

# UTAH Onion Variety Trial - 2018

*Onion Plots* were planted on 5 April in West Weber, UT and on 11 April, 2018 in Bear River City, UT. A total of 31 cultivars (Table 1) from six (6) seed companies were evaluated. Rows were 25 feet long on 39 inch beds (2 double rows; 12 inches apart on the bed, seeds spaced every 3.75 inches in-row) with three (3) replications at each site.

*Onions* were managed in accordance with the cultural activities of the cooperating growers. Weeds were controlled with herbicides according to their practices. Fields were hand weeded once or twice during the year. Insects were controlled as required and plants were irrigated with drip 2 times per week.

## ***Crop Evaluation.***

In mid-May plant stands were evaluated. All onion seedlings in separate 3-ft sections of each double row of each replication were counted. The incidence of IYSV was rated in early August just prior to early top-down evaluations. The IYSV disease severity ratings, {as per *alliumnet.com*; 0 (no symptoms), 1 (small), 2 (medium), 3 (large), 4(large+)} was used.

Crop maturity was rated twice weekly beginning on 1 August and continued through 4 September. Plots were rated as 0% (all leaves erect), 5, 10, 25, 50, 75, 90, 95 or 100% (all leaves fallen over) to determine the percent top down. Bulbs were lifted by the growers on 31 August (West Weber) and 7 September (Bear River City). One week later a representative section in the middle of each plot was hand topped, cured in the field for a few days and bagged. Each plot consisted of 40-50 lbs. of onion bulbs. Bagged bulbs were removed from the field



and further cured in a well ventilated shed before grading in early-October (4<sup>th</sup>-17<sup>th</sup>). Bulbs were mechanically sized on a rotating grading table as colossal (4"+), large jumbos (3.5-4"), jumbos (3-3.5"), mediums (2.25-3") and culls (<2.25" and/or rotten). Grade sizes were counted and weighed and jumbo and large jumbo bulbs were placed in a commercial storage shed in Corinne in late October. Bulbs will be further evaluated in late January 2019. At that time, the varieties will be evaluated for storage weight loss (pre-stored weight minus post-stored weight plus rots) and single centers.

## ***Comments about 2018***

Planting and weather conditions from mid-March to mid-April were considered fair and most onions in Utah were planted by April 15. Soil conditions at planting were a dry surface and good moisture at ½ inch. Growers needed to work around some significant rain events in late March that pushed planting dates back into April. After planting there were regular rain events (Figs. 1) which provided sufficient moisture for seed germination. Temperatures (Figs. 1) and growing degree days (Fig. 2) increased steadily through April which provided good conditions for seedling emergence and early plant growth. Precipitation events were regularly spaced and adequate moisture.

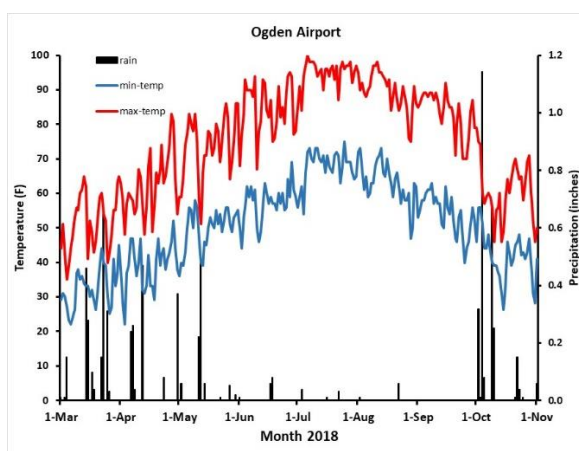
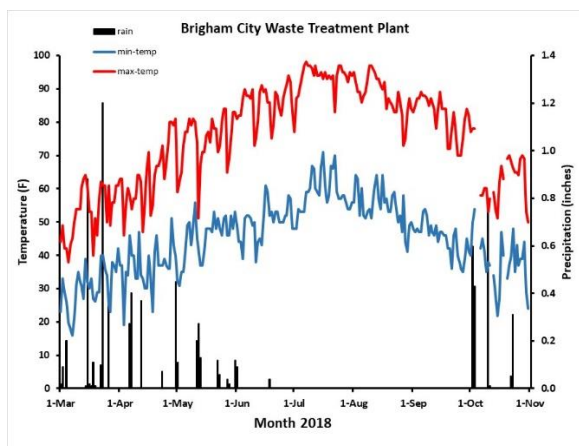


Figure 1. Air temperatures and precipitation (Mar 1 – Nov 1, 2018); Brigham City Waste Treatment Plant and Ogden Airport.

