# Sweetpotato Research Progress Report 2015

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## Sweetpotato Collaborators Trial -- 2015

Scott Stoddard, UCCE Merced County

This year's sweetpotato evaluation was with Quail H Farms, south of Livingston, CA. Soil type was Delhi sand, slightly saline. Conventional field, fumigated with Telone prior to planting. Drip irrigated, water quality marginal - high salts & alkalinity. Record dry winter and spring but good stand establishment. One rep of Burgundy from grower because of poor beds. Two row plots, machine harvested and sorted by grower crew. Good overall yields, high #1%.

| Rep | Var# | iety Name | Skin Color | Skin Text | Flesh color | Eyes | Lents | hape | iform | verall App | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Covington | Rose-Cu | 7 | 4 | 7 | 7 | 2,6 | 7 | 7 | excellent set, typical grooving |
| 2 | | | | 7 | | | | | | 8 | smooth skin |
| 1 | 2 | Cal Bx G1 | Rose | 3 | 3 | 5 | 7 | 3,4 | 4 | 5 | RC banding rough skin |
| 2 | | | | 5 | | | | 7 | | 4 | Light orange flech, YCR |
| 1 | 3 | Burgundy G2 | maroon | 7 | 5 | 9 | 5 | 5,6 | 6 | 7 | smooth skin, good flesh color |
| 2 | | | | 7 | | | 6 | | | | poor set, curled shapes |
| 1 | 4 | Diane | red | 7 | 4 | 5 | 5 | 4 | 7 | 7 | very long classic Diane |
| 2 | | | | 8 | | | | 3 | | | faded red, eyes |
| 1 | 5 | Orleans G2 | Cu | 5 | 3 | 7 | 5 | 3,5 | 5 | 5 | some RC, better flesh color than Bx |
| 2 | | | Rose | 7 | | | 6 | | | | |
| 1 | 6 | Bellevue | orange | 7 | 3 | 7 | 7 | 2,3 | 7 | 7 | a few eyes, tapered shape |
| 2 | | | | 9 | | 9 | 9 | | | 8 | worm damage, flea beetle damage |
| 1 | 7 | NC-87-847 | buff/tan | 7 | 2 | 5 | 5 | 2,6 | 7 | 7 | blocky, no veins, solid color |
| 2 | | | | 7 | | | | | | 8 | looks like Golden Sweet |
| 1 | 8 | L-09-149 | burgundy | 7 | 3 | 9 | 5 | 2,8 | 5 | 8 | No eyes but lents, excellent skin color |
| 2 | | | | 8 | | | | 3 | | 9 | YCR |
| 1 | 9 | Bonita | buff | 7 | 1 | 5 | 5 | 3,4 | 5 | 6 | some vins, some pink skin |
| 2 | | | cream | 7 | | | | 8 | 4 | 7 | some purple spots |
| 1 | 10 | NC-05-198 | light red | nooth | | | | | | | light red, smooth skin, stringy, latex |

| Skin color: | Skin Texture: | Flesh Color: | Eyes: | Lenticels: |
|---|---|---|---|---|
| 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: | |
|---|---|---|---|
| 1 = round | 1 = very poor | 1 = very poor | |
| 2 = round-elliptical | 3 = poor | 3 = poor | **All ratings made on #1 roots.** |
| 3 = elliptic | 5 = moderate | 5 = moderate | **YCR = yellow cortical ring** |
| 4 = long elliptic | 7 = good | 7 = good | **RC = Russet Crack** |
| 5 = ovoid | 9 = excellent | 9 = excellent | **RKN = root knot nematode** |
| 6 = blocky | | | **LG = longitudinal grooves** |
| 7 = irregular | | | **Culls = main reason for culls** |
| 8 = asymmetric | | | |

## NATIONAL SWEETPOTATO COLLABORATORS SUMMARY OF DATA
## 2015

STATE AND LOCATION REPORTING: Livingston, CA
DATE TRANSPLANTED: 5/1/2015. DATE HARVESTED: 9/18/2015. No. GROWING DAYS: 140
DISTANCE BETEEN ROWS (in): 40. DISTANCE IN ROW (in): 9
PLOT SIZE: NO. OF ROWS: 2 LENGTH (ft): 40 NO. OF REPS: 4
IRRIGATION: drip irrigation. 1.5 to 2 inches per week during summer, total 30".
FERTILIZER: PPI 60 gpa 8-8-8 followed by drip applied 10-0-10. About 175-50-175 N-P2O5-K2O.

| | | | ------- | 40 lb box/A | ------- | | | % | % |
|---|---|---|---|---|---|---|---|---|---|
| | **SELECTION** | **CLASS** | **US #1'S** | **INERS** | **JMBOS** | **YIELD** | **BINS/A** | **US #1'S** | **CULLS** |
| 1 | Covington | yam | 814.5 | 220.2 | 151.8 | 1186.5 | 47.5 | 68.7% | 5.9% |
| 2 | Bx | yam | 613.3 | 164.9 | 165.1 | 943.3 | 37.7 | 65.7% | 25.5% |
| 3 | Burgundy (175 G1) | red | 609.6 | 127.0 | 214.0 | 950.7 | 38.0 | 64.2% | 11.0% |
| 4 | Diane | red | 735.5 | 280.7 | 102.0 | 1118.2 | 44.7 | 65.8% | 12.2% |
| 5 | Orleans | yam | 731.6 | 215.4 | 159.4 | 1106.4 | 44.3 | 66.1% | 12.9% |
| 6 | Bellevue (LSU52) | yam | 664.0 | 191.4 | 198.4 | 1053.8 | 42.2 | 63.1% | 14.0% |
| 7 | NC-87-847 | sweet | 688.0 | 178.1 | 213.0 | 1079.2 | 43.2 | 64.0% | 6.8% |
| 8 | L-09-149 | red | 602.6 | 292.9 | 37.1 | 932.6 | 37.3 | 64.6% | 11.1% |
| 9 | Bonita | sweet | 485.4 | 145.8 | 262.3 | 893.5 | 35.7 | 54.2% | 19.5% |
| 10* | NC-05-198 | red | 373.2 | 193.7 | 278.9 | 845.8 | 31.1 | 44.3% | 2.0% |
| | Average | | 631.8 | 201.0 | 178.2 | 1011.0 | 40.2 | 62.1% | 12.1% |
| | LSD 0.05 | | 90.1 | 46.8 | 69.1 | 146.2 | 5.8 | 4.5% | 5.3% |
| | CV, % | | 9.3 | 15.9 | 28.4 | 9.7 | 9.7 | 4.8 | 27.5 |

| | |
|---|---|
| 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 size requirements of above grades, but are marketable quality. |
| Mkt Yield | Total marketable yield is the sum of the above three categories. |
| bins/A | bins/A are estimated based on market box yield assuming 23 boxes (18.4 Bu) per bin. |
| % 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. |
| LSD 0.05 | Least significant difference. Means separated by less than this amount are not significantly different (ns). |
| CV, % | Coefficient of variation, a measure of variability in the experiment. |
| 10* | NC-05-198 from ALT and not included in statistical analysis |

**SCORE SHEET FOR EVALUATION OF SWEETPOTATO SPROUT PRODUCTION - NSPCG TRIAL**

Date bedded: 2/25/15 Location: Quail H Farms
Robin Road near packing shed
Date Evaluated: 4/3/15 Type of bed: cold bed
Evaluated by: S. Stoddard Botran & Devrinol at bedding

| | 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 | Covington | yes | 3 | 3 | 2 | | |
| 2 | Cal Beauregard | yes | 4 | 4 | 2 | | |
| 3 | Burgundy G1 | yes | 1 | 1 | 1 | poor | smalll and sparse |
| 4 | Diane | yes | 5 | 5 | 3 | | trimmed before the others |
| 5 | Orleans | yes | 4 | 3 | 2 | | |
| 6 | Bellevue | yes | 2 | 2 | 1 | solid | better than 175 |
| 7 | NC-87-847 | yes | 4 | 2 | 2 | | |
| 8 | L-09-149 | yes | 5 | 5 | 3 | | as good as Diane |
| 9 | Bonita | yes | 4 | 4 | 2 | | |
| # | NC-05-198 | no | --- | --- | --- | | sent as plants from NCSU, in |
| # | | | | | | | |
| # | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

(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) indcates poor uniformity while 5 indicates the highest degree of uniformity of emergence.

(3) Earliness of plant production is rated form 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.

