

SWEETPOTATO RESEARCH PROGRESS REPORT

For the 2004 season

Scott Stoddard
UC Cooperative Extension
2145 Wardrobe Ave
Merced, CA 95340
(209) 385-7403



CONTENTS

Collaborators Trial	2
Scythe + Roundup Herbicide Trial	8
Stem Rot Fungicide Dip Trial	11
Devrinol – Dacthal Herbicide Trial	13
Beauregard Clean Seed Project	15

A pdf version of this report is available on UCCE Merced website at:
<http://cemerced.ucdavis.edu>

Mention of trade names is for grower recognition. No discrimination is intended nor endorsement by UCCE implied.

Collaborators Trial 2004

OBJECTIVE: Evaluate different varieties of sweetpotatoes.

Location: Gallo Bear Creek Ranch. South of Hwy 140 & Howard Rds. Hilmar sand, slightly saline-alkali. Blain Yagi, cooperator.

Varieties:

1. CA Beauregard GI from Dave Sousa.
2. B63 cuttings from bed G2
3. B14 G3
4. B14 G2
5. W375 hand selected no veins
6. MS 152
7. 97-113
8. B14 plants from Louisiana
9. L-99-35 (2 plots only)
10. L-01-29 (1 plot only)
11. NC-98-608 (hand transplanted 1 week later on May 26)
12. B63 cuttings from LA
13. B14 cuttings from NC G1 hand planted on May 26 reps 1 - 3

Plot layout.

50 plants per plot on 9" spacing
80" beds, drip irrigated

Bedded: March 10, 2004

Bed evaluation: April 12, 2004

Transplanted: May 18, 2004 with new 2-row finger planter

Hand transplant: May 26.

Field evaluation: June 14, 2004. plots 8, 9, 11, 12, 13
very poor stands. Var 6 small plants. Second field
evaluation August 12.

Harvest: October 4, 2004. Used 2-row digger and picked
off the ground. Field graded.



RESULTS

Plant bed production is shown in Table 1.

Yields are shown in Table 2. Due to stand problems,
statistical analysis performed only on lines 1 – 7.

California Beauregard yielded significant better than all other lines, in part because of strong
transplants and a good stand. Total yield with size breakdown is also shown in Figure 1.

Yields as affected by age of seed for Beauregard are shown in Fig 2. Yields declined and culls
increased substantially between G1 and G3 seed.

Root appearance and taste test results are shown in Tables 3 and 4. NC 98-608 received the
highest overall rating for both appearance and taste.

Table 1.

SCORE SHEET FOR EVALUATION OF SWEETPOTATO SPROUT PRODUCTION

Date bedded: 3/10/04 Location: Yagi Bros Farms, Inc.
 Date Evaluated: 4/12/04 Type of bed: hot bed
 Evaluated by: S. Stoddard

Selection	Roots presprouted yes/no	Plant Production 1-5 (1)	Uniformity of Emergence 1-5 (2)	Earliness 1-3 (3)	Root Conditions 1-5 (4)	Remarks (5)
1. Cal. Bearegard	G1 plants taken from growers hot bed					
2. B63 G2 plants	yes	3	2	2		2 - 8"
3. B14 G3 plants	yes	2	2	2		2 - 8"
4. B14 G2 plants	yes	4	3	2		6 - 8"
5. W375	yes	4	4	3		10 - 12"
6. MS152	yes	3	2	2		2 - 8"
7. 97-113	yes	4	4	2		6 - 8", nice straight
8. B14 cuttings from LA						
9. L-99-35 G0 plants						
10. L-01-29 G0 plants	Selections 8 - 13 arrived as plant cuttings, not bedded					
11. NC-98-608 cuttings						
12. B63 cuttings from LA						
13. B14 cuttings from NC						

- (1) Plant production rated from 1 – 5 based on observation during pulling season. A rating of 1 indicates low plant production, while 5 indicates good plant production.
- (2) Uniformity of emergence rated from 1 - 5. One (1) indicates poor uniformity while 5 indicates the highest degree of uniformity of emergence.
- (3) Earliness of plant production is rated from 1 – 3. One (1) indicated late emergence while 3 indicates early production.
- (4) Root conditions six weeks after first pulling, rated 1 – 5. One (1) indicates complete rotting, while 5 indicates perfectly sound conditions.
Mostly not applicable as beds were disced shortly after transplanting.
- (5) Notes on size of root, decay in beds, etc.

Table 2.

