

PRELIMINARY REPORT ON 1988 SAN LUIS
VALLEY RESEARCH ON HERBICIDE
INJURY TO POTATOES

BY: PHILIP WESTRA PHD
WEED SCIENTIST
COLORADO STATE UNIVERSITY

IN COOPERATION WITH
DR. GARY FRANC, DR. NIEL HUMBURG, DR. TOM
LAURIDSON, TIM D'AMATO, BILL STUMP, AND
BRIAN CRANMER

PROCEDURES: Research was initiated in May 1988 to investigate the effects of Oust, Glean, Amber, Ally, Harmony Extra, and Assert on the growth and development of russet burbank and centennial russet potatoes. All of these herbicides belong to the sulfonylurea family of herbicides, except for assert which is an imadazalanone herbicide. All except Oust are marketed primarily for small grain production. Oust is marketed for non-cropland sterilant use.

PLOT SIZE:

Plots were 14 feet in length, but consisted of 2 rows of potatoes planted 34 inches apart; 1 row (14 plants) of russet burbank, and 1 row (14 plants) of centennial russet potatoes. Seed stock was the highest research quality available from the CSU Center research station. The study was replicated 3 times, and consisted of 60 plots, with each plot containing 2 potato cultivars yielding a total of 120 subplots (see attached spray sheet). One (1) plant from each end of the plot was discarded for to eliminate border effects.

TREATMENT DATES:

Potatoes were planted on	May 18, 1988
Herbicide application 1 occurred on	July 1, 1988
Herbicide application 2 occurred on	July 14, 1988
Visual foliar symptomology caused by July 1 application date was recorded on	July 14, 1988
Foliar symptomology measurements made on (PHOTOS TAKEN)	July 22, 1988
Harvest 1 occurred on (PHOTOS TAKEN)	August 18, 1988
Final harvest occurred on (PHOTOS TAKEN)	September 22, 1988

TREATMENT INFORMATION:

All herbicide treated plots received only 1 herbicide application, either on July 1, or July 14. Treatments were applied over the top of the potato plants with SS11001 flat fan tips (new) under 15 psi using a carbon dioxide powered back pack sprayer. An electronic metronome was used to calibrate walking speed. Water for spraying came from the CSU campus at Ft. Collins. All herbicides were weighed out on a Mettler H10 balance, or measured to .01 ml accuracy with a 1 ml pipette. Sprayer was rinsed 4 times with 1. water 2. bleach solution 3. ammonium solution and 4. water between treatments. Experimental technique was excellent on this small, precise experiment.

DATA COLLECTED:

July 14, 1988

- 1. PLANT HEIGHT 2. CHLOROSIS RATING 3. INJURY RATING

July 22, 1988 (PHOTOS TAKEN)

- 1. CANOPY HEIGHT AND WIDTH 2. NUMBER OF FLOWERS PER PLOT

August 18, 1988 (FOR 3 PLANTS) (PHOTOS TAKEN)

- 1. VINE DRY WEIGHT (no significant differences were detected)
- 2. NUMBER OF TUBERS
- 3. TUBER WEIGHT IN KILOGRAMS
- 4. AVERAGE WEIGHT (GRAMS) PER TUBER
- 5. ALL TUBERS WERE CATEGORIZED AS a) NORMAL b) CRACKED c) FOLDED d) POPCORN (small with several small knobs or protrusions) e) KNOBBY (generally larger tubers with fewer but larger protrusions than occurred on the popcorn tubers), and f) MINUSCULE (size of a dime, or smaller) tubers. All tuber classes are expressed as a percent of the total number of tubers from each plot, for each variety.

September 22, 1988 (FOR 9 PLANTS) (PHOTOS TAKEN)

DATA COLLECTED WAS THE SAME AS FOR THE AUGUST 18, 1988 DATE.

DATA ANALYSIS

Data was analyzed using analysis of variance on an IBM AT computer; mean separation was achieved using Duncan's Multiple Range Test set at .05. Numbers within a column followed by different letters are significantly different. Comparisons should be made with the check plot values.

BAR GRAPH DATA

Bar graph data is presented with first harvest data appearing as the first set of bars, and final harvest data as the final set of bars. Within a given set of bars, a symbol of * or ^ indicates that the value for that bar is significantly different from the value for the check plot bar value. The bar graph data is a visual presentation of much of the data from the data table.

SEQUENCE OF PHOTOGRAPHS

The left hand page of the 2 pages for each treatment in the study contains 1. foliage shot from July 22, 1988

2. tuber shots from August 18, 1988 harvest

The tubers are arranged by replication. The lighter skinned tubers are from the russet burbank plants; darker skinned tubers are from centennial russet plants. Generally, the data and photos are arranged so the russet burbanks appear first, and the centennial burbanks last. Where appropriate, some close up shots of tuber damage are included.

The right hand page relates strictly to the final harvest of September 22, 1988. All 3 replications are represented in the first photograph. Russet burbank normally is arranged before centennial russet. Where appropriate, extra shots of tuber injury are included.

LEFT SIDE

RIGHT SIDE

FOLIAGE SHOT JULY 22, 88		ALL PHOTOS ARE OF SEPTEMBER 22, 88	
ALL OTHER PHOTOS ARE OF AUGUST 18, 88 FIRST HARVEST		FINAL HARVEST	

THE PHOTO NUMBERS IN THIS SEQUENCE CHART REFER TO THE HANDWRITTEN NUMBER FOUND ON THE BACK OF EACH PHOTOGRAPH, WHILE THE TREATMENT NUMBERS ON THIS LIST REFER TO THE ORIGINAL SPRAY SHEET. PHOTOGRAPHS ARE LIGHTLY GLUED INTO THE ALBUM, AND SHOULD NOT BE REMOVED UNLESS ABSOLUTELY NECESSARY.

PHOTO	TREATMENT	PHOTO	TREATMENT	PHOTO	TREATMENT	COMMENTS
1	1	51	11	100	15	
2	2	52	12	101	15	
3	3	53	12	102	15RB	
4	4	54	12	103	16	
5	5	55	13	104	16CR	
6	6	56	13	105	16RB	
7	7	57	13	106	17	
8	8	58	13	107	17CR	
9	9	59	14	108	17RB #	
10	10	60	14	109	18	
11	11	61	15	110	18CR	
12	12	62	15	111	18RB	
13	13	63	16	112	19	
14	14	64	16	113	19CR	
15	15	65	16	114	19RB	
16	16	66	16	115	20	
17	17	67	17	116	20CR	
18	18	68	17	117	20RB	
19	19	69	17	118	10	
20	20	70	18	119	10CR	
21 21	1	71	18	120	10RB	
22 22	1	72	18	121	9	
24	2	73	19	122	9	
25	2	74	19	123	8	
26	2	75	20	124	8CR	
27	3	76	20	125	8RB	
28	3	77	20	126	8CR	FOLDING
29	3	78	20	127	7	
30	3	81	1	128	7CR	
31	3	82	1CR	129	7RB	
32	4	83	1RB	130	7	
33	4	84	2	131	7CR/RB	
34	5	85	2	132	6	
35	5	86	2	133	6CR	
36	6	87	2	134	6RB	
37	6	88	3RB	135	5	
38	6	89	3RB	136	5CR	
39	7	90	3CR	137	5RB	
40	7	91	3	138	4	
41	7	91B	3*	139	4CR	
42	8	92	12	140	4RB	
43	8	93	12CR	141	11	
44	9	94	12RB	142	11 CR	
45	9	95	13	143	11 RB	
46	10	96	13CR			
47	10	97	13RB			
48	10	98	14			
49	10	99	14			
50	11					

 RB = RUSSETT BURBANK
 CR = CENTENNIAL RUSSETT
 # = MISSING PHOTO

THIS PHOTOGRAPH SEQUENCE LIST REFERS TO THE ORDER OF THE PHOTOGRAPHS AS THEY ACTUALLY APPEAR IN THE ALBUM, BEGINNING WITH UNTREATED CHECK, JULY 1, 1988 APPLICATION, ON PAGE 1.

PHOTOGRAPH SEQUENCE

SEQ	PHOTO	COMMENT	SEQ	PHOTO	COMMENT	SEQ	PHOTO	COMMENT
1	1	T1 FOL	51	128	CR	101	62	RB/CR
2	22	3 REP EH	52	130	CR/RB	102	100	3 REP FH
3	23	RB/CR	53	8	T8 FOL	103	102	RB
4	81	3 REP FH	54	42	3 REP EH	104	101	RB/CR
5	83	RB	55	43	RB/CR	105	16	T16 FOL
6	82	CR	56	123	3 REP FH	106	63	3 REP EH
7	2	T2 FOL	57	125	RB	107	64	RB/CR
8	24	3 REP EH	58	124	CR	108	65	RB
9	25	RB	59	126	CR	109	66	CR
10	26	CR	60	9	T9 FOL	110	103	3 REP FH
11	86	3 REP FH	61	44	3 REP EH	111	105	RB
12	84	RB	62	45	RB/CR	112	104	CR
13	87	RB	63	121	3 REP FH	113	17	T17 FOL
14	85	CR	64	122	RB/CR	114	67	3 REP EH
15	3	T3 FOL	65	10	T10 FOL	115	68	RB/CR
16	27	3 REP EH	66	46	3 REP EH	116	69	CR
17	28	RB	67	47	RB/CR	117	106	3 REP FH
18	29	CR	68	48	RB	118	108	MISSINGRB
19	30	RB	69	49	CR	119	107	CR
20	31	CR	70	118	3 REP FH	120	18	T18 FOL
21	91	3 REP FH	71	120	RB	121	70	3 REP EH
22	88	RB	72	119	CR	122	71	RB/CR
23	89	RB	73	11	T11 FOL	123	72	RB
24	90	CR	74	51	3 REP EH	124	109	3 REP FH
25	4	T4 FOL	75	50	RB/CR	125	111	RB
26	32	3 REP EH	76	141	3 REP FH	126	110	CR
27	33	RB/CR	77	143	RB	127	19	T19 FOL
28	138	3 REP FH	78	142	CR	128	73	3 REP EH
29	140	RB	79	12	T12 FOL	129	74	RB/CR
30	139	CR	80	54	3 REP EH	130	112	3 REP FH
31	5	T5 FOL	81	52	RB/CR	131	114	RB
32	34	3 REP EH	82	53	CR	132	113	CR
33	35	RB/CR	83	92	3 REP FH	133	20	T20 FOL
34	135	3 REP FH	84	94	RB	134	75	3 REP EH
35	137	RB	85	93	CR	135	76	RB/CR
36	136	CR	86	13	T13 FOL	136	77	RB
37	6	T6 FOL	87	55	3 REP EH	137	78	CR
38	36	3 REP EH	88	56	RB/CR	138	115	3 REP FH
39	37	RB/CR	89	57	RB	139	117	RB
40	38	RB	90	58	CR	140	116	CR
41	132	3 REP FH	91	95	3 REP FH			
42	134	RB	92	97	RB			
43	133	CR	93	96	CR			
44	7	T7 FOL	94	14	T14 FOL			
45	39	3 REP EH	95	59	3 REP EH			
46	40	RB/CR	96	60	RB/CR			
47	41	CR	97	98	3 REP FH			
48	127	3 REP FH	98	99	RB/CR			
49	131	CR/RB	99	15	T15 FOL			
50	129	RB	100	61	3 REP EH			

T# = TREATMENT NUMBER
 RB = RUSSETT BURBANK
 CR = CENTENNIAL RUSSETT

FOL = FOLIAGE
 REP = REPLICATIONS
 EH = EARLY HARVEST (8/18/88)
 FH = FINAL HARVEST (9/22/88)

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 HERBICIDE INJURY TO POTATOES
 Conducted at SAN LUIS VALLEY by Weed Science
 Project POTA608 with cooperater GARY FRANC

Use 1 gallon(s) per treatment mixture to spray 18 G/A .

Apply specified amount of product to each 2.8 by 42.0 foot plot.

