

MICHIGAN ASPARAGUS RESEARCH

— 2025 —

RESEARCH IS SUPPORTED BY:

Michigan Asparagus Research Committee; Michigan State University
AgBioResearch; Michigan State University Extension

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Acknowledgements

This report contains variety trial data from the Michigan Asparagus Industry Research Farm (Research Farm). It represents a strong cooperative effort among all stakeholders working together for the betterment of Michigan's asparagus industry.

The information in this book comes from research done at the Research Farm near Hart, Michigan. Again this year, we are including climate and weather data to put trial results into perspective (see page 46) and providing yield distribution graphs for each trial.

Why This Research Matters to You

The Research Farm plays a vital role in helping growers like you make smarter planting decisions. The variety trial data we collect provides insight into which asparagus varieties perform best under Michigan growing conditions. Traits evaluated include yield, spear quality, disease resistance, and harvest timing -- all factors that can directly impact your profitability and long-term farm planning.

Seed companies also use this data to determine whether or not to bring a variety to market, meaning the performance of a variety on our research farm can influence what seed becomes commercially available to you.

Scope of the 2025 Trials

In 2025, the Research Farm evaluated 55 varieties across 75 plots, including both commercially available varieties and experimental lines. Trials are conducted over multiple years to assess consistency, performance trends, and adaptability under changing weather and soil conditions. This year marked the second harvest from the 2021 MAIRF trial (see page 32) while the 2012 International Cultivar trial was concluded in 2024, as sufficient data had been collected on those varieties. This publication includes comprehensive results, allowing you to compare varieties based on total yield, spear size, and seasonal distribution.

Funding & Industry Support

Funds to operate the Research Farm, as well as most other asparagus research projects, are generated from many sources: voluntary contributions from Michigan asparagus processors and fresh packers, MSU Project GREEN, USDA/MDARD Specialty Crop Block Grants, and grower assessments. Profits from hybrid asparagus seed sales also help sustain the program.

The Research Farm is part-owned and part-leased by Michigan Asparagus Research, Inc. (MARI), which is made up of growers, processors, and fresh packers who meet annually each year. MARI has purchased equipment, installed a well, and funds daily operations of the farm during the asparagus season in cooperation with MSU.

We wish to express our sincere appreciation to farm manager Ashley Fleser, assistant farm manager Justin Adams, MSU vegetable educator Ben Werling and the 2024 MARI Board:

Nick Oomen, Chairman

Todd Greiner

Brock Oomen, Vice Chairman

Mary Sheppard

Gerrit Herrygers, Treasurer

Alex Arellano

Thank You to Our Supporters

The Michigan Asparagus Research, Inc. (MARI) extends sincere thanks to the following processors, fresh packers, and shippers whose voluntary contributions help fund asparagus research:

Greiner Farms

Honee Bear Canning

Michigan Freeze Pack

North Bay Produce

OPC Arbre Farms

Ridgeview Packing

Shafer Lake Fruit

Todd Greiner Farms Packing

West MI Produce

A strong research effort benefits the entire industry. If your processor or packer is listed above, we encourage you to thank them. If they are not, please encourage them to contribute next year. Their support makes this work possible.

We also welcome greater industry involvement. Whether you're a grower, processor, or seed company, your feedback, participation, and ideas help guide our research priorities. Contact us to learn how you can get involved, attend a future field day, or contribute to the effort.

Questions?

Jamie Clover Adams, Executive Director

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☎ (517) 881-3971

About the Graphs & Data Tables

The graphs and data tables in this year's asparagus research book were generated from data collected by the Christiaens automated asparagus sorter. It is designed specifically for research and data collection. It examines every spear harvested and measures the weight, diameter, and tip quality. This has enabled us to provide more data for you as you assess asparagus varieties for your farm.

In addition, the traditional charts and tables have some extra features. They include:

Error Bars. These are skinny lines extending from the top of bars in the charts. They are a graphical representation of the variability of the data. The error bars represent +/- one standard error unit around the mean (average). The standard error measures the variability in the data for a treatment. In other words, how different from each other were the four replicate measurements (plots) in the field for each treatment?

Capital Letters Associated with Error Bars. Some of the charts representing annual and cumulative data have capital letters associated with each error bar. The letters tell you whether we would judge treatments as different from each other at the 0.05 probability level (see below). Different chart bars that share the same letter are not statistically different. Those that do not share any of the same letters are significantly different. If there are no letters, there were no significant differences among any of the treatments.

Flowering. The sorter gives each spear a flower factor rating from 0-100% based on how "tight" the head is. Larger numbers are better as they indicate a tighter tip with less elongation/branching or flowering. On average, green asparagus spears have a flower factor between 20-40%. The "average flowering" included on each table is the average of these readings across all spears and all harvests for each plot. It's a course, overall look since tip quality will vary across harvests within a season.

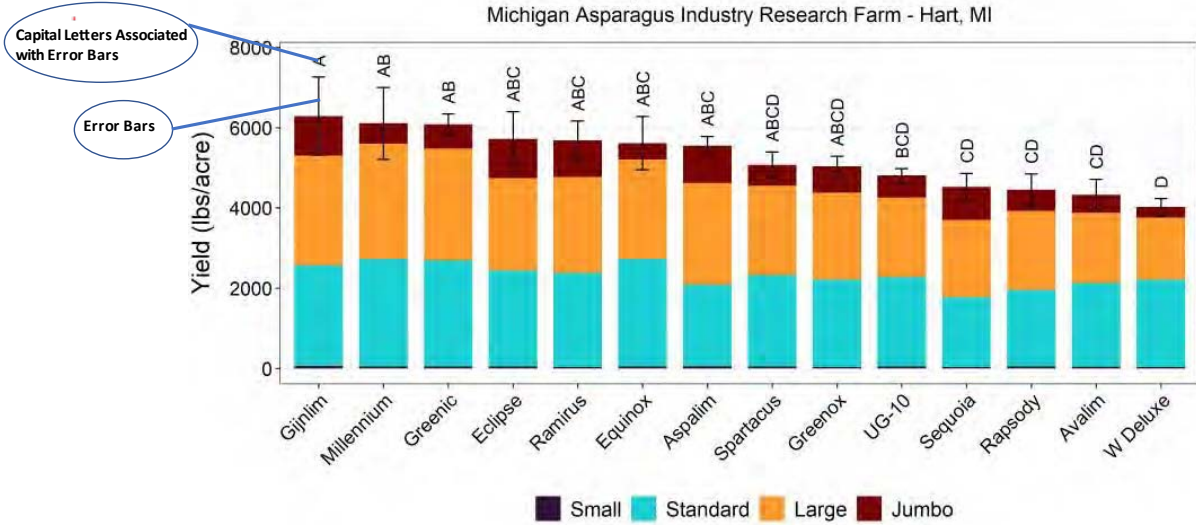
P-Values. These are found at the bottom of most of the data tables. In a basic sense, P-values represent the level of statistical significance. If the p-value is less than 0.05, we can interpret it to mean there is a 95% chance there are some real differences among the treatments. The lower the p-value, the more confident we are that there are real differences. The higher the p-value (especially greater than 0.10), the more confident we are in saying there probably aren't meaningful differences between the treatments.

LSD.05 Values. These are found at the bottom of most of the data tables. This is the "Least Significant Difference" determined at the 0.05 probability level. If two treatment means differ by more than this number, they would be considered significantly different. If they differ by less than this number, they are not considered significantly different. **Bolding is used in the tables to highlight treatments not significantly different from the highest value**, but the LSD can be used to compare any other treatments you may be interested in.

Questions can be directed to:

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(517) 353-0410

2017C Competitors Trial: 2022 Yield Data
Michigan Asparagus Industry Research Farm - Hart, MI



2015A Crown Trial: 2022 Yield Data
Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs. per acre				Total	Spear Tip Quality	
	Small	Standard	Large	Jumbo		Avg Flowering ¹	Invalid ²
WB-206	19	2529	3391	927	6867	28%	5%
Millennium	14	1864	2969	1842	6689	30%	7%
Rosalie	18	1765	2627	1736	6146	29%	5%
P Challenger-2	33	2352	2817	792	5994	30%	5%
UG-24	20	1726	2587	1530	5863	29%	5%
WB-203	17	1892	2397	1547	5854	28%	6%
WB-201	18	2069	2496	1172	5755	30%	5%
Voltare	22	1997	2576	911	5506	29%	5%
UG-25	18	1783	2532	955	5288	29%	6%
p Value	0.8245	0.2318	0.1489	0.2394	0.2730	0.7383	0.8502
LSD.05	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

P-Values

LSDs

Quantities not significantly different from the maximum in each column shown in bold.

¹ Measured as mean of flowering percentage of individual spears.

² Measured as percentage of individual spears with invalid flowering readings.

Hybrid Asparagus Yield Trials 2025 Results

Objectives:

To evaluate the yield, quality, disease resistance, and longevity of selected asparagus hybrids.

Methods:

The trials established during 2015 (Transplants), 2017 (Cultivar & Competitor) and 2021 (MAIRF Cultivars) consisted of transplants which were sown in the greenhouse in April and transplanted into the trial plots during June or early July.

The in-row plant spacing for each trial was:

- 2015B Transplant – 12"
- 2017 Cultivar – 12"
- 2017 Competitors – 9"
- 2021 MAIRF Cultivars – 12"

The 2015A crown trial was planted in early May with 1 year old crowns with in-row spacing of 9.4" apart. The row spacing for all trials is 54".

All trials were planted in a randomized, complete block design with 4 replications except for 2017 Cultivar which has 3 replications. Plots are harvested for 3-4 weeks during the third growing season and around 6 weeks in subsequent seasons.

Beginning in the spring of 2020, the weight, diameter, and length of each harvested spear were measured and recorded using an automated data collection system. In addition, tip quality was assessed for each spear. This year, we adjusted the sorting machine to improve data accuracy by slowing the belt and improving spear placement.

Results:

Guelph Millennium is used as an industry standard or "control" in all variety trials. It is a standout for standard spear yield and shows strong cumulative performance across seasons. Guelph Millennium continued to match or exceed annual and cumulative yields of alternative varieties in the majority of trials during the 2025 season. Top performers in jumbo spear production include Javelim, Bejo 3025 and Sequoia. Differences in tip quality (flower factor) were resolved among varieties in several trials in 2025, with Equinox, Eclipse, and Sequoia among those exhibiting tighter tips on average. The 2021 Variety Trial was harvested in 2024 (partial) and 2025, with several tested varieties yielding greater than or equal to Millennium in these initial years.

2015A Crown Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre					Spear Tip Quality	
	Small	Standard	Large	Jumbo	Total	Avg Flowering ¹	Invalid ²
Rosalie	80	1204	2752	5520	9556	36%	6%
Millennium	60	3652	4931	659	9303	30%	5%
P Challenger-2	202	4263	2649	399	7513	29%	6%
Voltare	40	1287	3203	2685	7215	35%	7%
WB-201	125	2161	3026	1280	6593	31%	6%
WB-206	92	3419	2623	457	6592	26%	5%
UG-24	131	3150	2585	615	6481	34%	7%
UG-25	101	2513	2719	698	6030	32%	6%
WB-203	86	1643	2214	1061	5005	25%	6%
p Value	0.0006	< 0.0001	0.0004	< 0.0001	< 0.0001	< 0.0001	0.5506
LSD.05	59	740	953	820	1613	3	n.s.

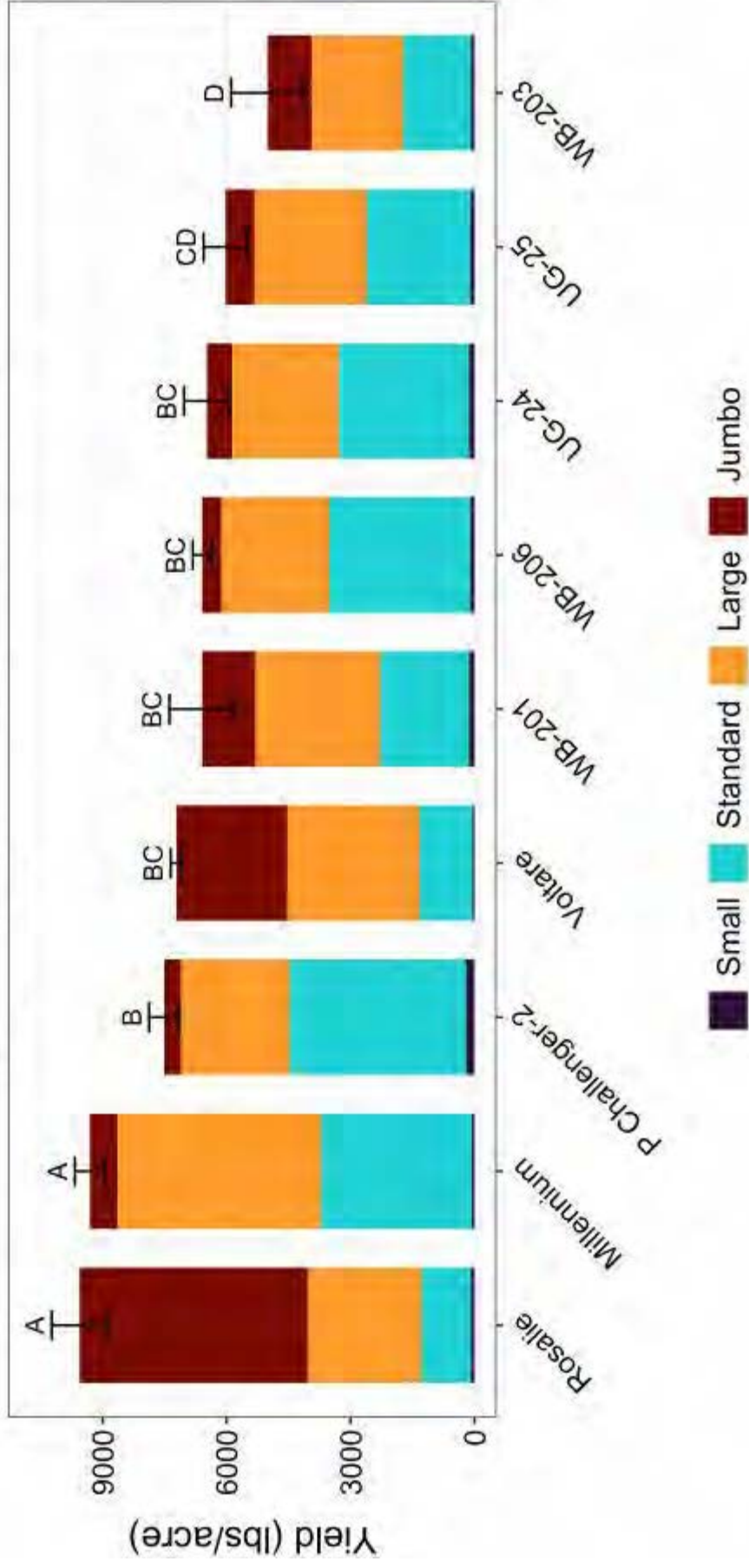
Quantities not significantly different from the maximum in each column shown in bold.

