

Parthenocarpic Pickle Research

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Parthenocarpic Pickles



- Several breeding programs
 - Quality much improved
- Gaining acreage worldwide
- Seedless
- Requires isolation
- Does not need bees
- Lower populations
 - 50-60% lower
- No pollenizers
- Higher potential yield
- Better size specific
 - Parth varieties sets its fruit in flushes
- Better color often
- Fewer culls, straighter

Variable Performance in Delaware So Far – However the Potential is there



Factors affecting yield stability in parthenocarpic cucumbers on Delmarva



Issues

- Parthocarpic pickles have been trialed on Delmarva with mixed results.
- One issue is the variability of yield responses in parthenocarpic pickle cultivars.
- Cultivars with more stable yields over multiple environments are most desirable.
- There is a lack of information on those factors that affect parthenocarpic cucumber yield stability: temperature, water (rainfall and irrigation), fertility, and planting date (daylength and heat units) as examples.

2020 Spring and Summer Planted Parthenocarpic Trials

Location: University of Delaware Carvel REC,
Georgetown, DE

Planting Dates: June 8, July 28

Experimental Design: Randomized complete block
design with 20 varieties, 4 replicates

Planting Method: Hand Planted

Plot size: 2 row x 10'

Row Spacing: Double rows on plastic mulch

Plant Spacing: 6" between seeds

Sample Size: 20' Row

Harvest Dates: July 21-30, September

Irrigation: drip



Rijk Zwann
Nunhems
Bejo



Variety	Bu/a June planting	
Lennon	277	a
V5010	258	ab
Gershwin	252	ab
V5016	247	abc
RZ 22	246	abc
V5031	239	abc
RZ 16	239	abc
RZ 11	219	abcd
V5025	194	abcd
RZ 21	186	abcd
Liszt	183	abcd
RZ 17	178	abcd
RZ 09	175	abcd
RZ 19	173	abcd
Aristan	151	bcd
Absolut	145	bcd
Rubenstein	132	cd
Bowie	120	d
Amarok	112	d

Variety	Bu/a July Planting	
RZ 21	574	a
V5025	521	ab
RZ 11	478	abc
V5031	437	abcd
RZ 16	433	abcd
RZ 22	427	abcd
Bowie	416	abcd
Aristan	360	abcd
RZ 19	353	abcd
RZ 17	329	bcd
Rubinstein	328	bcd
Lennon	307	bcd
Gershwin	284	bcd
RZ 09	268	cd
Liszt	268	cd
V5016	262	cd
Absolut	244	cd
Amarok	234	d

Factors affecting yield stability in
parthenocarpic cucumbers on Delmarva
2020




- Planting Dates: May 21, June 21, July 25, and August 8
- Two nitrogen fertilizer programs (80 and 120 lbs N per acre)
- Drip irrigation in small plots on black or white plastic mulch.
- 6" between seeds and two rows per plastic bed.
- Plots were 10' long (40 seeds planted per plot).
- Temperature and humidity data was recorded at the site.
- Plots received multiple hand harvests.
- Planting 3-4 were done on white mulch

- Planted May, June, July, and August plantings.
- One irrigation (overhead as needed) and one nitrogen fertilizer program (100 lbs N/a).
- Seeds were hand planted bare ground in rows 30" apart and 6" between seeds.
- Plots consisted of 2 rows, 20' in length with a 5' alley between.
- A once-over harvest was used. One row was harvested.
- Temperature and humidity were measured at the site.