**NATIONAL SWEETPOTATO COLLABORATORS SUMMARY OF DATA
2004**

STATE AND LOCATION REPORTING: Livingston, CA
 DATE TRANSPLANTED: May 18. DATE HARVESTED: 10/4/04. No. GROWING DAYS: 139
 DISTANCE BETWEEN ROWS (in): 40. DISTANCE IN ROW (in): 9
 PLOT SIZE: NO. OF ROWS: 1 LENGTH (ft): 40 NO. OF REPS: 4
 IRRIGATION: drip irrigation. 1.5 to 2 inches per week during summer.
 FERTILIZER: with the drip system. About 125-75-125 NPK

SELECTION	40 lb boxes/A			MKT YIELD	1000 lb BINS/A	% US #1'S	
	US #1'S	CANNERS	JUMBOS			US #1'S	CULLS
1 CA Beaugard G1	771.1	206.7	269.3 A	1247.0	49.9	63%	3%
2 B63 from bed G2	558.7	156.8	176.7 AB	892.2	35.7	62%	10%
3 B14 G3	370.4	154.3	84.6 BC	609.3	24.4	61%	19%
4 B14 G2	485.8	154.6	93.3 BC	733.8	29.4	66%	8%
5 W375	345.2	233.7	27.1 C	606.0	24.2	57%	2%
6 MS 152	298.4	134.0	74.9 BC	507.2	20.3	61%	10%
7 97-113	443.5	196.7	58.0 BC	698.3	27.9	64%	1%
8* B14 cuttings LSU	252.0	150.7	73.7	476.4	19.1	52%	5%
9* L-99-35	369.0	149.0	94.2	612.2	24.5	60%	8%
10* L-01-29	259.7	417.3	0.0	676.9	27.1	38%	0%
11* NC-98-608	224.5	254.7	64.4	543.6	21.7	42%	0%
12* B63 G1 LSU	293.8	41.1	169.5	504.4	20.2	60%	14%
13* B94-14 G2 NCSU	483.4	212.7	86.5	782.6	31.3	61%	3%
Average	467.6	176.7	112.0	756.3	30.3	62%	8%
LSD 0.05	168.9	NS	use letters	279.8	11.2	NS	NS
CV, %	24.3	30	41.8	24.9		13.1	81.5

US #1's Roots 2 to 3.5 inches in diameter, length 3 to 9 inches, well shaped and free of defects.
Canners Roots 1 to 2 in diameter, 2 to 7 inches in length.
Jumbos Roots that exceed the diameter and length requirements of above grades, but are marketable quality.
Mkt Yield Total marketable yield is the sum of the above three categories. Bin weight = 1000 lbs.
% US #1's Weight of US #1's divided by total marketable yield.
% Culls Roots greater than 1" in diameter that are so misshapen or unattractive as to be unmarketable.
 * Selections 8 - 13 arrived as cuttings. Due to poor plant stands, none of these are included in the statistical analysis.
 LSD 0.05 Least significant difference. Means separated by less than this amount are not significantly different. Cull and jumbo LSD performed on transformed data to assure homogeneity of variances.

2004 Collaborators Trial

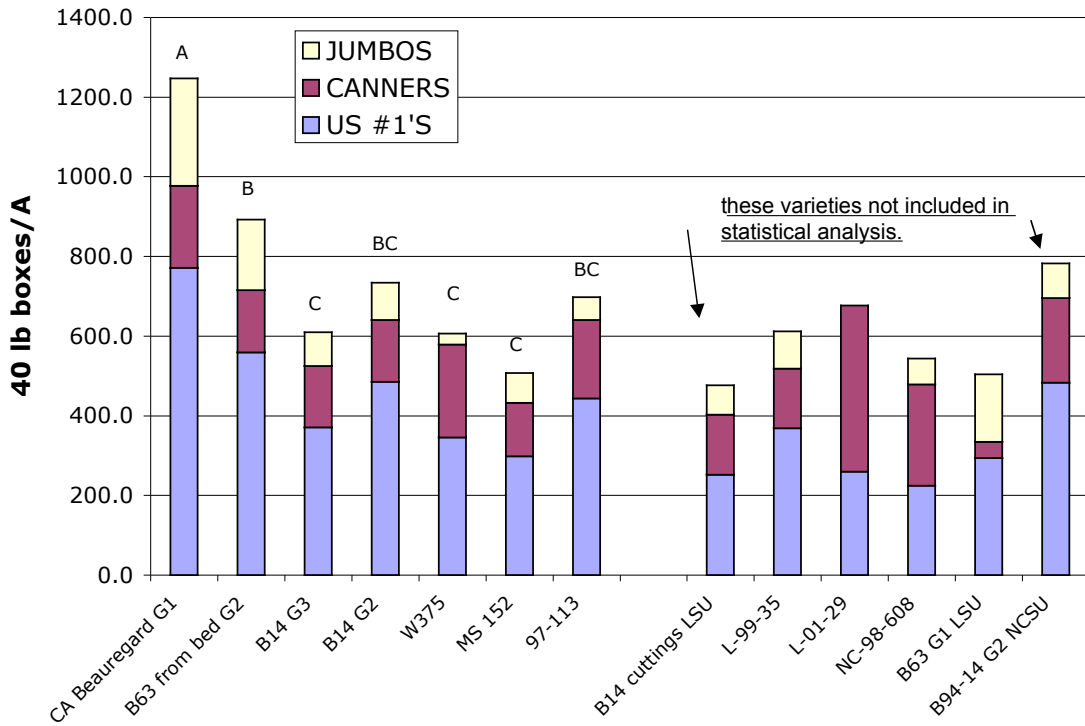


Figure 1. Collaborator Trial yield results. Height of bar = total marketable yield.