TRT NO	TREATMENT NAME	AI	FD #/gal	RATE	UNIT	GROW STGE	A ML or G/ TRT. MIX	1	2	3
01	CHECK					JULY 1		101	216	314
02	OUST	DF	75	.071	oz/A	JULY 1	0.00733	102	208	309
03	OUST	DF	75	.141	oz/A	JULY 1	0.01456	103	201	318
04	GLEAN	DF	75	.035	oz/A	JULY 1	0.00361	104	209	320
05	GLEAN	DF	75	.071	oz/A	JULY 1	0.00733	105	204	305
06	HARMONY EXTR	DF	75	.142	oz/A	JULY 1	0.01466	106	217	304
07	HARMONY EXTR	DF	75	.282	oz/A	JULY 1	0.02911	107	212	316
08	AMBER	DF	75	.071	oz/A	JULY 1	0.00733	108	214	303
09	ALLY	DF	60	.018	oz/A	JULY 1	0.00232	109	220	315
10	ASSERT	L	2.5	.47	lb/A	JULY 1	1.94165	110	203	313
11	CHECK					JUL 14		111	218	307
12	OUST	DF	75	.071	oz/A	JUL 14	0.00733	112	202	302
13	OUST	DF	75	.141	oz/A	JUL 14	0.01456	113	207	317
14	GLEAN	DF	75	.035	oz/A	JUL 14	0.00361	114	219	306
15	GLEAN	DF	75	.071	oz/A	JUL 14	0.00733	115	206	308
16	HARMONY EXTR	DF	75	.142	oz/A	JUL 14	0.01466	116	205	312
17	HARMONY EXTR	DF	75	.282	oz/A	JUL 14	0.02911	117	215	311
18	AMBER	DF	75	.071	oz/A	JUL 14	0.00733	118	211	319
19	ALLY	DF	60	.018	oz/A	JUL 14	0.00232	119	213	301
20	ASSERT	L	2.5	.47	lb/A	JUL 14	1.94165	120	210	310

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 HERBICIDE INJURY TO POTATOES
 Conducted at SAN LUIS VALLEY by Weed Science

TREATMENT NAME	AI #/gal	FD	RATE	UNIT	GROW STGE	RUSSEBURB	CENTRUSS	RUSSEBURB	CENTRUSS	RUSSEBURB	CENTRUSS
						HEIGHT INCHES 7-14-88	HEIGHT INCHES 7-14-88	CHLORISIS % 7-14-88	CHLORISIS % 7-14-88	% INJURY 7-14-88	% INJURY 7-14-88
CHECK					JULY 1	22.3a	18.7ab	0.0c	0.0b	0.0c	0.0e
CUST	75	DF	.071	oz/A	JULY 1	21.0a	16.3bc	0.7c	3.3b	6.7bc	10.0d
CUST	75	DF	.141	oz/A	JULY 1	16.0c	11.3e	10.0a	10.0a	33.3a	43.3a
GLEAN	75	DF	.035	oz/A	JULY 1	22.3a	19.0a	0.0c	0.0b	0.0c	0.0e
GLEAN	75	DF	.071	oz/A	JULY 1	21.0a	16.3bc	1.7bc	1.7b	3.0bc	5.0de
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	21.3a	16.3bc	3.3b	3.3b	3.3bc	5.0de
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	18.7b	13.3de	10.0a	10.0a	33.3a	36.7b
AMBER	75	DF	.071	oz/A	JULY 1	21.0a	14.7cd	0.0c	3.3b	1.7bc	16.7c
ALLY	60	DF	.018	oz/A	JULY 1	22.0a	18.0ab	0.0c	0.0b	0.0c	1.7e
ASSERT	2.5	L	.47	lb/A	JULY 1	21.3a	15.3cd	10.0a	8.3a	8.3b	8.3d
CHECK					JULY 14						
CUST	75	DF	.071	oz/A	JULY 14						
CUST	75	DF	.141	oz/A	JULY 14						
GLEAN	75	DF	.035	oz/A	JULY 14						
GLEAN	75	DF	.071	oz/A	JULY 14						
HARMONY EXTR	75	DF	.142	oz/A	JULY 14						
HARMONY EXTR	75	DF	.282	oz/A	JULY 14						
AMBER	75	DF	.071	oz/A	JULY 14						
ALLY	60	DF	.018	oz/A	JULY 14						
ASSERT	2.5	L	.47	lb/A	JULY 14						

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HERBICIDE INJURY TO POTATOES
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TREATMENT NAME	AI #/gal	FD	RATE	UNIT	CROW A STGE C	RUSSELBURB	CENTRUSS	RUSSELBURB	CENTRUSS	RUSSELBURB	CENTRUSS	RUSSELBURB	CENTRUSS
						HEIGHT INCHES	HEIGHT INCHES	WIDTH INCHES	WIDTH INCHES	CANOPY CROSS SEC SQ FEET	CANOPY CROSS SEC SQ FEET	NUMBER OF FLOWERS	NUMBER OF FLOWERS
CHECK					JULY 1	25.0a	23.7a	32.0ab	24.0a	5.56a	3.94a	38.7ab	24.7a
CUST	75	DF	.071	oz/A	JULY 1	19.3h	19.0ef	23.3j	17.3h	3.14h	2.28g	34.0bcd	10.3fgh
CUST	75	DF	.141	oz/A	JULY 1	15.0i	14.0h	17.3k	13.7i	1.80i	1.33h	8.0j	2.3jk
GLEAM	75	DF	.035	oz/A	JULY 1	23.0b-e	23.0ab	30.3cde	24.3a	4.84b	3.88ab	29.0ef	16.0de
GLEAM	75	DF	.071	oz/A	JULY 1	21.3fg	19.3ef	28.0fg	20.3def	4.15cde	2.73ef	20.0i	21.0abc
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	21.0fg	20.7cde	27.3gh	22.3bc	3.99def	3.21cd	19.3i	7.0hi
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	20.3gh	18.7fg	26.0hi	19.0fg	3.67fg	2.47fg	11.7j	1.0k
AMBER	75	DF	.071	oz/A	JULY 1	23.3bcd	20.7cde	31.3abc	22.0bcd	5.08b	3.16cd	31.0def	9.7gh
ALLY	60	DF	.018	oz/A	JULY 1	25.0a	22.3abc	32.0ab	24.0a	5.56a	3.72ab	36.0abc	20.7bc
ASSERT	2.5	L	.47	lb/A	JULY 1	23.0bcd	18.7fg	26.7ghi	17.3h	4.26cd	2.25g	22.0ghi	5.0ij
CHECK					JULY 14	24.7a	24.0a	32.7a	24.3a	5.60a	4.06a	39.7a	24.0ab
CUST	75	DF	.071	oz/A	JULY 14	21.7ef	18.3fg	25.3i	20.0ef	3.83ef	2.55fg	18.7i	12.3fg
CUST	75	DF	.141	oz/A	JULY 14	20.3gh	17.0g	24.0j	18.3gh	3.39gh	2.17g	22.7ghi	14.0ef
GLEAM	75	DF	.035	oz/A	JULY 14	25.0a	24.0a	32.0ab	23.3ab	5.56a	3.89ab	26.7fg	22.3abc
GLEAM	75	DF	.071	oz/A	JULY 14	23.7abc	21.3bcd	29.0ef	21.0cde	4.77b	3.12de	26.0fgh	20.0c
HARMONY EXTR	75	DF	.142	oz/A	JULY 14	22.0def	19.7def	27.0gh	22.0bc	4.13cde	3.02de	21.3hi	12.3fg
HARMONY EXTR	75	DF	.282	oz/A	JULY 14	22.3c-f	18.3fg	26.3hi	18.3gh	4.08cde	2.34g	28.3ef	7.3hi
AMBER	75	DF	.071	oz/A	JULY 14	24.0ab	21.3bcd	30.3cde	21.0cde	5.06b	3.11de	28.0ef	19.3cd
ALLY	60	DF	.018	oz/A	JULY 14	23.0bcd	23.0ab	31.0bcd	22.0bc	4.95b	3.51bc	26.7fg	20.0c
ASSERT	2.5	L	.47	lb/A	JULY 14	21.3fg	18.3fg	29.7de	18.0gh	4.40c	2.30g	33.0cde	19.7c

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 HERBICIDE INJURY TO POTATOES
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TREATMENT NAME	AI #/gal	FD	RATE	RATE UNIT	GROW A STGE C	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	
						TUBER WT KG 8-18-88	M.M. OF TUBERS 8-18-88	GRAMS/ TUBER 8-18-88	NORMAL TUBERS % 8-18-88	CRACKED TUBERS % 8-18-88	FOLDED TUBERS % 8-18-88	POPCORN TUBERS % 8-18-88	KNOBBY % 8-18-88	HINTS/CUL % 8-18-88
CHECK					JULY 1	2.82abc	33b	87a	89ab	4i	5def	0b	0c	1b
CUST	75	DF	.071	oz/A	JULY 1	2.48abc	140a	18f	7i	41c-f	17bc	13a	16a	6b
CUST	75	DF	.141	oz/A	JULY 1	1.77c	121a	15f	9hi	38c-g	12cd	9a	10ab	23a
GLEAN	75	DF	.035	oz/A	JULY 1	3.36ab	63b	53cde	54def	33c-h	9c-f	1b	3bc	0b
GLEAN	75	DF	.071	oz/A	JULY 1	3.24ab	38b	86a	89ab	4i	5def	0b	2bc	0b
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	2.86abc	45b	64b-e	49def	24e-f	25b	0b	2bc	0b
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	2.91abc	56b	52de	32fgh	30d-f	35a	0b	3bc	0b
AMBER	75	DF	.071	oz/A	JULY 1	2.84abc	51b	56cde	58cde	26d-f	10cde	3b	2bc	0b
ALLY	60	DF	.018	oz/A	JULY 1	3.25ab	45b	72a-d	92a	3i	4def	0b	1c	0b
ASSERT	2.5	L	.47	lb/A	JULY 1	3.40ab	58b	59cde	19ghi	69ab	7def	3b	1bc	0b
CHECK					JULY 14	3.57a	50b	72a-d	91a	3i	5def	0b	1c	0b
CUST	75	DF	.071	oz/A	JULY 14	2.83abc	52b	55cde	21ghi	76a	3ef	0b	0c	0b
CUST	75	DF	.141	oz/A	JULY 14	2.17bc	49b	44e	20ghi	59abc	3ef	1b	16a	0b
GLEAN	75	DF	.035	oz/A	JULY 14	2.95abc	42b	70a-d	88ab	9hi	3def	0b	0c	0b
GLEAN	75	DF	.071	oz/A	JULY 14	2.79abc	37b	75abc	85ab	11ghi	1f	0b	2bc	0b
HARMONY EXTR	75	DF	.142	oz/A	JULY 14	2.88abc	50b	58cde	40efg	50a-e	8def	0b	2bc	0b
HARMONY EXTR	75	DF	.282	oz/A	JULY 14	3.19ab	52b	62b-e	40efg	48b-e	8def	0b	4bc	0b
AMBER	75	DF	.071	oz/A	JULY 14	2.71abc	39b	70a-d	65bcd	29d-f	4def	0b	2bc	0b
ALLY	60	DF	.018	oz/A	JULY 14	2.99abc	50b	60cde	79abc	18f-i	2ef	0b	1c	0b
ASSERT	2.5	L	.47	lb/A	JULY 14	2.97abc	36b	83ab	47def	52a-d	1f	0b	0c	0b