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² Measured as percentage of individual spears with invalid flowering readings.

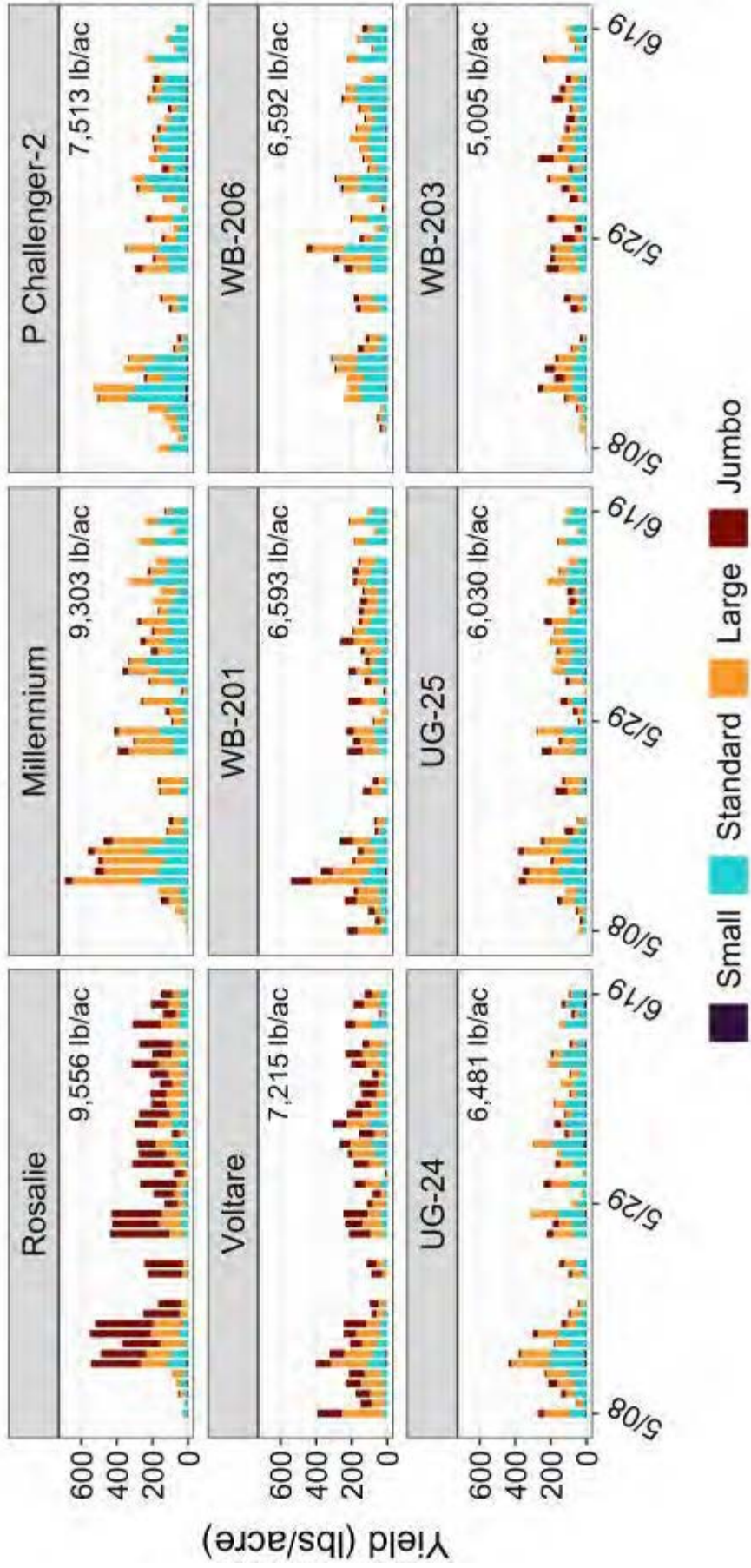
2015A Crown Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI



2015A Crown Trial: 2025 Yield Distribution

Michigan Asparagus Industry Research Farm - Hart, MI



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2015A Crown Trial: 2025 Cumulative Yields
Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre									
	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
Rosalie	842	3891	5730	5580	5226	6553	4144	10458	9556	51980
Millenium	408	2328	4159	5884	5060	7192	4839	8957	9303	48130
P Challenger-2	654	2844	4563	5445	5130	6438	4449	7867	7513	44904
WB-206	444	2559	4210	5610	6466	7209	4647	7162	6592	44898
UG-24	474	2781	4244	5612	5584	6202	4603	6251	6481	42231
WB-201	588	2503	3803	4368	4691	6079	3723	6479	6593	38828
Voltare	328	2194	3494	4595	4476	5774	3603	6724	7215	38404
UG-25	396	1980	3314	4632	4516	5713	3726	5390	6030	35697
WB-203	344	2042	3396	4639	4659	6123	3527	5107	5005	34842
p Value	0.0002	0.0006	0.0002	0.4997	0.0514	0.2218	0.3799	< 0.0001	< 0.0001	0.0014
LSD.05	192	747	1115	n.s.	n.s.	n.s.	n.s.	1812	1613	8041

Quantities not significantly different from the maximum in each column shown in bold.

2015B Transplant Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre					Spear Tip Quality	
	Small	Standard	Large	Jumbo	Total	Avg Flowering ¹	Invalid ²
Aspalim	199	2345	4381	2684	9609	29%	6%
Millennium	95	5008	4095	312	9510	28%	5%
Bejo 3025	97	2614	4009	2362	9082	34%	8%
Equinox	14	2676	4327	712	7728	34%	7%
Sequoia	55	1539	2890	3222	7705	37%	8%
UG-23	50	1491	2822	1207	5570	37%	7%
Eclipse	105	1869	2578	959	5511	33%	7%
Porthos	215	2089	2130	888	5322	27%	8%
UG-15	108	2346	1655	187	4295	38%	8%
p Value	0.0003	< 0.0001	0.0003	< 0.0001	0.0002	< 0.0001	0.1394
LSD.05	78	1179	1202	1014	2392	4	n.s.

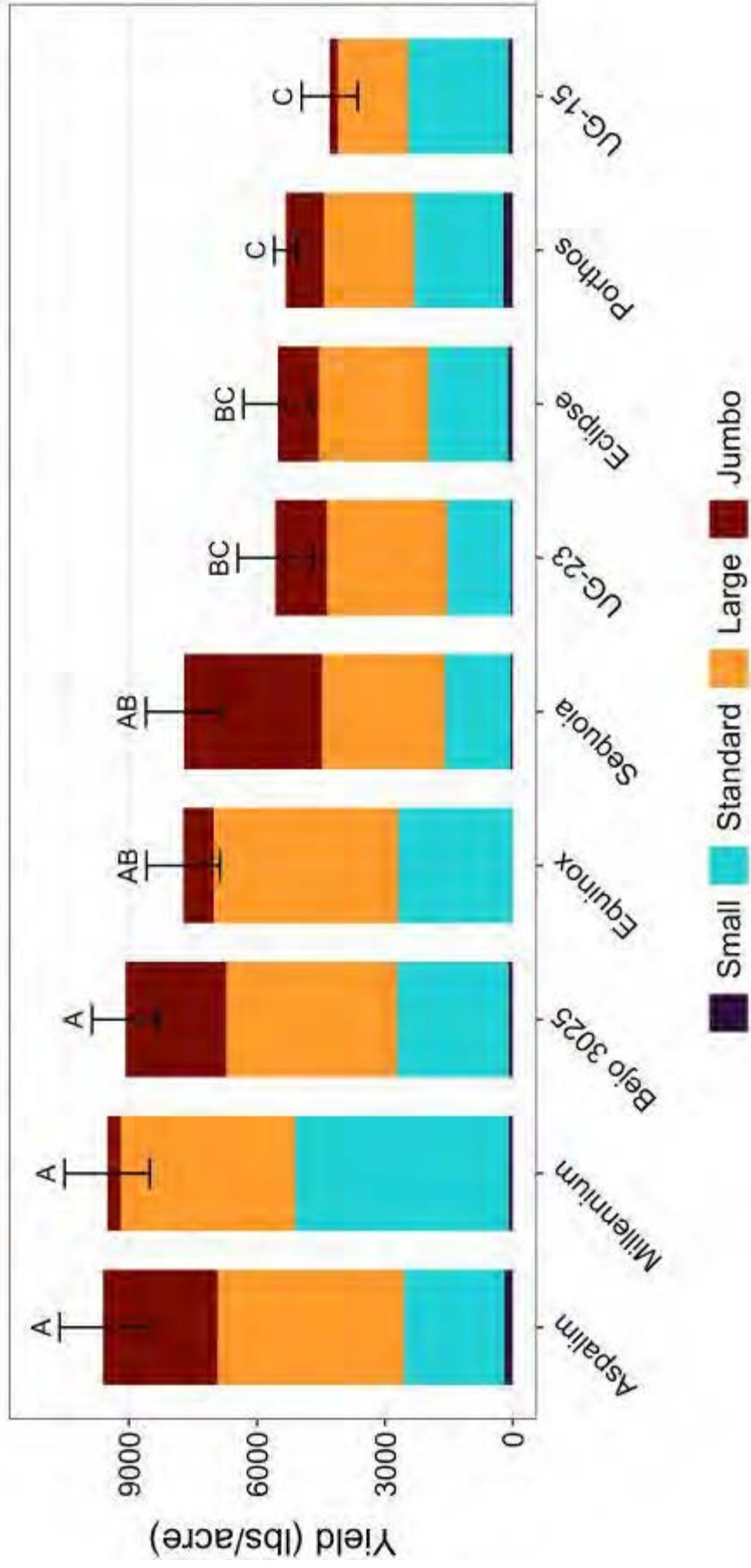
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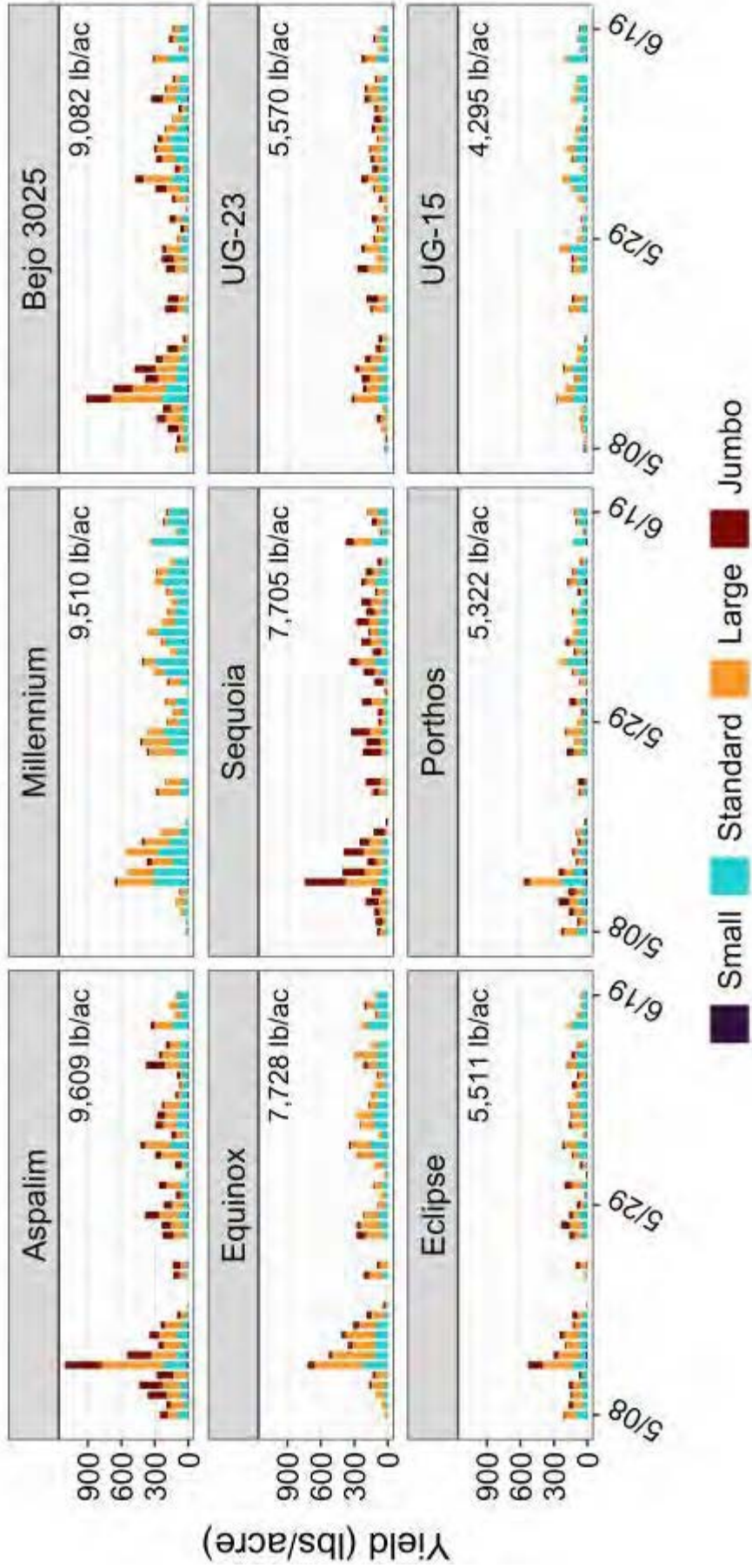
2015B Transplant Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI