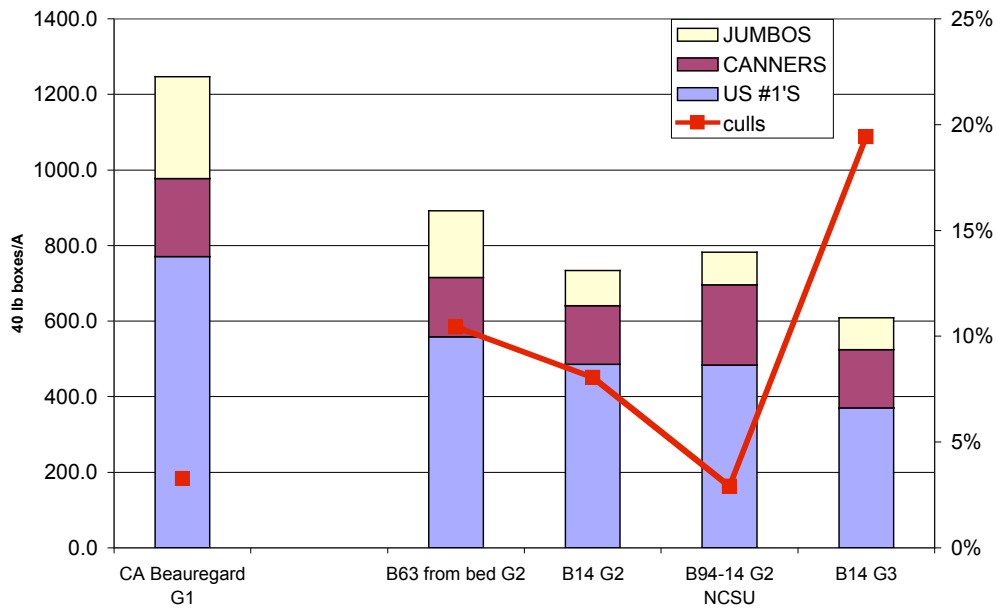


Figure 2. Yields for Beauregard clones of different ages. As the seed source ages (G1 to G3), yields decline and culls from russet crack increase.

Table 3. Root evaluations.

Sweetpotato Collaborators Trial -- 2004
Merced County

This year's sweetpotato evaluation was with Blain Yagi, near Livingston, CA. Soil type was Hilmar sand, slightly saline-alkali.

Varieties 1 - 7 were from plant beds, 8 - 13 from cuttings from greenhouse or shipped.

W375 seed is old and needs replacement. Russet crack showing in Beauregard G2 and G3.

No significant insect pressure. Season about 2 weeks early. Field weak and did not yield well.

Rep	Var	Variety Name	Skin Color	Skin Text	Flesh color	Eyes	Lents	Shape	Shape Uniformity	Overall App	Comments
1	1	CA Beauregard	Copper	7	3	9	7	5, 8, 2	7	7	some chimera, chunky
2			copper	9	4	9	7	3, 5	7	7	
			<i>all green lvs, entire to shouldered. Vine low growing.</i>								
1	2	B63 (G2)	copper	5	3	9	7	2,5	7	7	some rough skin, cracking, YCR
2			copper	5	2.5	9	7	3,4	7	6	
1	3	B14 (G3)	copper	3	3	7	5	2,5	5	5	rough skin, YCR, RC
2			copper	5	3	9	7	3, 8	5	6	
1	4	B14 (G2)	copper	7	3	9	7	2,5	7	7	YCR
2			copper	8	3	9	7	3, 5, 6	5	7	
1	5	W375	reddish purple	7	2	3	9	3,5	7	7	veins, some YCR, lt orange flesh
2			burgandy	7	3	5	7	2,8	8	6	
			<i>all green lvs, all shouldered, slightly cupped. More upright and green than Bgard. Thick stems and petioles.</i>								
1	6	MS I52	tan	5	4	5	7	3,5	5	6	cracks, eyes, lents turn dark
2			tan	7	4	5	5	3,8	7	7	
			<i>all green lvs, mostly entire some shouldered. Some crinkle. Very similar to Bgard in growth habit.</i>								
1	7	97-113	copper	7	3	5	9	3,4	5	5	YCR, lt orange, long
2			copper	8	3	5	7	3,4	7	6	
			<i>all green lvs, entire to deeply shouldered/lobed. Slightly less green than Bgard. Small vine. Some yellowing (stem rot?). Blooming</i>								
1	8	B14 from LSU	copper	7	3	9	9	2,5	7	7	YCR
2				9				3,8	8	7	
			<i>"tired" looking Beauregard</i>								
1	9	L-99-35	Rose	7	4	7	7	5,6	7	7	chunky. Some splits, lumps, veins
2			rose copper	8	4.5	7	7	2,5	8	8	
			<i>dark green mature lvs, purple new growth. Appear crinkled. All shouldered. Small bunch type of growth. Some foliar necrosis.</i>								
1	10	L-01-29	purple	5	0	5	5	2,5	7	7	some pimpling, white interior
2			purple	4	0	7	3	2,6	7	8	
			<i>lg lvs all shouldered, med green. Lg vine. Grows upright. Veins prominent in lvs.</i>								
1	11	NC-98-608	rose copper	9	3	7	5	6,2	7	8	chunky, some pimpling, slight YCR
2			rose copper	9	3	7	5	2,8	8	9	
			<i>lg lvs all green entire to shouldered, sl crinkle. More upright than Bgard. Petioles very long</i>								
1	12	B63 G1 LSU	copper	7	4	9	7	5,2	5	5	dark eyes, lents
2				6	4	7	5	5,2,6	5	6	
1	13	B94-14 G2 NCSU	copper	9	3	9	7	5,2	5	7	more rose than CA Bgard
2			rose copper	7	3	7	7	2,8	7	6	

