

Influence of Potato Vine Desiccant on Tuber Skinning and Stem End Vascular Browning Spring 2001

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Introduction

Potatoes are planted on 35-40,000 acres annually in Florida generating cash receipts in 2000 of approximately 120 million dollars. North Florida potato production has averaged 20,000 acres over the last several years. Approximately 20% of the potato acreage in the Tri-County Agricultural Area (TCAA; St. Johns, Flagler, and Putnam counties) is planted in fresh market varieties i.e. Red LaSoda, La Chipper. The division of acreage statewide between fresh and chip varieties is approximately equal. Growers are constantly looking for methods to improve tuber quality of fresh market potatoes. Vine desiccation is a well accepted method of improving tuber appearance at harvest. The vine desiccants labeled for use in Florida change periodically. Therefore, an evaluation of products on common varieties should be conducted to insure that growers maintain optimum tuber quality.

Materials and Methods

The trial was conducted at the Hastings Research and Education Center's Yelvington Farm. The Yelvington Farm is located seven miles southeast of Hastings, Florida. The Hastings REC is part of the University of Florida's/IFAS network of research and extension centers developed to conduct applied research in agriculturally unique areas of the state.

Crops in the TCAA are grown on beds consisting of sixteen potato rows. The rows are raised with a between row spacing of 40 inches (center to center). The ground is irrigated with seepage irrigation. The water table is controlled by the flow of water into irrigation furrows spaced between beds. Potatoes in this experiment were produced using this system of land management.

The experiment was arranged in a randomized complete block design with four replications. Plot size was eight rows wide by 20 feet long. La Chipper, LaRouge, Red La Soda, Dark Red Norland, Russet Norkota, and AF1615-1 (round white) were planted on a randomly selected row in each plot (Figure 1). Atlantic was planted in the guard rows in each plot – rows one and eight. The experiment was planted on 9 March, 2001 and harvested 18 June, 2001.

The potato crop was managed following standard production practices. Potato seed tubers were cut manually to approximately 2.5 oz seed pieces and planted at eight-inch in-row spac-

ing. Stand counts were taken twice during the season and reported as the number of emerged plants in each row (data not shown). Fertilizer (14-2-12) was applied in a split application at planting (1200 lb/acre) and at the 6-10 inch growth stage (700 lb/acre).

Soil was fumigated with 1,3-dichloropropene (Telone II, 6 gal product/acre) in early January prior to planting. Aldicarb (Temik 20 lb product/acre) was applied at planting. Metribuzin (Sencor DF, 20 oz product/acre) was applied at hilling. Fungicides were applied as needed for control of early and late blight.

Desiccant treatments are listed in Table 1. Desiccant treatments were applied using a Weed Systems Equipment, Inc. CO₂ assisted sprayer with a four-row spray boom. The unit was attached to a Ford-New Holland 4835 tractor. Applications were made at 50 gpa and 30 psi using D4 cone tips with five drop nozzles per row. The drop nozzle pattern provided two nozzles on each side of the row and one nozzle over the top of the row.

Table 1. List of potato vine desiccation treatments, active ingredients, and product manufacturer.

No.	Treatment	Active Ingredient	Manufacturer
1	Control – No Desiccant		
2	Desiccate II 2E (2 qt/A) ¹ + AS ² (5 lb/A) + crop oil @ 0.5%	endothall	Cerexagri
3	Desiccate II 2E (1.5 qt/A) + AS (5 lb/A) + crop oil @ 0.5%	endothall	Cerexagri
4	Desiccate II 2E (1.0 qt/A) + AS (5 lb/A) + crop oil @ 0.5%	endothall	Cerexagri
5	Desiccate II 2E (1.0 qt/A) + AS (5 lb/A) + crop oil @ 0.5% + diquat (2.4 oz/A)	endothall	Cerexagri
6	Desiccate II 2E (1.0 qt/A) + AS (5 lb/A) + crop oil @ 0.5% + diquat (1.2 oz/A)	endothall	Cerexagri
7	Rely (3 pt/A)	glufosonate	Aventis
8	GX-696 (1.5 pt/A) + NIS @ 0.25% v/v	diquat	Griffin
9	Boa (1.5 pt/A) + NIS @ 0.25% v/v	paraquat	Griffin
10	Reglone (1.5 pt) – NIS @ 0.25% v/v	diquat	Syngenta

¹volumes and weights applied product not a.i.