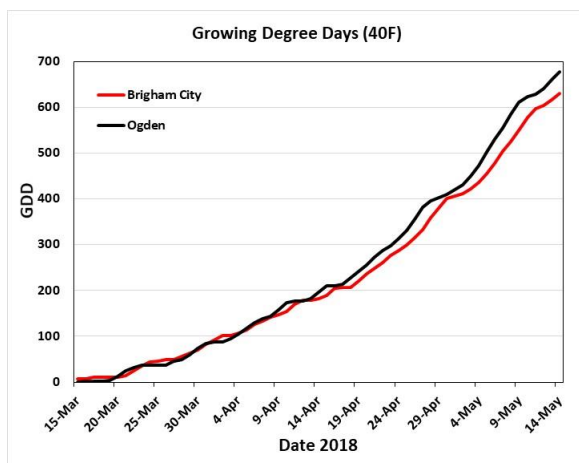


Figure 2. Growing degree day (base 40F) accumulation, Brigham City and Ogden Airport (Mar 15 - May 15, 2018).

May temperatures were considered normal which aided onion growth considerably.

Generally in Utah, June temperatures were normal and onions grew rapidly. July, August, and early September growing conditions were very dry but temperatures were ideal and most onion production areas reported no production related problems.

Harvest began a bit earlier in 2018 than previous years. Most onions were lifted in early September and topping and harvest continues until early October. A wet period in early October slowed the late harvest and most growers finished field bulb removal by mid-month. In general, growers reported excellent yields though many noted bulb sizes were quite large.

The fall field work necessary for the 2019 planting season was on schedule and growers indicate that onion acreage in 2019 would be about the same as 2018.

### *Plant Populations*

Stand counts (Table 1) were considered good in West Weber and Bear River City. Targeted seed placement was 12 seeds per foot of bed (39" beds – 2 double rows per bed – 170,000 seeds/A). At both locations, plant stands were near 80% of expected plants. Summer weather conditions in 2018 (June to September) were normal and no days above 100F were recorded in either of the two production regions. Average monthly high temperature in June, July and August was 88F, 93F and 90F, respectively during 2018. These averages were above the 30 year average monthly temperature but were still considered good growing conditions for onions. Utah growers reported that there was sufficient water to grow the crop. Plant growth was good throughout the summer and thrips pressure was reported to be moderate. Visual IYSV symptoms were noted in most fields in early August and in general, pressure was considered to be light

at the time of evaluation with severity ratings of less than one (<1) (alliumnet.com). In the future, additional evaluations should be made as IYSV severity can change rapidly. Some commercial fields in Utah had high incidence of IYSV that contributed to yield loss, but overall, IYSV incidence was assessed as moderate as reported by growers. Crop maturity, as evaluated from top-down data (Table 2) was very early in 2018. Historically, early maturing cultivars are at 50% top-down in mid-August with late cultivars achieving this stage of development in early September. In general, the onion crop sized very well and many fields had excellent productivity with a high percentage of large jumbo and colossal sized bulbs.

### ***2018 Cultivar Productivity.***

Yield performances and maturity ratings for the 31 varieties tested in West Weber are listed in Table 2 and those grown in Bear River City are listed in Table 3. Varieties are ranked from 1 to 31 with #1 having the highest and #31 the lowest marketable yield (colossal, large jumbo, jumbo, and medium sized bulbs).

Average marketable yield across the 31 entries grown in West Weber was 1901 bags/acre in 2018 (Table 2). Jumbo, large jumbo and colossal bulb yield accounted for 94% of the average marketable yield for all varieties tested. The variety with the highest marketable yield was SV4058NU (Seminis) and the lowest, Ridge Line (Amer. Takii).

Average marketable yield across the 31 entries grown in Bear River City was 2057 bags/acre in 2018 (Table 3). Jumbo, large jumbo and colossal bulb yield accounted for 95% of the marketable yield for all varieties tested. The variety with the highest

marketable yield was SV6672NW (Seminis) and the lowest, Marengo (Nunhems).

Graded marketable bulbs were placed into storage in late October. On January 30-31, bulbs were re-evaluated for storage weight loss associated with water loss/shrinkage (sample weight into storage minus post-storage weight) and storage related defects (soft rot, neck rot, mold, etc) and other disorders (greening, sprouts, double bulbs, etc). Thirty 30 sound bulbs (10 bulbs per replication; random mix of sizes) were cut to determine single centers. A sample of the bulbs were displayed at the 2019 USU Onion Association Meetings (Feb. 12).

