Onion Hybrid Performance

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The objective of the trial was to compare: 1) onion hybrids and 2) primed vs. un-primed seed. Onion seed was planted on May 4, 2005 in 4-inch paired rows on 18-inch centers at 167,000 seeds/A. The experimental design was a randomized complete block design with four replicates. Best management practices were used for fertility, weed, disease, and insect control. Winds caused at least 50% lodging in all hybrids 123-124 days after emergence, reducing the effectiveness of using the _ down date as an indication of maturity. To compensate for this, the percentage of tops down was evaluated prior to undercutting. All hybrids were undercut September 13 and harvested September 21. After harvest, onions were allowed to cure and then were graded. Diseased and double bulbs were graded as culls regardless of diameter.

The trial was sprayed with 1.3 pt Buctril + 0.5 pt Goal on June 16 and July 1. Differences in hybrid tolerance to the herbicides were observed after each application. Visual injury observations after the second herbicide application are shown in Table 1. Teton exhibited the most herbicide tolerance and had the highest total yield and yield for onions greater than 3 inches in size. Highlander was the least tolerant, resulting in earlier than expected maturity and lower than expected yield and bulb size. A reduction in growth was evident throughout the growing season for hybrids with visual injury scores higher than 19%.

Seed priming is a physiologically based, seed enhancement process for improving the germination characteristics of seeds. Seed priming is accomplished by partially hydrating seeds and maintaining them under defined moisture, temperature and aeration conditions for a prescribed period of time. In this state, seeds are optimally hydrated and desirable metabolic activity is attained, thereby allowing important pre-germination steps to be accomplished within the seeds. At the conclusion of the priming process, seeds are re-dried to their storage moisture levels. The gains made in priming are not lost following dry-back of the seeds. Following the priming process, seeds are physiologically closer to germination and, therefore, have fewer steps to complete than unprimed seeds in order to accomplish germination and growth after planting. The potential benefits of seed priming are: faster and more uniform germination; improved germination under a broad temperature range; reduced seeding rates; earlier maturity; and higher yields.

Primed seed lots were submitted for Flamenco, Highlander, Milestone and Vaquero. Unprimed seed for all hybrids generally emerged 20 days after planting. Priming reduced the days to emergence by 2 days for Highlander and Vaquero and 4 days for Milestone but did not affect maturity (data not shown). Emergence also appeared more uniform with the primed seed (visual observation). Priming the seed increased yield and bulb size for Flamenco and Vaquero.

Table 1.

Hybrid	Seed source	Herbicide injury[c]	Days to 1/2 down[d]	% Tops down	Yield						Single centers[e]	# of bulbs
					1-2.25"	2.25-3"	3-4"	4-4.5"	Total	Culls		
		%		9/13	cwt/A						%	1000s/A
Alpine	AT	23	113	100	55	57	5	0	116	6	NA	72
Flamenco	NH	16	123	81	18	161	111	0	290	0	65	81
Flamenco[a]	NH	14	122	80	17	214	243	0	473	16	38	112
Frontier	AT	20	119	98	20	288	71	0	378	7	23	104
Highlander	AT	34	103	100	51	130	21	0	201	7	NA	90
Highlander[ab]	AT	35	102	100	67	115	22	0	204	44	NA	105
Highlander[b]	AT	30	104	100	78	138	20	0	236	25	NA	114
Infinity	NH	16	121	81	27	153	269	5	453	0	38	105
Livingston	SO	14	121	89	26	163	237	5	430	7	10	101
Milestone	AT	23	119	96	53	182	92	0	326	0	27	110
Milestone[ab]	AT	26	119	94	41	236	149	0	426	0	27	120
Milestone[b]	AT	25	119	94	48	247	124	0	418	0	35	120
Montero	NH	26	123	80	9	92	448	15	563	8	38	96
Nebula	NH	13	122	86	9	164	312	0	485	0	58	101
NIZ 37-48	VL	25	119	93	35	176	99	0	309	0	13	96
SOL-95	SO	18	120	83	47	130	118	0	294	0	27	94
SX7200ON	NH	15	124	61	8	77	330	0	414	0	75	77
Tesoro	NH	14	122	83	11	110	424	10	555	8	40	100
Teton	SE	5	119	90	8	95	584	0	687	55	38	114
Vaquero	NH	18	124	63	12	107	421	5	545	0	80	98
Vaquero[a]	NH	14	124	64	15	104	473	54	646	0	65	110
LSD (P=.05)		7	3	11	18	51	105	18	113	31	16	23

[a]Primed seed. [b]Seed lots submitted by Kamterter. [c]Evaluated 7/6/05. [d]An indication of maturity.

[e]Single centers were not evaluated for Alpine and Highlander due to an insuffecent number of >3" bulbs.