**Sweetpotato ALT 2015**
Scott Stoddard, Farm Advisor

The ALT in 2015 was conducted with Dave Souza with new plants from NC State and LSU, as well as selections saved from last year. Field site located at Sunset and Lincoln Rds. Transplanted June 3. 25 plant plots, 12" spacing, 1-row, drip irrigation. Diane field. Red yam trial with replicated plots also at this location. Harvest on Oct 12 and 13, 2015. No yield weights taken, but production estimated from buckets. 1 tote in storage

| | | Bucket Yield | | | | Harvest notes | 2/22/16 | status |
|---|---|---|---|---|---|---|---|---|
| | Variety | #1's | Med | Jumbo | Total | | Storage notes | 2016 |
| 1 | Burgundy | | | | | nice skin color, but poor set, low yield | | **NSPCG** |
| 2 | Diane | | | | | Excellent -- better yield than all others in this test | | |
| 3 | L-09-149 | | | | x | nice red but yield off. | Stored well but skin color too dark | Drop |
| | | | | | | | | |
| 4 | L-11-119 | | | | 6.5 | Nice red skin with orange flesh. Good shape, little small. Smooth. | | **Keep** |
| 5 | L-12-15 | | | | x | poor set, splits. | | Drop |
| 6 | L-12-36 | 2 | 3 | 1 | 6 | nice looking red, small, late, root count low yield low | too dark -- maroon skin | Drop |
| 7 | L-13-3 | 3 | 3 | 5 | 11 | light rose skin, irregular shape | Red, good shape, stored well | **Keep** |
| 8 | L-13-38 | | | | 7 | Purple skin, white flesh. Long, veins, erratic set. | veins | Drop |
| 9 | L-13-48 | 2 | 1 | 5 | 8 | red long consistent shape early | sprounting, lents, rough storage | Drop |
| 10 | L-13-5 | 3 | 2 | 3 | 8 | light rose skin, good shape, root count low | rot, staining, lents | Drop |
| 11 | L-13-52 | | | | 3.5 | Tan skin white flesh. Rough skin, variable shape and set. | | Drop |
| 12 | L-13-60 | | | | 8 | rosy beige skin cream flesh. Similar to Bonita but not as good shape, est, color. | | Drop |
| 13 | L-13-64 | | | | 2.5 | Pink skin white flesh. Erratic set and shape. | sprouts | Drop |
| 14 | L-13-81 | | | | 7.5 | Dark purple smooth skin, orange flesh. Large size, erratic shape. | | **NSPCG** |
| 15 | L-13-84 | 3 | 1 | 1 | 5 | Cu skin orange flesh. Similar look as Bellevue. | stored well | **NSPCG** |
| 16 | L-13-86 | | | | 7 | White skin, white flesh. Some scurf. Low yield and erratic set. | | Drop |
| 17 | L-13-132 | 2 | 1 | 4 | 7 | slightly round, root count poor, weak color | mottled maron, orange flesh | Drop |
| 18 | L-13-133 | | | | 8 | Purple skin orange flesh. Poor set, long. Fusarium suseptible. | | Drop |
| 19 | L-13-160 | | | | 5 | Light red skin orange flesh. Erratic set. YCR | nice color after storage | **Keep** |
| 20 | L-13-164P | 1 | 1 | 2 | 4 | decent yield and shape | grooved. Veins. Lumps, hair roots | Drop |
| 21 | L-13-165P | | | | 5 | Purple skin purple flesh. Large, misshapen, and bumpy. | | Drop |
| 22 | L-13-176 | | | | 6.5 | Red skin oragne flesh. Wild shape, setting roots at two feet deep | | Drop |
| 23 | L-13-181 | 2.5 | 2.5 | 1.5 | 6.5 | excellent red | stored poorly. Light, rot, dull color | Drop |
| | | | | | | | | |
| 24 | L-14-04 | 1 | 1 | 1 | 3 | rose skin orange flesh, good shape, yield soft | dull sprouts | Drop |
| 25 | L-14-05 | 1 | 1 | 5 | 7 | fluting but good yield | | Drop |
| 26 | L-14-23 | | | | 6.5 | Purple skin white flesh. Double skin. Lots jumbos but smooth. Latex | faded | Drop |
| 27 | L-14-15P | 2 | 1 | 4 | 7 | outstanding purple, good shape and yield, 2x skin | | **Keep** |
| 28 | L-14-25P | 1 | 0 | 8 | 7 | purple, excellent shape. Jumbos. Some side roots. Early | | Drop |
| 29 | L-14-27 | 2 | 1 | 1 | 4 | red skin, fair to good yield, nice shape | retained good color | **Keep** |
| 30 | L-14-31 | 2 | 1 | 4 | 7 | red. Not setting enough roots. Jumbos. Great shape. | orange flesh, some sprouts | **Keep** |
| 31 | L-14-33 | | | | 4 | Rose skin deep orange flesh. Nice shape and skin set. Good yield. | pimples and lents prominent | Drop |
| 32 | L-14-41P | 1 | 0.5 | 8 | 9.5 | purple purple, decent shape, all jumbos, massive tonnage | every root with tip rot | Drop |
| 33 | L-14-44 | | | | 5 | Pink/red skin with white flesh. Eyes, erratic set. | | Drop |
| 34 | L-14-53 | | | | 6.5 | Purple skin orange flesh. Good color but too long. Latex | veins | Drop |
| 35 | L-14-55 | 2.5 | 1 | 3 | 6.5 | red good shape and yield, 2x sking. Some long. Latex | orange flesh, lents, pimples | Drop |
| 36 | L-14-56 | | | | 6.5 | Red skin, orange flesh, very smooth with nice shape. | stored wel | **Keep** |
| 37 | L-14-67 | | | | 5 | Red skin, light orange flesh. Long. Some misshape | eyes, dark skin | Drop |
| 38 | L-14-69 | | | | 3.5 | Red skin, orange flesh. Long. Smooth, but poor set and low yield. | good skin color in storage | **Keep** |
| 39 | L-14-75 | | | | 2.5 | Purple skin orange flesh. Nice flesh color. Smooth good shape. | prominent lents | Drop |
| 40 | L-14-78 | 1 | 1 | 1 | 3 | Red skin, orange flesh. not enough yield | lents and pimples | Drop |
| 41 | L-14-89 | | | | 5 | Red skin, orange flesh. Skins easily. Nice shape. | looks terrible, sprouting | Drop |
| 42 | L-14-90 | | | | 3.5 | Red skin, white flesh. Small, smooth skin. | faded, sprouts | Drop |
| 43 | L-14-101 | | | | x | drop | no sample | Drop |
| 44 | L-14-122 | | | | 6 | Purple skin orange flesh. Good skin set, but long shape. Mixed with white | too dark, rough skin | Drop |
| 45 | L-14-124 | 1 | 2 | 1 | 4 | Red skin orange flesh. Tapered and long. | sprouting, lumpy | Drop |
| 46 | L-14-129 | | | | 5 | Light orange skin orange flesh. Poor shape and set. Lents, skin color | shriveled | Drop |
| 47 | L-14-138 | | | | 2.5 | Red skin orange flesh. Poor set, chunky, low yield. | turned brown | Drop |
| 48 | L-14-142 | 2 | 1 | 1 | 4 | red-purple. Low yield, irregular shape | orange flesh, 2nd purple skin | Drop |
| 49 | L-14-145 | 2 | 1 | 5 | 8 | nice red, early, high yield, 2x skin | | **Keep** |
| 50 | L-14-147 | | | | 7 | Red skin, orange flesh. Double skin, side roots, lots of jumbos and latex | | Drop |
| 51 | L-14-149 | 2 | 2 | 3 | 7 | nice red, double skin. Good yield, a bit long some bent | Lumps and lents | Drop |
| 52 | L-14-150 | | | | x | red s 2x skin high yield | stored poorly, raised lents | Drop |
| 53 | L-14-161 | | | | x | poor shape | | Drop |
| | | | | | | | | |
| 54 | NC05-198 | | | | | light red, smooth, latex | | **NSPCG** |
| 55 | NC08-553 | | | | x | tan skin white flesh good shape and yield. Latex | Stored well | **NSPCG** |
| 56 | NC10-104 | 3 | 2 | 5 | 10 | nice red root count low. Latex | stored well, good color, lents | **Keep** |
| 57 | NC11-805 | | | | 5 | Pink/beige skin, white flesh. Lots of latex. Smooth skin variable shape | sprouts | Drop |
| 58 | NC11-980 | | | | x | good red, some irregular shape. Mix of hills some good some bad | splits, sprouts | Drop |
| 59 | NC12-029 | 9 | 6 | 2 | 17 | splits, light red skin, excellent yield, good shape, skin with stripes | Stored well | **Keep** |
| 60 | NC12-745 | 2 | 1 | 2 | 5 | nice smooth skin shape variable orange flesh | pinkish red, stored well | **Keep** |
| 61 | NC12-910 | | | | 12 | Purple skin orange flesh. Good set but a little small. Smooth. Latex | pimples | **Keep** |
| 62 | NC12-926 | 4 | 1 | 4 | 9 | white, jumbos, #1s inconsistent | shriveled, prominent lents | Drop |
| 63 | NC12-948 | | | | 11 | Gold skin, yellow flesh. Smooth. Good shape but erratic set. | bad pimpling | Drop |