Skin color:	Skin Texture:	Flesh Color:	Eyes:	Lenticles:
cream (Hanna)	1 = very rough	0 = white	1 = very deep	1 = very prominent
Tan	3 = moderately rough	1 = cream	3 = deep	3 = prominent
copper (Jewel)	5 = moderately smooth	2 = yellow	5 = moderate	5 = moderate
Rose (Beau)	7 = smooth	3 = orange	7 = shallow	7 = few
Purple (Garnet)	9 = very smooth	4 = deep orange	9 = very shallow	9 = none
		5 = very deep orange		

Shape:	Shape Uniformity:	Overall Appearance:	All ratings made on #1 roots.
1 = round	1 = very poor	1 = very poor	
2 = round-elliptical	3 = poor	3 = poor	
3 = elliptic	5 = moderate	5 = moderate	
4 = long elliptic	7 = good	7 = good	
5 = ovoid	9 = excellent	9 = excellent	
6 = blocky			
7 = irregular			
8 = asymmetric			

Table 4. Sweetpotato taste test results, 2004.

	Variety	flesh color	texture	moisture	Flavor	total	
AVERAGE	1Beauregard	8.6	6.1	6.3	5.3	26.3	C
	6MS 152	7.0	6.4	6.6	6.0	26.0	C
	797-113	6.9	8.0	7.9	7.3	30.0	BC
	9L-99-35	9.6	7.7	8.1	7.0	32.4	AB
	11NC-98-608	8.4	8.9	8.7	9.1	35.1	A
	LSD 0.05	1.7	1.7	1.3	1.6	4.8	

All ratings made on 0 – 10 scale, where 0 = completely unacceptable and 10 = very good.

Taste testing done on baked sweetpotatoes.

Scythe herbicide on sweetpotatoes 2004

OBJECTIVE: Evaluate efficacy of Scythe and Scythe + Roundup tank mixes for control of weeds under the drip tape in sweetpotatoes.

Location: Field located north of 1st Ave between Van Clief and Lassen near Stevinson. NW corner behind Foster Farms chicken house. Nathan Mininger, cooperator.

Treatments:

1. UTC
2. 3% Scythe (Low concentration) (120 ml/4 L, or 3 gals in 100 gallons)
3. 5% Scythe (medium conc.)
4. 7% Scythe (high conc.)
5. 3% Scythe + 0.4% Roundup Ultra Max
6. 3% Scythe + 0.8% Roundup Ultra Max

Directed spray 12" band to middle of bed directly on top of drip tape.

160 gpa equivalent . Actually applied was 1 gallon on 0.04 acres (= 25 gallons/A)

30 psi using 8004 nozzle.

Crop: Garnets just starting to run, about 6 weeks post transplant.

Plot Layout:

Plots 1 bed wide by 60 ft long (400 ft² per plot)

Treatments applied June 18, 2004, about 6 weeks after transplanting.

Weed control.

Initial weed evaluation taken day of application. Field had been cultivated once. Weeds were resprouting. Mostly crabgrass. Some pigweed, mallow, purslane, puncture vine, nutsedge, and Bermuda grass.

Evaluations made June 23, 30, July 7, and July 27. Plots hand weeded to remove pigweed after the July 7 evaluation date.

Tape effects. No effects seen.

Harvest October 13, 2005. two rows per plot. Not all plots could be harvested.

RESULTS

Weed control and crop phytotoxicity ratings at different dates are shown in Table 1. Data from original evaluations were transformed using the arcsin transformation to improve statistical analysis. Zero indicates no weed or phytotoxicity pressure, while scores of 90 would indicate complete weed cover (100% weeds). Weed control was excellent for the Scythe treatments that included Roundup, and very good for the 5% and 7% rates of Scythe alone. The 3% Scythe solution provided only marginal suppression of the grass and broadleaf weeds in this field. Figure 1 shows examples of how the plots looked late in the season (broadleaf weeds were hand pulled by this time).

No damage was observed on the drip tape. Some slight injury on some vines in the treatments with Roundup was observed as a result of drift, but the plants made a complete recovery.

Yield results are shown in Table 2. There was a slight trend for increased yields as weed control increased, however, due to missing plots and high variability, no significant differences were observed.

Roundup and Scythe are registered for in-season use with sweetpotatoes. As a banded spray in this trial, the treatments with the addition of Roundup provided excellent weed control throughout the season (no additional mechanical cultivation was performed in this trial). Using in a band over the top of the drip tape should be an effective and economical way to control many weeds. Further research is needed to determine best timings and rates of Roundup for sweetpotatoes.