²ammonium sulfate

Vine desiccants were applied on 31 May, 2001. Application was made 83 days after planting and 18 days before harvest. Vine desiccation ratings were recorded 1, 2, 4, 6, and 8 days after desiccant application. Plants were rated on the following scale: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 2.5 = yellow and dying to moderately mature; 3.0 = moderately mature; 3.5 = moderately mature to green and vigorous; 4 = green and vigorous.

Tubers were harvested, washed, and graded into five size classes from each plot on 18 June, 2001 with commercial equipment. A sample of 20 tubers from all size classes was rated for vascular browning and percent skinning. Vascular browning was rated by cutting four ¼ inch slices from the stem end of each potato. A potato was rated as zero if none of the slices had vascular browning. A tuber was rated as one through four depending on the number of slices

from the stem end that had vascular browning. A ranking of four indicated that all tuber slices show evidence of vascular browning. Percent skinning was visually rated as the percent of tuber surface that was skinned after harvesting, washing, and grading with commercial equipment.

Results and Discussion

- Vine desiccation treatments influenced yield in only one variety, AF1615-1 (Table 10).
- The vine desiccation rating on the day of spraying for La Chipper, LaRouge, Red LaSoda, Dark Red Norland, AF1615-1, and Russet Norkota were 2.6, 3.3, 2.9, 2.1, 3.6, and 3.8, respectively. Vine desiccant application did not significantly enhance vine decline compared to the control. However, there were strong trends supporting the relatively fast vine desiccation in the diquat and paraquat treatments compared to the endothall and glufosonate treatments. Heavy rainfall (2.6 inches) during the 8 day vine desiccation rating period after vine kill hastened vine decline in the non-treated plots. This tended to mask the vine decline in the desiccation treatments resulting in no significant differences between the treatments (Tables 3, 5, 7, 9, 11, and 13). Between vine kill and harvest, the research farm received 6.8 inches of rain.
- Tubers treated with the faster acting desiccants (diquat and paraquat) tended to have higher vascular browning ratings compared to the non-treated control and the slower acting desiccants (endothall and glufosonate). However, the severity of vascular browning was strongly influenced by potato variety and the maturity of each variety at desiccant application.
- The total percent skinning rating for tubers in each desiccant treatment was dependent on the variety tested. Generally, all vine desiccants had lower total percent skinning than the non-treated control. There were no significant treatment differences for Dark Red Norland for total percent skinning (Table 9). Dark Red Norland was the most senesced potato variety at desiccant application.
- The percent non-skinned rating for tubers was only significant for the Russet Norkota variety (Table 13). However, in all varieties there was a strong trend toward a larger percent of non-skinned tubers in the desiccant treated plots compared to the non-treated control.
- Desiccant application reduced skinning on the tubers that were skinned compared to the non-treated control in Russet Norkota, AF1615-1, and Red LaSoda as described in the adjusted percent skinning column (Tables 7, 11, and 13).

Conclusion

The application of vine desiccants should be recommended to growers to improve tuber quality. The type of desiccant to apply (faster or slower desiccation) should be chosen based on the varieties grown, weather conditions at application, and timing of production.

Table 2. Desiccant Trial. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of La Chipper grown at the Hastings REC. - 2001.

Treatment	Total	Market.	Culls (cwt/A)	Size					Size		Specific Gravity
	Yield	Yield ¹		Distribution by Class (%) ²					Distribution (%)		
	(cwt/A)	(cwt/A)		1	2	3	4	5	2 to 4	3 to 4	
Control - No Desiccant	271	222	29	7	55	32	5	1	92	37	1.067
Desicate II 2E (2 qt)	256	208	34	6	54	39	1	0	94	40	1.067
Desicate II 2E (1.5 qt)	223	185	26	6	61	28	6	0	94	34	1.065
Desicate II 2E (1.0 qt)	279	233	32	6	51	37	7	0	94	44	1.068
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	302	257	28	6	55	30	8	1	94	39	1.066
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	256	223	21	5	50	39	6	0	95	45	1.066
Rely 3 pt/acre	302	241	43	4	49	39	9	0	96	47	1.065
GX-696 (1.5 pt/A)	278	237	28	6	52	34	8	0	94	42	1.066
Boa (1.5 pt/A)	311	264	29	4	45	40	11	0	96	51	1.068
Reglone (1.5 pt)	328	294	23	4	48	38	10	0	96	49	1.066
<i>LSD</i> ³	<i>ns</i>	<i>ns</i>	--	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	0.6296	0.6318	--	0.2748	0.6222	0.1274	0.8648	0.5591	0.4906	0.0816	0.7124