**SCORE SHEET FOR EVALUATION OF SWEETPOTATO SPROUT PRODUCTION - ALT 2015**

Date bedded: 2/24/15 Location: D&S Farms
Atwater, CA

Date Evaluated: 3/20/15 Type of bed: cold bed, sprinkler irrigated

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 | NC 11-980 | yes | 3 | 3 | 2 | | all green |
| 2 | NC 08-553 | yes | 3 | 2 | 2 | | |
| 3 | NC 10-104 | yes | 3 | 3 | 1 | | |
| 4 | NC 11-805 | yes | 5 | 5 | 3 | | largest plants |
| 5 | L-12-15 | yes | 2 | 2 | 1 | | green w/purple vein |
| 6 | L-13-132 | yes | 3 | 2 | 2 | | green lvs |
| 7 | L-13-60 | yes | 2 | 2 | 2 | | all green |
| 8 | L-13-86 | yes | 1 | 3 | 1 | | all purple, small |
| 9 | L-13-3 | yes | 5 | 4 | 2 | | lots of plants |
| 10 | L-09-149 | yes | 3 | 2 | 2 | | big & small, all green |
| 11 | L-13-5 | yes | 3 | 4 | 2 | | |
| 12 | L-13-160 | yes | 2 | 2 | 1 | | geen purple lvs |
| 13 | L-13-133 | yes | 5 | 4 | 3 | | lots of good plants |
| 14 | L-12-36 | yes | 1 | 1 | 1 | | almost no plants |
| 15 | L-13-181 | yes | 1 | 1 | 1 | | almost no plants |
| 16 | L-13-176 | yes | 2 | 3 | 1 | | just breaking |
| 17 | L-13-119 | yes | 2 | 2 | 1 | | mostly purple |

(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) indcates poor uniformity while 5 indicates the highest degree of uniformity of emergence.

(3) Earliness of plant production is rated form 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. Replicated variety yield results in the 2015 ALT.**

| Var | Var Name | TMY lbs/A | 40.0 lb box/A No. 1's | Meds | Jumbos | adjusted TMY box/A | bins/A | No. 1's #1% | Culls cull% | harvest comments | market class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | NC-05-198 | 33834 | 373 | 194 | 279 | 846 | 31.1 | 44.3% | 0.0% | light red | orange |
| 2 | NC 08-553 | 45864 | 503 | 407 | 236 | 1147 | 42.2 | 43.9% | 0.0% | good color, excessive latex | sweet |
| 3 | Burgundy | 28935 | 298 | 209 | 217 | 723 | 26.6 | 41.5% | 0.0% | poor set | red |
| 4 | L-09-149 | 41092 | 322 | 256 | 450 | 1028 | 37.8 | 31.3% | 0.0% | deep purple skin | red |
| | **Average** | 37431 | 374 | 266 | 295 | 936 | 34.4 | 40.3% | 0.0% | | |
| | **LSD 0.05** | --- | 125 | 67.7 | 158 | 313 | 12.5 | 7.2 | --- | | |
| | **CV,%** | --- | 20.9 | 15.9 | 33.5 | 20.9 | 20.9 | 11.2 | --- | | |

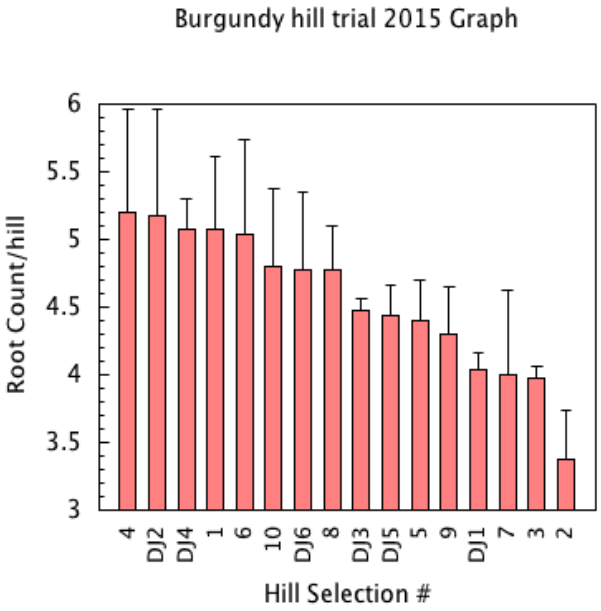
TMY = Total marketable yield (sum of #1s, mediums, and jumbos).

## Burgundy (LSU 175) Hill Selection Trial.

In 2014 several outstanding hill selections were made from commercial fields to see if root set could be improved over the clone currently available at UC Davis. With help from Dave Souza, runner cuttings were made last spring from these selections and planted into replicated small plots. Results are shown in Table 3 and Figure 1. Hill counts below 5 are unacceptable. The top five hills were saved for further evaluation in 2016.

**Table 3. Burgundy hill selection results, 2015.**

| hill selection | # roots per hill | #1 yield boxes/A | mediums boxes/A |
|---|---|---|---|
| 4 | 5.2 | 350 | 346 |
| DJ2 | 5.2 | 360 | 253 |
| FPS 1 | 5.1 | 323 | 248 |
| DJ4 | 5.1 | 320 | 328 |
| 6 | 5.0 | 376 | 316 |
| 10 | 4.8 | 314 | 285 |
| DJ6 | 4.8 | 290 | 334 |
| 8 | 4.8 | 484 | 339 |
| DJ3 | 4.5 | 293 | 218 |
| DJ5 | 4.4 | 264 | 186 |
| 5 | 4.4 | 363 | 244 |
| 9 | 4.3 | 375 | 207 |
| DJ1 | 4.0 | 323 | 170 |
| 7 | 4.0 | 372 | 227 |
| 3 | 3.9 | 151 | 76 |
| 2 | 3.4 | 246 | 242 |
| **LSD** | **NS** | **NS** | **153** |



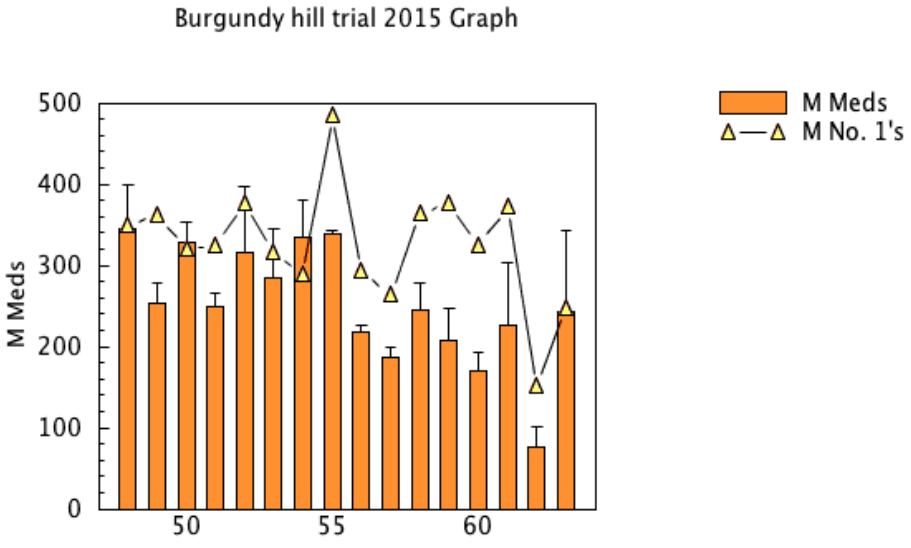




**Figure 1. Burgundy hill selection results, 2015.**

**Nimitz nematicide on sweetpotatoes Merced County**
Scott Stoddard, Farm Advisor
UC Cooperative Extension, Merced County

**Objective**: Evaluation of Nimitz nematicide (fluensulfone) on sweetpotato production and nematode control in a commercial field in California.