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TREATMENT NAME	AI #/gal	FD	RATE	RATE UNIT	GROW A STGE C	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	
						TUBER WT KG/PLOT	GRAMS / TUBER	NO. TUBERS / PLOT	NORMAL %	CRACKED %	FOLDED %	POPCORN %	KNOBBY %	MINISCOL %
						8-18-88	8-18-88	8-18-88	8-18-88	8-18-88	8-18-88	8-18-88	8-18-88	
CHECK					JULY 1	2.68a	91ab	30cd	98a	2a	0b	0b	0a	0a
CUST	75	DF	.071	oz/A	JULY 1	2.06abc	50c-f	42abc	13d	79ab	4b	4a	0a	0a
CUST	75	DF	.141	oz/A	JULY 1	1.41c	29f	48a	30cd	60bc	5b	0b	5a	0a
GLEAN	75	DF	.035	oz/A	JULY 1	2.74a	98a	28cd	88a	10e	3b	0b	0a	0a
GLEAN	75	DF	.071	oz/A	JULY 1	2.09abc	87ab	24d	96a	3e	0b	0b	1a	0a
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	2.69a	93ab	29cd	97a	3e	0b	0b	0a	0a
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	2.09abc	87a-d	24d	69ab	6e	24a	0b	1a	0a
AMBER	75	DF	.071	oz/A	JULY 1	2.38ab	92ab	26cd	72ab	22de	2b	1b	3a	0a
ALLY	60	DF	.018	oz/A	JULY 1	2.58a	92ab	28cd	98a	0e	1b	0b	1a	0a
ASSERT	2.5	L	.47	lb/A	JULY 1	2.41ab	75a-e	32bcd	56bc	40cd	4b	0b	1a	0a
CHECK					JULY 14	2.68a	96a	28cd	95a	1e	1b	0b	3a	0a
CUST	75	DF	.071	oz/A	JULY 14	1.61bc	46def	35a-d	5d	91a	3b	0b	0a	0a
CUST	75	DF	.141	oz/A	JULY 14	2.02abc	43ef	47ab	4d	89a	6b	0b	1a	0a
GLEAN	75	DF	.035	oz/A	JULY 14	2.50ab	86abc	29cd	95a	4e	1b	0b	0a	0a
GLEAN	75	DF	.071	oz/A	JULY 14	2.66a	92ab	29cd	80ab	17de	2b	0b	1a	0a
HARMONY EXTR	75	DF	.142	oz/A	JULY 14	2.06abc	52c-f	40a-d	24d	74ab	2b	0b	0a	0a
HARMONY EXTR	75	DF	.282	oz/A	JULY 14	1.62bc	60b-f	27cd	22d	70ab	8b	0b	0a	0a
AMBER	75	DF	.071	oz/A	JULY 14	2.26abc	65a-f	35a-d	31cd	66ab	2b	0b	1a	0a
ALLY	60	DF	.018	oz/A	JULY 14	2.20abc	92ab	24d	73ab	26de	2b	0b	0a	0a
ASSERT	2.5	L	.47	lb/A	JULY 14	1.96abc	48c-f	41abc	32cd	68ab	0b	0b	0a	0a

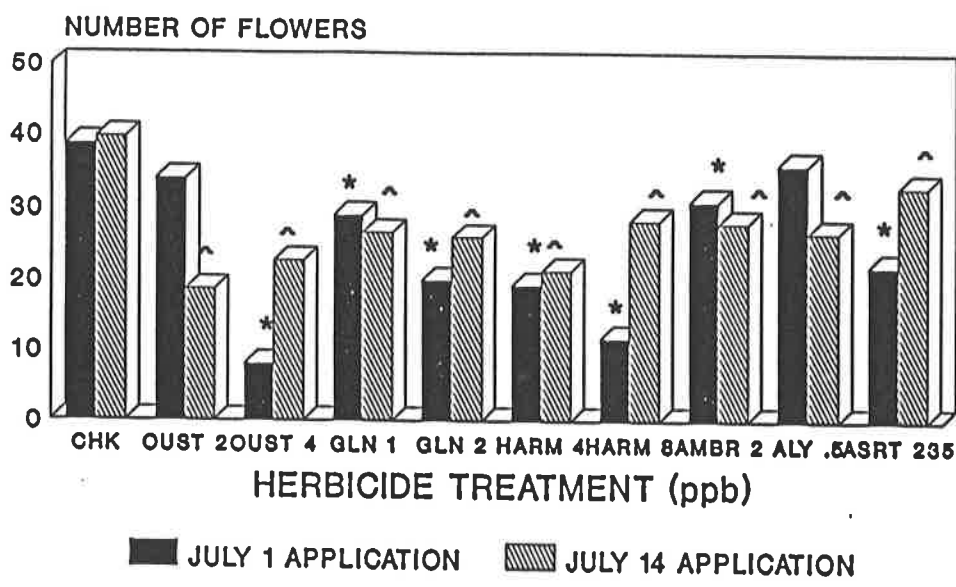
Colorado State University
 HERBICIDE INJURY TO POTATOES
 Conducted at SAN LUIS VALLEY by Weed Science

TREATMENT NAME	AI #/gal	FD	RATE	UNIT	GROW STGE	RUSSEBURB		RUSSEBURB		RUSSEBURB		RUSSEBURB		RUSSEBURB		RUSSEBURB	
						9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88	9-22-88
						KG TUBERS / PLOT	NO. TUBERS / PLOT	GRAMS / TUBER	NORMAL TUBERS %	CRACKED TUBERS %	FOLDED TUBERS %	POPCORN TUBERS %	KNOBBY TUBERS %	MINISQUL TUBERS %			
CHECK					JULY 1	10.677a-d	132d	81.29a	98.19a	0.14h	1.12f	-0.08b	0.64c	0.00b			
CUST	75	DF	.071	oz/A	JULY 1	6.883fg	341b	20.79f	6.66j	4.91gh	62.17a	1.97b	10.45b	13.85a			
CUST	75	DF	.141	oz/A	JULY 1	5.550g	419a	13.17f	10.57ij	6.52gh	55.28a	1.41b	7.84b	18.39a			
GLEAN	75	DF	.035	oz/A	JULY 1	10.433a-e	132d	79.58ab	86.57ab	4.91gh	8.03def	0.00b	0.49c	0.00b			
GLEAN	75	DF	.071	oz/A	JULY 1	10.233a-e	151cd	67.64a-e	94.57a	3.25gh	2.18f	0.00b	0.00c	0.00b			
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	10.467a-e	163cd	64.13b-f	42.23fg	19.84efg	35.71b	0.00b	2.21c	0.00b			
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	10.350a-e	200cd	51.91fg	24.19hi	34.61c-f	30.87bc	8.01a	1.07c	1.25b			
AMBER	75	DF	.071	oz/A	JULY 1	12.300ab	204cd	60.37d-g	69.79cd	18.19fgh	12.01def	0.00b	0.00c	0.00b			
ALLY	60	DF	.018	oz/A	JULY 1	12.150abc	164cd	74.06a-d	94.66a	3.43gh	0.25f	0.00b	1.66c	0.00b			
ASSERT	2.5	L	.47	lb/A	JULY 1	9.800b-e	145cd	67.47a-e	49.47ef	32.14def	13.85def	0.00b	2.35c	2.20b			
CHECK					JULY 14	12.300ab	164cd	74.94a-d	97.34a	1.84gh	0.82f	0.00b	0.00c	0.00b			
CUST	75	DF	.071	oz/A	JULY 14	8.567def	179cd	47.79gh	13.64ij	58.44ab	19.20cd	0.00b	8.72b	0.00b			
CUST	75	DF	.141	oz/A	JULY 14	8.100ef	222c	37.01h	17.02hij	31.21def	16.69de	0.00b	23.92a	11.16a			
GLEAN	75	DF	.035	oz/A	JULY 14	11.900abc	150cd	78.85abc	90.79ab	8.94gh	0.27f	0.00b	0.00c	0.00b			
GLEAN	75	DF	.071	oz/A	JULY 14	10.200a-e	142d	71.49a-d	77.13bc	19.79efg	0.71f	0.00b	2.37c	0.00b			
HARMONY EXTR	75	DF	.142	oz/A	JULY 14	9.600cde	149cd	64.34c-f	29.38gh	65.79a	3.72ef	0.00b	1.10c	0.00b			
HARMONY EXTR	75	DF	.282	oz/A	JULY 14	9.717b-e	178cd	54.56efg	41.69fg	50.48abc	6.05def	0.00b	0.00c	1.78b			
AMBER	75	DF	.071	oz/A	JULY 14	10.467a-e	144cd	72.77a-d	50.58ef	43.39bcd	3.15ef	0.00b	2.32c	0.56b			
ALLY	60	DF	.018	oz/A	JULY 14	12.783a	163cd	78.75abc	78.42bc	17.98fgh	3.39ef	0.00b	0.21c	0.00b			
ASSERT	2.5	L	.47	lb/A	JULY 14	10.883a-d	160cd	68.70a-e	61.50de	37.01cde	1.49f	0.00b	0.00c	0.00b			

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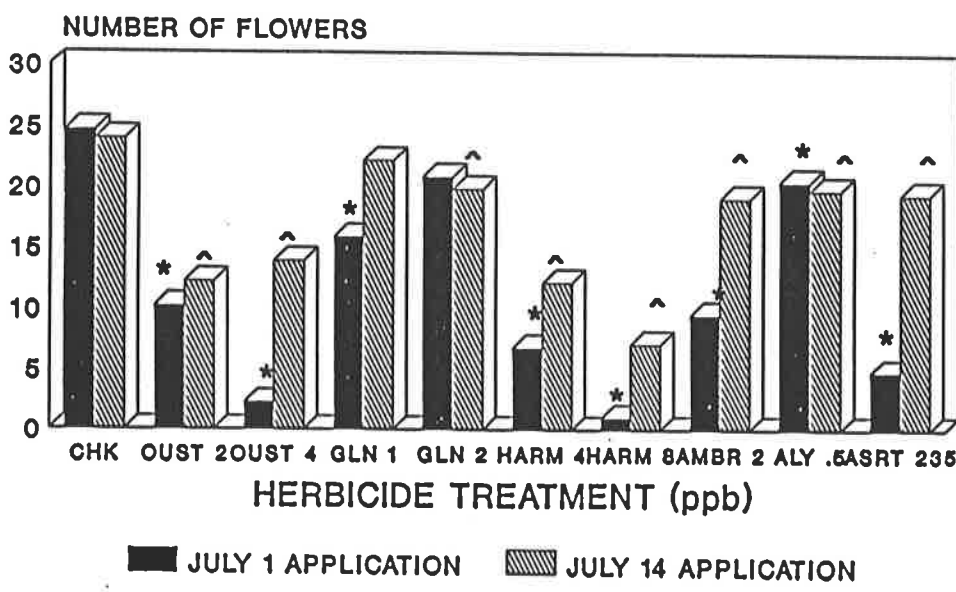
TREATMENT NAME	AI #/gal	FD	RATE	UNIT	GROW A STGE C	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	CENTRUSS	
						KG TUBERS / PLOT	NO TUBERS / PLOT	AVG WT TUBER	NORMAL TUBERS %	CRACKED TUBERS %	FOLDED TUBERS %	POPOORN TUBERS %	KNOBBY TUBERS %	MINISCUJ TUBERS %
CHECK					JULY 1	11.250a	114b-e	99.26ab	97.57a	0.80d	1.00d	0.00a	0.63a	0.00b
CUST	75	DF	.071	oz/A	JULY 1	7.467f-l	126bcd	60.91efg	11.10efg	80.90ab	8.01abc	0.00a	0.00a	0.00b
CUST	75	DF	.141	oz/A	JULY 1	5.717i	199a	29.03h	15.23efg	80.00ab	2.99bcd	0.00a	1.14a	0.63ab
GLEAN	75	DF	.035	oz/A	JULY 1	9.133b-g	99cde	92.93abc	94.91ab	1.94d	2.24cd	0.00a	0.91a	0.00b
GLEAN	75	DF	.071	oz/A	JULY 1	9.067b-g	95cde	95.65abc	96.22ab	3.78d	0.00d	0.00a	0.00a	0.00b
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	8.333c-h	86a	96.65abc	92.45abc	4.96d	2.29cd	0.00a	0.00a	0.30ab
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	9.050b-g	106cde	85.70bcd	76.76bc	7.44d	12.59a	0.00a	0.00a	3.21a
AMBER	75	DF	.071	oz/A	JULY 1	7.900e-h	98cde	81.39b-e	74.30c	16.91d	8.79ab	0.00a	0.00a	0.00b
ALLY	60	DF	.018	oz/A	JULY 1	10.950ab	109cde	100.39ab	96.83ab	2.88d	0.29d	0.00a	0.00a	0.00b
ASSERT	2.5	L	.47	lb/A	JULY 1	8.563c-h	118b-e	72.99cde	44.80d	47.96c	4.07bcd	0.00a	0.20a	2.98ab
CHECK					JULY 14	10.017a-d	100cde	100.28ab	97.58a	2.42d	0.00d	0.00a	0.00a	0.00b
CUST	75	DF	.071	oz/A	JULY 14	6.847h-l	129bc	53.68fg	2.73g	96.54a	0.73d	0.00a	0.00a	0.00b
CUST	75	DF	.141	oz/A	JULY 14	7.400f-l	149b	50.01g	3.41fg	96.36a	0.22d	0.00a	0.00a	0.00b
GLEAN	75	DF	.035	oz/A	JULY 14	9.800a-e	90de	108.89a	91.82abc	8.18d	0.00d	0.00a	0.00a	0.00b
GLEAN	75	DF	.071	oz/A	JULY 14	9.367a-f	95cde	98.52abc	82.09abc	17.57d	0.34d	0.00a	0.00a	0.00b
HARMONY EXTR	75	DF	.142	oz/A	JULY 14	8.450c-h	125bcd	67.24def	28.53de	70.51b	0.73d	0.00a	0.24a	0.00b
HARMONY EXTR	75	DF	.282	oz/A	JULY 14	8.083d-h	116b-e	69.59d-g	21.86efg	77.47b	0.67d	0.00a	0.00a	0.00b
AMBER	75	DF	.071	oz/A	JULY 14	7.850e-h	118b-e	66.61d-g	22.98ef	72.80b	1.22d	0.00a	1.32a	1.67ab
ALLY	60	DF	.018	oz/A	JULY 14	10.183abc	96cde	107.19a	82.65abc	17.35d	0.00d	0.00a	0.00a	0.00b
ASSERT	2.5	L	.47	lb/A	JULY 14	7.300gh-l	126bcd	57.81efg	15.62efg	76.43b	6.54a-d	0.00a	1.41a	0.00b