Planted on March 9, 2001, desiccated on May 31, 2001, and harvested June 18, 2001.

¹ - Marketable Yield: size classes 2 to 4

² - Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 3. Desiccant Trial. Yield, vine desiccation rating, and tuber ratings for La Chipper grown at the Hastings REC - 2001.

Clone	Total	Market.	Vine Desiccation Rating ¹					Tuber Ratings			
	Yield	Yield	(Days after Application)					Vascular	Total %	% Non-	Adj %
	(cwt/A)	(cwt/A)	1	2	4	6	8	Browning	Skinning ²	Skinned ³	Skinning ⁴
Control - No Desiccant	271	222	2.3	1.8	1.8	1.3	1.0	2.5 b	8.8 a	22	11.1
Desicate II 2E (2 qt)	256	208	2.0	1.5	1.3	1.0	1.0	2.0 c-e	4.5 b	57	10.5
Desicate II 2E (1.5 qt)	223	185	2.0	1.3	1.0	1.0	1.0	2.4 bc	5.1 b	49	10.0
Desicate II 2E (1.0 qt)	279	233	2.3	1.8	1.0	1.0	1.0	1.6 e	5.4 b	47	10.0
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	302	257	2.0	1.8	1.0	1.0	1.0	1.9 de	6.5 ab	43	11.5
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	256	223	2.3	2.0	1.3	1.0	1.0	0.8 f	4.9 b	54	10.6
Rely 3 pt/acre	302	241	2.5	2.0	1.5	1.0	1.0	0.9 f	5.1 b	52	10.6
GX-696 (1.5 pt/A)	278	237	1.8	1.5	1.0	1.0	1.0	3.0 a	6.0 b	44	10.5
Boa (1.5 pt/A))	311	264	1.5	1.5	1.3	1.0	1.0	2.0 c-e	5.4 b	48	10.2
Reglone (1.5 pt)	328	294	1.8	1.3	1.3	1.0	1.0	2.1 b-d	4.5 b	55	10.0
<i>LSD</i> ⁵	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.4	2.6	<i>ns</i>	<i>ns</i>
<i>p value</i>	0.6296	0.6318	0.0816	0.3466	0.5976	0.4635	--	0.0001	0.0207	0.0593	0.2266

¹ - Vine Desiccation Rating: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 3.0 = moderately mature; 4 = green and vigorous growth

² - Total % Skinning is the percent of the tuber surface skinned during harvesting, washing, and grading. (20 tubers rated per block with four blocks).

³ - % Non-skinned is the percent of tubers per treatment that had no skinning.

⁴ - Adjusted % Skinning is Total % Skinning adjusted by rating only the tubers that were skinned.

⁵ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 4. Desiccant Trial. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of LaRouge grown at the Hastings REC. - 2001.

Treatment	Total	Market.	Culls	Size					Size		Specific Gravity
	Yield	Yield ¹		Distribution by Class (%) ²					Distribution (%)		
	(cwt/A)	(cwt/A)		1	2	3	4	5	2 to 4	3 to 4	
Control - No Desiccant	195	138	51	5	49	42	5	0	95	46	1.064
Desicate II 2E (2 qt)	200	131	65	3	46	45	6	0	97	51	1.065
Desicate II 2E (1.5 qt)	145	99	41	6	58	30	6	0	94	36	1.065
Desicate II 2E (1.0 qt)	160	115	37	5	46	37	13	0	95	49	1.065
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	140	102	33	7	61	28	4	0	93	32	1.064
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	233	171	54	4	51	38	7	0	96	45	1.063
Rely 3 pt/acre	176	127	45	3	44	48	5	0	97	53	1.063
GX-696 (1.5 pt/A)	226	182	37	3	46	46	5	0	97	51	1.062
Boa (1.5 pt/A)	154	112	37	4	52	35	9	0	96	44	1.063
Reglone (1.5 pt)	182	137	41	3	45	40	13	0	97	53	1.063
<i>LSD</i> ³	<i>ns</i>	<i>ns</i>	--	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	0.4023	0.4973	--	0.2638	0.5819	0.5324	0.9374	--	0.2638	0.4709	0.6454

Planted on March 9, 2001, desiccated on May 31, 2001, and harvested June 18, 2001.