**Location**: New sweetpotato field, bottom of borrow pit, near Sundance and Bert Crane Rds. West side of field in buffer zone. Soil formally Atwater Sand, now a mix with subsoil and Atwater Sand (white rectangle in photo below).
**Cooperators**: Aaron Silva, Doreva Produce Company; Steve Eskelsen, ADAMA


| treatments | | Application dates: 6/19/15 | 7/24/15 | 8/17/15 |
|---|---|---|---|---|
| 1 | UTC | | | |
| 2 | Nimitz EC 6 pts/a PPI | x | | |
| 3 | Nimitz PPI 6 pts/A fb Movento 5 oz/A 2x | x | x | x |
| 4 | Nimitz PPI 6 pts/A fb Nimitz 3 pts/A 2x | x | x | x |
| 5 | Mocap 26 lbs/A PPI | x | | |
| 6 | Movento 5 oz/A fb Movento 5 oz | | x | x |

Plots 25 feet wide (3 – 4 beds per plot) by 35 feet long, replicated 4x.

**Methods:**
Fumigation: The east side of the field was fumigated with metam-K at 45 gpa in May. A buffer zone on the west side of the field was not fumigated because of homes. The trial was located fully within the buffer zone.

Nematicide: Nimitz EC (fluensulfone) was applied by hand using a back-pack sprayer at 50 gpa equivalent to the entire plot area on 19-June to clean, cultivated plot area. Mocap 15G (granular formulation of ethoprop) was applied by hand using a fertilizer spreader. The materials were then incorporated ~6" with a light disc before pulling the beds. Plot size was 25 feet wide (3 – 4 beds) by 35 feet long, but only the middle bed in each plot was

harvested. Post plant applications of Nimitz and Movento (spirotetramat) were made at 4 and 8 weeks after transplanting in 50 gpa water and included 0.25% Dyne-Amic NIS using Teejet 8004 nozzles at 30 psi. Plants were covering beds except for those treatments in the northern edge of the field in the poor soil area.

Transplant: cv "Bonita" was transplanted using commercial equipment on June 23 thruout the test area on 9" spacing. One row within each plot area was removed and replaced with susceptible cv "O'Henry", hand planted on 9" spacing.

Sampling: Soil samples for nutrient analysis were taken on 8-July, nematode sampling from select treatments on 22-July.

Harvest: Center bed of each plot was dug with a 2-row digger and separated by hand into #1's, Jumbos, mediums, and culls on 3-Nov-2015. Harvested plot area was one row by the length of the plot (35 feet). Culls were separated based on culls from root knot nematode (RKN) damage or because of poor shape and/or cuts (commercial culls). Plots that had received Nimitz applications were crop destruct and disked after yields were determined. Yield results were analyzed as a split-plot AOV and mean separation using Fisher's Protected LSD at the 95% confidence level.

**Table 1. Nematode and nutrient soil sample results, Nimitz Trial Merced County 2015.**

**Nematode soil sampling.**

| 7/22/15 treatment | | Composite nematode sample 0-12" #/500 cc | Species |
|---|---|---|---|
| 1 | UTC | 108 | stunt |
| 2 | Nimitz 6 pts/a | 144 | stubby root |
| | | 540 | stunt |
| 7 | Metam 45 gpa | 0 | none detected |

**Plot soil samples 0-12" on north end (bad) and south end of field on 8-July-2015.**

| | pH | EC mmhos/cm | soluble salts ppm | NO3-N ppm | Olsen ppm | K ppm | Ca ppm | Mg ppm | Na ppm | B ppm | Zn ppm | Fe ppm | Cu ppm | Mn ppm | Sulfate ppm | CEC meq/100g | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Good | 5.3 | 0.8 | 531 | 4 | 20 | 143 | 450 | 122 | 28 | 1.3 | 26.7 | 26.7 | 0.4 | 1.8 | 92 | 6.3 | 0.6 |
| Bad | 6.3 | 1.4 | 890 | 8 | 34 | 247 | 529 | 161 | 136 | 0.2 | 1.9 | 34.4 | 0.5 | 2.1 | 83 | 6.2 | 0.7 |

Bad end of field: poor water penetration, slow vine growth, reduced yield.

**RKN causes cracking in susceptible cultivar O'Henry.**

**Slow water penetration in the test plot area was a result of high levels of sodium and presence of a hardpan.**

**Results**:
Yield results are shown in Table 2 and in Figure 2. No consistent significant differences were seen in this trial from the main effect of the nematicide treatments, and none of the treatments had significantly more total marketable yield than the untreated control (UTC). Total marketable yield ranged from 18.5 to 25 bins per acre when averaged across both varieties. While no RKN were found in the mid-season sampling, roots were damaged from this nematode species. Nematodes counts in the soil at the end of the season were not ascertained. More RKN culled roots occurred in the Nimitz PPI followed by Nimitz foliar post (Treatment 4), but this was not significantly different than the other treatments. Because of the layout of the test area, yields were not measured in the area of the field fumigated with metam.

Variety did have a significant effect on the results of this trial, with Bonita performing much better than O'Henry. Bonita is a nematode resistant cultivar, so this result is not unexpected. Culled roots from RKN damage were only 0.4% as compared to 13.8% with O'Henry. The nematicide x variety interaction was not significant for culled roots.

The erratic and mostly not significant results of this trial were probably a result of the location. This field has not been in sweetpotatoes for many years and is only sometimes cultivated to any crop, furthermore, high sodium conditions in the north west corner reduce water penetration and slowed crop development. Another factor was incorporation, which probably was not adequate to thoroughly mix the Nimitz treatments prior to bedding.

**Acknowledgements**: Many thanks to Aaron Silva for his help and cooperation with this test.

**Table 2. Yield and grade results, Nimitz nematicide trial in sweetpotatoes, Merced County 2015.**

| Nematicide Treatment | boxes/A #1's | Mediums | Jumbos | TMY | TMY bins/A | Culls RKN % | Culls Comm % |
|---|---|---|---|---|---|---|---|
| 1 UTC | 229.7 | 139.7 | 119.9 | 489.2 | 19.6 | 4.8% | 10.7% |
| 2 Nimitz 6 pts/a | 257.8 | 153.7 | 141.2 | 552.6 | 22.1 | 5.2% | 14.9% |
| 3 Nimitz 6 pts/A fb Movento 5 oz/A | 218.2 | 126.5 | 146.3 | 490.9 | 19.6 | 4.9% | 10.8% |
| 4 Nimitz 6 pts/A fb Nimitz 3 pts/A | 187.9 | 146.7 | 128.7 | 463.3 | 18.5 | 10.9% | 20.4% |
| 5 Mocap 26 lbs/A | 280.5 | 118.8 | 74.7 | 474.0 | 19.0 | 8.4% | 15.4% |
| 6 Movento 5 oz/A fb Movento | 281.0 | 141.3 | 201.2 | 623.5 | 24.9 | 8.4% | 14.2% |
| LSD 0.05 | 64.4 | NS | 38.2 | NS | NS | NS | NS |
| Variety | | | | | | | |
| Bonita | 280.4 | 136.6 | 240.1 | 657.1 | 26.3 | 0.4% | 19.4% |
| O'Henry | 204.6 | 139.0 | 30.5 | 374.1 | 15.0 | 13.8% | 9.3% |
| Variety LSD 0.05 | 26.2 | NS | 32.1 | 59.1 | 2.31 | 4.7 | 3.3 |
| Nematicide x Variety p value | 0.001 | NS | 0.002 | 0.05 | 0.05 | NS | NS |
| CV, % | 17.8 | 34.3 | 39.1 | 18.8 | 18.8 | 108.4 | 37.7 |

Yield based on 40 lb box, bin = 1000 lbs.
TMY = Total Marketable Yield, sum of #1's, Jumbos, and Mediums.
Culls RKN = culled roots from root knot nematode damage
Culls comm = culled because of cuts and shape but otherwise sound
LSD 0.05 = Least Significant Difference at the 95% confidence interval. Means separated by less than this amount are not significantly different.
NS = not significant.
CV = coefficient of variation.