2015B Transplant Trial: 2025 Yield Distribution

Michigan Asparagus Industry Research Farm - Hart, MI



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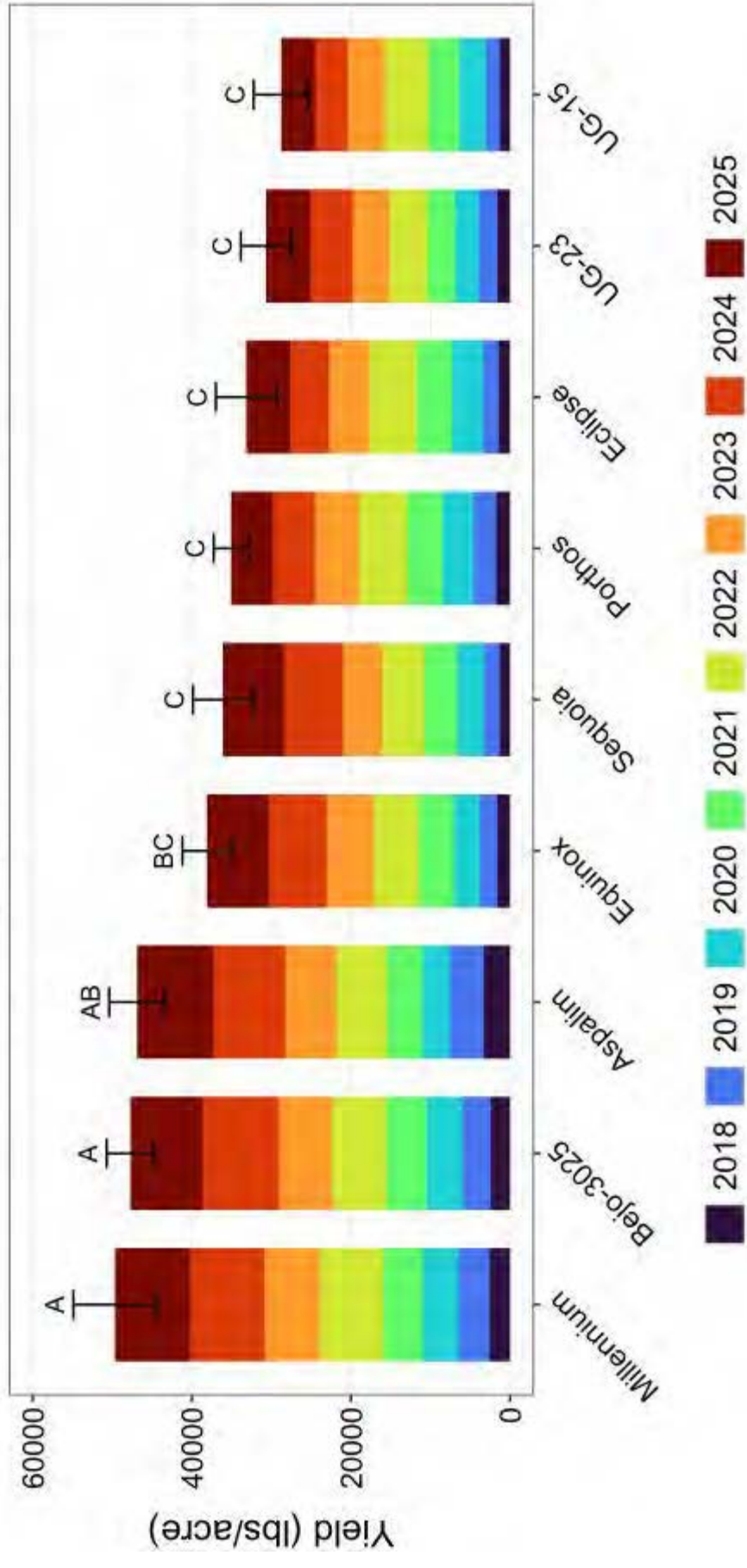
2015B Transplant Trial: 2025 Cumulative Yields
Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre								
	2018	2019	2020	2021	2022	2023	2024	2025	Total
Millennium	2559	3866	4557	4955	7971	6976	9298	9510	49692
Bejo-3025	2436	3558	4529	5088	6825	6646	9556	9082	47721
Aspalim	3297	4265	3478	4513	6354	6321	9081	9609	46918
Equinox	1604	2184	3319	4394	5649	5890	7341	7728	38109
Sequoia	1280	2004	3376	4119	5333	4857	7419	7705	36093
Porthos	1756	2836	3891	4467	6068	5506	5218	5322	35063
Eclipse	1450	1956	3867	4499	5959	5048	4869	5511	33158
UG-23	1624	2314	2961	3505	4743	4655	5294	5570	30666
UG-15	1288	1718	3379	3959	5399	4701	4072	4295	28812
p Value	< 0.0001	0.0008	0.1377	0.6488	0.0109	0.0055	0.0001	0.0002	0.0005
LSD.05	823	1267	n.s.	n.s.	1729	1349	2503	2392	10306

Quantities not significantly different from the maximum in each column shown in bold.

2015B Transplant Trial: 2025 Cumulative Yields

Michigan Asparagus Industry Research Farm - Hart, MI



2017A Cultivar Trial – Transplants: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI

Cultivar	Mean Yields in lbs/acre					Spear Tip Quality	
	Small	Standard	Large	Jumbo	Total	Avg Flowering ¹	Invalid ²
UG-33	28	2783	5432	1923	10166	31%	5%
Bejo 3025	103	3332	4099	2222	9756	35%	8%
Millennium	85	4133	3849	802	8870	27%	8%
UG-24	72	2485	4446	1590	8592	36%	6%
Javelim	103	1357	3265	3024	7748	42%	8%
UG-36	39	3307	3672	535	7552	29%	6%
UG-31	136	3123	3341	916	7517	33%	7%
UG-30	114	4289	2467	618	7488	35%	6%
UG-25	121	5082	1781	102	7086	34%	5%
UG-28	144	3181	2849	466	6641	33%	9%
UG-27	94	3848	2372	322	6636	27%	8%
Canticus	108	1926	2589	1945	6569	31%	8%
UG-23	68	1920	3156	1136	6281	35%	8%
UG-35	33	2366	2897	518	5814	32%	5%
UG-34	36	1820	2936	1014	5806	37%	8%
UG-32	91	2228	2833	652	5804	28%	6%
UG-26	113	2561	2340	702	5715	35%	9%
UG-29	206	3163	1639	311	5318	36%	8%
p Value	0.0040	< 0.0001	0.0035	< 0.0001	0.0109	< 0.0001	0.2349
LSD.05	84	1298	1586	1159	2661	4	n.s.

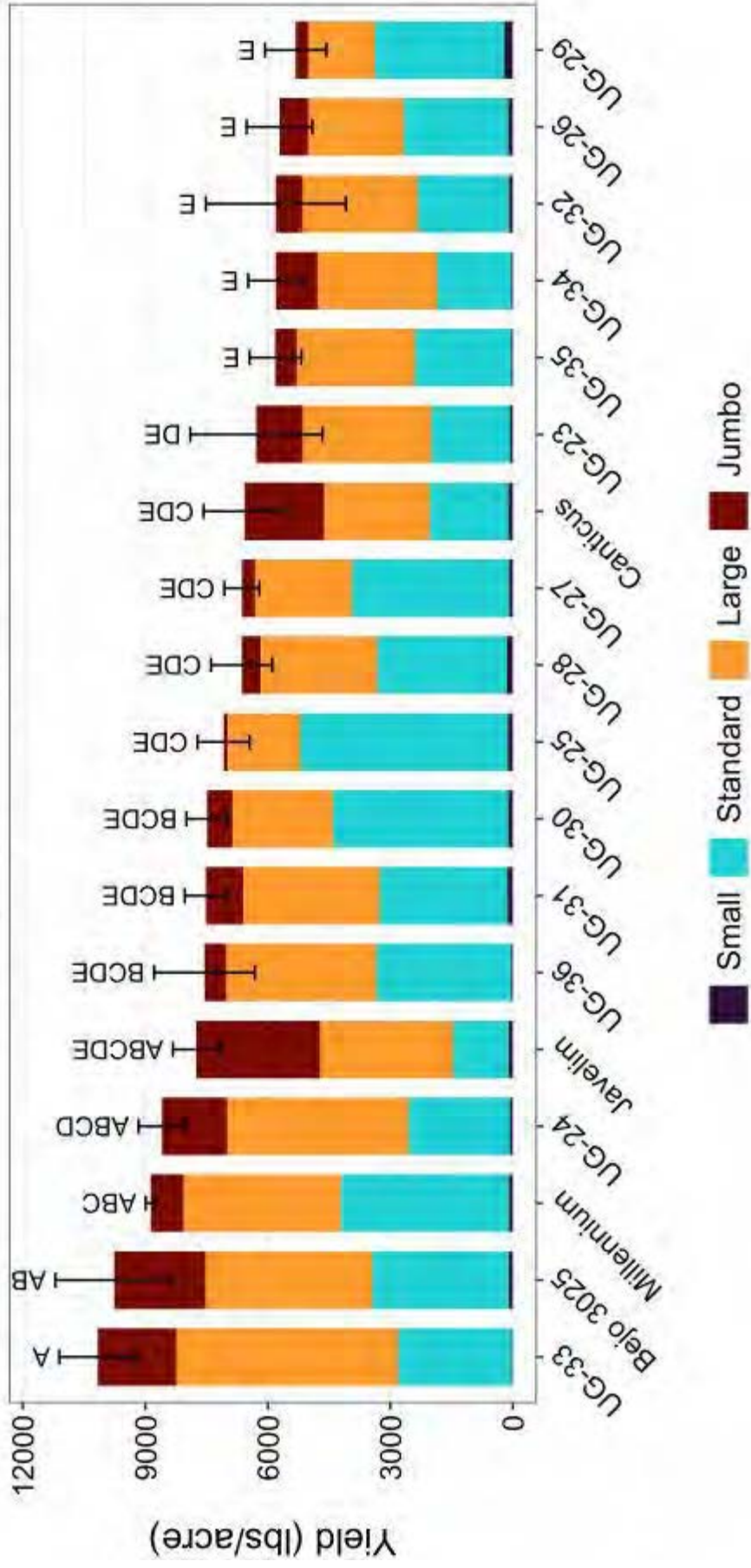
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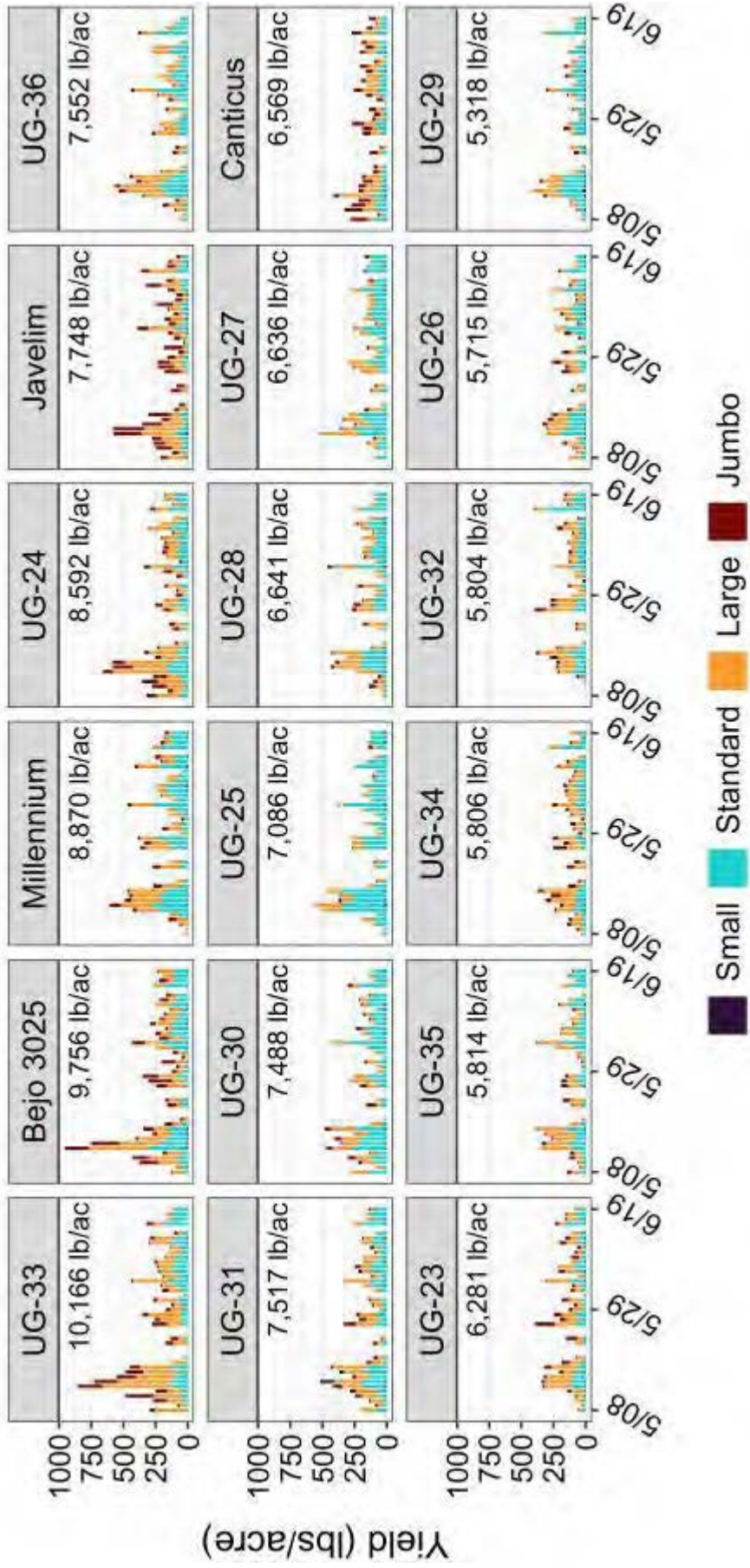
2017A Cultivar Trial – Transplants: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI



2017A Cultivar Trial – Transplants: 2025 Yield Distribution

Michigan Asparagus Industry Research Farm - Hart, MI



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2017A Cultivar Trial – Transplants: 2025 Cumulative Yields

Michigan Asparagus Industry Research Farm - Hart, MI

Cultivar	Mean Yields in lbs/acre							Total
	2019	2020	2021	2022	2023	2024	2025	
UG-33	525	2223	3810	6069	5005	9395	10166	37193
Millennium	461	2346	4678	5636	5503	8163	8870	35656
Javelim	666	2834	4758	5814	5504	7988	7748	35312
Bejo 3025	438	2440	3914	5361	4390	8952	9756	35250
UG-24	750	2551	3622	5914	4940	7797	8592	34168
UG-25	416	2422	3200	5408	5447	6820	7086	30799
UG-31	513	2186	4093	4427	4840	6460	7517	30035
UG-27	313	2219	3796	5690	5082	5988	6636	29724
UG-30	390	2081	4137	4120	4790	6673	7488	29680
UG-23	558	3146	4221	5029	4400	5471	6281	29106
UG-36	332	2186	3715	4396	4352	6556	7552	29089
UG-28	400	2052	2848	4550	3761	6386	6641	26637
UG-34	457	2263	3731	4827	3664	5142	5806	25890
Canticus	588	2134	2830	4093	4031	5630	6569	25874
UG-32	297	2598	3011	4454	4364	5194	5804	25722
UG-29	387	2073	3764	4659	4285	4540	5318	25027
UG-35	282	1648	3125	4774	3982	5339	5814	24964
UG-26	299	1772	3257	4368	3105	4724	5715	23240
p Value	0.0006	0.1803	0.4656	0.5280	0.2063	0.0028	0.0109	0.0328
LSD.05	201	n.s.	n.s.	n.s.	n.s.	2447	2661	8874

Quantities not significantly different from the maximum in each column shown in bold.

2017C Competitors Trial: 2025 Yield Data
Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre					Spear Tip Quality	
	Small	Standard	Large	Jumbo	Total	Avg Flowering ¹	Invalid ²
Aspalim	195	2589	4511	2138	9434	30%	8%
Ramirus	165	3212	4594	1315	9286	23%	8%
Gijnlim	148	3074	4470	1220	8911	23%	7%
UG-10	51	3251	4591	827	8720	27%	8%
Greenic	137	4127	3248	644	8157	27%	8%
Sequoia	123	2668	3396	1593	7781	31%	8%
Millennium	81	4779	2773	135	7767	25%	6%
Equinox	87	4055	3132	248	7522	32%	7%
Rapsody	53	1532	2874	1970	6429	23%	6%
Spartacus	221	4001	1599	174	5995	29%	7%
Greenox	178	2492	2579	705	5953	23%	9%
Avalim	90	2009	3025	631	5756	30%	6%
Eclipse	139	2316	2226	527	5207	31%	10%
W Deluxe	172	2496	818	108	3594	24%	8%
p Value	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.2110
LSD.05	65	707	1068	469	1641	3	n.s.

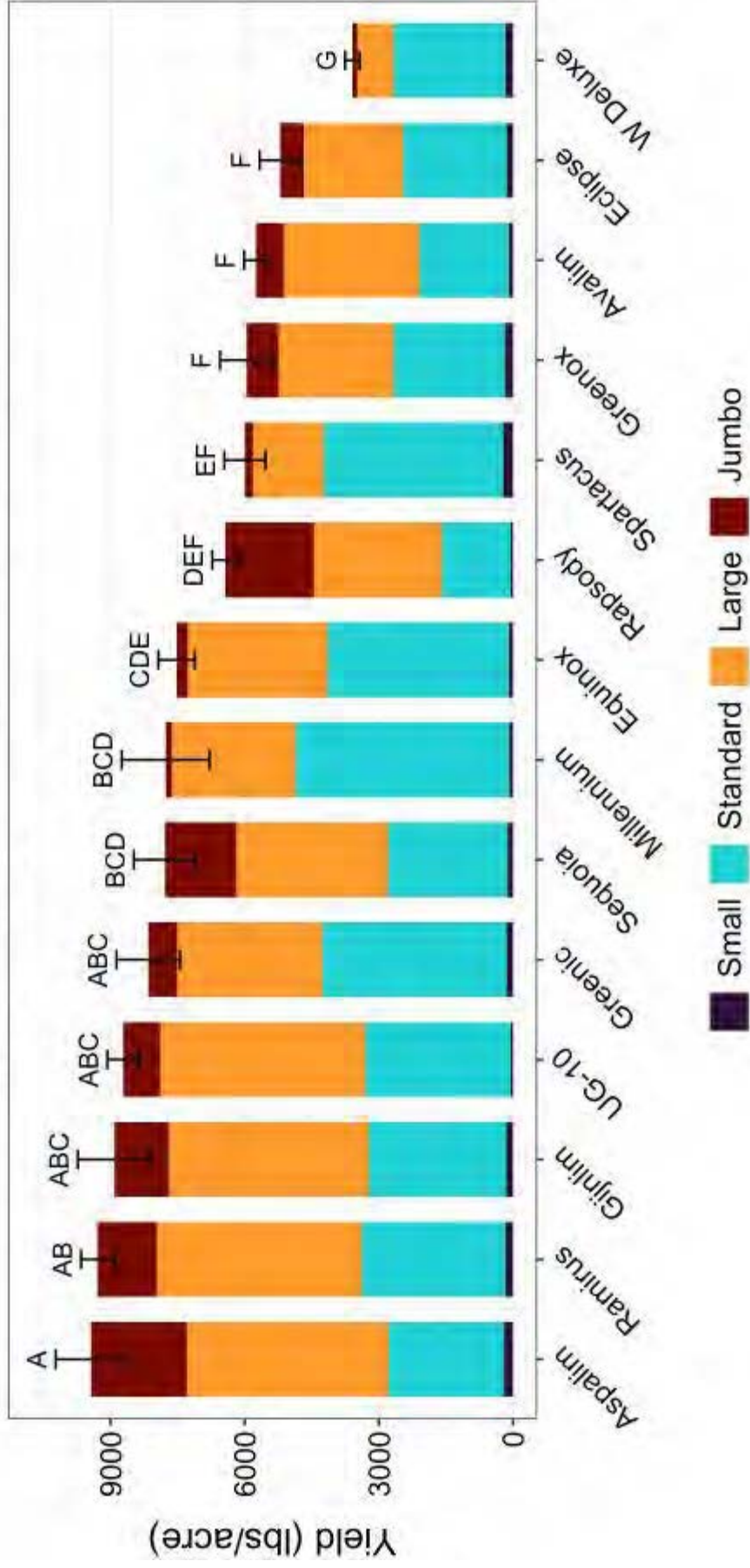
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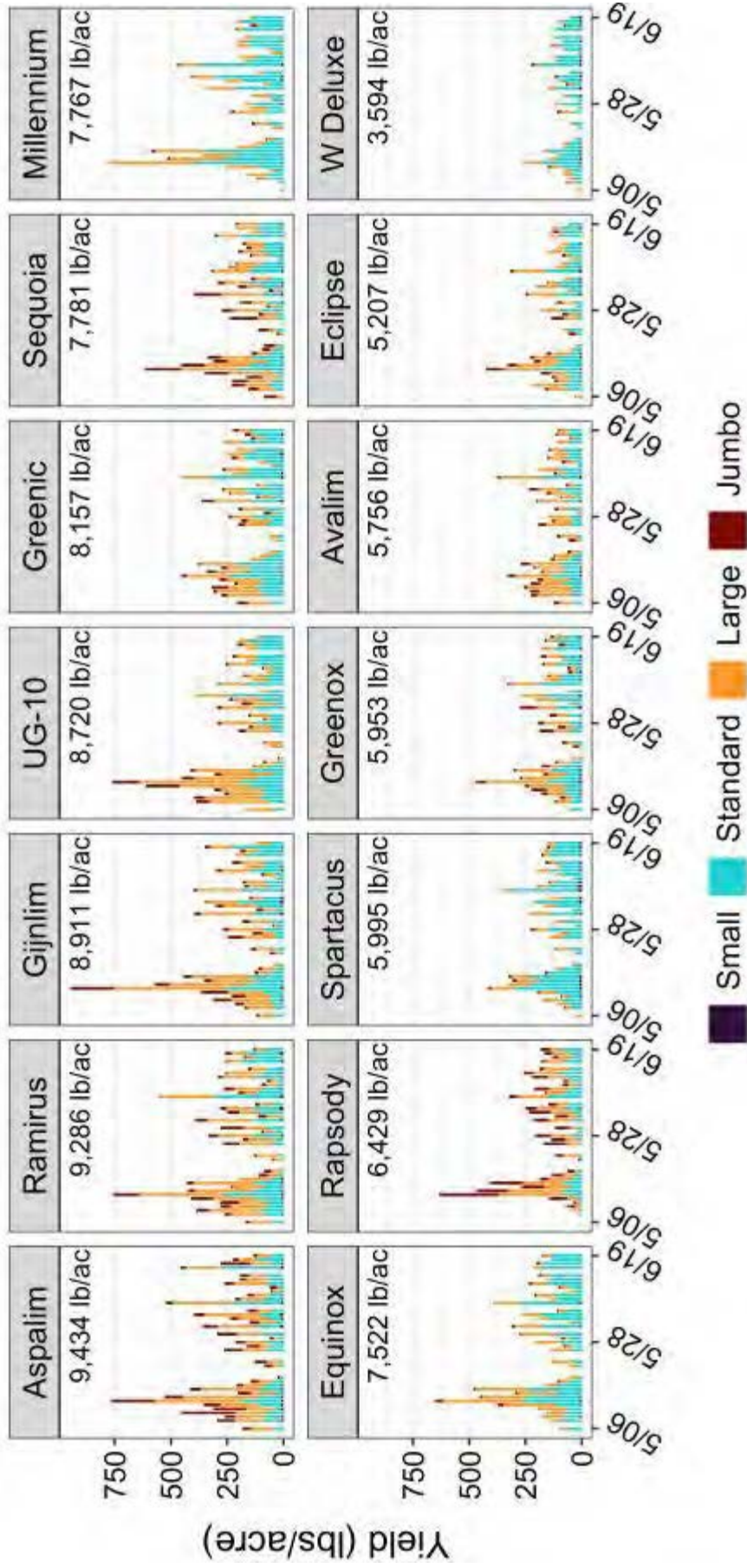
2017C Competitors Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI



2017C Competitors Trial: 2025 Yield Distribution

Michigan Asparagus Industry Research Farm - Hart, MI



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2017C Competitors Trial: 2025 Cumulative Yields

Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre							Total
	2019	2020	2021	2022	2023	2024	2025	
Gijnlim	604	2211	4709	6490	5709	7649	8911	36284
Aspalim	917	2066	3301	5713	6069	7653	9434	35153
Ramirus	524	1710	3881	5850	5742	7514	9286	34507
Millennium	506	2175	4380	6334	5623	6886	7767	33672
Greenic	411	1943	4104	6248	5128	6948	8157	32939
UG-10	473	1524	3648	4902	4726	6896	8720	30889
Equinox	444	1692	3445	5752	4794	6532	7522	30182
Sequoia	368	1484	3475	4630	4669	7339	7781	29746
Spartacus	605	1872	3726	5290	4856	5581	5995	27924
Rapsody	354	1614	3132	4566	3978	5852	6429	25925
Greenox	387	1636	2973	5193	4179	5510	5953	25832
Eclipse	554	1917	2824	5840	3949	4967	5207	25258
Avalim	438	1548	3268	4414	4171	4670	5756	24265
W Deluxe	391	1575	3162	4169	3590	3600	3594	20080
p Value	< 0.0001	0.4669	0.2038	0.0443	0.0277	0.0001	< 0.0001	< 0.0001
LSD.05	198	n.s.	n.s.	1563	1543	1756	1641	7132

Quantities not significantly different from the maximum in each column shown in bold.

2021 MAIRF Cultivar Trial: 2025 Yield Data
Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre					Spear Tip Quality	
	Small	Standard	Large	Jumbo	Total	Avg Flowering ¹	Invalid ²
Exp 113	98	1596	2779	2136	6609	32%	9%
EXP 42	66	1364	2572	2470	6472	37%	7%
UG 45	89	3023	2893	449	6454	26%	6%
UG 46	103	1816	2744	1000	5663	31%	7%
UG 42	87	1539	2908	1105	5639	27%	9%
EXP 110	58	936	2539	2066	5600	37%	10%
WB 260	187	2405	1843	566	5001	25%	8%
WB 234	118	2132	1905	796	4951	29%	10%
UG 43	45	2876	1627	187	4734	22%	5%
WB 212	121	2392	1757	374	4643	30%	8%
Millennium	39	2056	2068	192	4355	27%	8%
UG 28	74	2074	1683	274	4106	28%	7%
WB 231	128	1947	1316	607	3998	36%	7%
UG 47	104	2117	1477	280	3978	24%	7%
UG 41	49	2064	1348	107	3568	26%	7%
WB 230	119	1564	1128	275	3086	27%	8%
WB 270	141	1930	723	158	2951	26%	10%
WB 209	114	1047	556	188	1904	25%	8%
p Value	0.0048	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.5689
LSD.05	68	769	831	480	1616	3	n.s.