Parthenocarpic pickle yield stability over planting dates. Georgetown, Delaware, 2020

Variety	N rate	21-May	24-Jun	25-Jul	6-Aug	Total	Mean	SD	bu/a
		#	#	#	#	#			total
Absolut	H	232	399	357	372	1360	340	74	452
Absolut	L	262	368	345	330	1305	326	46	416
Amarok	H	245	561	398	410	1614	404	129	490
Amarok	L	363	508	451	347	1669	417	76	502
Aristan	H	219	487	416	384	1506	377	113	447
Aristan	L	267	453	380	338	1438	360	78	417
Bowie	H	285	668	516	312	1781	445	181	553
Bowie	L	354	622	393	320	1689	422	136	537
Liszt	H	323	440	515	443	1721	430	79	596
Liszt	L	352	462	358	414	1586	397	52	530
RZ 76	H	300	538	379	351	1568	392	103	491
RZ 76	L	421	540	336	435	1732	433	84	528
V5016	H	264	434	302	341	1341	335	73	436
V5016	L	230	362	507	328	1427	357	115	495
V5025	H	301	609	543	305	1758	440	160	575
V5025	L	403	571	482	337	1793	448	101	587
V5031	H	342	688	521	342	1893	473	166	604
V5031	L	293	518	445	376	1632	408	96	552

The most stable variety in this set of trials was Liszt. Absolut also had relatively stable yields but with lower overall yields. Bowie, V5031, and V5025 had high yield potential but with less stability.



Factors affecting
yield stability in
parthenocarpic
cucumbers on
Delmarva 2021

H=120 lbs N
L= 80 lbs N

Variety	N rate	May	June	July	August	Total	Mean	SD	bu/a
		#	#	#	#	#			total
Absolut	H	390	285	241	167	1083	271	93	524
Absolut	L	398	405	263	291	1357	339	73	557
Amarok	H	474	423	348	303	1548	387	76	662
Amarok	L	422	494	362	350	1628	407	66	628
Aristan	H	435	432	295	233	1395	349	101	646
Aristan	L	314	333	250	235	1132	283	48	446
Bowie	H	534	478	340	318	1670	418	105	713
Bowie	L	520	447	417	375	1759	440	61	656
Liszt	H	402	364	262	253	1281	320	74	589
Liszt	L	418	316	246	317	1297	324	71	551
RZ-76	H	464	482	292	416	1654	414	86	694
RZ-76	L	469	311	352	251	1383	346	92	556
V5016	H	405	268	238	211	1122	281	86	529
V5016	L	355	378	309	216	1258	315	72	579
V5025	H	516	466	375	372	1729	432	71	687
V5025	L	462	366	327	327	1482	371	64	618
V5031	H	379	346	318	352	1395	349	25	577
V5031	L	446	417	367	340	1570	393	48	630

The most stable varieties in this set of trials were Amarok, V5025, and V5031. Bowie had high yield potential but with less stability.

2021 Spring and Summer Planted Parthenocarpic Trials

Location: University of Delaware Carvel REC,
Georgetown, DE

Planting Dates: May 27 July 26

Experimental Design: Randomized complete block
design with 24 varieties, 4 replicates

Planting Method: Hand Planted

Plot size: 2 row x 10'

Row Spacing: Double rows on plastic mulch

Plant Spacing: 6" between seeds

Sample Size: 20' Row

Harvest Dates: July 5-8, September 15-22

Irrigation: drip



Rijk Zwann
Nunhems
Bejo

Variety	Bu/a May
RZ 22	337
RZ 03	268
NUN 2104	268
V5016	232
Aristan	228
RZ 16	223
NUN 2103	221
V5031	202
Amarok	179
RZ 43	175
NUN 2106	158
V5025	153
RZ 02	152
RZ 10	145
NUN 2101	143
RZ 04	137
NUN 2102	136
RZ 05	135
NUN 2105	133
EXP 3486	112
RZ 37	109
RZ 07	95
Absolut	95
RZ 11	60

Variety	Bu/a July
RZ 22	183
V5016	178
RZ 03	154
V5025	149
V5031	144
RZ 07	143
RZ 04	139
NUN 2105	128
RZ 05	126
Amarok	119
Absolut	118
RZ 43	118
RZ 37	114
RZ 16	101
NUN 2101	101
RZ 11	99
NUN 2106	98
RZ 10	96
NUN 2103	93
NUN 2104	82
EXP 3486	77
NUN 2102	69
Aristan	51
RZ 02	33

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- Pickle Packers International
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- UD and UMD farm staff