¹ - Marketable Yield: size classes 2 to 4

² - Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 5. Desiccant Trial. Yield, vine desiccation rating, and tuber ratings for LaRouge grown at the Hastings REC - 2001.

Clone	Total Yield (cwt/A)	Market. Yield (cwt/A)	Vine Desiccation Rating ¹					Tuber Ratings			
			(Days after Application)					Vascular Browning	Total % Skinning ²	% Non- Skinned ³	Adj % Skinning ⁴
			1	2	4	6	8				
Control - No Desiccant	195	138	3.0	2.3	2.3	1.3	1.0	1.6 cd	13.3	3	13.6
Desiccate II 2E (2 qt)	200	131	2.8	2.0	1.8	1.0	1.0	1.1 de	12.9	7	13.8
Desiccate II 2E (1.5 qt)	145	99	2.3	1.5	1.3	1.0	1.0	1.1 de	10.5	18	12.4
Desiccate II 2E (1.0 qt)	160	115	2.5	2.0	1.5	1.0	1.0	1.9 bc	15.9	0	15.9
Desiccate II 2E (1.0 qt) + Diquat (2.4 oz)	140	102	2.0	1.3	1.3	1.0	1.0	0.9 e	8.9	17	10.6
Desiccate II 2E (1.0 qt) + Diquat (1.2 oz)	233	171	2.5	2.0	1.8	1.3	1.0	1.7 c	11.3	10	12.4
Rely 3 pt/acre	176	127	2.5	1.8	1.5	1.3	1.0	1.1 de	11.8	5	12.4
GX-696 (1.5 pt/A)	226	182	2.8	1.8	1.5	1.0	1.0	1.7 c	12.4	9	13.4
Boa (1.5 pt/A)	154	112	2.3	2.0	1.5	1.0	1.0	2.8 a	12.0	12	13.4
Reglone (1.5 pt)	182	137	2.5	1.5	1.3	1.0	1.0	2.3 b	11.8	12	13.1
<i>LSD</i> ⁵	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.6	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>p value</i>	0.4023	0.4973	0.4474	0.4493	0.5786	0.4635	--	0.0109	0.2341	0.3927	0.3703

¹ - Vine Desiccation Rating: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 3.0 = moderately mature; 4 = green and vigorous growth

² - Total % Skinning is the percent of the tuber surface skinned during harvesting, washing, and grading. (20 tubers rated per block with four blocks).

³ - % Non-skinned is the percent of tubers per treatment that had no skinning.

⁴ - Adjusted % Skinning is Total % Skinning adjusted by rating only the tubers that were skinned.

⁵ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 6. Desiccant Trial. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of Red LaSoda grown at the Hastings REC. - 2001.

Treatment	Total	Market.	Culls	Size					Size		Specific Gravity
	Yield	Yield ¹		Distribution by Class (%) ²					Distribution (%)		
	(cwt/A)	(cwt/A)		1	2	3	4	5	2 to 4	3 to 4	
Control - No Desiccant	344	260	73	3	43	44	10	1	96	54	1.059
Desicate II 2E (2 qt)	363	281	71	3	44	41	11	1	96	53	1.060
Desicate II 2E (1.5 qt)	317	267	40	4	46	41	9	0	96	50	1.059
Desicate II 2E (1.0 qt)	274	199	64	5	48	47	0	0	95	47	1.057
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	287	233	40	6	58	33	4	0	94	37	1.060
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	268	215	44	4	55	38	3	0	96	41	1.058
Rely 3 pt/acre	326	251	65	4	46	32	18	0	96	50	1.059
GX-696 (1.5 pt/A)	300	227	63	5	50	41	5	0	95	46	1.059
Boa (1.5 pt/A)	337	262	68	4	45	43	9	0	96	51	1.057
Reglone (1.5 pt)	274	209	57	4	51	41	4	0	96	45	1.059
<i>LSD</i> ³	<i>ns</i>	<i>ns</i>	--	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	<i>0.5164</i>	<i>0.6168</i>	--	<i>0.8681</i>	<i>0.8178</i>	<i>0.5418</i>	<i>0.0731</i>	<i>0.5690</i>	<i>0.9704</i>	<i>0.8364</i>	<i>0.757</i>

Planted on March 9, 2001, desiccated on May 31, 2001, and harvested June 18, 2001.