Of the varieties evaluated, most seed companies had one or more of their varieties perform in the top 15. Yield, grade assessment are reported in Table 2 and Table 3. Storage weight losses (shrink) were very low as 2018 harvest weather conditions were considered ideal. Most varieties had high percentage of double centers (Table 2 & 3), while the percentage of losses due to sprouts, mold, rots, and other defects was considered very low.

Variety performance is known to vary with soil type, planting date, fertilizer program, irrigation schedule, and general plant care. Growers using the information in Tables 2 and 3 should consult further with the seed company representatives to get more detailed information about variety performance before selecting a new cultivar for planting on their farm. If you would like to discuss these findings with me, please feel free to contact me.

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Table 1. Cultivars of onion planted in 2018 at two sites in Utah. Stand counts -plants per foot of bed (seed drop ~13 seeds per bed foot) collected in May. IYSV incidence ratings evaluated in early August. Value rating of 0-5 (www.alliumnet.com).

Seed Company	Cultivar	West Weber		Bear River City	
		Stand Count (plants/ft)	IYSV Incidence	Stand Count (plants/ft)	IYSV Incidence
Bejo	Antartica	10.7	1.00	8.1	0.67
Bejo	Crockett	9.3	0.67	9.7	0.67
Bejo	Delgado	7.1	1.00	7.6	0.67
Bejo	Gunnison	9.3	0.67	9.7	0.67
Bejo	Hamilton	11.7	0.67	9.9	0.67
Bejo	Legend	8.9	0.67	7.4	1.00
Bejo	Sedona	9.7	1.00	8.9	0.67
Crookham	Avalon	9.8	0.33	10.3	1.00
Crookham	Oracle	10.9	1.00	8.4	0.67
Crookham	Red Beret	9.8	0.67	8.6	0.67
Crookham	Scout	10.8	0.33	9.6	0.67
Enza Zaden	E61L.10284	10.0	1.00	9.0	0.67
Nunhems	Arcero	11.2	0.67	9.3	1.00
Nunhems	Cometa	9.8	1.00	7.0	0.00
Nunhems	Granero	9.8	0.33	8.6	0.33
Nunhems	Joaquin	11.4	0.67	8.8	1.00
Nunhems	Marengo	11.6	0.67	7.9	0.33
Nunhems	Pandero	9.1	0.67	10.6	1.00
Nunhems	Ranchero	10.0	0.33	9.4	0.33
Nunhems	Vaquero	9.7	0.67	9.9	0.33
Seminis	Red Nugent	10.6	0.33	9.9	0.67
Seminis	SV4058NU	8.9	0.33	8.2	0.33
Seminis	SV4643NT	8.7	1.00	9.9	0.33
Seminis	SV6646NW	10.3	0.33	10.0	0.67
Seminis	SV6672NW	10.8	0.33	10.9	0.67
Seminis	Swale	11.2	0.33	10.4	0.33
Seminis	Tucannon	9.2	1.00	8.6	0.33
Seminis	XP 07716000	9.8	0.67	8.7	0.67
Am.Takii	Grand Perfection	10.2	0.33	8.4	1.00
Am.Takii	Ridge Line	9.6	0.67	7.2	0.33
Am.Takii	Traverse	10.3	1.00	8.6	0.33
lsd 0.05		3.3	0.68	3.5	0.60

§ - IYSV rating based on replicate averages

TABLE 2. Yield of 31 onions varieties grown in West Weber, UT in 2018.