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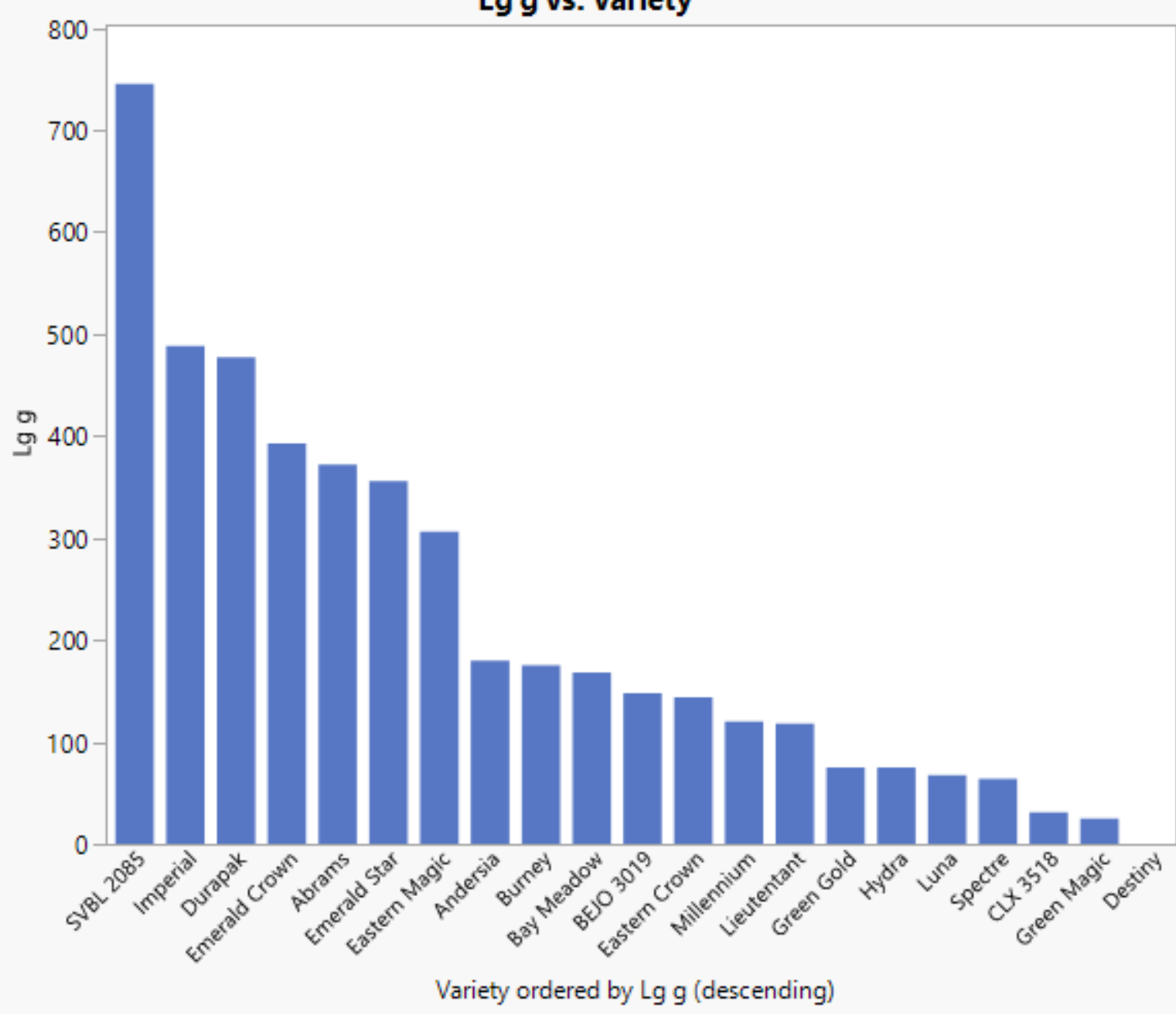
New Grant - Research on New and Reemerging Vegetables for Processing in Delaware