Table 1. Scythe + Roundup herbicide trial on Garnet sweetpotatoes, Merced 2004.
Degree of weed pressure or phytotoxicity to crop (0 = nothing, 90 = extremely bad).

plot treatment	18-Jun		23-Jun nut-				30-Jun nut-				7-Jul nut-				27-Jul nut-		
	BL	Grass	BL	Grass	sedge	Phytot	BL	Grass	sedge	Phytot	BL	Grass	sedge	Phytot	BL	Grass	sedge
1 UTC	24.5	29.4	27.7	39.2	15.9	0.0	29.4	42.1	15.9	0.0	30.8	44.9	17.9	0.0	20.5	52.6	26.2
2 3% Scythe	20.5	22.5	4.6	26.2	13.8	0.0	13.8	27.9	13.8	0.0	15.9	29.4	13.8	0.0	4.6	33.1	15.9
3 5% Scythe	18.4	18.4	9.2	6.6	4.6	0.0	13.8	11.3	4.6	0.0	13.8	11.3	9.2	0.0	9.2	12.9	9.2
4 7% Scythe	25.8	22.5	4.6	4.6	0.0	0.0	6.6	4.6	0.0	0.0	6.6	9.2	4.6	0.0	6.6	11.3	9.2
5 3% Scythe + 0.4% Roundup	20.5	25.7	0.0	9.2	13.8	4.6	0.0	13.8	4.6	7.8	0.0	13.8	13.8	0.0	0.0	13.8	15.9
6 3% Scythe + 0.8% Roundup	20.5	24.5	0.0	4.6	4.6	24.2	4.6	4.6	9.2	19.1	9.2	4.6	9.2	0.0	0.0	4.6	9.2
LSD 0.05	NS	NS	11.8	12.1	10.8	6.6	13.7	12.7	10.4	7	14.8	13.1	NS	NS	12.3	13.5	NS
CV, %	22.9	27.1	102	53.1	81.5	90.8	79.7	48.7	86.1	104	77.4	45.8	77.2	---	120	41.8	58.2

first application made June 18.

BL = broadleaf leaves. Mainly redroot pigweed. Grass weeds mainly barnyard grass. Broadleaf weeds hand weeded after July 7.
Phytotoxicity = necrosis and foliar damage to vines.

LSD 0.05 = Least significant difference at the 95% probability level. Plot ratings were adjusted using the arcsin transformation.

CV = Coefficient of variation.

Table 2. Garnet yield for Scythe + Roundup herbicide trial, 2004.

plot treatment	#1's	Med	Jumbo	Culls	TMY
1 UTC	219.1	205.8	60.5	20.4	485.5
2 3% Scythe	271.0	147.6	71.9	18.8	490.6
3 5% Scythe	258.5	180.0	128.8	49.5	567.4
4 7% Scythe	290.2	202.6	76.3	20.3	569.1
5 3% Scythe + 0.4% Roundup	276.6	187.9	107.6	24.4	572.1
6 3% Scythe + 0.8% Roundup	310.2	212.8	104.1	38.2	627.1
LSD 0.05	NS	NS	NS	NS	NS
CV, %	25.5	17.7	39.3	43.2	22.1

LSD 0.05 = Least significant difference at the 95% probability level.

NS = not significant

CV = coefficient of variation

not all plots could be harvested, resulting in high CV's

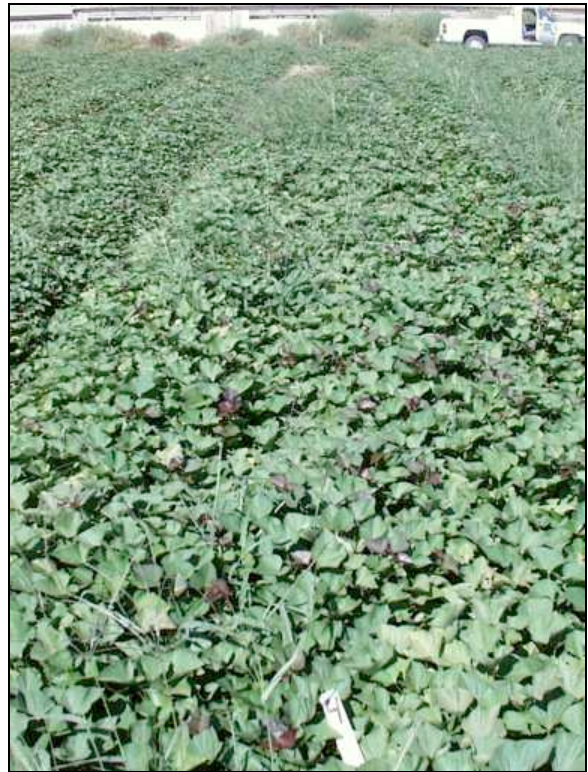
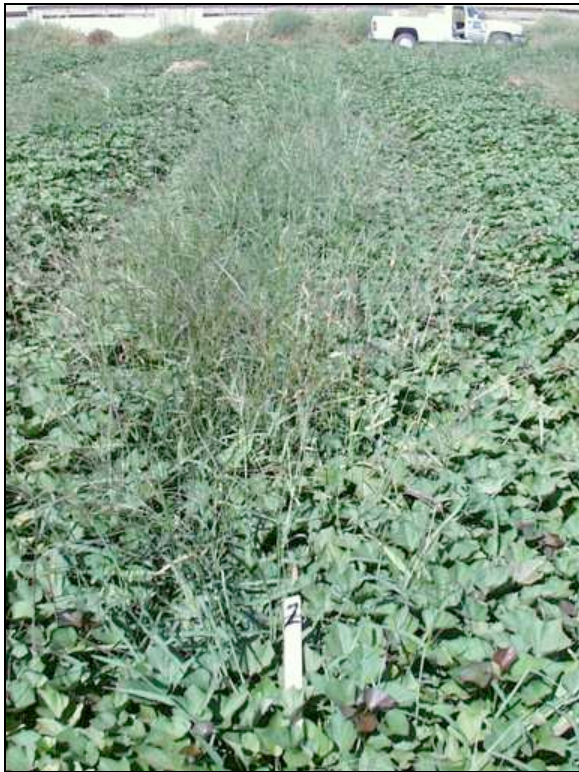