SOURCE	VARIETY	Yield (bags/A)			Colossal (4+")		LgJumbo (3.5-4")		Jumbo (3-3.5")		Medium(2.25-3")		Cull (<2.25+rots)		Top-Down <sup>4</sup>	% Wt loss <sup>5</sup>	% Single Centers
		Total	Market <sup>1</sup>	Rank <sup>2</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>			
Bejo	Antartica	1786	1775	19	778	44	594	33	339	19	64	4	11	1	12-Aug	6.8	53.3
Bejo	Crockett	1519	1505	26	436	29	707	47	286	19	76	5	14	1	21-Aug	7.2	36.7
Bejo	Delgado	1866	1857	17	825	44	800	43	191	10	41	2	9	0	17-Aug	1.8	33.3
Bejo	Gunnison	1552	1540	25	307	20	626	40	535	34	72	5	12	1	15-Aug	5.6	46.7
Bejo	Hamilton	1697	1694	22	489	29	533	31	582	34	90	5	4	0	12-Aug	4.8	63.3
Bejo	Legend	1914	1886	16	821	43	715	37	303	16	47	2	27	1	20-Aug	4.8	60.0
Bejo	Sedona	1764	1764	20	501	28	896	51	327	19	41	2	0	0	20-Aug	2.4	36.7
Crookham	Avalon	1497	1488	27	700	47	626	42	162	11	0	0	9	1	13-Aug	11.2	68.9
Crookham	Oracle	2028	2018	13	1096	54	659	32	182	9	81	4	10	1	15-Aug	3.8	58.9
Crookham	Red Beret	1709	1679	23	397	23	455	27	615	36	211	12	29	2	18-Aug	4.9	70.0
Crookham	Scout	2443	2443	2	1714	70	542	22	157	6	29	1	0	0	17-Aug	5.8	33.3
Enza Zaden	E61L.10284	2335	2325	5	1594	68	551	24	147	6	33	1	10	0	15-Aug	17.9	36.9
Nunhems	Arcero	2027	2018	14	826	41	674	33	377	19	141	7	9	0	15-Aug	2.9	81.4
Nunhems	Cometa	1399	1386	30	799	57	453	32	112	8	21	2	13	1	21-Aug	7.5	20.0
Nunhems	Granero	1685	1656	24	672	40	642	38	308	18	33	2	29	2	19-Aug	2.7	60.0
Nunhems	Joaquin	2398	2352	3	1408	59	676	28	222	9	46	2	46	2	24-Aug	4.2	76.7
Nunhems	Marengo	1466	1438	29	422	29	461	31	495	34	60	4	28	2	14-Aug	7.5	56.7
Nunhems	Pandero	2123	2102	10	1354	64	516	24	206	10	28	1	20	1	19-Aug	9.0	83.3
Nunhems	Ranchero	2290	2289	6	1245	54	747	33	252	11	44	2	2	0	15-Aug	5.2	45.4
Nunhems	Vaquero	2175	2167	8	1268	58	717	33	164	8	18	1	9	0	13-Aug	2.0	70.0
Seminis	Red Nugent	2021	1990	15	722	36	750	37	361	18	156	8	31	2	15-Aug	15.9	46.3
Seminis	SV4058NU	2502	2482	1	1442	58	675	27	365	15	0	0	20	1	21-Aug	11.4	50.6
Seminis	SV4643NT	1746	1735	21	831	48	479	27	354	20	71	4	10	1	20-Aug	11.5	49.6
Seminis	SV6646NW	2133	2107	9	987	46	749	35	287	13	84	4	26	1	17-Aug	3.3	51.0
Seminis	SV6672NW	2255	2248	7	1219	54	754	33	252	11	24	1	6	0	12-Aug	10.0	38.9
Seminis	Swale	2035	2027	12	1305	64	572	28	131	6	19	1	8	0	14-Aug	4.5	100.0
Seminis	Tucannon	1864	1848	18	967	52	638	34	233	13	10	1	16	1	21-Aug	7.7	83.3
Seminis	XP 07716000	2045	2032	11	947	46	639	31	405	20	40	2	13	1	18-Aug	3.3	50.1
Am.Takii	Grand Perfection	2334	2327	4	1057	45	831	36	379	16	61	3	6	0	15-Aug	5.1	74.3
Am.Takii	Ridge Line	1325	1297	31	379	29	562	42	260	20	96	7	28	2	17-Aug	3.3	36.7
Am.Takii	Traverse	1495	1469	28	226	15	644	43	523	35	76	5	26	2	15-Aug	4.3	50.0
Grower		2447	2440		1279	52	1000	41	146	6	15	1	7	0	17-Aug	10.7	64.4
	<i>Isd 0.05</i>	424	490		408		182		392		115		56			13.5	45.2

1 - Marketable Yield = Colossal+Large Jumbo+Jumbo+Medium

3 - % of total yield

5 - Prestorage weight minus (shrink+rot poststorage weight).

2 - Rank is based on the marketable yield

4 - Estimated date of 50% of leaves fallen over.

TABLE 3. Yield of 31 onions varieties grown in Bear River City, UT in 2018.