RUSSETT BURBANK NUMBER OF FLOWERS



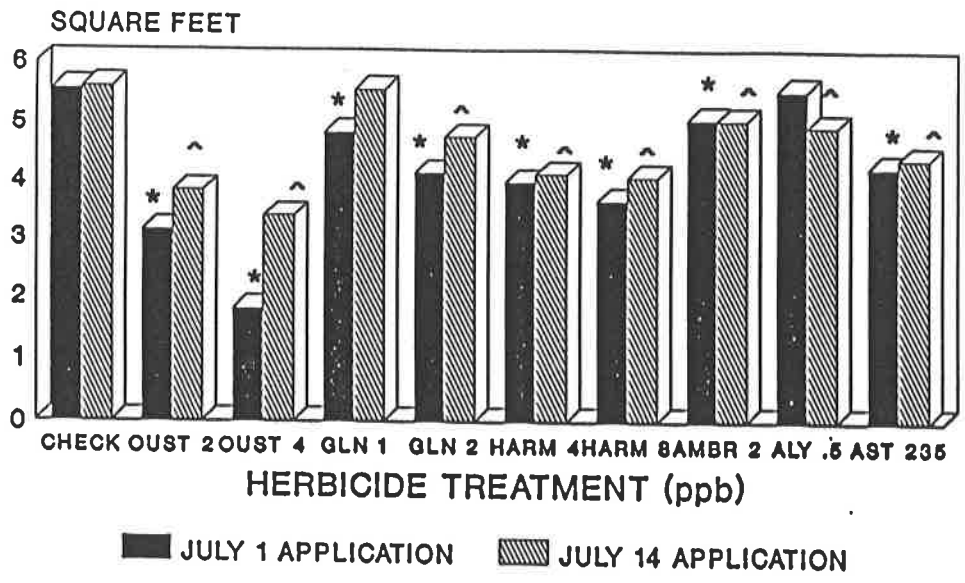
PER PLOT BASIS

CENTENNIAL RUSSETT NUMBER OF FLOWERS



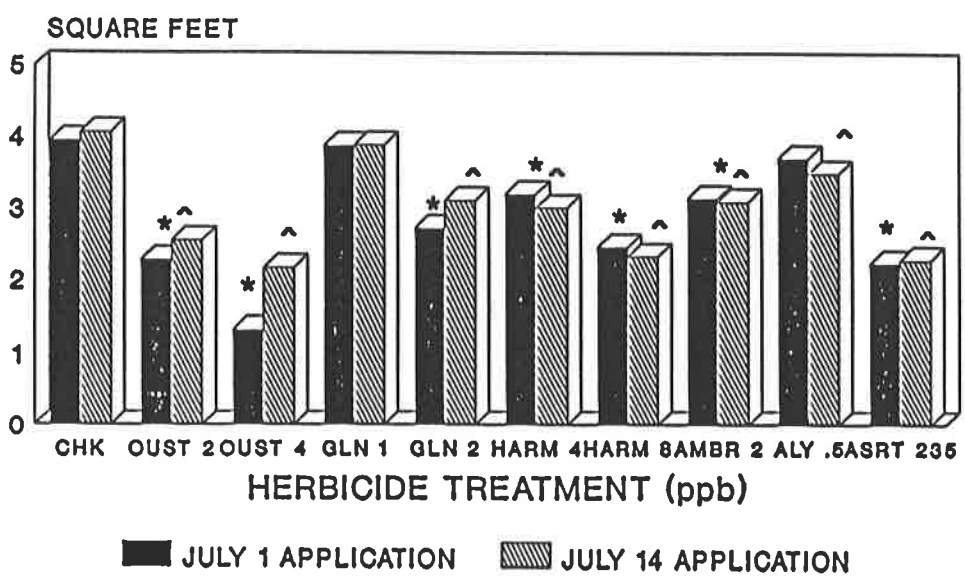
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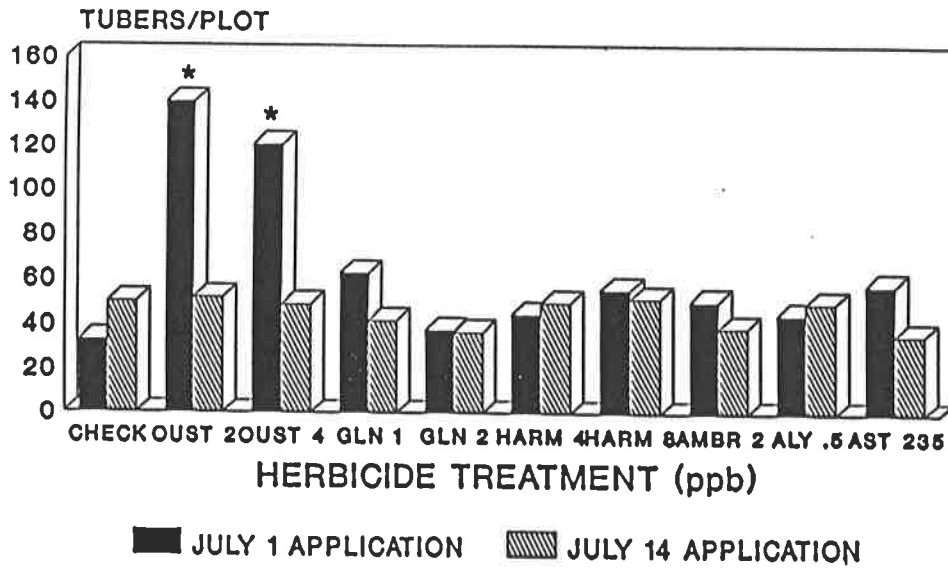
JULY 22, 1988 DATA

CENTENNIAL RUSSETT CANOPY CROSS SECTION (SQ. FT.)



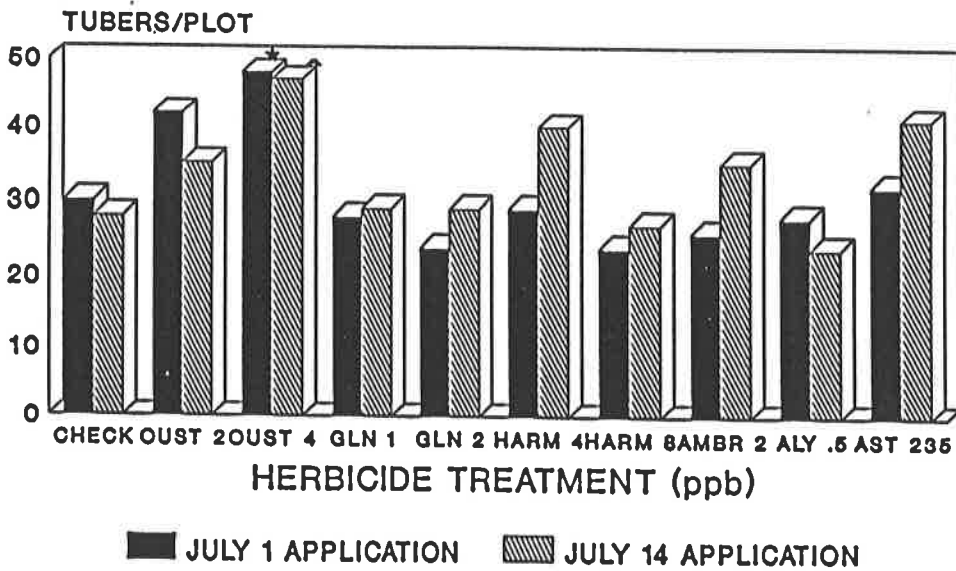
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RUSSETT BURBANK EARLY HARVEST TUBER COUNT TOTAL