Figure 1. Comparison of late-season grass control between the untreated check (top left), 3% Scythe (bottom left), 7% Scythe (bottom right) and Roundup + 3% Scythe (top right).

Sweetpotato Fungicide Trial 2004

OBJECTIVE: Evaluate efficacy of fungicide dips for vine wilt (*Fusarium*) control in two susceptible varieties.

Location: 2 locations. Weir and hwy 140. Blaine Yagi with Yagi Bros., cooperator. Soil type: Hilmar loamy sand slightly saline-alkalai

Treatments: all treatments on pulled plants immediately before transplanting

1. UTC (water dip)
2. Benolate dip 16 oz/50 gal for 15 minutes
3. Mertect 8 fl oz/7.5 gals for 4 minutes
4. Botran 1 oz/3 gals for 4 minutes (less than label rate)
5. Topsin 16 oz/50 gal for 15 minutes
6. Quadris 1 fl oz/7.5 gals for 4 minutes
7. Chlorox 2% dip for 30 seconds

Variety: Japanese

Each treatment adjusted to 3 gallons of water.

Plot layout:

Plots 50 plants long, one row wide.

Transplanted: May 27, 2004. Treatments #2 and #5 dipped for ~30 minutes.

Evaluation: June 14, 2004. No phyto, no disease. Plants from treatment 2 look slightly smaller.

Second Location: Robin and River Rds, near Livingston. Jason Tucker cooperator. Soil type: Delhi sand.

Treatments: Same as first location. All treatments on pulled plants immediately before transplanting

Variety: Golden Sweet

Each treatment adjusted to 3 gallons of water.

Plots 50 plants long, one row wide.

Transplanted: May 28, 2004. Note difference for treatment 4 and plot layout in rep 4 as compared to Yagi location.

Evaluation: June 14, 2004. No phyto, no disease. Plants from treatment 2 look slightly smaller.

RESULTS

No disease problems were seen at either location, and no disease evaluations could be made. Yields were measured to see if there would be an effect from the treatments. Yield results are shown in Figures 1 and 2. There were no significant differences in yield from the fungicide treatments for either variety.

Fungicide Trial 2004
Japanese

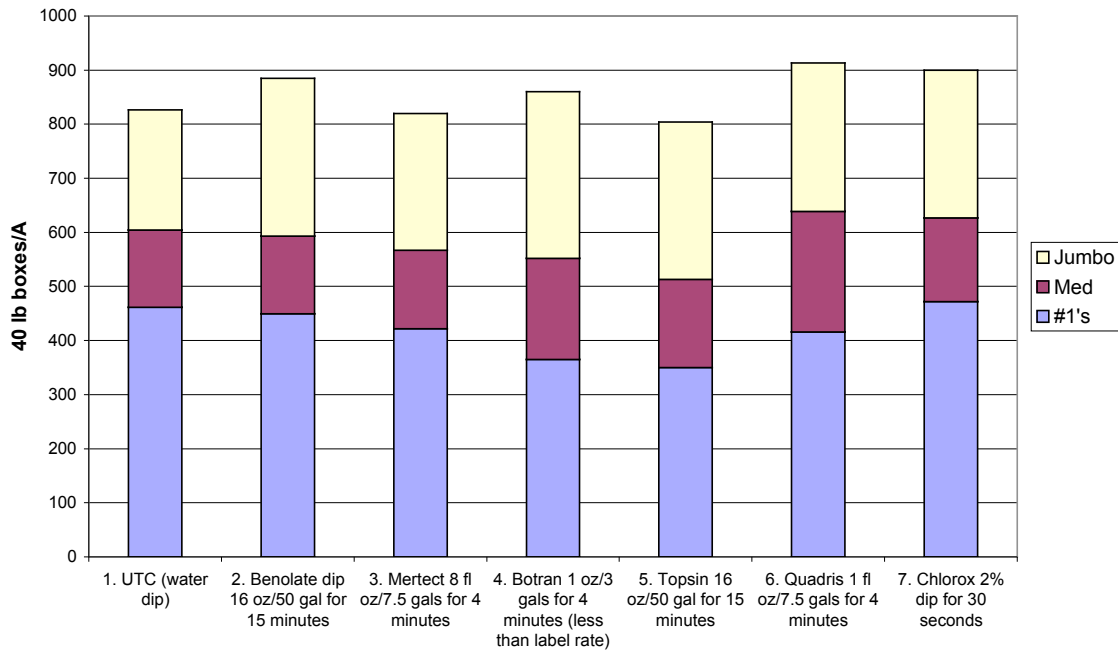


Figure 1. Yield of Japanese sweetpotatoes for location 1. No significant differences.