¹ - Marketable Yield: size classes 2 to 4

² - Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 7. Desiccant Trial. Yield, vine desiccation rating, and tuber ratings for Red LaSoda grown at the Hastings REC - 2001.

Clone	Total Yield (cwt/A)	Market. Yield (cwt/A)	Vine Desiccation Rating ¹					Tuber Ratings			
			(Days after Application)					Vascular Browning	Total % Skinning ²	% Non- Skinned ³	Adj % Skinning ⁴
			1	2	4	6	8				
Control - No Desiccant	344	260	2.8	2.3	1.8	1.3	1.0	1.8 a-c	14.8 a	8	16.0 a
Desicate II 2E (2 qt)	363	281	2.8	2.0	1.8	1.5	1.0	1.5 c	12.9 ab	5	13.9 ab
Desicate II 2E (1.5 qt)	317	267	2.3	1.8	1.8	1.3	1.0	2.2 ab	11.0 bc	13	12.4 b-d
Desicate II 2E (1.0 qt)	274	199	2.3	2.0	2.0	1.0	1.0	1.5 c	9.1 c	14	10.6 d
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	287	233	2.0	1.8	1.5	1.0	1.0	2.3 ab	8.3 c	24	10.8 cd
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	268	215	2.5	2.3	2.3	1.3	1.0	1.9 a-c	10.9 bc	15	12.8 bc
Rely 3 pt/acre	326	251	2.5	2.0	2.0	1.5	1.0	2.0 a-c	9.1 c	23	11.6 cd
GX-696 (1.5 pt/A)	300	227	2.5	1.8	2.0	1.3	1.0	1.7 bc	9.5 bc	18	11.5 cd
Boa (1.5 pt/A))	337	262	2.0	1.8	1.5	1.0	1.0	1.8 a-c	10.5 bc	13	12.0 b-d
Reglone (1.5 pt)	274	209	2.3	1.5	1.5	1.0	1.0	2.3 a	8.3 c	27	11.2 cd
<i>LSD</i> ⁵	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.6	3.4	<i>ns</i>	2.2
<i>p value</i>	0.5164	0.6168	0.5890	0.7222	0.2664	0.4969	--	0.0109	0.0038	0.2397	0.0005

¹ - Vine Desiccation Rating: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 3.0 = moderately mature; 4 = green and vigorous growth

² - Total % Skinning is the percent of the tuber surface skinned during harvesting, washing, and grading. (20 tubers rated per block with four blocks).

³ - % Non-skinned is the percent of tubers per treatment that had no skinning.

⁴ - Adjusted % Skinning is Total % Skinning adjusted by rating only the tubers that were skinned.

⁵ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 8. Desiccant Trial. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of Dark Red Norland grown at the Hastings REC. - 2001.

Treatment	Total	Market.	Culls	Size					Size		Specific Gravity
	Yield	Yield ¹		Distribution by Class (%) ²					Distribution (%)		
	(cwt/A)	(cwt/A)		1	2	3	4	5	2 to 4	3 to 4	
Control - No Desiccant	223	182	39	11	64	23	2	1	89	25	1.054
Desicate II 2E (2 qt)	276	231	71	7	61	28	4	0	93	32	1.056
Desicate II 2E (1.5 qt)	208	179	40	9	69	22	0	0	91	22	1.055
Desicate II 2E (1.0 qt)	272	223	64	6	54	39	1	0	94	40	1.055
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	246	197	40	6	59	35	0	0	94	35	1.056
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	266	231	44	8	64	26	2	0	92	29	1.057
Rely 3 pt/acre	256	220	65	9	62	28	2	0	92	30	1.055
GX-696 (1.5 pt/A)	242	207	63	7	64	29	0	0	93	29	1.055
Boa (1.5 pt/A)	335	305	68	4	55	40	1	0	97	41	1.056
Reglone (1.5 pt)	281	245	57	6	57	33	4	0	94	37	1.055
<i>LSD</i> ³	<i>ns</i>	<i>ns</i>	--	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	0.3948	0.2340	--	0.5778	0.6922	0.4682	0.7259	0.4635	0.4149	0.6130	0.6847

Planted on March 9, 2001, desiccated on May 31, 2001, and harvested June 18, 2001.