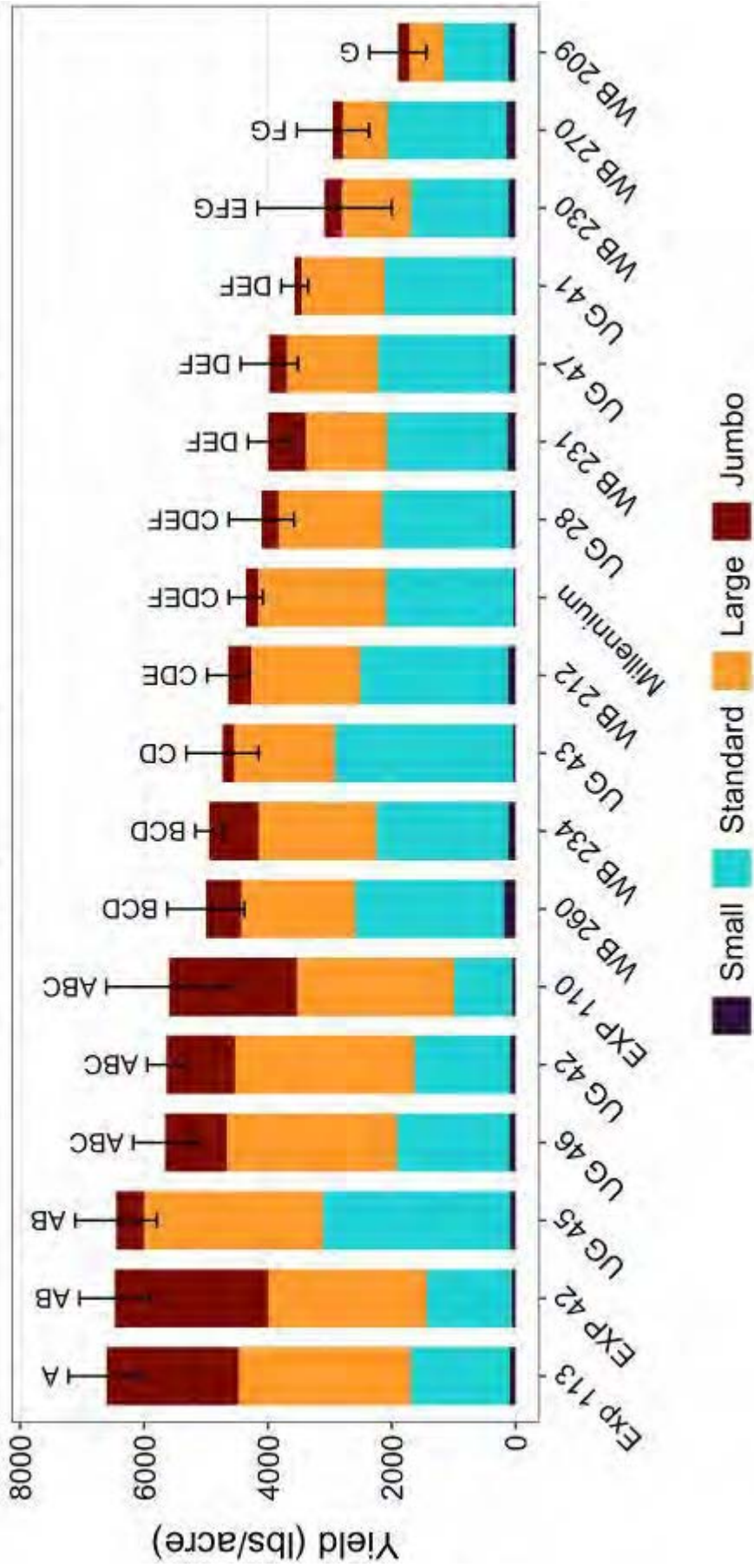
Quantities not significantly different from the maximum in each column shown in bold.

¹ Measured as mean of flowering percentage of individual spears.

² Measured as percentage of individual spears with invalid flowering readings.

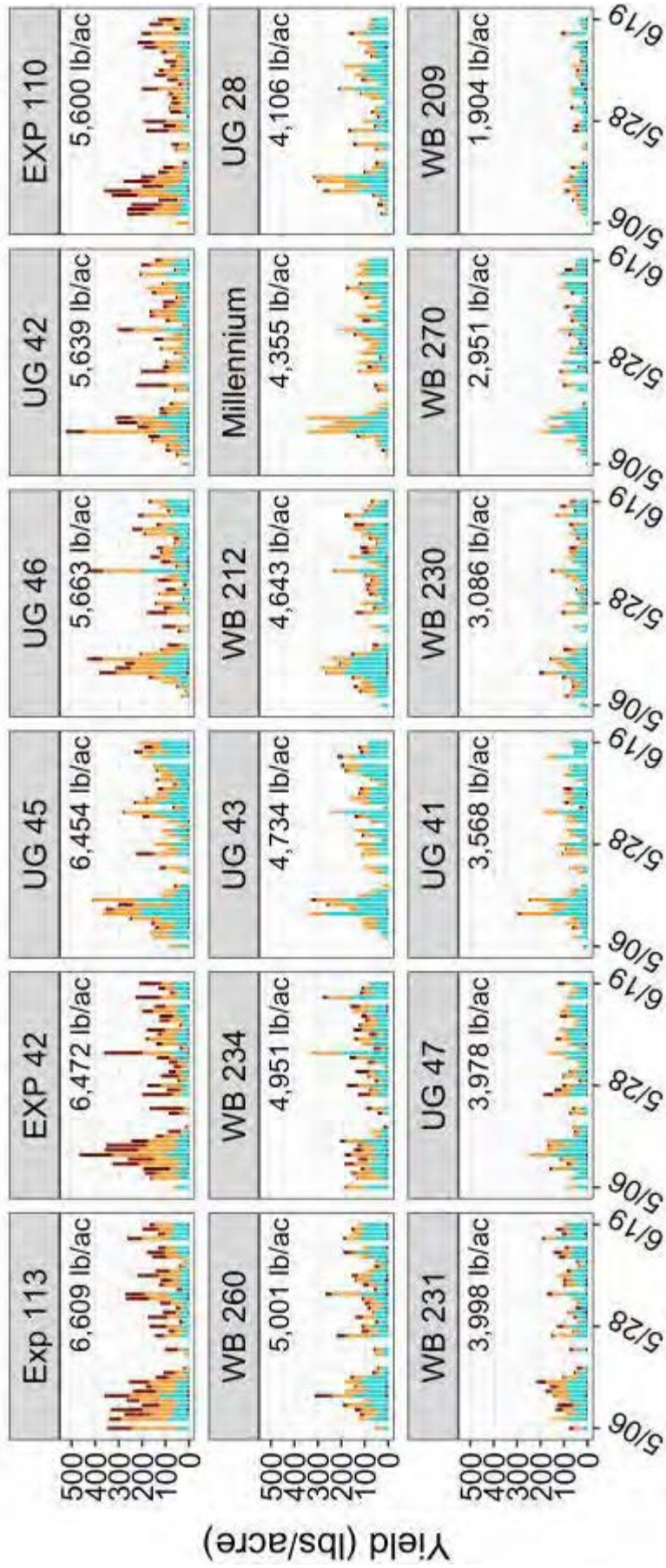
2021 MAIRF Cultivar Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI



2021 MAIRF Cultivar Trial: 2025 Yield Distribution

Michigan Asparagus Industry Research Farm - Hart, MI



Small
 Standard
 Large
 Jumbo

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2021 MAIRF Cultivar Trial: 2025 Cumulative Yields

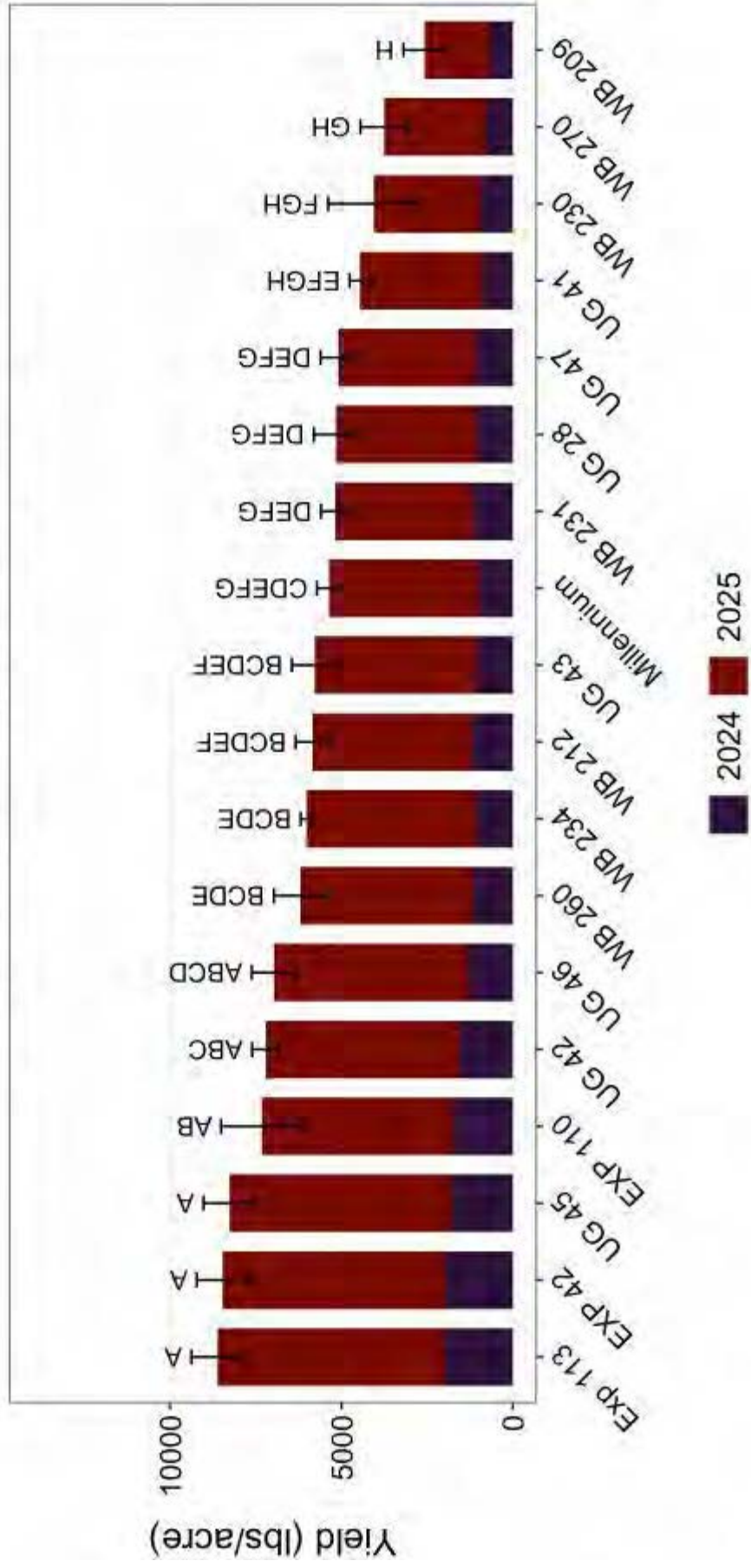
Michigan Asparagus Industry Research Farm - Hart, MI

Variety	Mean Yields in lbs/acre		
	2024	2025	Total
Exp 113	2004	6609	8613
EXP 42	1987	6472	8459
UG 45	1805	6454	8259
EXP 110	1726	5600	7327
UG 42	1573	5639	7212
UG 46	1306	5663	6969
WB 260	1196	5001	6197
WB 234	1066	4951	6017
WB 212	1203	4643	5845
UG 43	1047	4734	5781
Millennium	1009	4355	5364
WB 231	1186	3998	5184
UG 28	1054	4106	5160
UG 47	1124	3978	5102
UG 41	894	3568	4462
WB 230	969	3086	4055
WB 270	808	2951	3759
WB 209	671	1904	2576
p Value	< 0.0001	< 0.0001	< 0.0001
LSD.05	438	1616	1978

Quantities not significantly different from the maximum in each column shown in bold.

2021 MAIRF Cultivar Trial: 2025 Cumulative Yields

Michigan Asparagus Industry Research Farm - Hart, MI



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Guelph Eclipse Plant Population Study
2025 Results

Objectives:

To evaluate the effect of planting density on yield and spear size in a planting of the asparagus variety Guelph Eclipse.

Methods:

The trial was established in 2017 with 1 year old crowns of Guelph Eclipse planted on 13 May, 2017. The crowns are spaced 6, 9 or 12 inches apart in 54" rows. Each plot is 25" feet long. Plots with plant spacing of 6" apart consist of 50 crowns, 9" spacing have 33 crowns, and 12" spacing contain 25 crowns per plot. The planting density for the 3 treatments are 19,360, 14,520, and 9,680 crowns per acre, respectively. Fresh weight, spear number and spear size, based on diameter are measured and recorded for each harvest.

Results:

As in previous years, no significant differences in yield or spear diameter were observed across plant populations.