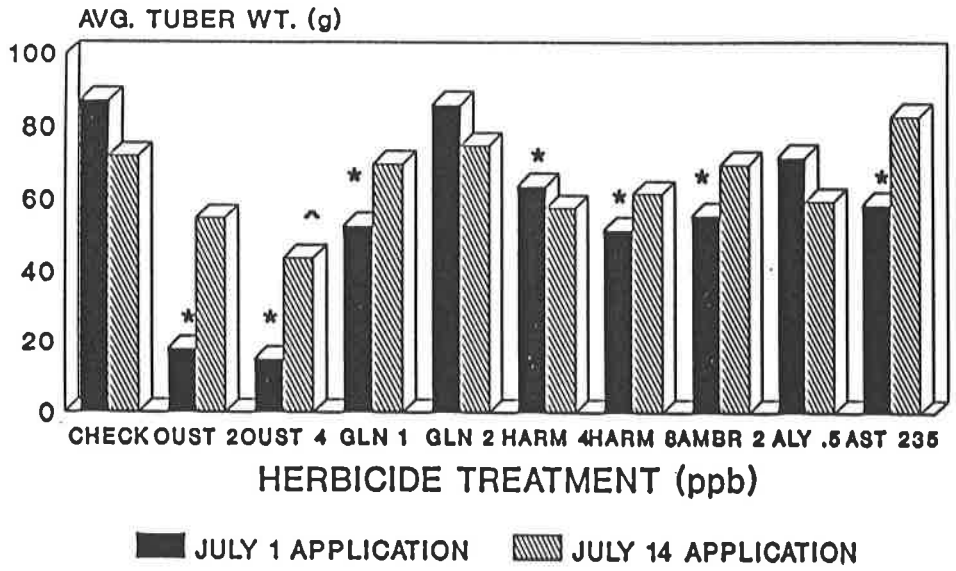
AUGUST 18, 1988 HARVEST

CENTENNIAL RUSSETT EARLY HARVEST TUBER COUNT TOTAL



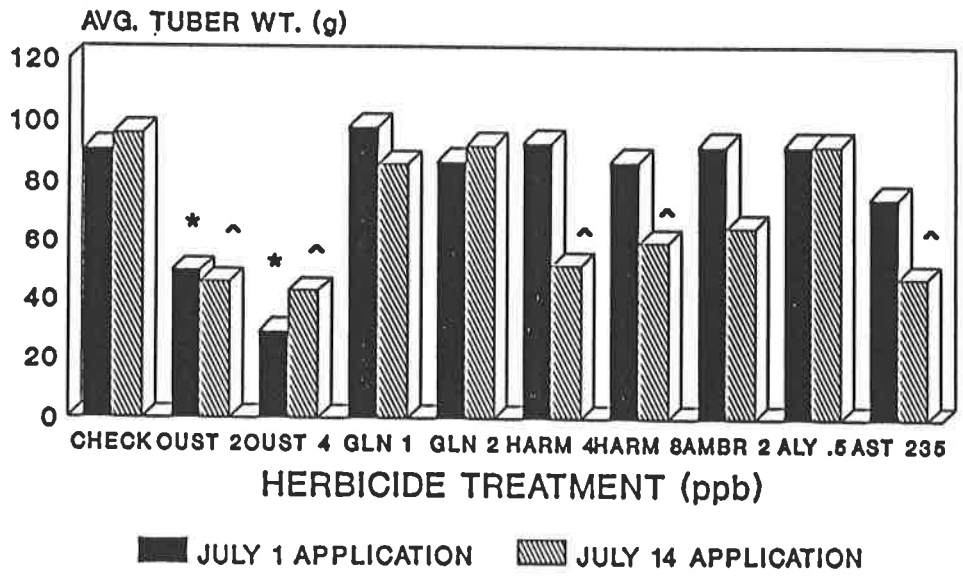
AUGUST 18, 1988 HARVEST

RUSSETT BURBANK AVERAGE TUBER WEIGHT



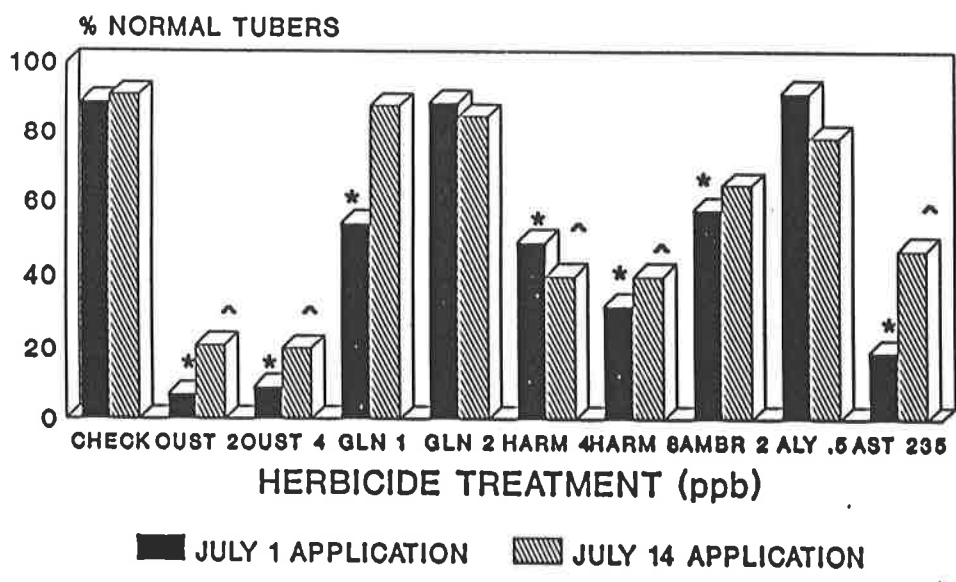
AUGUST 18, 1988 DATA

CENTENNIAL RUSSETT AVERAGE TUBER WEIGHT



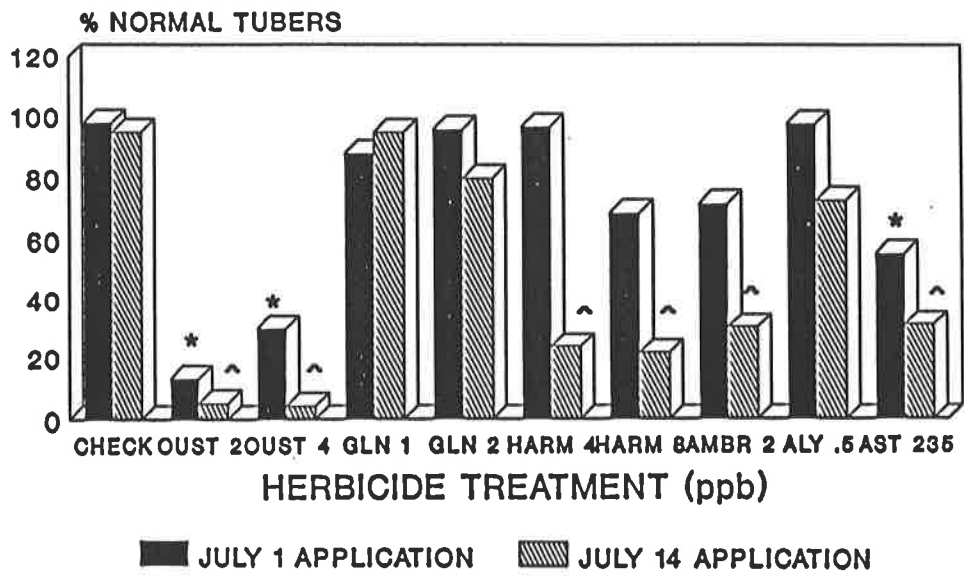
AUGUST 18, 1988 DATA

RUSSETT BURBANK PERCENT NORMAL TUBERS



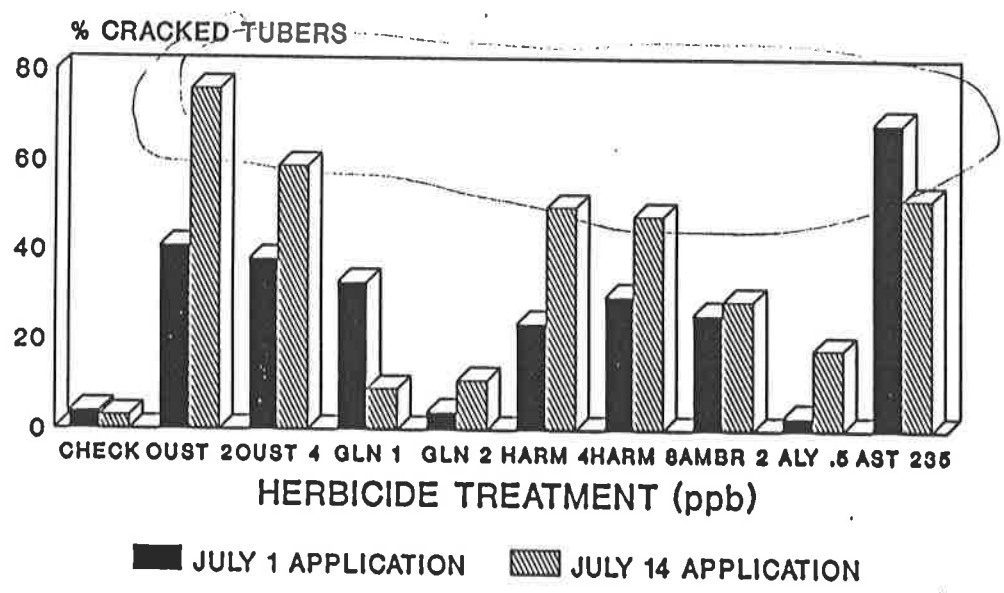
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CENTENNIAL RUSSETT PERCENT NORMAL TUBERS



