Kernel Wt (g)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Aldara
Andrew
Dermis
Frank
Marion
Northern Blais
Grand Traverse
The Beast
Arb4-3
Arb7-1
Cuddy 2-28
Gibs 5-15
Price W41
Rose 9-2
Shep Rosy
Grimo
HHC
UMHDI

Maine Blueberries

20,000 acre, 480 growers
2022 – 77.6 million pounds
99% processed

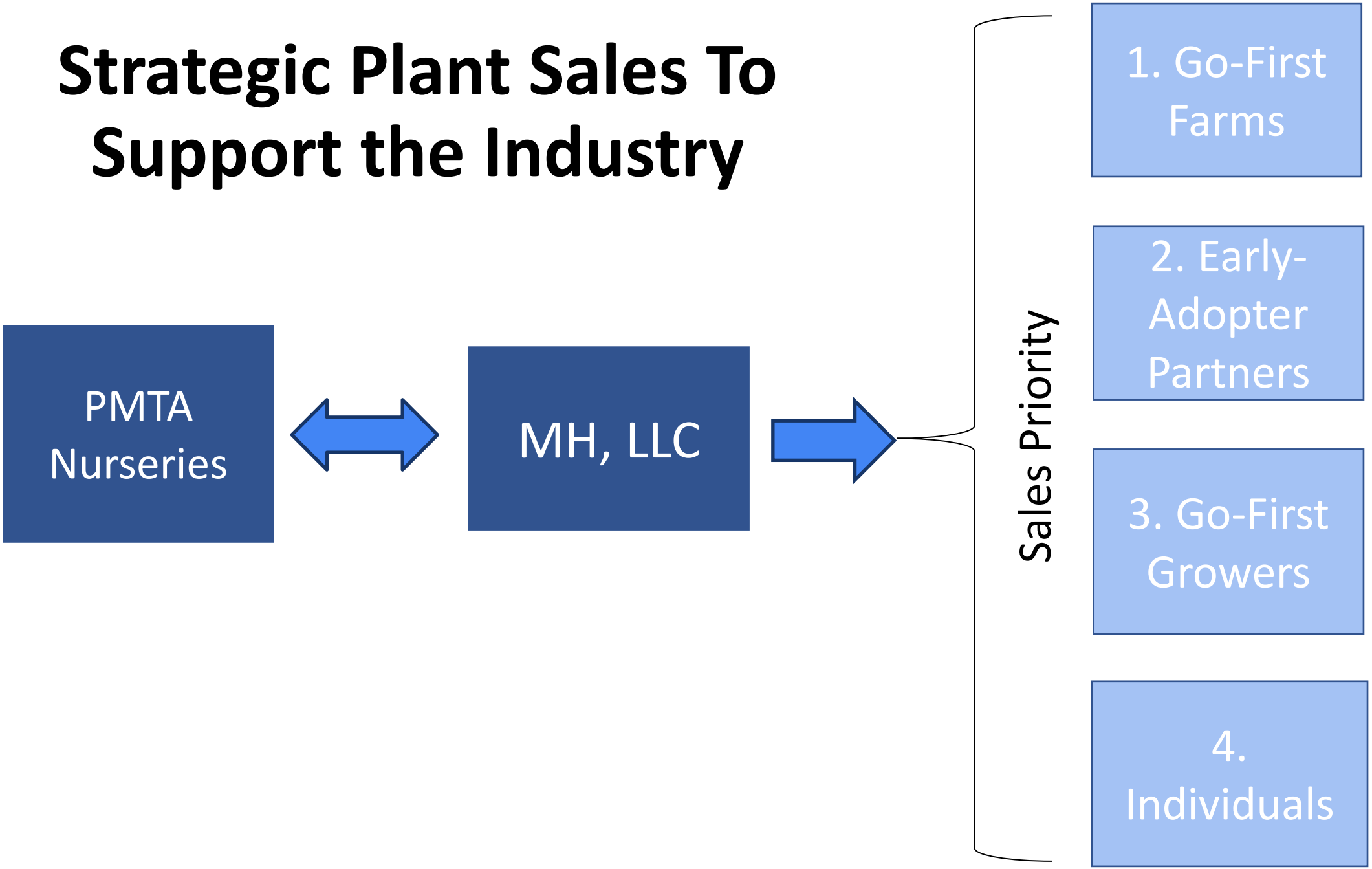
Oregon Blueberries

15,000 acre, 320 growers
2022 – 157 million pounds
60% processed

Cultivar Recommendations/Availability

- Northern Blais
  - Good all around, limited testing, available from Grimo Nut Nursery
- The Beast, Grand Traverse
  - For warmer parts of Upper Midwest, limited testing
  - Available from multiple sources
- Z's Nutty Ridge, LLC
  - Photon, NITKA – not yet trialed in Upper Midwest
- Rutgers Landmark Series
  - European genetics, testing underway in Upper Midwest
- UMHDI 1st Gen Selections