2017B Eclipse Plant Population Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI

Population	Mean Yields in lbs/acre					Spear Tip Quality	
	Small	Standard	Large	Jumbo	Total	Avg Flowering ¹	Invalid ²
9,680 plants/ac	184	3901	3090	500	7675	34%	9%
14,520 plants/ac	211	3794	2682	626	7312	33%	10%
19,360 plants/ac	248	4074	2810	456	7589	33%	8%
p Value	0.1336	0.7446	0.3364	0.5126	0.8100	0.5190	0.1915
LSD.05	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

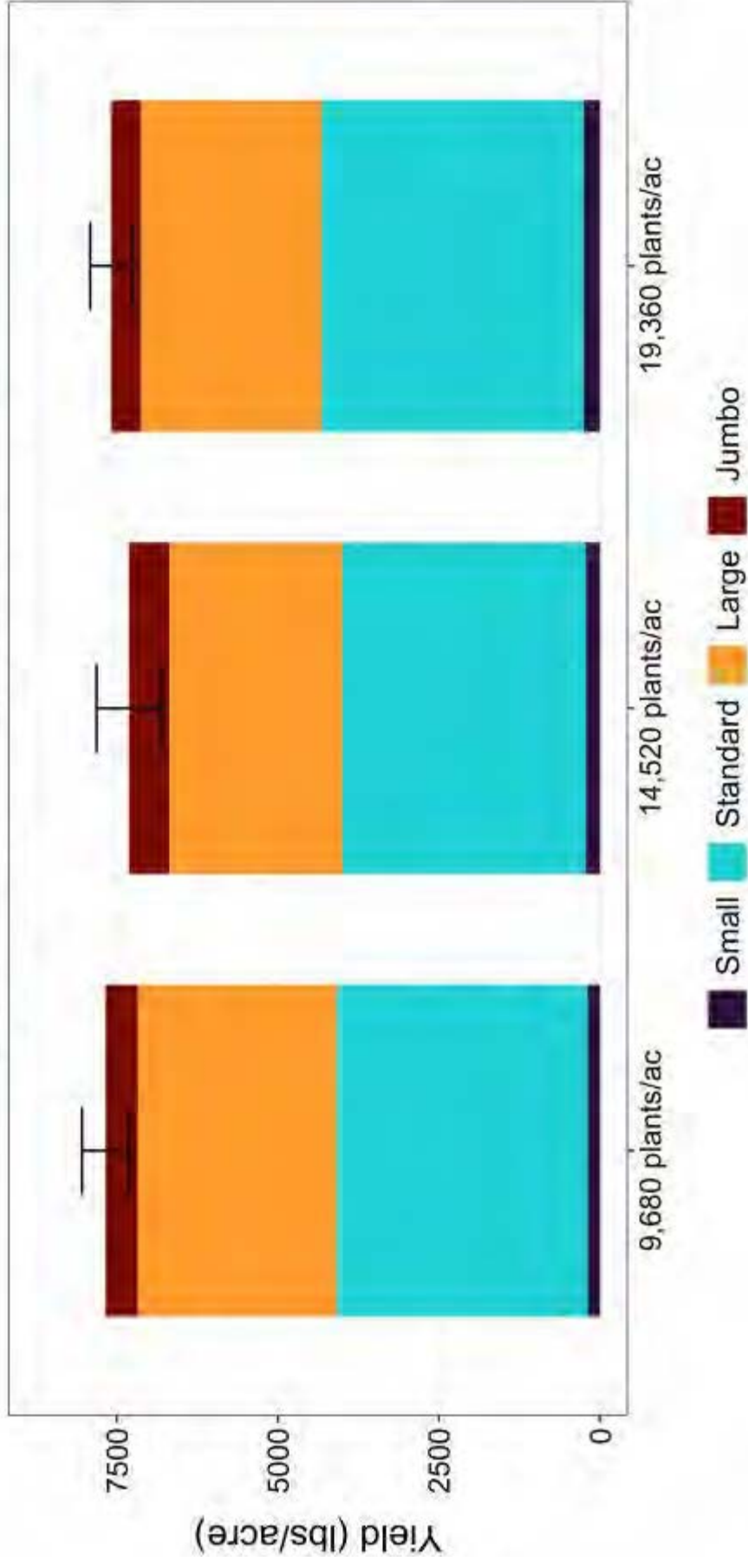
Quantities not significantly different from the maximum in each column shown in bold.

¹ Measured as mean of flowering percentage of individual spears.

² Measured as percentage of individual spears with invalid flowering readings.

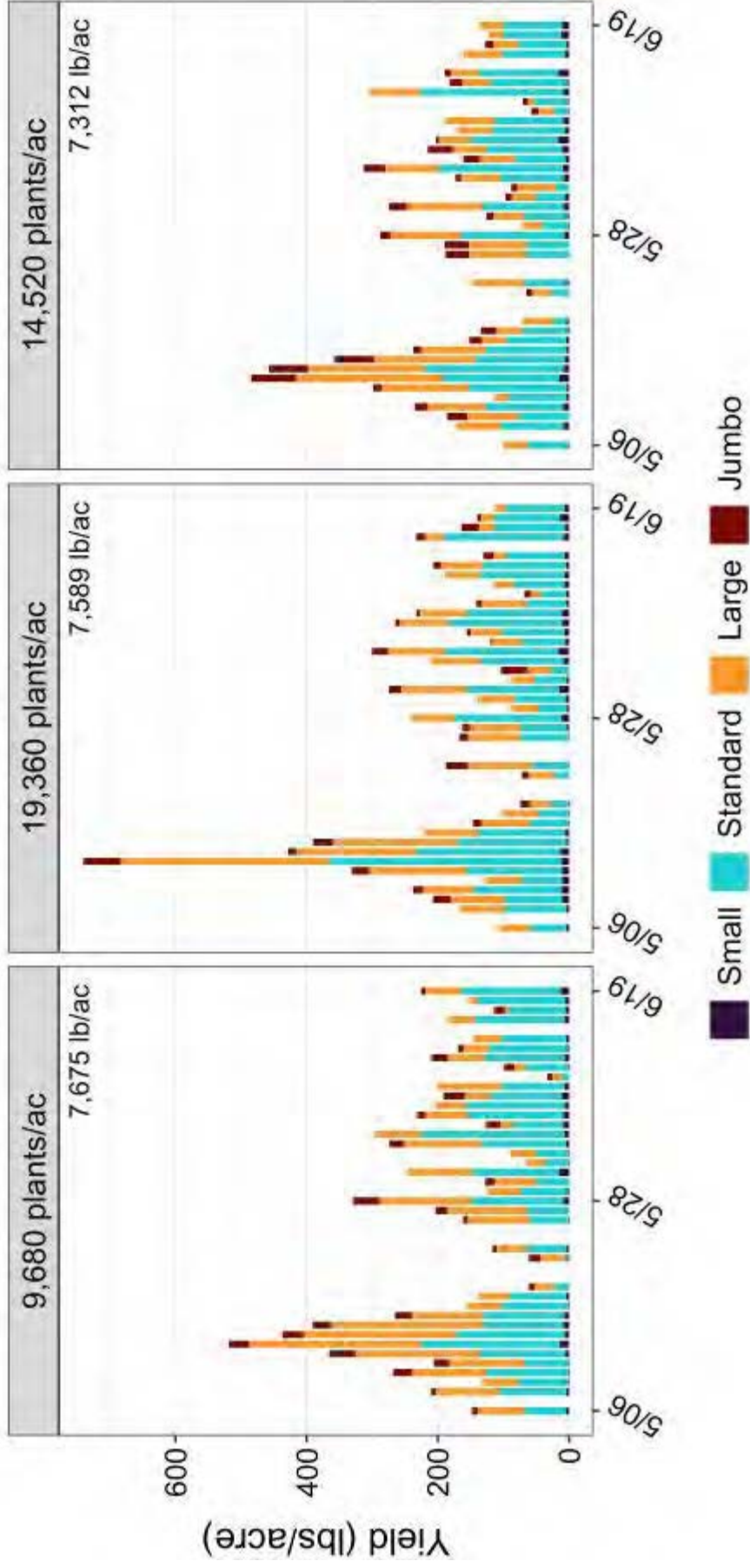
2017B Eclipse Plant Population Trial: 2025 Yield Data

Michigan Asparagus Industry Research Farm - Hart, MI



2017B Eclipse Plant Population Trial: 2025 Yield Distribution

Michigan Asparagus Industry Research Farm - Hart, MI



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2017B Eclipse Plant Population Trial: 2025 Cumulative Yields

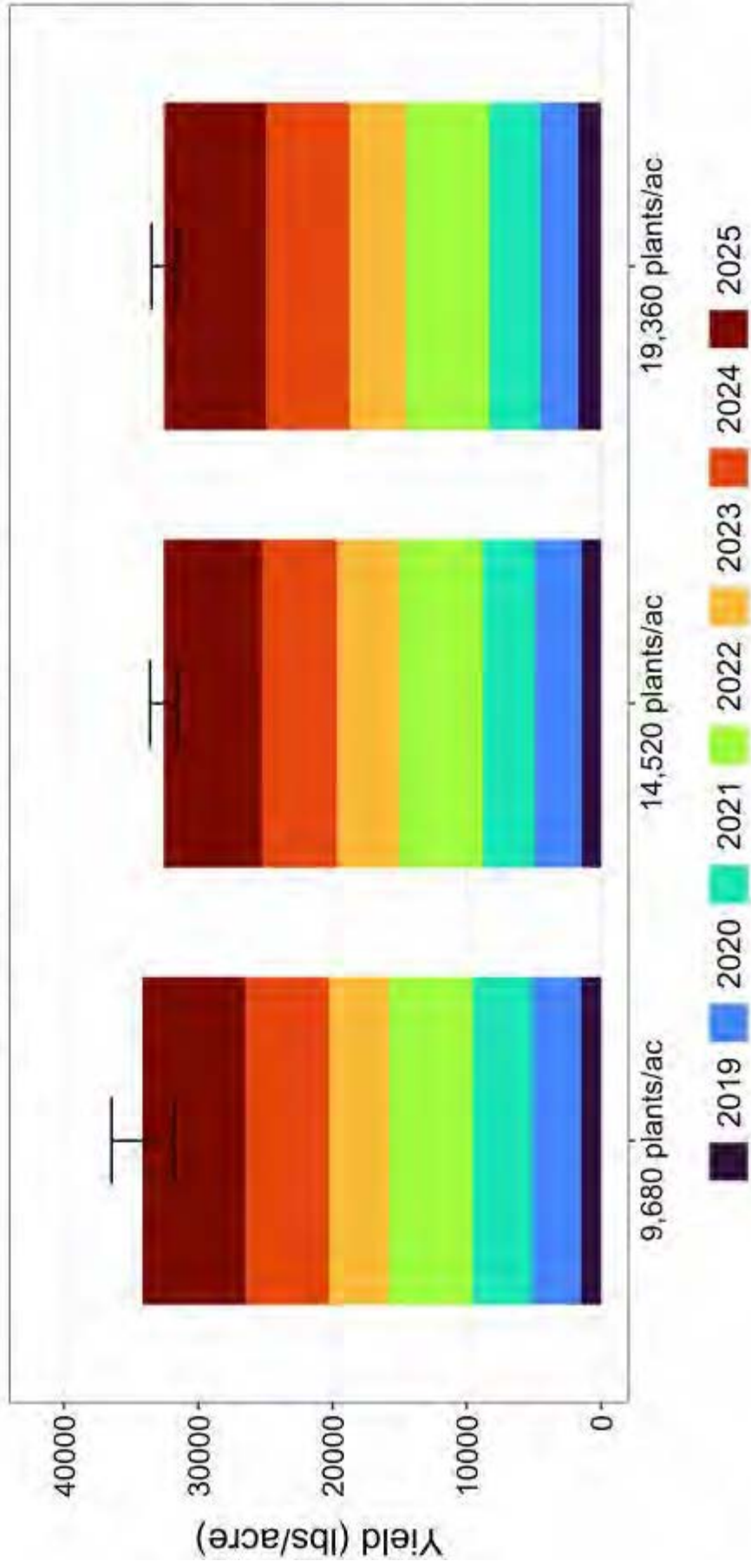
Michigan Asparagus Industry Research Farm - Hart, MI

Population	Mean Yields in lbs/acre							
	2019	2020	2021	2022	2023	2024	2025	Total
9,680 plants/ac	1486	3638	4445	6261	4432	6226	7675	34162
14,520 plants/ac	1425	3514	3825	6292	4582	5635	7312	32586
19,360 plants/ac	1705	2836	3786	6221	4201	6221	7589	32558
p Value	0.1822	0.3424	0.3265	0.9946	0.6852	0.2274	0.8100	0.7161
LSD.05	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

Quantities not significantly different from the maximum in each column shown in bold.

2017B Eclipse Plant Population Trial: 2025 Cumulative Yields

Michigan Asparagus Industry Research Farm - Hart, MI



2025 Weather and Climate Data

Michigan Asparagus Industry Research Farm - Hart, MI

Month	Average Temperature (F)			Total Precipitation (in)		
	2024	2025	30yr Normal	2024	2025	30yr Normal
January	26.9	22.6	22.9	0.95	0.30	2.75
February	36.2	22.7	24.1	0.63	0.22	1.96
March	38.1	37.6	32.4	3.83	3.58	2.37
April	47.7	45.0	43.8	3.82	2.26	3.63
May	58.9	53.5	54.8	3.23	4.63	4.45
June	66.7	68.1	64.8	7.50	1.44	3.72
July	68.6	71.5	68.8	3.05	2.26	3.53
August	68.3	67.9	67.6	1.79	2.04	3.27
September	64.8	63.4	60.8	1.03	2.48	3.23
October	53.0	52.5	49.0	1.16	1.63	3.96
November	42.3	38.0	37.7	3.15	1.53	3.43
December	29.9	25.6	28.4	1.65	1.16	2.60

Daily weather data from ARF Enviroweather Station. NOAA climate normals 1991-2020 from Hart 3 WSW Station.