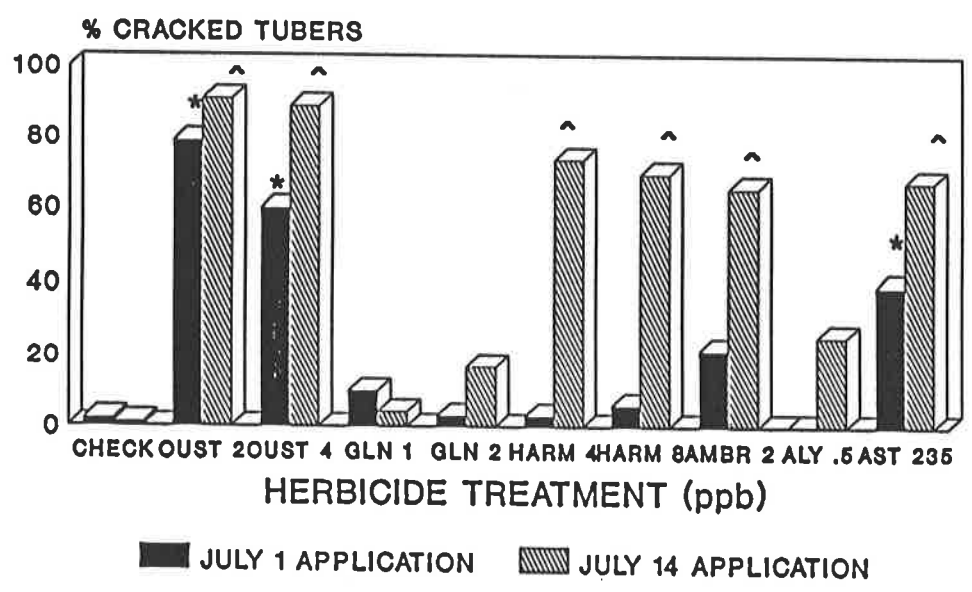
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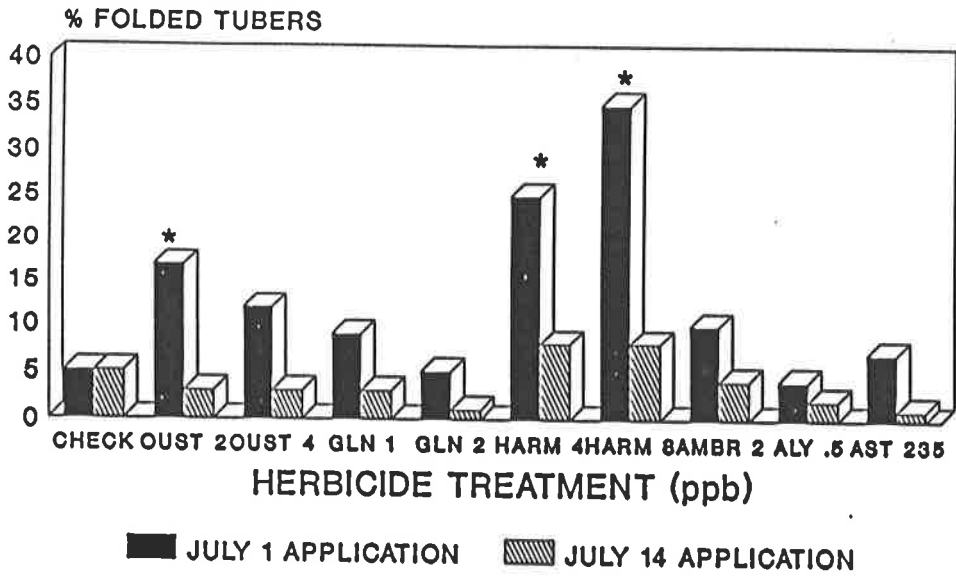
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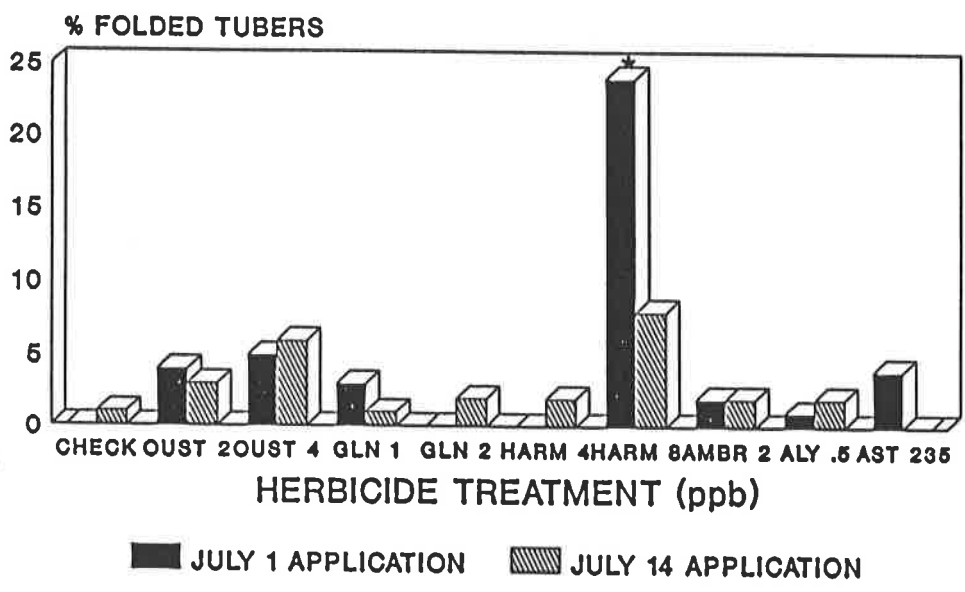
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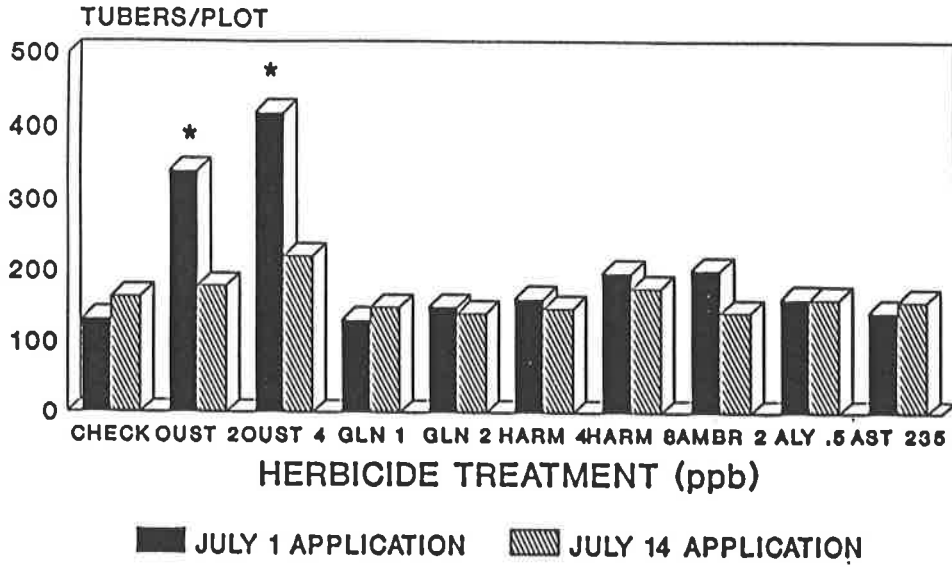
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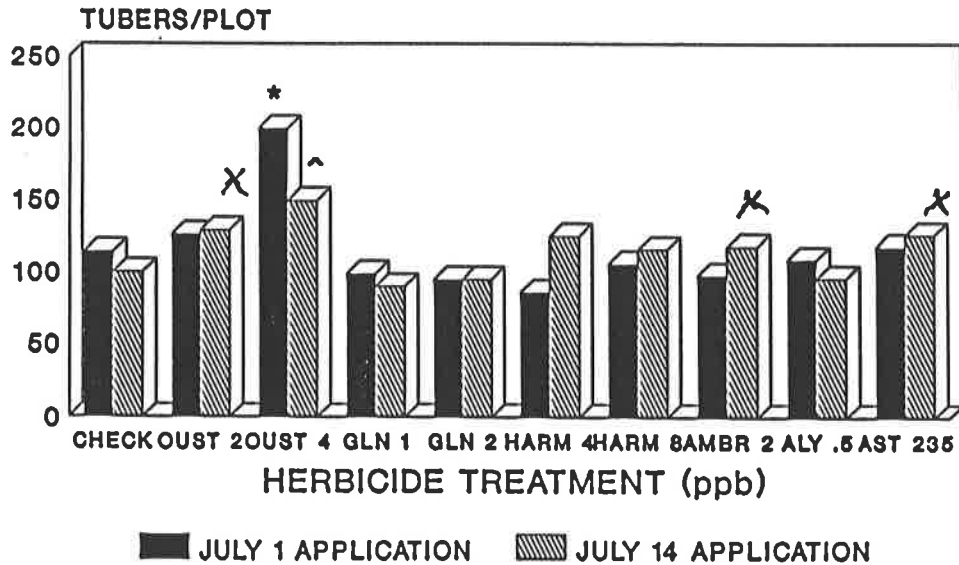
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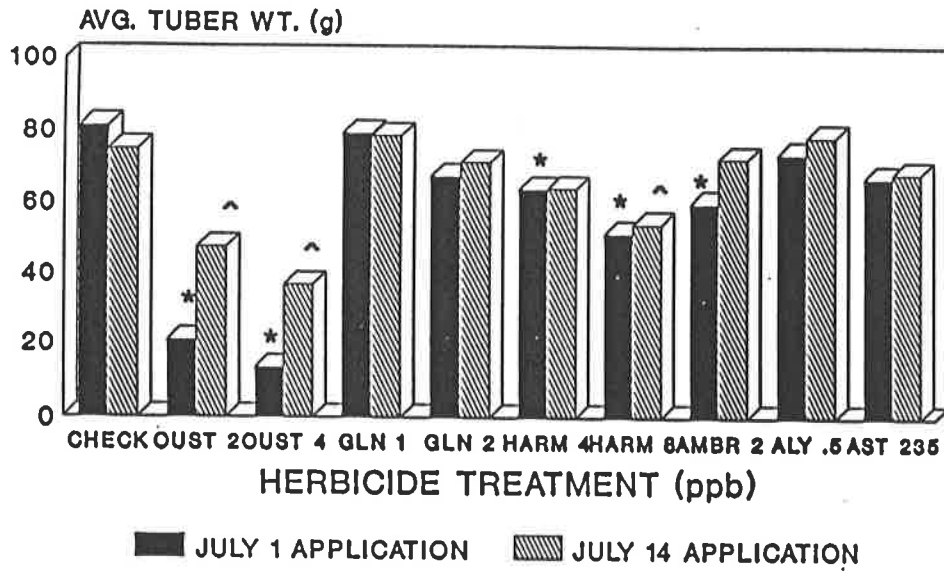
SEPTEMBER 22, 1988 HARVEST

CENTENNIAL RUSSETT FINAL HARVEST TUBER COUNT



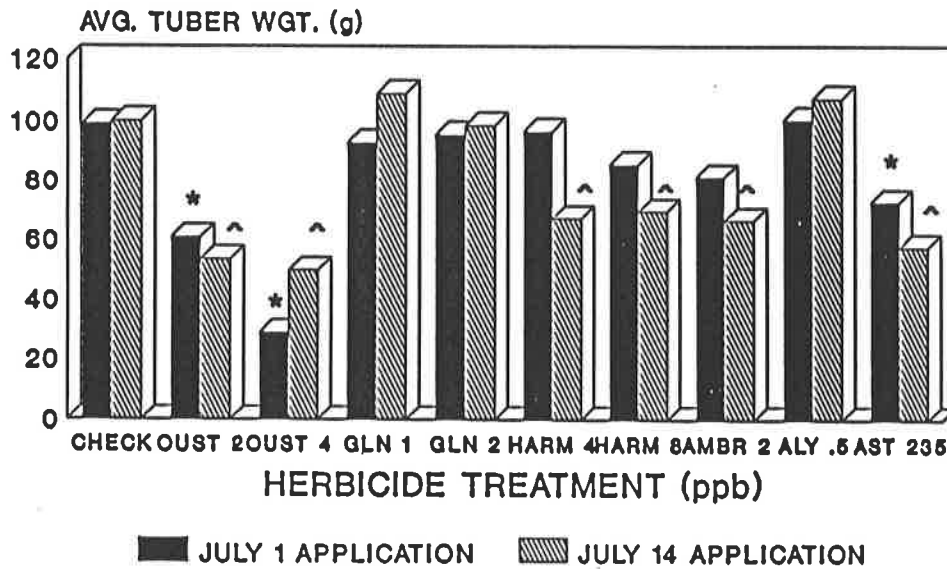
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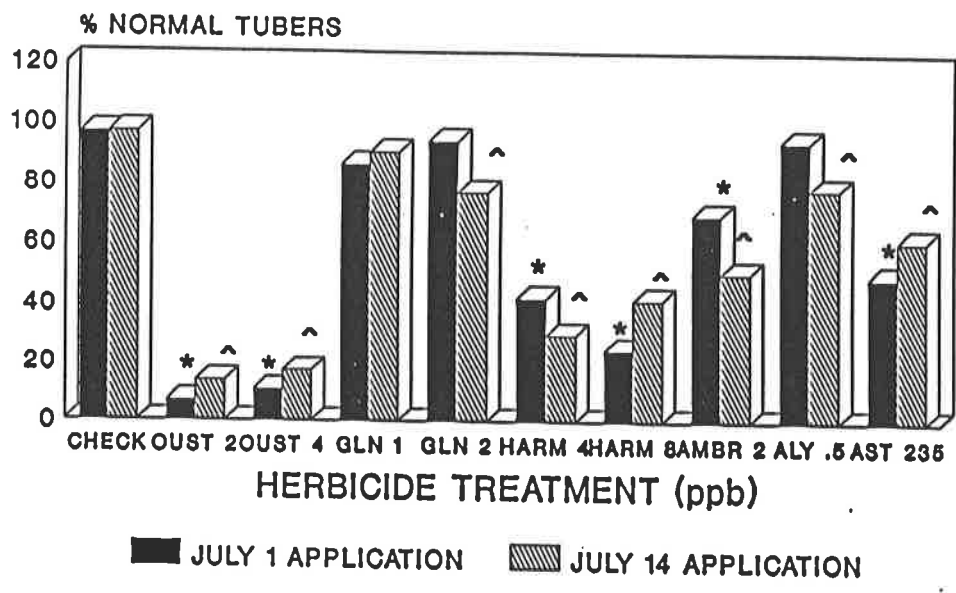
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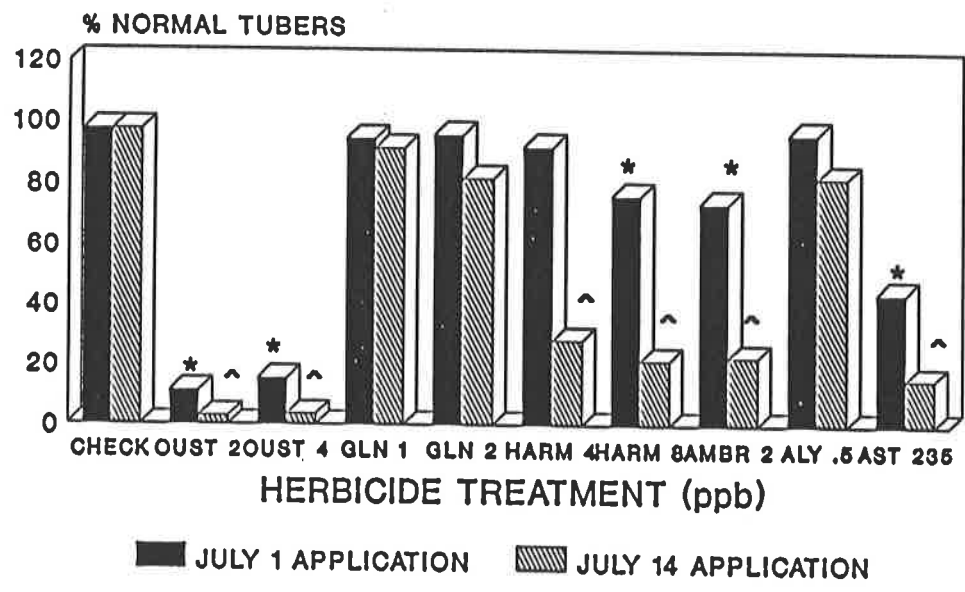
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RUSSETT BURBANK PERCENT NORMAL TUBERS HARVESTED