Fungicide Trial 2004
Golden Sweet

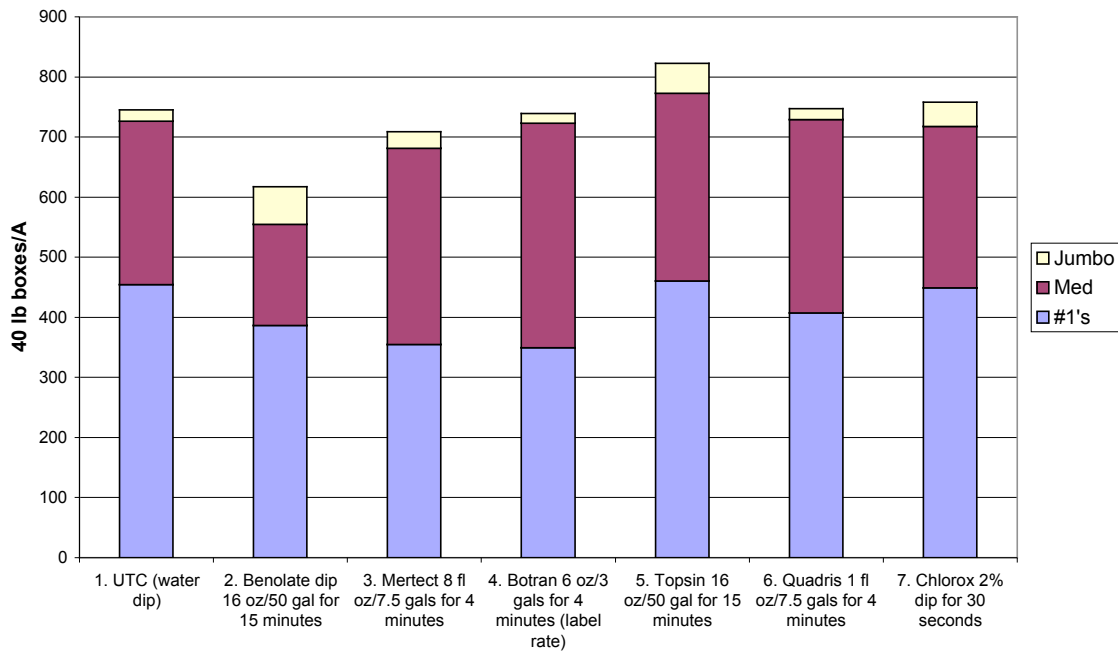


Figure 2. Yield of Golden Sweet sweetpotatoes for location 2. No significant differences.

Devrinol & Dacthal Demonstration Trial 2004

OBJECTIVE: Herbicide demonstration trial with 2 pre-plant herbicides in a commercial sweetpotato production field.

Location: SE corner of Hull and Atwater-Jordan. Dave Souza, cooperater.

Treatments:

1. UTC
2. 4 lbs Devrinol/A
3. 6 lbs Dacthal/A

plots 42 ft wide (6 beds) by 1200 ft long.
 Replicated 2X.
 Applied with orchard sprayer, 50 psi and 45 gpa.
 Immediately after application incorporated 2".

		utc					
Dacthal 2	UTC	Devrinol 2	UTC	Dacthal 1	UTC	Devrinol 1	UTC

Applied May 26, 2004

Transplanted May 27

1st rating: June 9. No weeds. No phyto.

2nd rating: June 23. More weeds apparent in a zone near leak in mainline.

3rd rating: June 30. Field mechanically cultivated.

No harvest data.

RESULTS

Weed pressure ratings for June 23 and 30 are shown in Figure 1. Plots were evaluated by subjectively assigning a weed presence rating from 0 to 10, where 0 = no weeds and 10 would indicate complete coverage by weeds. Plots were evaluated at 6 separate areas in the field. There was a significant reduction in both grassy and broadleaf weeds in the Devrinol and Dacthal treatments on the June 23 evaluation, though weed pressure at this time was low. Even

in the untreated areas, weed pressure rarely exceeded 2 on a scale from 0 to 10. No statistical analysis could be done on June 30 because the field was being cultivated at the time; however, the basic trends were the same as on the previous date.