MSU Enviroweather sensors do not measure frozen precipitation, affecting accuracy of precipitation totals during winter months.

Temperature/moisture conditions in 2025 resulted in a large early-season yield peak, followed by a mid-season lull, then a period of steady harvests to finish out the season -- supporting higher than average total yields on the heels of a similar high yielding year in 2024.

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Turning Data into Decisions: Using Research Farm Results to Choose Asparagus Varieties

Each year, the Michigan Asparagus Research Farm generates a wealth of data designed to help growers make one of the most important long-term decisions on the farm: what to plant. Variety selection is not just a short-term choice -- it shapes productivity, costs, and returns for 15 years or more. The right decision can influence everything from yield and longevity to picking efficiency, pack-out, and customer satisfaction.

The good news is growers are not making these decisions alone. The combination of research farm data and on-farm experience provides a powerful framework for evaluating options and reducing risk.

Start with the Benchmark

For most Michigan growers, Millennium remains the benchmark. Research farm trials consistently show that while newer varieties may match Millennium in yield, none have clearly outperformed it over time. Its strength lies in consistency -- reliable production, good tip quality, and long stand life, all of which contribute to strong return on investment.

Because of that consistency, many growers view Millennium as an "anchor" variety; a dependable base upon which to layer newer genetics.

Look Beyond Yield

While yield is critical, it is not the only factor that drives profitability. Research farm data clearly shows that varieties differ in diameter profile, uniformity, and tip quality -- traits that directly impact labor efficiency and marketability.

Diameter matters. Varieties like Pacific Challenger 2 tend to produce slimmer spears, while others like Eclipse or Aspalim produce a higher proportion of large and jumbo spears. These differences influence both customer preferences and harvest efficiency. Larger spears require fewer cuts per pound, potentially reducing picking costs. At the same time, more uniform varieties can move more efficiently through the packing line, lowering sorting costs.

Tip quality is another key consideration. Some newer varieties -- such as Eclipse, Equinox, Pacific Challenger 2 and Spartacus -- have demonstrated stronger tip retention compared to Millennium in research trials. While the economic impact of this varies by operation, improved visual quality can enhance pack-out and help maintain or attract buyers.

Match Varieties to Your Market

Growers consistently emphasized one point: customer needs should drive variety decisions. Diameter preferences, visual quality, and consistency all influence how asparagus performs in the marketplace.

For example, varieties that produce more jumbo spears may help meet specific retail or food service demand, while others with uniform sizing may improve packing efficiency and presentation. In direct market or relationship-driven sales, visual appeal can be a differentiator.

Consider Field Conditions and Risk

Variety performance is not uniform across farms. Soil type, weather, and disease pressure all influence outcomes. Research farm trials provide valuable comparisons under controlled conditions, but on-farm performance adds essential context.

Growers are paying close attention to how varieties respond to stress, particularly drought, heat, and disease. Some have explored varieties like Pacific Challenger 2 on fields with known disease pressure, while others are evaluating how newer varieties hold quality later in the season.

Use Data as a Filter -- Then Test

The most effective approach is to use research farm data as a filter, narrowing the field to a few promising candidates. From there, on-farm testing provides the real-world validation needed to make confident decisions.

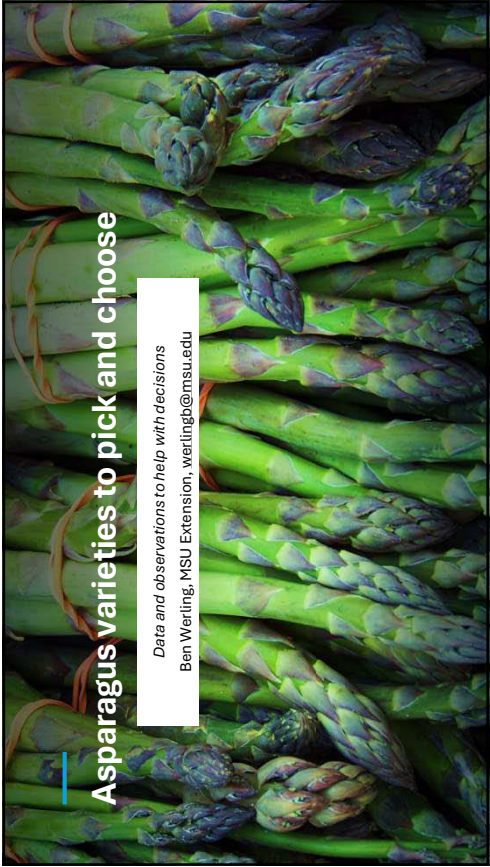
Many growers are taking a practical approach: trialing new varieties on a limited acreage, observing performance over time, and comparing results alongside established plantings.

The Bottom Line

There is no single “best” variety for every farm. Instead, successful variety selection comes from balancing several factors:

- Yield and longevity (with Millennium as a strong anchor)
- Customer preferences (diameter and appearance)
- Operational efficiency (picking and packing costs)
- Field conditions and risk tolerance
- Willingness to experiment and learn

Michigan’s asparagus industry has a unique advantage: high-quality research data paired with deep grower experience. When those two sources are used together, growers are well positioned to make informed, profitable decisions and to continue strengthening the industry for the future.



1

Decisions about varieties are long-term choices that can impact your bottom line

Total lb/ac

Longevity

Picking costs

Packing costs

Customer retention

Customer attraction

\$ROI\$

2

What I'll share today

Research Farm Data – A good filter for what's next

Screen varieties in controlled setting & collect detailed data

+

On-farm experience

Varieties planted at larger scale w/ varied soils, picked and packed in commercial setting

3

Millennium is still the benchmark for yield

4

Millennium (Fox Seeds) Our benchmark



- High yield + longevity
- Good tip quality up to ~ 12"
- Balanced diameter profile
- Very widely adapted

5

Research Farm Data

No evidence any current varieties outyield Millennium

Variety	Cumulative yield after 7-10 harvest years	
	Win-tie-loss	vs Millennium
Eclipse	0	2-3
Equinox	0	2-1
Pacific Challenger 2	0	3-0
Spartacus	0	4-0
Aspalim	0	2-0

6

What I heard

Yield of newer varieties seems more variable compared to Millennium

- Plantings of some newer varieties have yielded less
- Some plantings are young, limited area
- **Millennium is consistent**

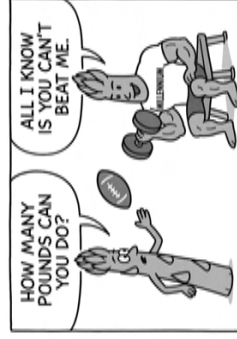


Image courtesy Chat GPT and a week working from home

7

Yields don't differ much, but diameters do —
customers care and you may too



"Jumbo" the asparagus spear,
a.k.a. one AI image too far....

8

Research Farm Data

Varieties differ in size profile — some lean standard, some standard + large, others more jumbo

Variety	Small	Standard	Large	Jumbo
Pacific Challenger 2	3%	53%	36%	8%
Spartacus	3%	59%	33%	5%
Millennium	1%	48%	41%	10%
Equinox	1%	47%	42%	10%
Eclipse	2%	43%	41%	14%
Aspalim	2%	31%	47%	20%



*Percentages are averages from three trials, based on 2022-2025 data from the sorting machine

What I heard

Varieties truly do differ in diameter, customer demand varies by diameter class

Eclipse – Helps supply Jumbos, early but even later in season



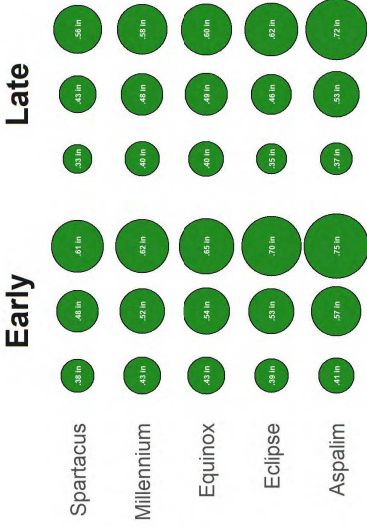
Pacific Challenger 2 – Slimmer spears



Photos: J. Bakker

What I heard

Diameter profiles may affect picking and packing costs



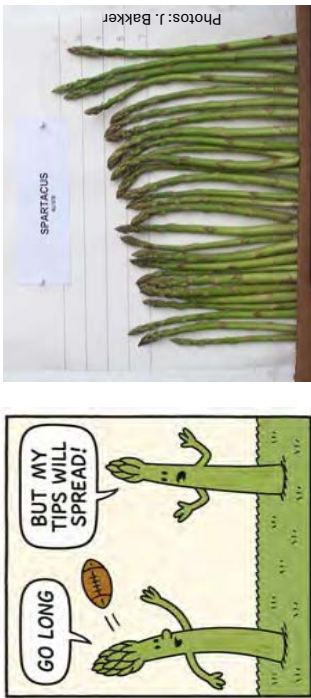
Aesthetics differ – how will they influence pack-out and customer preference?



Research Farm Data

Newer varieties may hold tip quality better

Tip quality	
Variety	Win-tie-loss vs Millenium
Eclipse	10-0-1
Equinox	7-3-1
Pacific Challenger 2	9-1-0
Spartacus	2-0-0
Aspalim	1-1-0



What I heard

Varieties like Eclipse and Spartacus do hold tips better, but does it make a difference to the bottom line?

What I heard

Some who interact directly with customers are thinking about visual quality — both to keep buyers happy and to improve pack-out



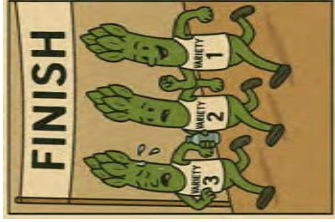
Equinox “looks great in a lug” or “will look great on a supermarket shelf”

You are thinking about how varieties respond to stress from weather and disease

What I heard

You're keeping an eye out for varietal responses to stress

- Some newer varieties seem to lose their juice towards the end
- Some struggle in dry conditions/soils



What I heard

Disease susceptibility is on your mind

- **Soilborne disease** – Pacific Challenger 2 planted on ground with *Phytophthora*
- **Purple spot in fern and on spears** – Differences in purple spot in fern/on spears



So... what does this all mean as you consider new varieties?

How you are choosing varieties for your farm
You are thinking about...

- **Yield** → Millennium is a strong anchor
- **Customer needs** → Diameter and visual quality
- **Thinking about net returns** → Picking & packing costs
- **Field conditions & stress** → heat, drought, foliar disease, replant ground
- **Experimenting** → Trying new varieties in a small way and tracking them

Acknowledgements + Closing Thoughts

- **Closing thoughts:**
 - It's exciting to be think about planting new asparagus
 - We have a reliable option — and new varieties to try
 - Data + sharing experiences = good choices
- **Thank you** to growers and colleagues for time, insights, and data



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AND JUSTICE FOR ALL

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2025 Asparagus Soil and Nutrient Management Research Update

Zack Hayden, MSU Department of Horticulture & MSU Extension

Research Takeaways

- Significantly higher yields in 2025 for irrigated treatments (~16% increase), following dry 2024 summer. Continued trend toward higher yields with gypsum, but not significant. No significant annual yield differences prior to 2025.
- Greater stem death symptoms were observed in 2024 and 2025 (dry conditions late in the summer in both years) regardless of irrigation/calcium fertilization. Severity varies across years, influenced by environmental conditions.
- Irrigation improved spear tip quality on 9 of 34 harvest dates in 2025, but not always attributable to direct cooling from in-season irrigation events.
- Irrigation and supplemental calcium effects will vary with soil type, soil test levels, weather, and other factors. Heavy annual gypsum applications (as used in this study) are not recommended or economical across most soils, and may induce deficiencies in other nutrients (Mg, for example) when soil test levels are low. A soil test should guide management. Sandier soils with soil test calcium levels near 300 ppm are more likely to justify calcium amendment.





Irrigation and Calcium Interactions in Asparagus: 2025 Update

Great Lakes Expo
December 9, 2025

Zack Hayden
Assoc. Professor and Extension Specialist
Soil and Nutrient Management for Vegetables
Department of Horticulture, MSU

1

Irrigation in Asparagus: Why and When?

Root biomass = W1+W2
CHO content = W1
W1+W2

ROOT CARBOHYDRATES = "GAS TANK"

FERN

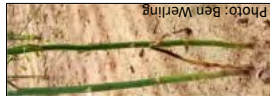

Harvest Season
Spear cooling
Yield & Quality

Fern Season
Avoid drought stress
Fill gas tank for next year's yield

Adapted from Dan Drost, Utah State

2

Calcium (Ca) in the Asparagus – Soil System

- Most MI soils contain "adequate" Ca (>300-400 ppm), sandy soils more likely to be low
- Interactions with other nutrients
- Ca is an immobile plant nutrient
- Ca disorders and water uptake are closely linked

Photo: Ben Wiering

3

Calcium x Irrigation Research Questions

- 1) Are there benefits to supplemental Ca fertilization in asparagus?
- 2) Are potential benefits mediated by availability of irrigation?
 - Harvest-season irrigation (spear cooling for yield/quality)
 - Fern-season irrigation (fern productivity for future yields)
- 3) Can we better understand temperature and moisture controls on yield and quality?