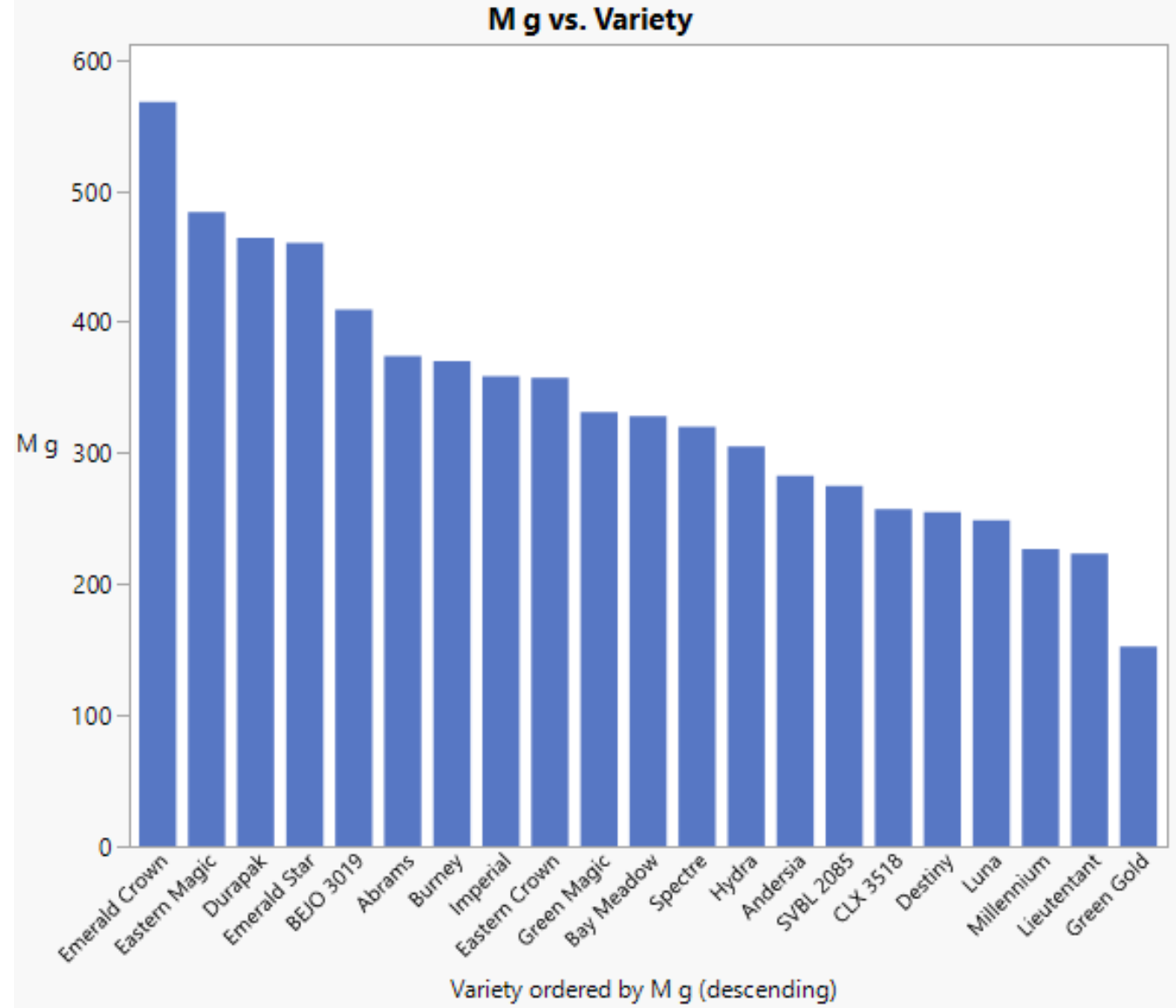
Emphasis will be placed on crops where interest has been shown for Delaware sources (an example would be beets); crops that complement existing processing plant schedules and product lines (early spring, late fall, and specific summer niches); past crops where there is renewed interest in Delaware sourcing; crops with mechanical harvest potential, and crops that compete well with field crops for profitability. Research will concentrate on variety and advanced breeding material evaluation and yield optimization studies. Constraints to production (such as pests) will be identified and evaluated for future research.