¹ - Marketable Yield: size classes 2 to 4

² - Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 9. Desiccant Trial. Yield, vine desiccation rating, and tuber ratings for Dark Red Norland grown at the Hastings REC - 2001.

Clone	Total Yield (cwt/A)	Market. Yield (cwt/A)	Vine Desiccation Rating ¹					Tuber Ratings			
			(Days after Application)					Vascular Browning	Total % Skinning ²	% Non- Skinned ³	Adj % Skinning ⁴
			1	2	4	6	8				
Control - No Desiccant	223	182	1.8	1.3	1.3	1.0	1.0	1.4 ab	8.5	19	10.5
Desicate II 2E (2 qt)	276	231	2.0	1.0	1.0	1.0	1.0	0.5 d	7.0	34	10.5
Desicate II 2E (1.5 qt)	208	179	1.5	1.3	1.0	1.0	1.0	0.5 d	6.8	35	10.3
Desicate II 2E (1.0 qt)	272	223	1.8	1.3	1.3	1.0	1.0	1.6 a	7.1	33	10.6
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	246	197	1.8	1.3	1.3	1.0	1.0	0.8 cd	5.5	47	10.3
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	266	231	1.5	1.3	1.0	1.0	1.0	0.9 cd	5.8	48	10.7
Rely 3 pt/acre	256	220	1.3	1.0	1.0	1.0	1.0	1.4 ab	6.1	40	10.1
GX-696 (1.5 pt/A)	242	207	1.0	1.0	1.0	1.0	1.0	1.6 a	7.5	30	10.7
Boa (1.5 pt/A))	335	305	1.8	1.3	1.3	1.0	1.0	0.9 b-d	8.4	19	10.3
Reglone (1.5 pt)	281	245	1.3	1.0	1.0	1.0	1.0	1.2 a-c	7.0	35	10.7
<i>LSD</i> ⁵	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.5	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>p value</i>	0.3948	0.2340	0.2624	0.8948	0.7097	--	--	0.0001	0.2277	0.4258	0.9400

¹ - Vine Desiccation Rating: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 3.0 = moderately mature; 4 = green and vigorous growth

² - Total % Skinning is the percent of the tuber surface skinned during harvesting, washing, and grading. (20 tubers rated per block with four blocks).

³ - % Non-skinned is the percent of tubers per treatment that had no skinning.

⁴ - Adjusted % Skinning is Total % Skinning adjusted by rating only the tubers that were skinned.

⁵ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 10. Desiccant Trial. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of AF1615-1 grown at the Hastings REC. - 2001.

Treatment	Total	Market.	Culls	Size					Size		Specific Gravity
	Yield	Yield ¹		Distribution by Class (%) ²					Distribution (%)		
	(cwt/A)	(cwt/A)		1	2	3	4	5	2 to 4	3 to 4	
Control - No Desiccant	296	220	63	5	64	28	2	0	95	30	1.065
Desicate II 2E (2 qt)	346	267	64	5	57	35	3	0	95	38	1.064
Desicate II 2E (1.5 qt)	318	269	36	5	55	34	7	0	95	41	1.064
Desicate II 2E (1.0 qt)	255	182	56	6	57	37	0	0	95	37	1.064
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	372	314	45	4	47	40	9	0	96	49	1.063
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	309	236	55	7	62	31	0	0	93	31	1.061
Rely 3 pt/acre	308	217	80	5	48	45	2	0	95	47	1.065
GX-696 (1.5 pt/A)	312	240	62	4	55	40	2	0	96	41	1.063
Boa (1.5 pt/A)	302	219	66	7	61	33	0	0	93	33	1.063
Reglone (1.5 pt)	315	250	56	4	53	38	5	0	97	44	1.062
<i>LSD</i> ³	<i>ns</i>	<i>71</i>	--	<i>2.6</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>2.6</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	<i>0.2197</i>	<i>0.0284</i>	--	<i>0.0241</i>	<i>0.2885</i>	<i>0.3445</i>	<i>0.0769</i>	--	<i>0.0241</i>	<i>0.1957</i>	<i>0.4667</i>

Planted on March 9, 2001, desiccated on May 31, 2001, and harvested June 18, 2001.