4

Methods: Experiment at Asparagus Research Farm

- Guelph Millennium planted 2019 (1-yr old crowns)
- Experiment started spring 2022

Baseline soil test: 0-12" depth

pH	CEC	Organic Matter (%)	Bray-P (ppm)	K (ppm)	Ca (ppm)	Mg (ppm)
6.7	3.5	1.5	175	147	450	98

Loamy sand

5

Methods: Experimental Design

- Split-Plot RCBD, 4 Replications
- Subplots: 2 rows, 25 ft long



6

Gypsum (Calcium Sulfate – 20% Ca, 16% S)

- 1,000 lb/ac pelletized gypsum pre-harvest annually
- 210 lb Ca, 160 lb S
- Why gypsum?
 - Common amendment
 - Meaningful soil Ca input without pH change (lime) or excess N (CaNO_3)
 - Intermediate Ca solubility

Fertility Program:

- N, K, S, and B applied annually at recommended rates



7

Methods: Micro-sprinkler Irrigation

➤ Harvest Season

➤ Fern Season



LOCOMOS

Dr. Younsuk Dong, MSU ABSE

8

Methods: Data Collection

Spear Yield and Quality



- Spear number, weight, length, diameter
- Tip quality (flower factor)

Fern Productivity

- Stem production by category
- Light interception
- Fern tissue nutrient analysis

Soil

- Soil nutrient analysis by depth in spring

Environmental

- Soil and air temperature sensors during harvest irrigation
- Soil moisture sensors (10, 20, and 40 cm depth)

9

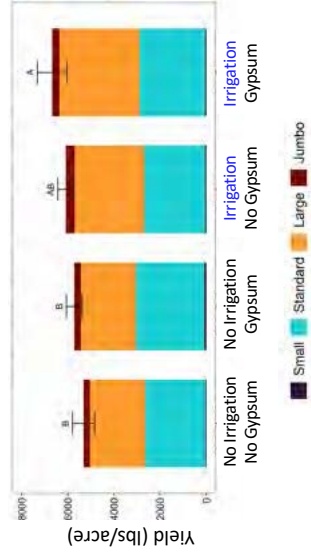
Results: Weather and Irrigation Summary

	2022	2023	2024	2025
General Weather	Warm/ Wet	Hot/ Dry Early	Mild Early / Dry Late	Warm/Mild Dry
Harvest Irrigation Events	4	6	2	3
Fern Irrigation Events	2	4	5	5

• **Focus:** Yield, fern productivity, and tip quality following multiple summer droughts

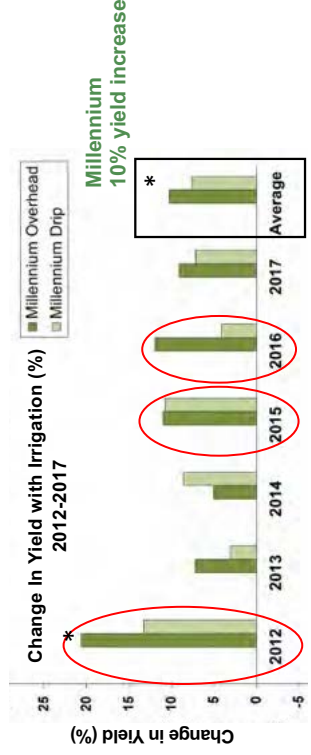
10

Impact on 2025 Yields



11

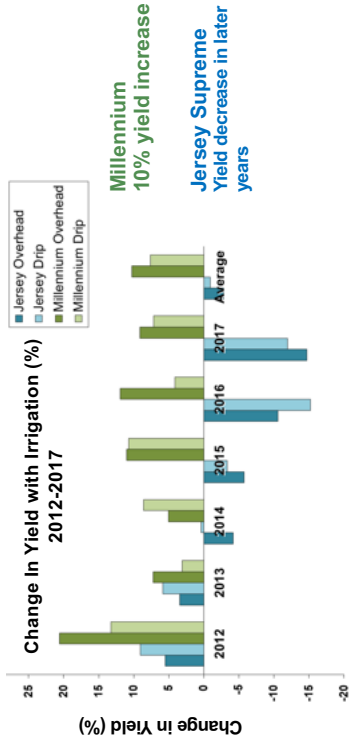
Results from Previous Michigan Irrigation Research



Dan Brainard, Michigan State University

12

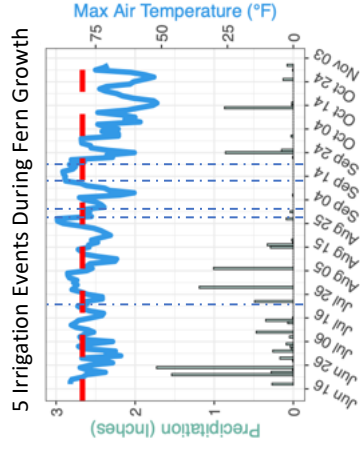
Results from Previous Michigan Irrigation Research



Dan Brinard, Michigan State University

13

Flashback to Last Summer's (2024) Conditions



14

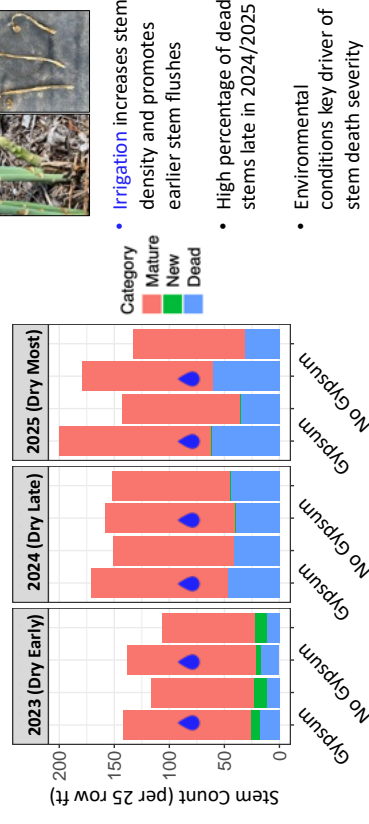
Fern Condition Under Late-Season Drought



How late should we be irrigating?

15

Effects on Stem Production and Timing



16

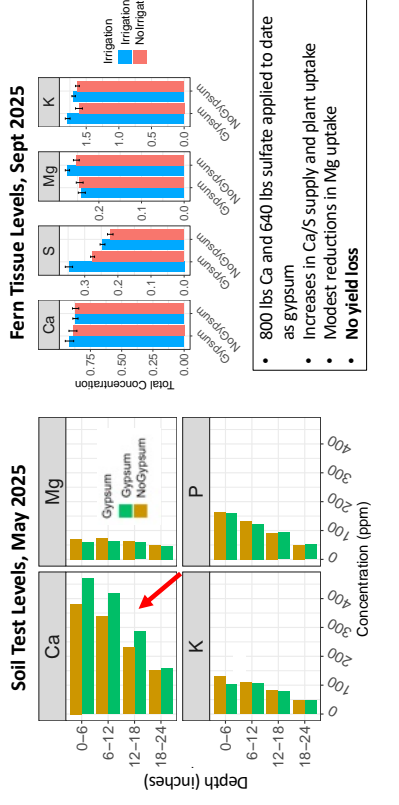
Key Considerations with Gypsum



- Gypsum is a source of Calcium and Sulfur
- Gypsum is “intermediately” soluble
- Does not appreciably change soil pH
- Gypsum can act as a soil conditioner to reduce compaction
 - BUT soil structure benefits much less likely on sandy soils with low clay content
- Risks of high rates on sandy soils
 - Excessive Ca can interfere with soil retention and plant uptake of other cations (e.g., Potassium, Magnesium, etc.)

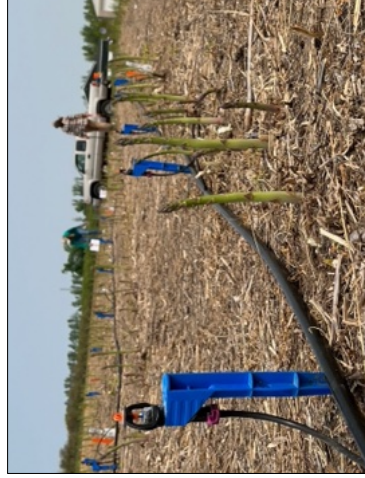
17

Changing Soil and Plant Nutrient Concentrations



18

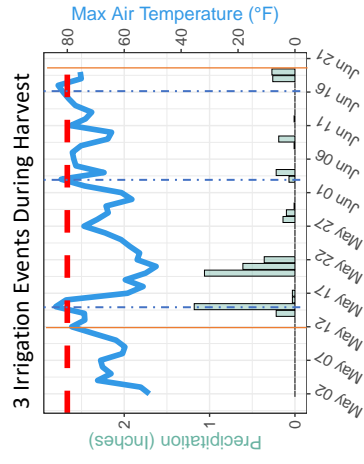
Harvest Season Irrigation



- Irrigate when temperatures are >80 F and surface soil moisture not saturated.
- Run 2 hours (0.25”) during heat of the day

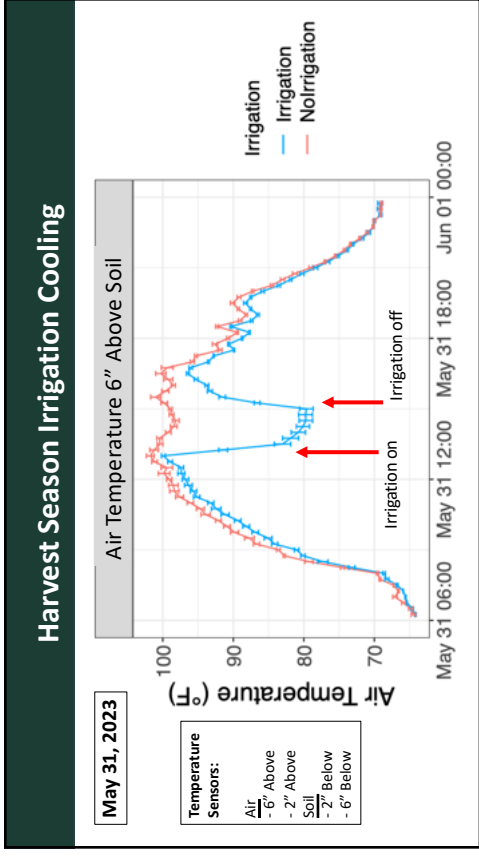
19

2025 Harvest Season Weather



- Large temp swing early, but generally mild
- Generally good moisture
- High yields

20



21

Measuring Spear Tip Quality

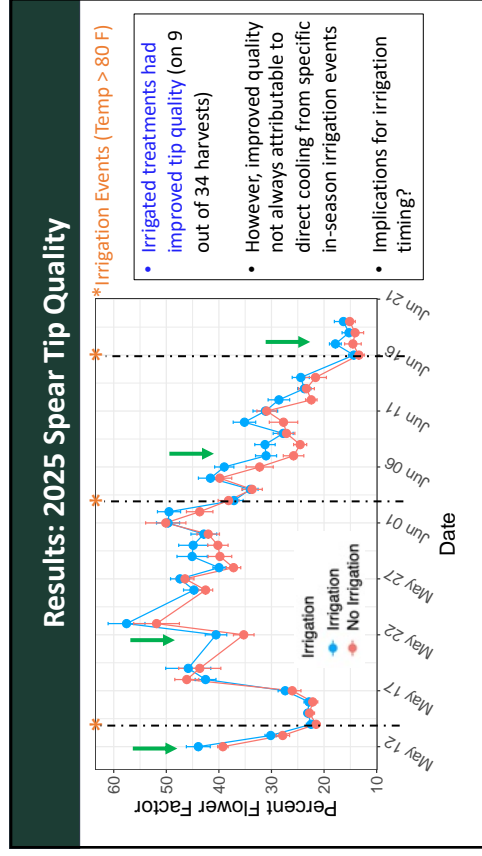
C = Closed
PO = Partially Open
O = Open

Dan Brainard, MSU

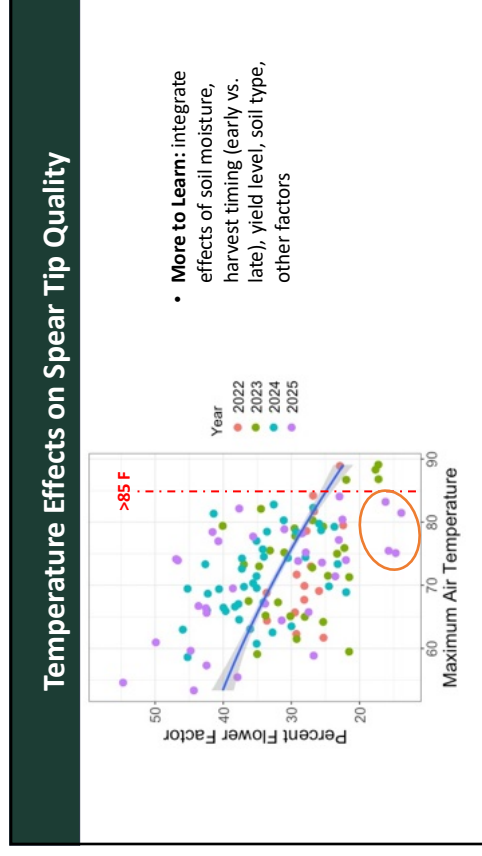
"Flower Factor" Tip Quality Measurement

- 0-100% scale developed for white asparagus
- Green asparagus:
 - Best tip quality ~ 40-50%
 - Poor tip quality ~ 20%

22



23



24

2025 Conclusions



- Irrigation can improve yields of Guelph Millennium following drought conditions, even for established stands
- Irrigation can improve spear tip quality, perhaps not only via direct cooling from in-season irrigation events
- Environmental conditions are a key driver of stem death symptoms, regardless of irrigation/calcium fertilization.
- Irrigation and supplemental calcium effects will vary with soil type, soil test levels, weather, and other factors
- Sandy soils with soil test Ca levels near or below 300 ppm more likely to justify supplemental Ca.

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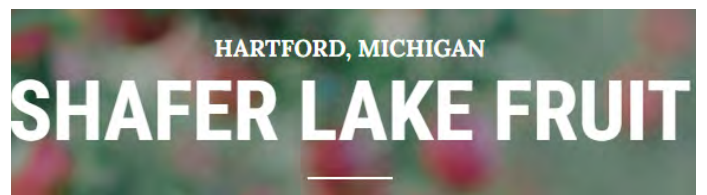
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