Processing Broccoli

- July 22 Direct Seeded
- 21 Varieties
- Harvested October 6 to November 10
- Cut floret evaluation
 - Recovery
 - Sizes
 - Core
 - Blonding
- Freezing

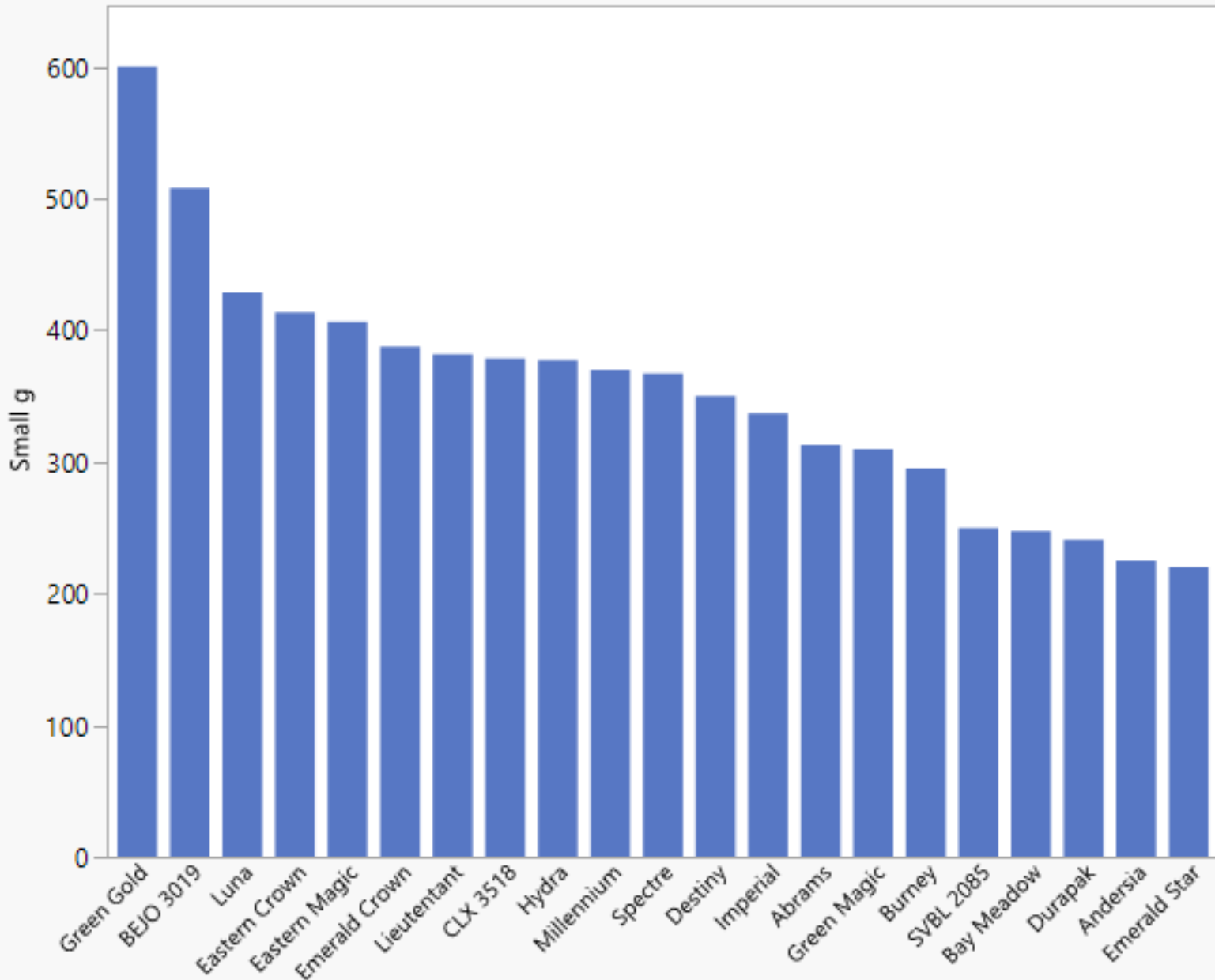




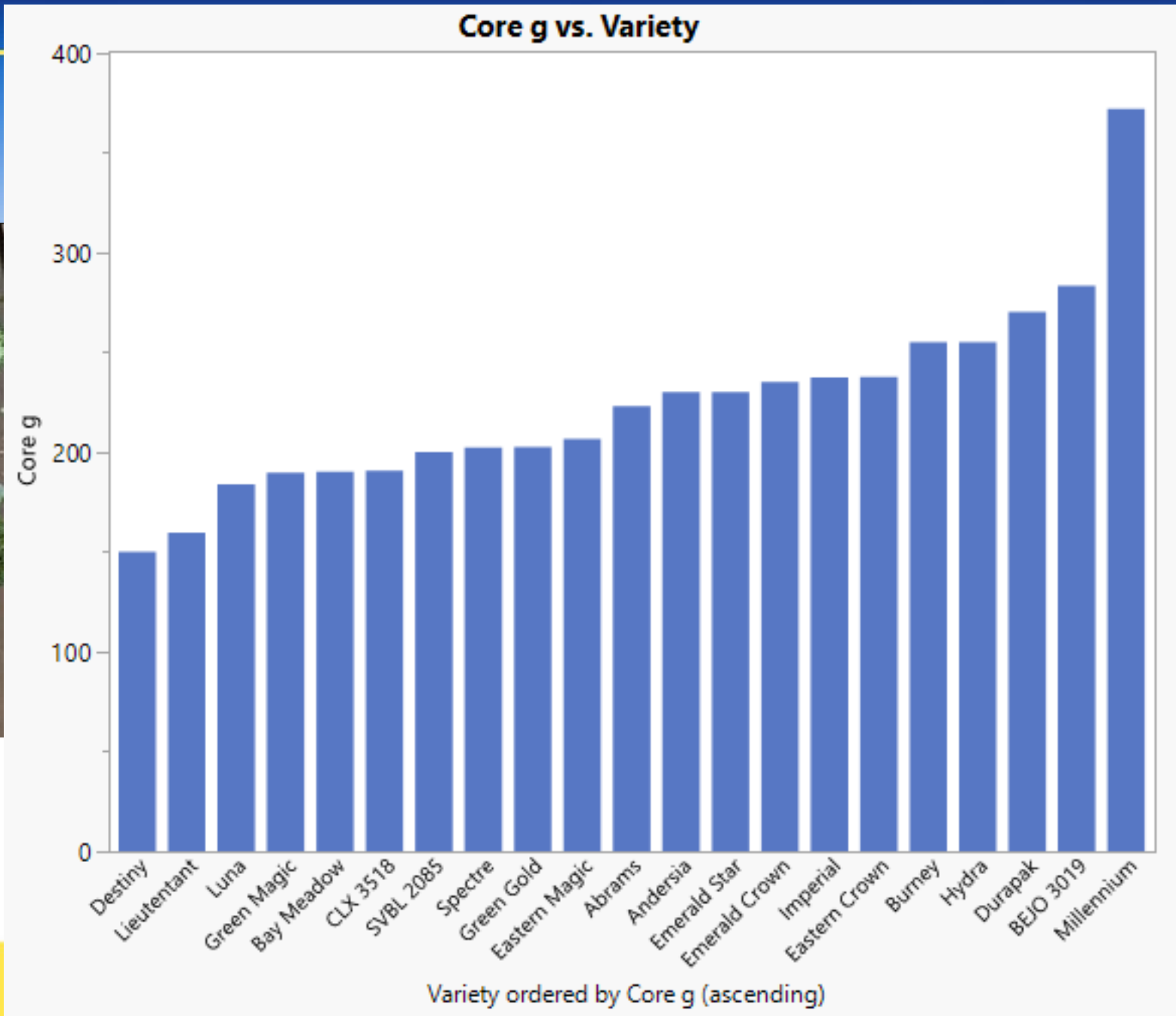


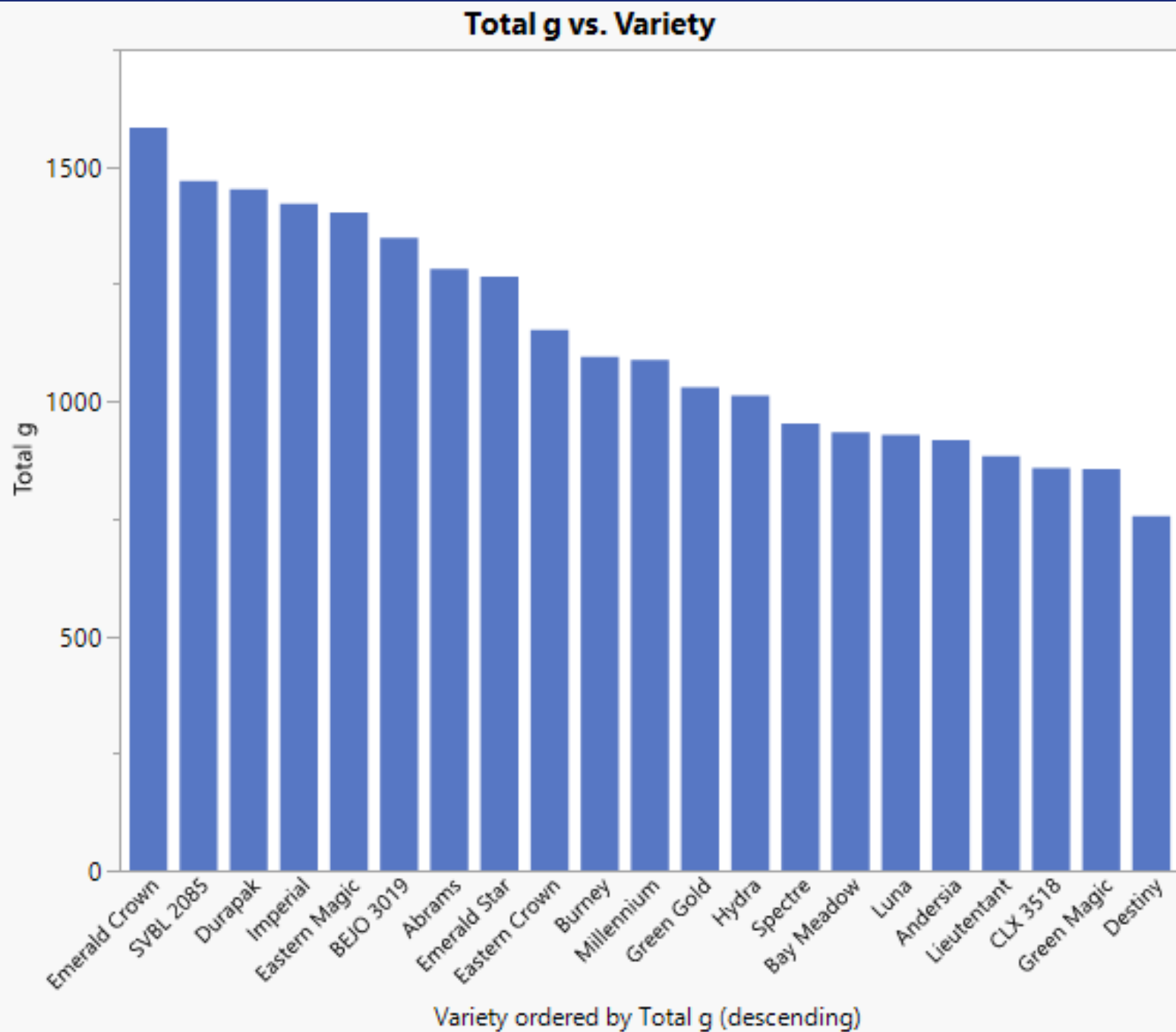