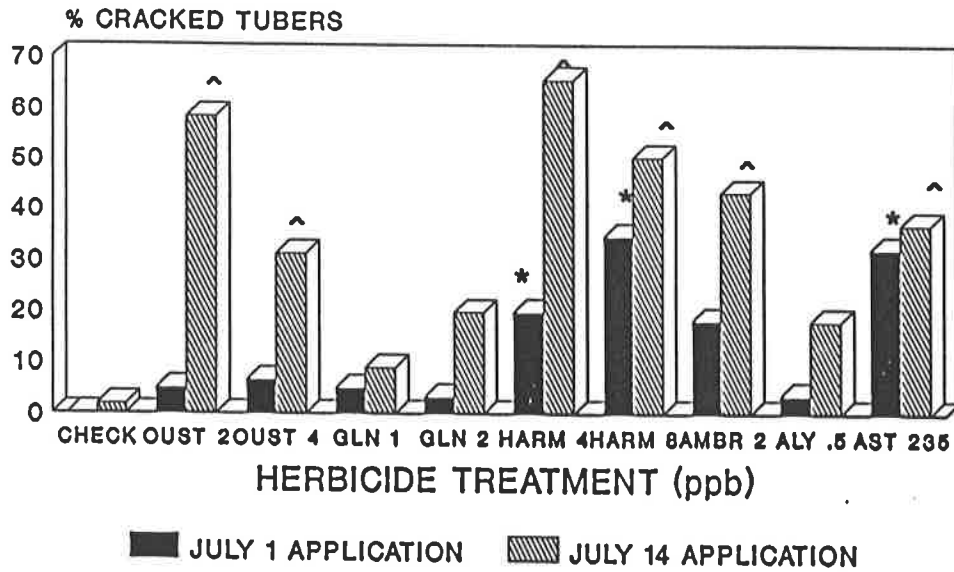
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CENTENNIAL RUSSETT PERCENT NORMAL TUBERS HARVESTED



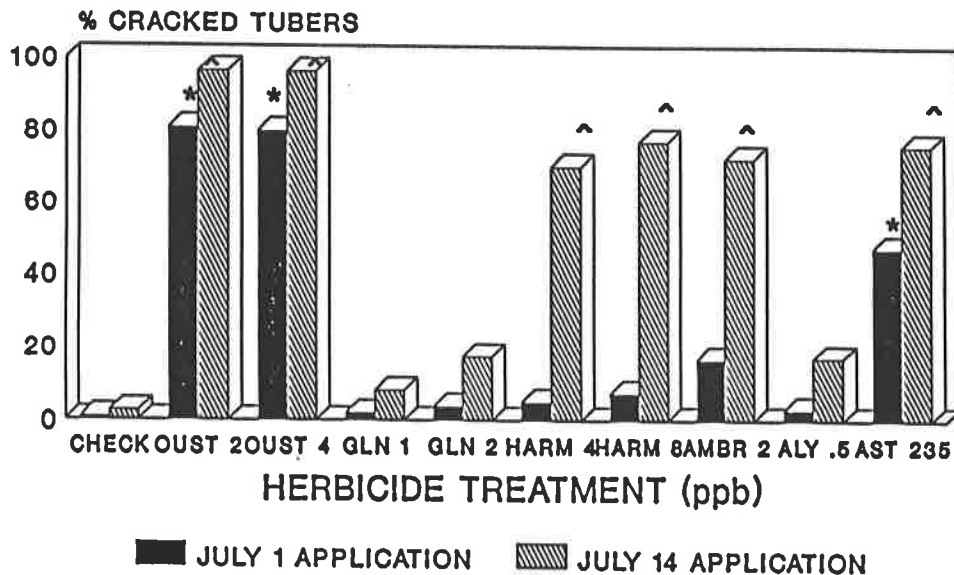
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RUSSETT BURBANK PERCENT CRACKED AT FINAL HARVEST



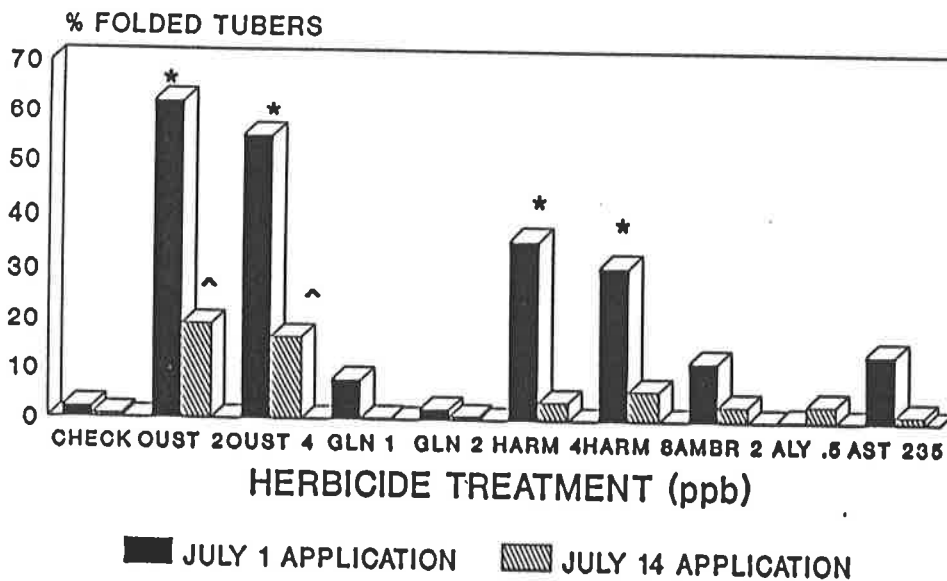
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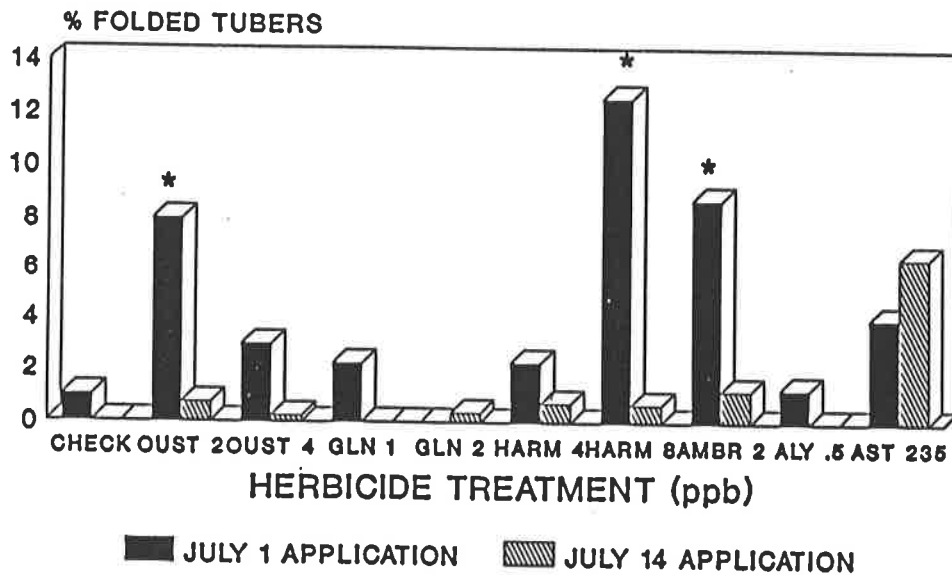
SEPTEMBER 22, 1988 HARVEST

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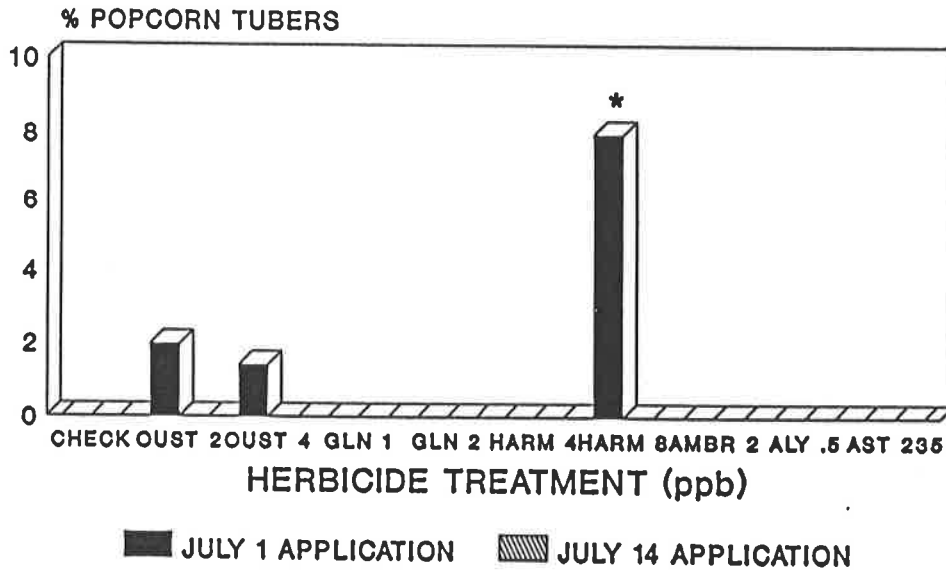
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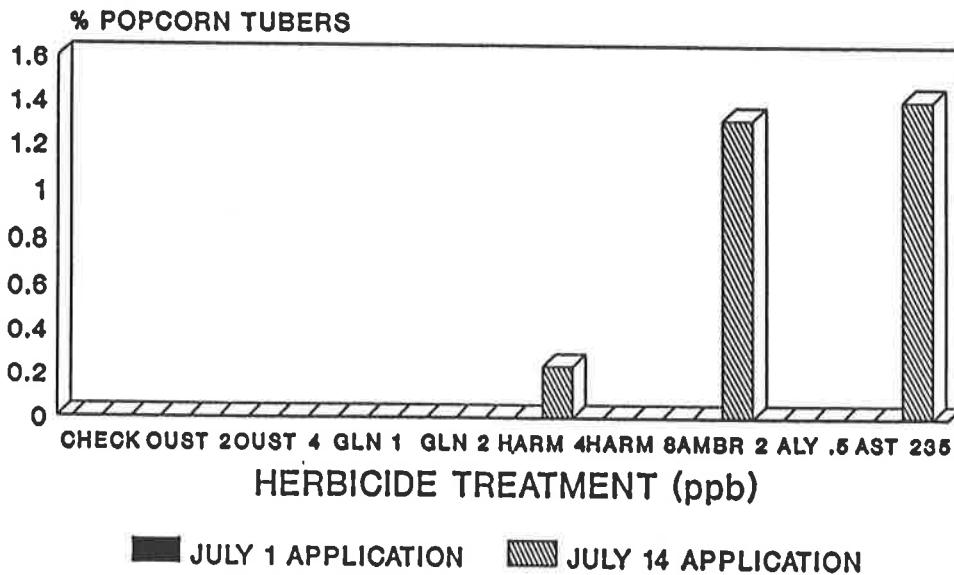
SEPTEMBER 22, 1988 HARVEST