¹ - Marketable Yield: size classes 2 to 4

² - Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 11. Desiccant Trial. Yield, vine desiccation rating, and tuber ratings for AF1615-1 grown at the Hastings REC - 2001.

Clone	Total Yield (cwt/A)	Market Yield (cwt/A)	Vine Desiccation Rating ¹ (Days after Application)					Tuber Ratings			
			1	2	4	6	8	Vascular Browning	Total % Skinning ²	% Non-Skinned ³	Adj % Skinning ⁴
Control - No Desiccant	296	220	3.3	2.5	2.3	1.3	1.0	1.7 d	16.8 a	4	17.3 a
Desiccate II 2E (2 qt)	346	267	2.8	2.3	2.0	1.3	1.0	1.5 d	9.1 bc	18	11.0 c
Desiccate II 2E (1.5 qt)	318	269	2.5	2.0	1.8	1.3	1.0	1.6 d	8.3 c	24	10.8 c
Desiccate II 2E (1.0 qt)	255	182	2.8	2.3	2.3	1.5	1.0	2.4 c	8.0 c	25	11.1 bc
Desiccate II 2E (1.0 qt) + Diquat (2.4 oz)	372	314	2.3	2.0	1.5	1.3	1.0	2.3 c	9.1 bc	25	12.1 bc
Desiccate II 2E (1.0 qt) + Diquat (1.2 oz)	309	236	2.8	2.3	1.8	1.3	1.0	2.3 c	10.0 bc	15	11.7 bc
Rely 3 pt/acre	308	217	2.8	2.0	2.0	1.3	1.0	2.4 c	11.8 b	17	13.8 b
GX-696 (1.5 pt/A)	312	240	2.5	2.3	2.3	1.3	1.0	2.6 bc	8.8 bc	28	12.1 bc
Boa (1.5 pt/A))	302	219	3.0	2.0	2.0	1.3	1.0	3.0 b	9.1 bc	23	11.7 bc
Reglone (1.5 pt)	315	250	2.8	1.5	1.5	1.5	1.0	3.5 a	9.0 bc	22	11.4 bc
<i>LSD</i> ⁵	<i>ns</i>	<i>71</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>0.5</i>	<i>3.5</i>	<i>ns</i>	<i>2.7</i>
<i>p value</i>	<i>0.2197</i>	<i>0.0284</i>	<i>0.2506</i>	<i>0.8948</i>	<i>0.7097</i>	<i>0.9885</i>	<i>--</i>	<i>0.0001</i>	<i>0.0006</i>	<i>0.1116</i>	<i>0.0009</i>

¹ - Vine Desiccation Rating: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 3.0 = moderately mature; 4 = green and vigorous growth

² - Total % Skinning is the percent of the tuber surface skinned during harvesting, washing, and grading. (20 tubers rated per block with four blocks).

³ - % Non-skinned is the percent of tubers per treatment that had no skinning.

⁴ - Adjusted % Skinning is Total % Skinning adjusted by rating only the tubers that were skinned.

⁵ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 12. Desiccant Trial. Yield, marketable yield, percentage of yield by grade, size distribution and specific gravity of Russet Norkota grown at the Hastings REC. - 2001.