SOURCE	VARIETY	Yield (bags/A)			Colossal (4+")		LgJumbo (3.5-4")		Jumbo (3-3.5")		Medium(2.25-3")		Cull (<2.25+rots)		Top-Down <sup>4</sup>	% Wt loss <sup>5</sup>	% Single Centers
		Total	Market <sup>1</sup>	Rank <sup>2</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>	bags	% <sup>3</sup>			
Bejo	Antartica	1919	1885	24	686	36	636	33	451	24	111	6	34	2	2-Sep	3.9	43.3
Bejo	Crockett	1727	1715	27	490	28	590	34	554	32	81	5	13	1	4-Sep	2.8	73.3
Bejo	Delgado	1896	1874	25	746	39	645	34	461	24	23	1	22	1	1-Sep	4.2	26.7
Bejo	Gunnison	1685	1655	29	399	24	362	21	766	45	127	8	30	2	30-Aug	4.1	56.7
Bejo	Hamilton	2268	2241	7	920	41	592	26	616	27	112	5	26	1	4-Sep	1.9	63.3
Bejo	Legend	1713	1698	28	491	29	483	28	637	37	87	5	15	1	31-Aug	6.3	40.0
Bejo	Sedona	2090	2074	13	778	37	745	36	497	24	54	3	17	1	4-Sep	2.3	50.0
Crookham	Avalon	2561	2531	2	1380	54	728	28	292	11	131	5	30	1	17-Aug	4.8	7.4
Crookham	Oracle	1962	1942	22	754	38	636	32	486	25	66	3	21	1	4-Sep	2.2	56.7
Crookham	Red Beret	1848	1814	26	198	11	710	38	761	41	145	8	33	2	4-Sep	3.9	56.7
Crookham	Scout	2271	2250	6	1181	52	695	31	251	11	123	5	21	1	25-Aug	2.3	40.0
Enza Zaden	E61L.10284	2368	2305	5	1425	60	465	20	332	14	83	3	64	3	24-Aug	2.0	0.0
Nunhems	Arcero	1989	1985	18	822	41	611	31	441	22	111	6	4	0	4-Sep	4.5	76.7
Nunhems	Cometa	2448	2409	3	1211	49	860	35	288	12	49	2	40	2	2-Sep	5.4	45.0
Nunhems	Granero	2107	2058	14	906	43	567	27	491	23	95	4	49	2	3-Sep	4.8	60.0
Nunhems	Joaquin	2141	2121	12	1141	53	435	20	459	21	86	4	21	1	4-Sep	6.4	44.8
Nunhems	Marengo	1519	1513	31	470	31	546	36	446	29	51	3	6	0	4-Sep	4.7	50.5
Nunhems	Pandero	2039	2033	15	886	43	648	32	412	20	86	4	6	0	4-Sep	2.7	43.3
Nunhems	Ranchero	2222	2189	9	1284	58	419	19	383	17	103	5	34	2	30-Aug	1.6	43.3
Nunhems	Vaquero	2055	2017	16	1155	56	407	20	371	18	84	4	38	2	2-Sep	2.7	43.3
Seminis	Red Nugent	2192	2168	11	838	38	570	26	608	28	152	7	24	1	30-Aug	2.3	73.3
Seminis	SV4058NU	2474	2356	4	1337	54	721	29	266	11	32	1	117	5	4-Sep	14.2	50.8
Seminis	SV4643NT	2017	1981	19	651	32	697	35	528	26	105	5	37	2	29-Aug	2.5	13.3
Seminis	SV6646NW	2235	2198	8	765	34	684	31	618	28	130	6	36	2	1-Sep	4.2	46.7
Seminis	SV6672NW	3116	3109	1	1057	34	970	31	1013	32	70	2	6	0	27-Aug	3.9	53.3
Seminis	Swale	2058	1928	23	843	41	454	22	563	27	68	3	130	6	30-Aug	4.0	45.6
Seminis	Tucannon	1977	1972	21	854	43	590	30	435	22	95	5	5	0	31-Aug	2.8	53.3
Seminis	XP 07716000	2200	2178	10	1010	46	762	35	341	16	64	3	22	1	29-Aug	2.1	43.3
Am.Takii	Grand Perfection	1988	1973	20	1013	51	450	23	423	21	86	4	15	1	1-Sep	2.5	45.7
Am.Takii	Ridge Line	1625	1603	30	570	35	610	38	359	22	65	4	21	1	26-Aug	8.9	80.0
Am.Takii	Traverse	2032	2004	17	965	47	694	34	271	13	73	4	28	1	27-Aug	2.5	21.4
Grower		2324	2303		589	25	755	32	775	33	185	8	21	1	4-Sep	2.0	70.0
	<i>lsd 0.05</i>	424	490		408		182		392		115		56			13.5	45.2

1 - Marketable Yield = Colossal+Large Jumbo+Jumbo+Medium

3 - % of total yield

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