Strategic Plant Sales To Support the Industry



2. Early-Adopter Commercial Partners

- Application process
- Formal or informal groups of growers (minimum of 3) with demonstrated experience working together
- Pooled plant orders place annually

3. Go-First Growers

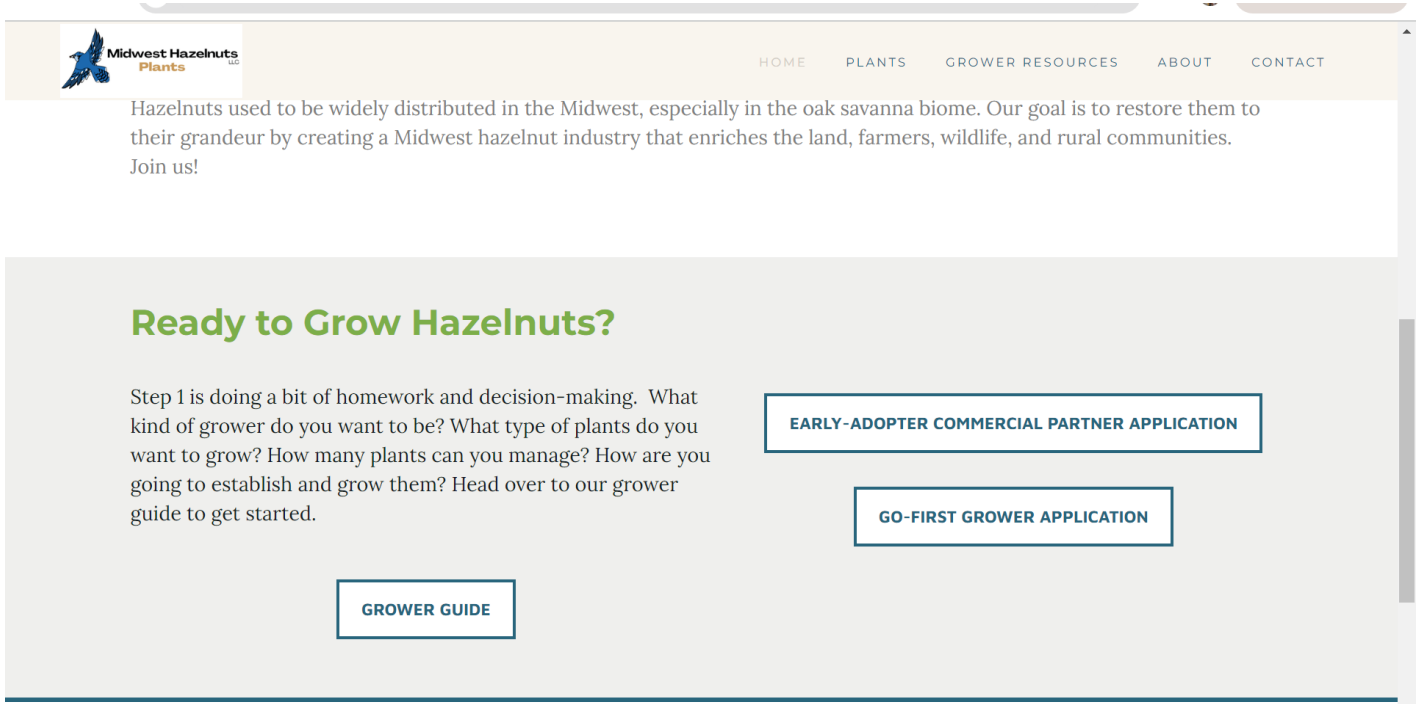
Application process
Must be within 25 miles of a Go-First Farm

4. On Your Own

Get on the waiting list to be notified when online ordering is open

Three Ways to Access UMHDI Plants

- Be part of an Early Adopter Commercial Partner organization
- Apply to be a Go-First Grower
- Sign up for the waiting list to be notified when ordering is open online



www.midwesthazels.com