Treatment	Total	Market.	Culls	Size					Size		Specific Gravity
	Yield	Yield ¹		Distribution by Class (%) ²					Distribution (%)		
	(cwt/A)	(cwt/A)		1	2	3	4	5	2 to 4	3 to 4	
Control - No Desiccant	181	130	51	21	80	0	0	0	80	0	1.058
Desicate II 2E (2 qt)	238	168	69	9	81	10	0	0	91	10	1.059
Desicate II 2E (1.5 qt)	214	148	66	15	79	7	0	0	85	7	1.059
Desicate II 2E (1.0 qt)	236	172	64	12	81	7	0	0	88	7	1.058
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	241	174	67	11	80	9	0	0	89	9	1.059
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	275	227	48	11	70	15	4	0	89	19	1.061
Rely 3 pt/acre	222	170	51	16	75	9	0	0	84	9	1.059
GX-696 (1.5 pt/A)	209	143	67	13	84	2	1	0	87	4	1.058
Boa (1.5 pt/A)	205	148	56	14	80	7	0	0	87	7	1.060
Reglone (1.5 pt)	245	190	55	12	81	7	0	0	88	7	1.059
<i>LSD</i> ³	<i>ns</i>	<i>ns</i>	--	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
<i>P Value</i>	0.7747	0.5266	--	0.3894	0.7237	0.7342	0.5366	--	0.3894	0.7128	0.7347

Planted on March 9, 2001, desiccated on May 31, 2001, and harvested June 18, 2001.

¹ - Marketable Yield: size classes 2 to 4

² - Size classes: 1 = <1 7/8", 2 = 1 7/8 to 2.5", 3 = 2.5 to 3.25", 4 = 3.25 to 4", 5 = >4"

³ - Means separated within columns by Waller-Duncan's *k* - ratio t test.

Table 13. Desiccant Trial. Yield, vine desiccation rating, and tuber ratings for Russet Norkota grown at the Hastings REC - 2001.

Clone	Total Yield (cwt/A)	Market. Yield (cwt/A)	Vine Desiccation Rating ¹					Tuber Ratings			
			(Days after Application)					Vascular Browning	Total % Skinning ²	% Non- Skinned ³	Adj % Skinning ⁴
			1	2	4	6	8				
Control - No Desiccant	181	130	3.5	2.5	2.3	2.0	1.0	2.9 a-c	14.6 a	7 c	15.6 a
Desicate II 2E (2 qt)	238	168	3.0	2.3	2.0	2.0	1.0	2.7 b-d	7.9 bc	24 a-c	10.3 b
Desicate II 2E (1.5 qt)	214	148	2.8	2.3	2.3	1.8	1.0	3.2 a	5.9 c	43 a	10.2 b
Desicate II 2E (1.0 qt)	236	172	3.0	2.0	2.0	2.0	1.0	2.7 cd	8.4 bc	23 a-c	10.8 b
Desicate II 2E (1.0 qt) + Diquat (2.4 oz)	241	174	2.3	2.0	1.8	1.8	1.0	3.2 a	10.0 b	13 bc	11.3 b
Desicate II 2E (1.0 qt) + Diquat (1.2 oz)	275	227	3.3	2.8	2.5	2.0	1.0	3.1 a-c	9.9 b	9 c	10.8 b
Rely 3 pt/acre	222	170	3.0	2.3	2.3	1.8	1.0	3.1 a-c	9.4 b	23 a-c	11.7 b
GX-696 (1.5 pt/A)	209	143	2.8	2.8	2.3	1.5	1.0	3.2 ab	7.4 bc	28 a-c	10.2 b
Boa (1.5 pt/A)	205	148	3.0	2.3	2.0	1.8	1.0	2.4 d	6.9 bc	33 ab	10.2 b
Reglone (1.5 pt)	245	190	2.8	2.3	2.0	1.8	1.0	2.7 b-d	7.9 bc	27 a-c	10.6 b
<i>LSD</i> ⁵	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.5	3.3	23.0	1.7
<i>p value</i>	0.7747	0.5266	0.4869	0.5679	0.6175	0.8786	--	0.0003	0.0008	0.0229	0.0001

¹ - Vine Desiccation Rating: 1 = completely dead; 1.5 = no leaves, stems standing green; 2 = yellow and dying; 3.0 = moderately mature; 4 = green and vigorous growth

² - Total % Skinning is the percent of the tuber surface skinned during harvesting, washing, and grading. (20 tubers rated per block with four blocks).

³ - % Non-skinned is the percent of tubers per treatment that had no skinning.

⁴ - Adjusted % Skinning is Total % Skinning adjusted by rating only the tubers that were skinned.

⁵ - Means separated within columns by Waller-Duncan's *k* - ratio t test.