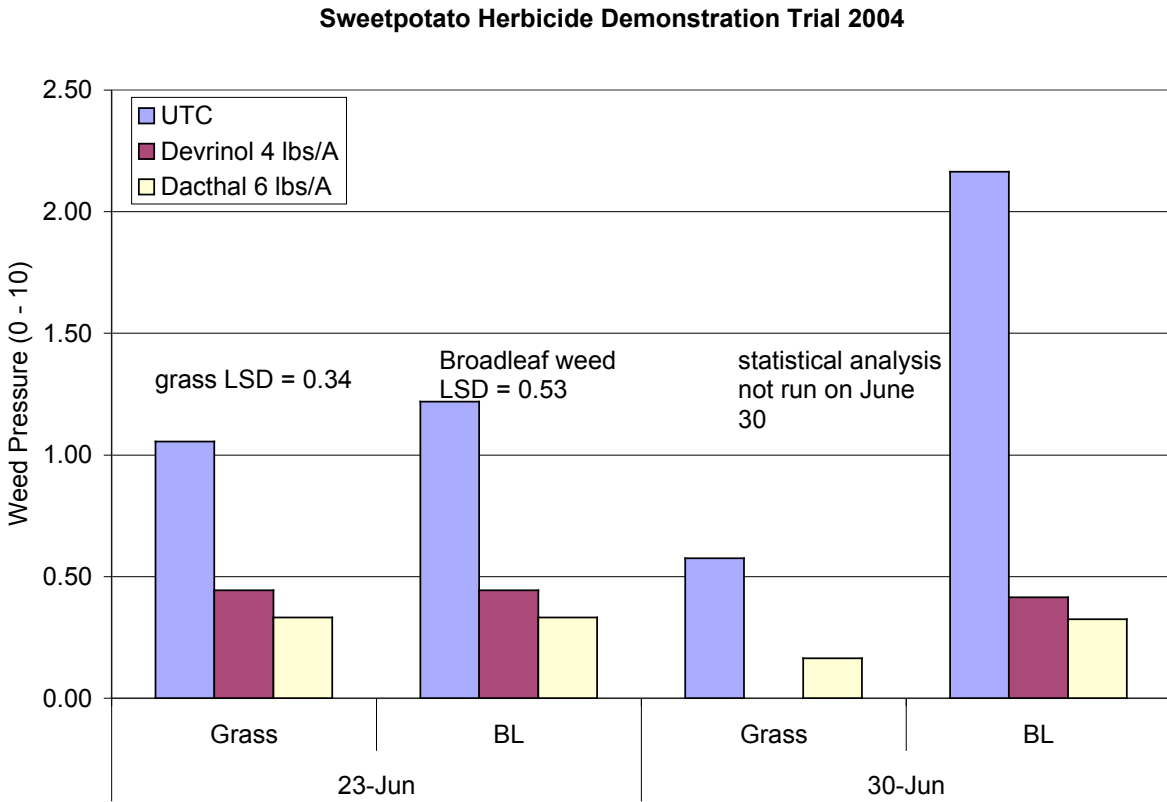


Figure 1. Weed pressure as affected by herbicide treatment. Herbicides were applied one day prior to transplanting and were mechanically incorporated to about 2". Grass and broadleaf (BL) weeds were significantly reduced for both herbicides as compared to the untreated control; however, overall weed pressure was very low. There were not enough reps on the June 30 evaluation date to perform a statistical analysis.

Beauregard Clean Seed Project 2004.

OBJECTIVE: New clone selection for virus-tested Beauregard plants available for Sweetpotato Council of California members.

The Sweetpotato Council of California maintains seven sweetpotato varieties with Foundation Plant Services in Davis, CA, for the purpose of providing availability of virus-tested (virus free) plants for the sweetpotato industry in California. Orders are typically taken in the fall, and then cuttings are taken from mother plants and planted into 4" pots that can be purchased by the growers for \$1 per plant. Occasionally, the Council re-evaluates the existing mother plants by selecting new hills from the field.

Beauregard went through this process starting in 2001. In 2003, however, it was apparent that the clone selected inadvertently displayed "twining" in the greenhouse. The twining characteristic results in young plants that grow up and twist around each other. Additionally, the stems are more spindly than plants that do not have this characteristic. This trait has been noticed by the breeders in both NC and LA, in which case they usually dispose of these selections. Because some members of the Council were concerned that a weak clone may have been chosen, the Council elected to go through the process again with Beauregard.

As part of the Sweetpotato Council of California's ongoing efforts to supply virus-tested seed for the industry, I began making hill selections in the fall of 2004 from various commercial fields in both Merced and Stanislaus Counties. 55 individual selections were made from 10 different producers. Hills were displayed and votes taken at the Nov 2004 Council meeting. The hills chosen for virus-testing and further evaluation were hill #4, taken from Paul Espinola's field in Turlock. Seed source came from Dave Souza, which came from the current CA Bgard selection at FPS. The second hill was hill #34, from Aaron Silva from a field on the SW corner of Sultana and Bell in Merced County. Seed also purchased from Dave Souza.

The selected hills were taken to Foundation Plant Services (FPS) in Davis on November 19 to begin the virus testing process. They were coded Beauregard 03 for hill#34 and Beauregard 04 for hill#4. This entails sprouting the roots, taking meristem cuttings, then growing out the cuttings into large plants that can be virus tested. Virus testing consists of splicing a stem and leaf to an indicator plant, Brazilian morning glory, on two separate events, and then observing for indicator symptoms.

The procedure takes a long time. Beauregard is slow growing after the meristem process. As of April, 2005, the plants were still in the growth chambers at FPS. Actual virus testing likely will not occur until June or July. Cuttings that are shown to be virus-free will then be maintained at FPS and enough cuttings propagated so that they can be evaluated in a replicated field trial in Merced County in 2006. The new hills will be compared to the current selection. Based on the results of this trial, a new VT clone will be selected that will be available for the Council members.