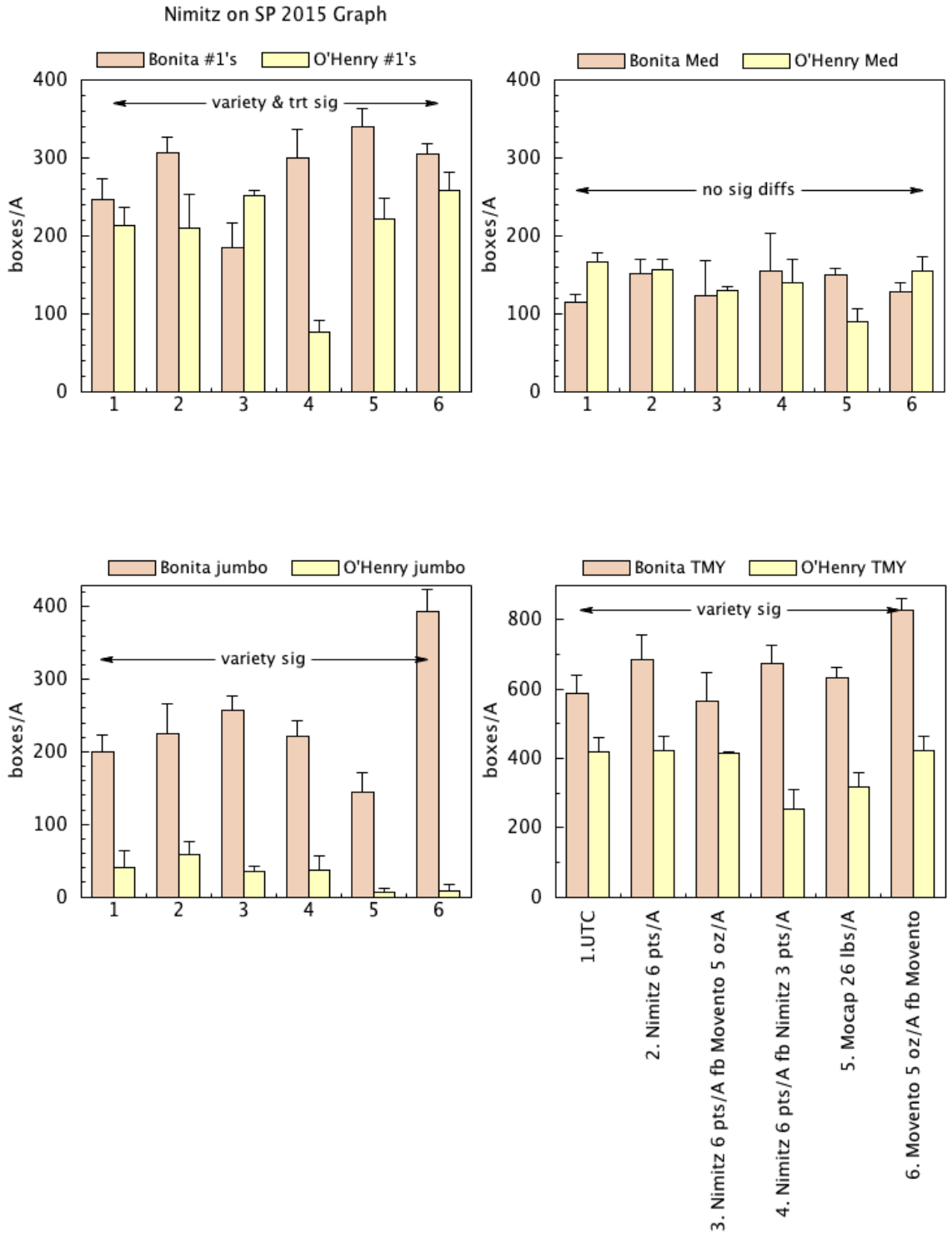
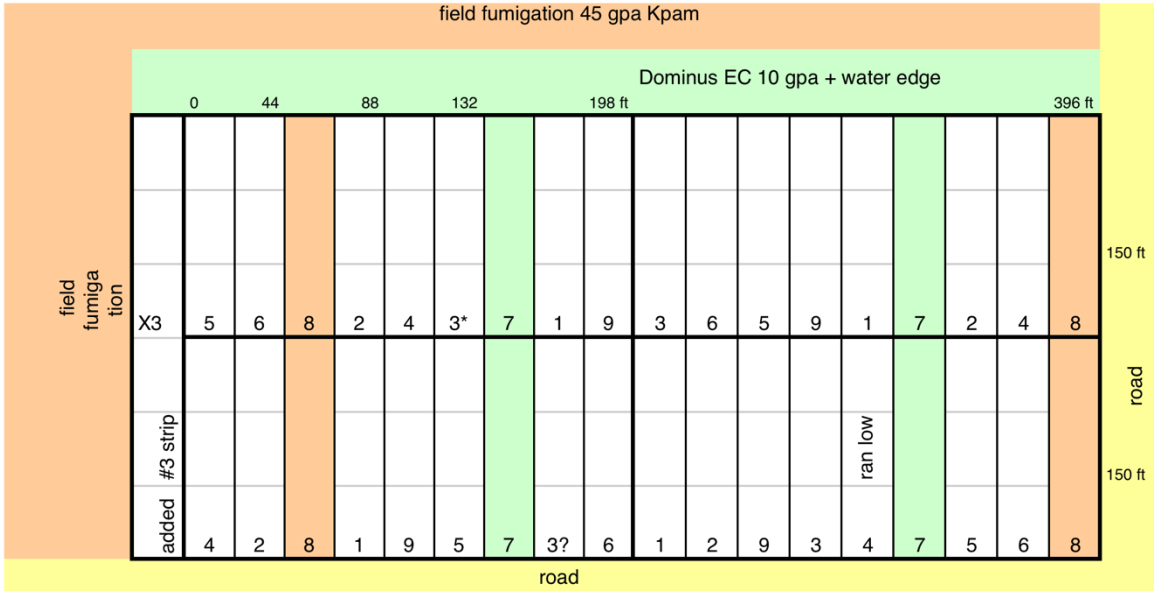



**Figure 2. Yield results as affected by variety and nematicide treatment for #1's, mediums, jumbos, and total marketable yield (TMY).**

**Sweetpotato field fumigation trial 2015**
**Scott Stoddard, Farm Advisor**

**Objective:** Evaluation of new fumigant Dominus (allyl isothiocyanate) on sweetpotato production and RKN control in a commercial field in California.




plots 22' wide x 150' long (3 to 4 beds)
Total area: 425 x 300 = 3 acres

**Cooperators**: Nathan and Nolan Mininger, Mininger Farms, Livingston, CA; Chris Leon, Isagro USA; Larry Beckstead, Crop Production Services Merced, CA; Mike Stanghellini, Trical
**Location**: Machado Ranch, south of Hwy 140 and Washington Rds, in Merced County (yellow square in photo below).

**Treatments**:

1 UTC
2 Dominus 10 gpa – noble plow
3 Dominus 5 gpa + Telone 5 gpa – noble plow
4 67/33 Dominus/Pic 10 gpa – noble plow
5 Pic Plus 10 gpa – noble plow
6 Grower Standard 12 gpa Telone – noble plow
7 Dominus EC 10 gpa – CPS rig + added water
8 45 gpa metam potassium – CPS rig (field standard fumigaion)
9 PicClor80 10 gpa – noble plow

*X3 = extra #3 added due to initial application problems*
*3* = reapplied over initial application*
*3? = doubtful if material was applied*

**Methods:**

| | |
|---|---|
| Fumigation | Applied April 16, 2015 using application equipment from Tri-Cal and Crop production Services. Tri-Cal noble plow shank depth ~ 10" with emittors at 10". CPS rig used shanks on 9" centers and emittors at 3, 6, and 9" with 44 gpa applied. All fumigation treatments followed by ring roller to seal the soil immediately after application. |
| Transplanted | cv Covington about May 25, 12" spacing |
| RKN smpl 1 | June 5 Rep 1, June 8 reps 2- 4. 20 soil cores 0 – 12" taken from center bed of fumigation plot halfway between drip tape and plant row. Denele Labs in Turlock |
| plant biomass | July 9 two plant sample at 50 & 100 ft |
| leaf tissue | Sept 16 composite all reps, 6th leaf from growing tip |
| RKN smpl 2 | Sept 17 all reps, Denele Labs in Turlock |
| RKN smpl UC | Oct 8 composite sample reps 1 & 3, UC Riverside determination |
| Harvest | Nov 6 & 7, 2015. Commercial digger, center bed of each plot (2 rows x 150 ft). Field graded into #1's, mediums, jumbos, and culls. |