RUSSETT BURBANK PERCENT POPCORN AT FINAL HARVEST



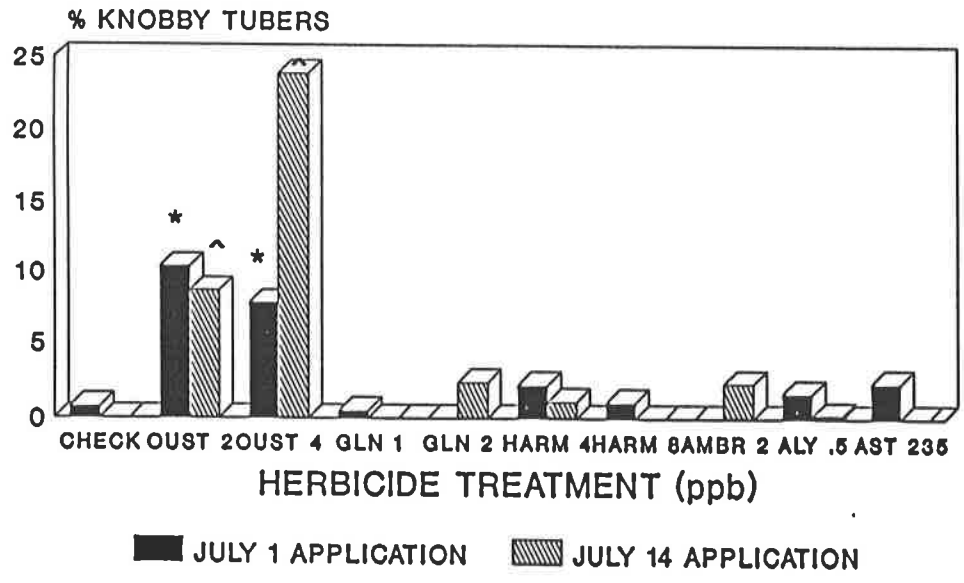
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CENTENNIAL RUSSETT PERCENT POPCORN AT FINAL HARVEST



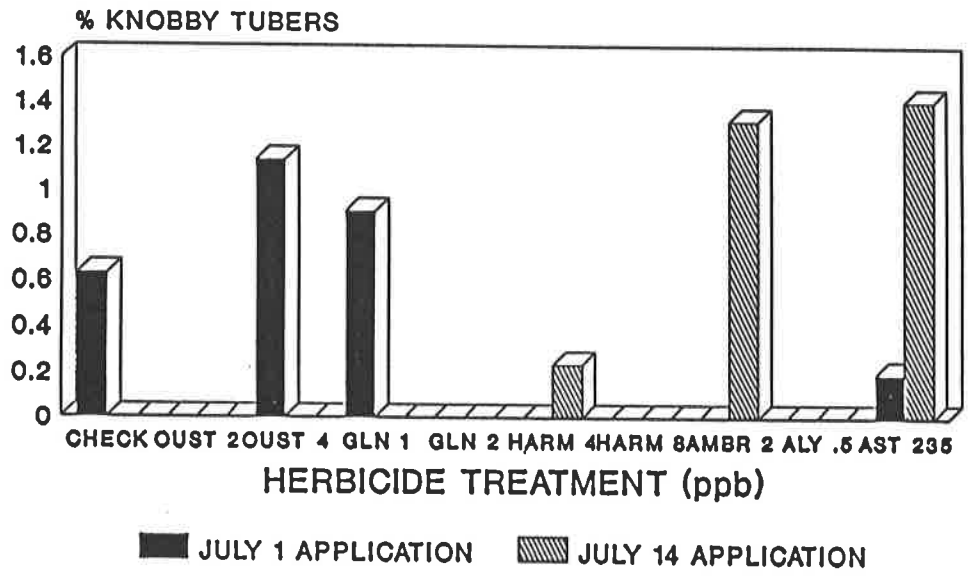
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RUSSETT BURBANK PERCENT KNOBBY AT FINAL HARVEST



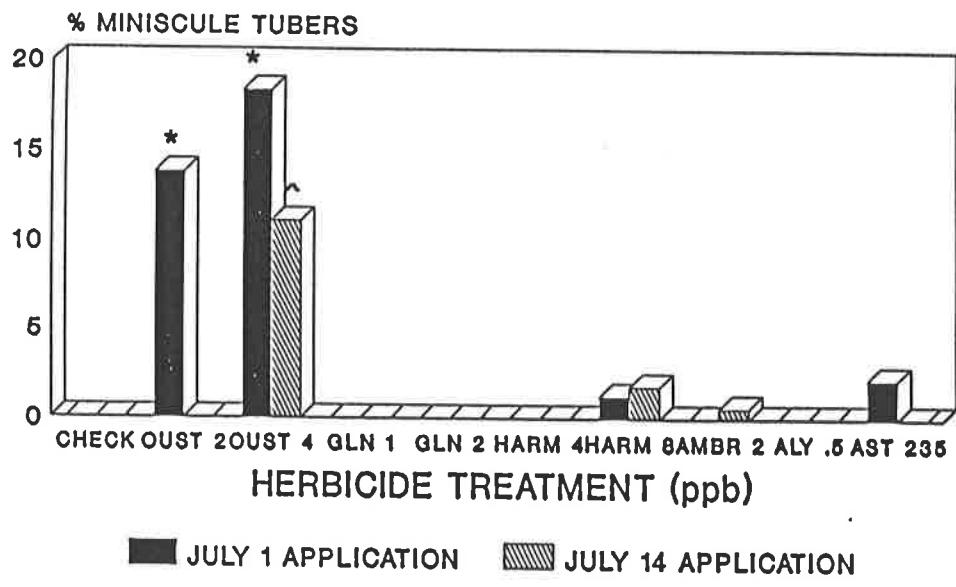
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CENTENNIAL RUSSETT PERCENT KNOBBY AT FINAL HARVEST



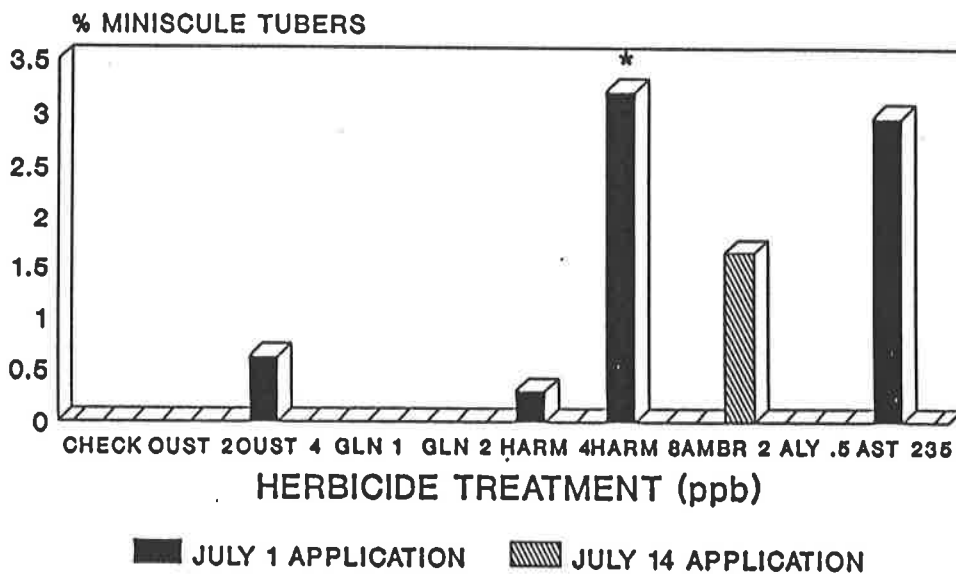
SEPTEMBER 22, 1988

RUSSETT BURBANK PERCENT MINISCULE AT FINAL HARVEST



SEPTEMBER 22, 1988 HARVEST

CENTENNIAL RUSSETT PERCENT MINISCULE AT FINAL HARVEST



SEPTEMBER 22, 1988 HARVEST

Colorado State University
 HERBICIDE INJURY TO POTATOES
 Conducted at SAN LUIS VALLEY by Weed Science

TREATMENT NAME	AI #/gal	FD	RATE	UNIT	GROW A STGE C	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB	RUSSEBURB
						KG TUBERS / PLOT	NO. TUBERS / PLOT	GRAMS / TUBER	NORMAL TUBERS %	CRACKED TUBERS %	FOLDED TUBERS %	POPCORN TUBERS %	KNOBBY TUBERS %	MINISCOL TUBERS %
CHECK					JULY 1	10.677a-d	132d	81.29a	98.19a	0.14h	1.12f	-0.08b	0.64c	0.00b
CUST	75	DF	.071	oz/A	JULY 1	6.883fg	341b	20.79i	6.66j	4.91gh	62.17a	1.97b	10.45b	13.85a
CUST	75	DF	.141	oz/A	JULY 1	5.550g	419a	13.17i	10.571j	6.52gh	55.28a	1.41b	7.84b	18.39a
GLEAN	75	DF	.035	oz/A	JULY 1	10.433a-e	132d	79.58ab	86.57ab	4.91gh	8.03def	0.00b	0.49c	0.00b
GLEAN	75	DF	.071	oz/A	JULY 1	10.233a-e	151cd	67.64a-e	94.57a	3.25gh	2.18f	0.00b	0.00c	0.00b
HARMONY EXTR	75	DF	.142	oz/A	JULY 1	10.467a-e	163cd	64.13b-f	42.23fg	19.84efg	35.71b	0.00b	2.21c	0.00b
HARMONY EXTR	75	DF	.282	oz/A	JULY 1	10.350a-e	200cd	51.91fg	24.19hi	34.61c-f	30.87bc	8.01a	1.07c	1.25b
AMBER	75	DF	.071	oz/A	JULY 1	12.300ab	204cd	60.37d-g	69.79cd	18.19fgh	12.01def	0.00b	0.00c	0.00b
ALLY	60	DF	.018	oz/A	JULY 1	12.150abc	164cd	74.06a-d	94.66a	3.43gh	0.25f	0.00b	1.66c	0.00b
ASSERT	2.5	L	.47	lb/A	JULY 1	9.800b-e	145cd	67.47a-e	49.47ef	32.14def	13.85def	0.00b	2.35c	2.20b
CHECK					JULY 14	12.300ab	164cd	74.94a-d	97.34a	1.84gh	0.82f	0.00b	0.00c	0.00b
CUST	75	DF	.071	oz/A	JULY 14	8.567def	179cd	47.79gh	13.64ij	58.44ab	19.20cd	0.00b	8.72b	0.00b
CUST	75	DF	.141	oz/A	JULY 14	8.100ef	222c	37.01h	17.02hij	31.21def	16.69de	0.00b	23.92a	11.16a
GLEAN	75	DF	.035	oz/A	JULY 14	11.900abc	150cd	78.85abc	90.79ab	8.94gh	0.27f	0.00b	0.00c	0.00b
GLEAN	75	DF	.071	oz/A	JULY 14	10.200a-e	142d	71.49a-d	77.13bc	19.79efg	0.71f	0.00b	2.37c	0.00b
HARMONY EXTR	75	DF	.142	oz/A	JULY 14	9.600cde	149cd	64.34c-f	29.38gh	65.79a	3.72ef	0.00b	1.10c	0.00b
HARMONY EXTR	75	DF	.282	oz/A	JULY 14	9.717b-e	178cd	54.56efg	41.69fg	50.48abc	6.05def	0.00b	0.00c	1.78b
AMBER	75	DF	.071	oz/A	JULY 14	10.467a-e	144cd	72.77a-d	50.58ef	43.39bcd	3.15ef	0.00b	2.32c	0.56b
ALLY	60	DF	.018	oz/A	JULY 14	12.783a	163cd	78.75abc	78.42bc	17.98fgh	3.39ef	0.00b	0.21c	0.00b
ASSERT	2.5	L	.47	lb/A	JULY 14	10.883a-d	160cd	68.70a-e	61.50de	37.01cde	1.49f	0.00b	0.00c	0.00b