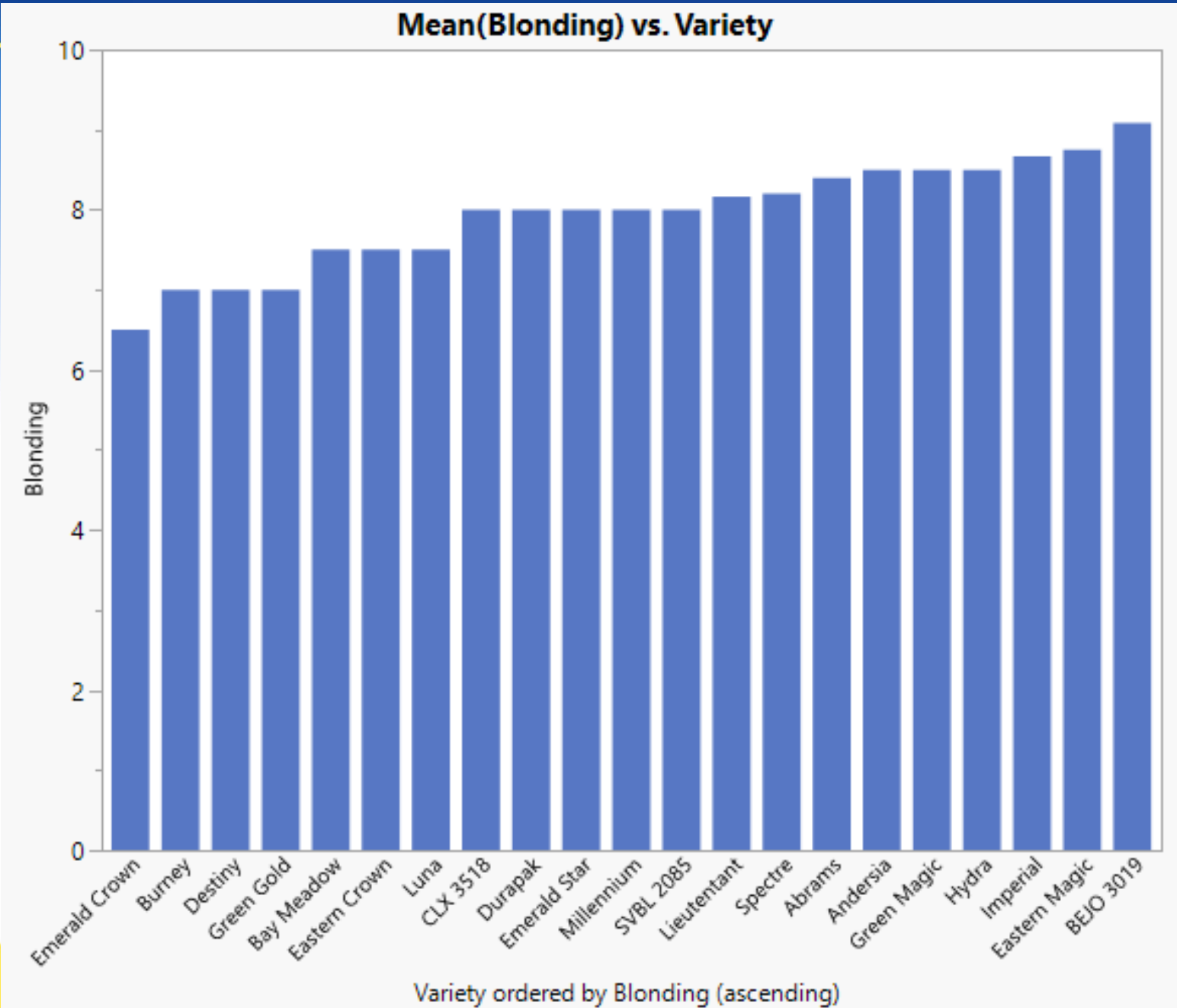
Small g vs. Variety



Variety ordered by Small g (descending)







Next Step – Frozen Sample Evaluations



Specialty Cole Crops – Broccolini, Caulilini, Sprouting Broccoli, Gai Lan





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