Sample Type: SOIL — Date Sampled: Various; Grower/Location/Project: Various

| | | NO3-N | Olsen-P | X-K | X-K | X-Na | X-Na | X-Ca | X-Mg | CEC (estimated) | OM (LOI) | pH | SAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | [ SOP 312.03 ] | [ SOP 340.03 ] | [ SOP 360.04 ] | [ SOP 360.04 ] | [ SOP 360.04 ] | [ SOP 360.04 ] | [ SOP 360.04 ] | [ SOP 360.04 ] | [ SOP 360.04 ] | [ SOP 415.03 ] | [ SOP 205.02 ] | |
| SAMPLE # | DESC | ppm | ppm | ppm | meq/100g | ppm | meq/100g | meq/100g | meq/100g | meq/100g | % | | my calculation |
| 7 | Dominus Fumigation | 10.79 | 5.7 | 50 | 0.13 | 23 | 0.10 | 3.45 | 0.60 | 4.28 | 0.40 | 8.12 | 0.99 |

**Results:**

Canopy weights, RKN soil sample results, and crop yields are shown in Tables 1, 2, and 3. No significant differences were seen in plant canopy weights measured about 6 weeks into the growing season between any of the fumigation treatments, though treatment 7 (Dominus applied by CPS) had the greatest median weight. Both the early June and late season (September) root knot nematode (RKN) samples were highly variable and no significant treatment affects occurred. Fall nematode counts were extremely high, > 500 RKN per 500 cc of soil for all treatments and over 40,000 for one plot, as measured by Denele Labs in Turlock. A second set of composite fall samples were sent to Antoon Ploeg at UC Riverside for additional analysis for confirmation and again showed extremely high counts for this plot location. However, there was little correlation between fall RKN counts and cull % or yield.

Except when Dominus was combined with Telone, these treatments did not significantly increase yield over the untreated control. Telone, PicClor80, Dominu+Telone, Metam K, and PicPlus significantly increased #1 and total marketable yield (TMY) over the other treatments. There was no change to the percentage of #1's. Culled roots were also significantly different by treatment, ranging from about 30% to 5%. All fumigation treatments except

#7 (Dominus 10 gpa CPS) were significantly less than the untreated control. Lowest cull % occurred with Telone, PicClor 80, Pic Plus, around 6 – 7%. Most of the culled roots were a result of RKN damage, however, in treatment #7 most of the roots were culled because of soft rot (23.2%) (Figures 1 & 2). Dominus alone and when combined with Pic (treatments 2 and 4) with the noble plow also had significantly higher cull% than the best treatments in this test (13.1 and 14.75, respectively) (Figure 3).

A two-year summary of the Dominus trials is shown in Table 4. When averaged across all treatments, fumigation increased TMY by 145% and decreased the number of culled roots by 40%. Much of the yield increase in total marketable yield occurred not only because of significant increases in #1 production but also as a result of dramatic increases in jumbo yield (>350%). Fumigation had far less impact on root yield in the medium size category (110%). Similar results to sweetpotato size distribution occur with water stress. Stressed plants, whether from nematodes or water, reduce their ability to grow large roots.

Over 2 years, the results with low rates of Dominus (10 gpa) or Dominus combinations are mixed, with significant yield increases in 2014 but not 2015, and with cull production significant higher than Telone or metam with some of the Dominus treatments in both years.

**Acknowledgements**. Many thanks to Larry Beckstead (Crop Production Services), Mike Stanghelini (Tri-Cal), and Nolan Mininger for their help and cooperation with this test.

**Table 1. Sweetpotato vine biomass and leaf sample results, Dominus fumigation trial 2015.**

| | | 2 plant biomass on July 10 | | | Composite leaf samples Sept 16 | | |
|---|---|---|---|---|---|---|---|
| plot # | treatment | wet g | dry g | % | %N | %P | %K |
| 1 | UTC | 583.3 | 241.9 | 65.1% | 4.17 | 0.18 | 1.43 |
| 2 | Dominus 10 gpa – noble plow | 510.1 | 217.1 | 64.7% | 3.89 | 0.18 | 1.50 |
| 3 | Dominus 5 gpa + Telone 5 gpa – noble plow | 522.3 | 207.1 | 68.1% | 3.84 | 0.17 | 1.46 |
| 4 | 67/33 Dominus/Pic 10 gpa – noble plow | 723.2 | 276.8 | 67.3% | 4.27 | 0.20 | 1.78 |
| 5 | Pic Plus 10 gpa – noble plow | 797.9 | 289.1 | 67.1% | 4.52 | 0.19 | 1.70 |
| 6 | Gwr Standard 12 gpa Telone – noble plow | 597.5 | 233.8 | 67.9% | 4.02 | 0.19 | 1.83 |
| 7 | Dominus EC 10 gpa – CPS rig + water | 865.5 | 317.7 | 68.1% | 4.20 | 0.14 | 1.40 |
| 8 | 45 gpa metam potassium – CPS rig | 490.8 | 193.4 | 68.7% | 4.06 | 0.18 | 1.73 |
| 9 | PicClor80 10 gpa – noble plow | 491.1 | 196.5 | 68.4% | 4.22 | 0.22 | 1.76 |
| | **Average** | 620.2 | 241.5 | 67.3% | 4.1 | 0.2 | 1.6 |
| | **LSD 0.05** | NS | NS | ns | --- | --- | --- |
| | **CV, %** | 33.9 | 28.9 | 5.4 | --- | --- | --- |

plant samples include vine and leaves at 50 and 100 ft into plot.
LSD 0.05 = Least Significant Difference at the 95% confidence interval. Means separated by less than this amount are not significantly different.
NS = not significant. --- = not enough data to perform analysis.
CV = coefficient of variation.

**Table 2. Root knot nematode soil sample results.**

| plot # | treatment | 5-Jun Denele #/500 cc | 17-Sep Denele #/500 cc | 8-Oct UC ANR #/100 g | 8-Oct UC ANR #/500 cc |
|---|---|---|---|---|---|
| 1 | UTC | 63 | 11426 | 750 | 4875 |
| 2 | Dominus 10 gpa – noble plow | 45 | 14513 | 1335 | 8678 |
| 3 | Dominus 5 gpa + Telone 5 gpa – noble plow | 68 | 3708 | 585 | 3803 |
| 4 | 67/33 Dominus/Pic 10 gpa – noble plow | 149 | 8100 | 3150 | 20475 |
| 5 | Pic Plus 10 gpa – noble plow | 0 | 6242 | 1230 | 7995 |
| 6 | Gwr Standard 12 gpa Telone – noble plow | 9 | 2453 | 810 | 5265 |
| 7 | Dominus EC 10 gpa – CPS rig + water | 72 | 7232 | 1020 | 6630 |
| 8 | 45 gpa metam potassium – CPS rig | 9 | 2196 | 5 | 33 |
| 9 | PicClor80 10 gpa – noble plow | 5 | 10301 | 2865 | 18623 |
| | **Average** | 46.5 | 7352.0 | 1305.6 | 8486.1 |
| | **LSD 0.05** | NS | NS | --- | --- |
| | **CV, %** | 162 | 120 | --- | --- |

Denele: commercial lab in Turlock, CA. UC ANR results reported #/100 g and converted to #/500 cc using 1.3 g/cc soil b.d.
LSD 0.05 = Least Significant Difference at the 95% confidence interval. Means separated by less than this amount are not significantly different.
NS = not significant. --- = not enough data to perform analysis.
CV = coefficient of variation.

**Table 3. Sweetpotato harvest yield and grade results by fumigation treatment, 2015.**

| plot # | treatment | boxes per acre #1's | Jumbo | mediums | TMY | TMY bins | culls lbs | #1 % | culls % | |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Gwr Standard 12 gpa Telone – noble plow | 720.8 | 91.2 | 189.9 | 1001.9 | 40.1 a | 2882.2 | 72.1% | 6.6% | cd |
| 9 | PicClor80 10 gpa – noble plow | 696.5 | 104.6 | 180.8 | 982.0 | 39.3 a | 2892.0 | 71.0% | 6.8% | cd |
| 3 | Dominus 5 gpa + Telone 5 gpa – noble plow | 657.1 | 107.6 | 200.6 | 965.4 | 38.6 a | 4018.1 | 67.0% | 9.5% | bcd |
| 8 | 45 gpa metam potassium – CPS rig | 594.6 | 100.8 | 159.7 | 855.2 | 34.2 ab | 3419.6 | 70.1% | 10.2% | bcd |
| 5 | Pic Plus 10 gpa – noble plow | 539.3 | 163.0 | 185.8 | 888.1 | 35.5 abc | 2190.0 | 62.0% | 5.7% | d |
| 7 | Dominus EC 10 gpa – CPS rig + water | 503.6 | 27.5 | 169.6 | 700.7 | 28.0 bcd | 8704.4 | 71.8% | 23.2% | a |
| 2 | Dominus 10 gpa – noble plow | 480.3 | 59.1 | 168.8 | 708.3 | 28.3 bcd | 4103.1 | 66.9% | 13.1% | bc |
| 4 | 67/33 Dominus/Pic 10 gpa – noble plow | 462.5 | 42.8 | 176.2 | 681.6 | 27.3 cd | 4696.1 | 67.9% | 14.7% | b |
| 1 | UTC | 363.6 | 15.0 | 170.9 | 549.4 | 22.0 d | 8456.9 | 65.0% | 28.6% | a |
| | **Average** | 557.6 | 79.1 | 178.0 | 814.7 | 32.6 | 4595.8 | 68.2% | 13.1% | |
| | **LSD 0.05** | 143.3 | NS | NS | 189.7 | 7.6 | 2461 | NS | 7.3 | |
| | **CV, %** | 17.6 | 104.1 | 12.0 | 16.0 | 16.0 | 36.7 | 8.8 | 37.9 | |

yield based on 40 lb box, bin = 1000 lbs.
TMY = Total Marketable Yield, sum of #1's, Jumbos, and Mediums. Culls are unmarketable roots because of nematode damage and rot.
#1 % = yield of #1's as a percent of TMY.
Culls % = weight of culled roots as a percent of total root production.
LSD 0.05 = Least Significant Difference at the 95% confidence interval. Means separated by less than this amount are not significantly different.
NS = not significant. --- = not enough data to perform analysis.
CV = coefficient of variation.

**Table 4. Sweetpotato fumigation trials relative yield summary, 2014 - 15.**

| Treatment | 2 yr average yield response, % of UTC #1's | Med | Jumbo | TMY | % CULLS | |
|---|---|---|---|---|---|---|
| 1 UTC | 100.0% | 100.0% | 100.0% | 100.0% | 15.7% | |
| 2 Dominus 10 gpa | 143.4% | 114.4% | 218.0% | 136.2% | 6.7% | |
| 3 Dominus 5 gpa + Telone 5 gpa | 161.9% | 117.3% | 343.5% | 152.7% | 6.2% | |
| 4 Dominus 5 gpa + Pic Plus 5 gpa | 118.7% | 112.1% | 177.2% | 119.0% | 13.9% | |
| 5 Pic Plus 10 gpa | 149.9% | 117.5% | 470.5% | 148.9% | 4.9% | |
| 6 Gwr Standard 12 gpa Telone | 134.9% | 113.8% | 308.9% | 157.4% | 6.2% | |
| 7 PicPlus 15 gpa | 133.3% | 117.0% | 107.7% | 125.8% | 5.1% | * |
| 8 Dominus EC 10 gpa – CPS rig + added water | 138.5% | 99.2% | 183.6% | 127.5% | 23.2% | * |
| 9 45 gpa metam potassium – CPS rig | 163.5% | 93.5% | 672.7% | 155.6% | 10.2% | * |
| 10 PicClor80 10 gpa – noble plow | 191.6% | 105.8% | 698.2% | 178.7% | 6.8% | * |
| **average increase above UTC** | **148.4%** | **110.1%** | **353.4%** | **144.7%** | **59.0%** | |

relative yield: treatment yield increase or decrease as compared to UTC within size category and year
TMY = Total Marketable Yield, sum of #1's, Jumbos, and Mediums. Culls are unmarketable roots because of nematode damage and rot.
* Treatment 7 tested in 2014; treatments 8 - 10 in 2015.

**Figure** 1. **Soft rot**.

**Figure** 2. **RKN damage**

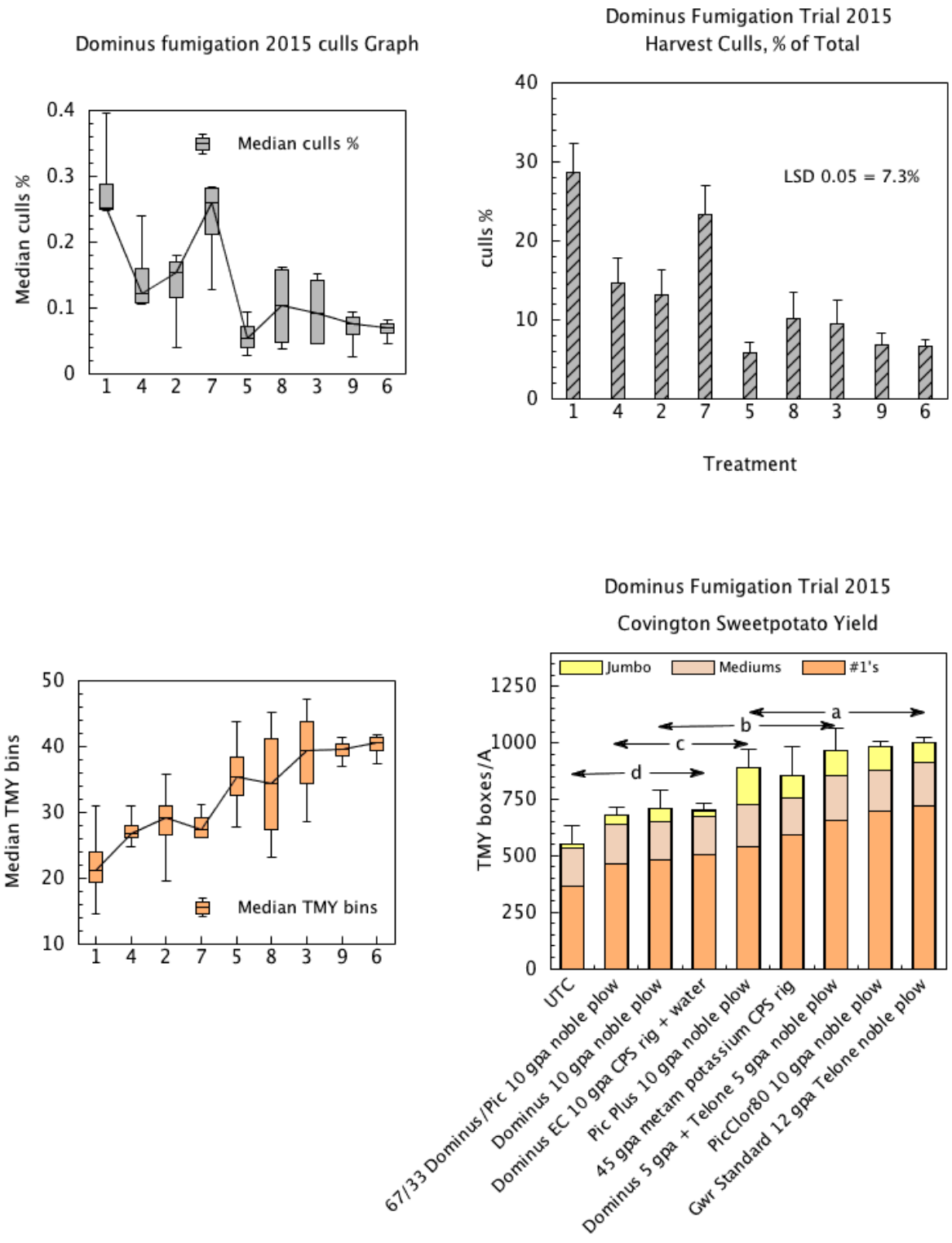



**Figure 3. Culls were significantly different between treatments (top); highest yields occurred in the Telone treatment, but PicPlus, metam-K, Dominus+Telone, and PicChlor80 all had statistically similar TMY.**

**Sweetpotato fungicide trial 2015**
Scott Stoddard, Farm Advisor

Location: field near Ballico. Corner of Harding and Cortez, SW corner of field
Cooperator: Blaine Yagi, Yagi Bros Farms
Variety: Japanese (Kenney 12 or equivalent)
Treatments:

| Plant dip May 26 | |
|---|---|
| 1 | UTC with cut plants |
| 2 | Serenade Soil 6 fl oz in 2 gals |
| 3 | Botran 5F 6 fl oz in 2 gal |
| 4 | Mertect 340 2.5 fl oz in 2 gal |
| 5 | Regalia 3 qts/100 gal (= 6 oz in 2 gal) |
| 6 | Maxim 4FS 1.5 fl oz |
| 7 | Maxim 1.5 oz with pulled plants |
| 8 | Mertect 2.5 oz with pulled plants |
| 9 | UTC with pulled plants |

plot size: 1 bed by 12 plants (about 10 ft)
Plants cut: 5/26/15
dip treatment: 5/26/15
dip time: ~ 30 secs
Spacing: 9"

plant stand: June 9 initial plant stand counts
disease: stem rot disease evaluation on June 25
Harvest: 9/4/15 101days after transplanting
used 2-row digger, then sorted into buckets

**SUMMARY**

This was a fungicide trial to evaluate the efficacy of various fungicides applied at transplanting to sweetpotatoes to control stem rot, *Fusarium oxysporum f.sp. batatas*. The variety used was a *Fusarium* susceptible Japanese type similar to Kotobuki in appearance (purple skin and white flesh). Applications were made to slips (cut plants) as a plant dip on May 26 just before transplanting. Fungicide rates were based on label recommendations then adjusted to equivalent concentrations for 2 gallons of water. Fungicides included Serenade Soil biofungicide (*Bacillus subtilis*), Botran (Dicloran), Mertect (thiabendazole), Regalia (extract of *Reynoutria sachalinensis)*, and Maxim (fluidoxonil). Plants were dipped for 30 seconds and then allowed to drain before transplanting. All plants were cut about 1 inch above the soil line except for those treatments that used pulled plants (treatments 7, 8, 9). Transplanting was done with a standard 6-row finger planter with 12 plants per plot. Approximately 2 and 4 weeks after transplanting the plots were evaluated for plant stand and symptoms of stem rot (Figure 1). Harvest was done with a 2-row digger and separated into standard size grades. Culls were separated into roots with obvious stem rot when possible. Because of the small size of these plots and the resulting high variability, yields have not been adjusted and are reported as pounds per plot.

Results are shown in Tables 1 and 2 and in Figure 2. No significant difference was observed in plant stand between treatments, but Mertect was the lowest at 88%, suggesting that this treatment causes plant mortality even with a reduced dipping time of only 30 seconds (last year, similar but greater effects were observed with a dipping time of 2 minutes). Stem rot at four weeks after planting was significantly different among treatments, with less than 2% stem rot in the Maxim treated plants and more than 30% with Mertect and Serenade Soil treatments (Figure 2). There was little difference in the amount of stem rot at harvest, however, with an average of 4.9% of the harvested roots that were culled for this reason. Best yields occurred with the Maxim treated plants, Botran, and the untreated plots with pulled plants.

As in 2014, the pulled plants fared very well in this test, with improved yield and no more harvest stem rot then the plants that were cut, even though cutting is a recommended practice to control this disease.

Maxim fungicide applied at transplanting appears to be a safe and effective method to reduce the onset of stem rot in sweetpotatoes. This affect is slightly improved using pulled plants as compared to cut plants. Future plans should evaluate the combination of Maxim with pulled plants in larger field strip tests to verify these preliminary results.

**Acknowledgements**. Many thanks to Blaine Yagi for his cooperation with this test, as well as Syngenta (Derrick Hammons) for product support.

**Figure 1. Stem rot symptoms on sweetpotatoes were evaluated 4 and 8 weeks after transplanting.**

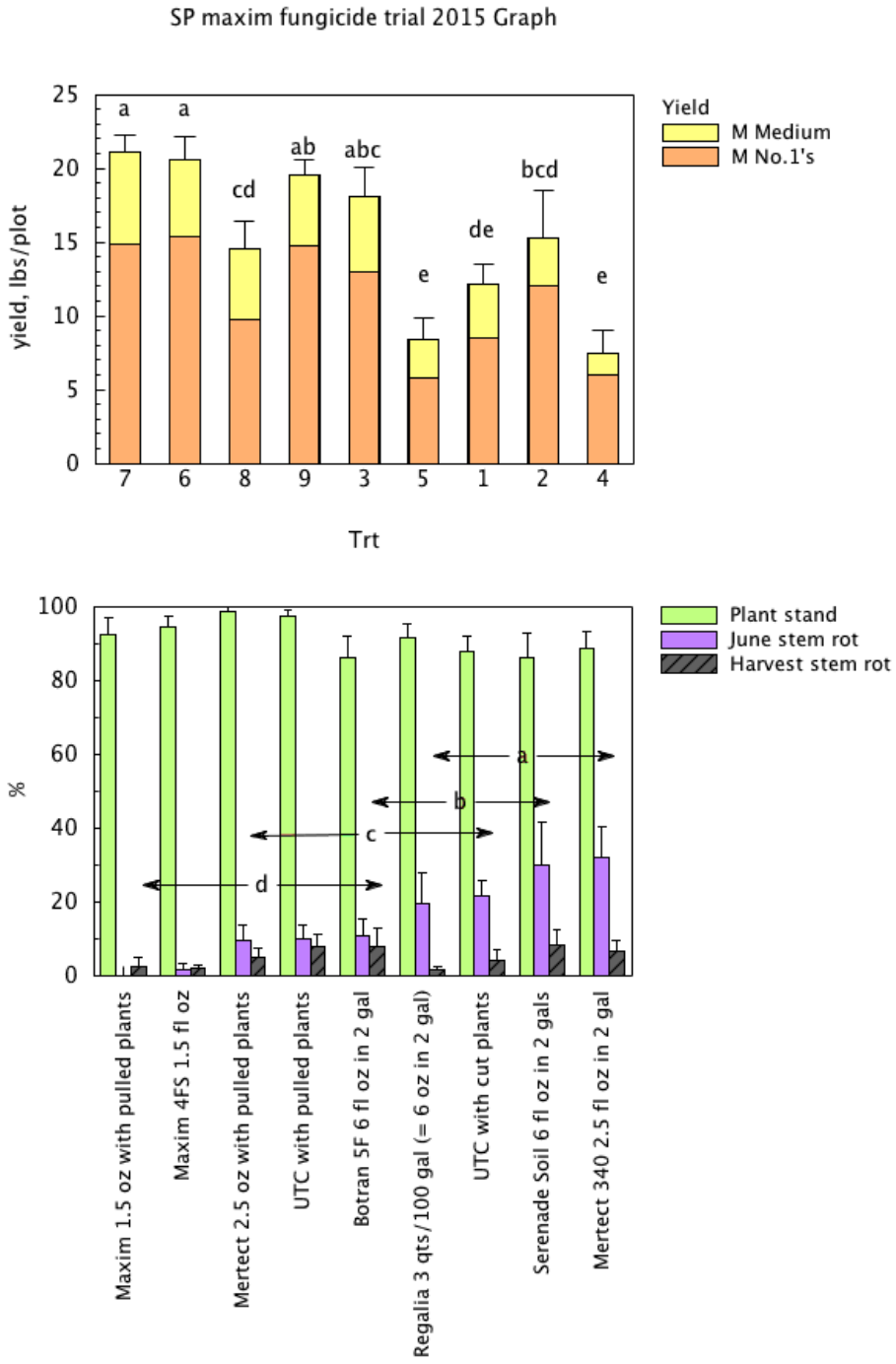



**Figure 2. Treatment averages for plant stand, yellow plants, and roots with stem rot at harvest (bottom) and total marketable yield (TMY), and infected roots as affected by fungicide treatments.**

**Table 1. Stem rot fungicide efficacy trial in sweetpotatoes (variety Kenne 12), Yagi Bros Farms 2015.**

| Treatment | | 6/9/15 plant stand (1) | 6/25/15 Stem Rot (2) | qrt corr. | Harvest yield, lbs per plot (3) No.1's | ledium | Jumbo | culls | TMY | Culls with stem rot (4) % | sqrt corr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | UTC with cut plants | 87.7% | 21.8% | 0.846 | 8.5 | 3.6 | 0.0 | 0.6 | 12.1 | 4.1% | 0.734 |
| 2 | Serenade Soil 6 fl oz in 2 gals | 86.1% | 29.8% | 0.881 | 12.0 | 3.3 | 0.0 | 1.0 | 15.3 | 8.2% | 0.761 |
| 3 | Botran 5F 6 fl oz in 2 gal | 86.1% | 10.8% | 0.777 | 13.0 | 5.1 | 0.0 | 1.2 | 18.1 | 7.7% | 0.757 |
| 4 | Mertect 340 2.5 fl oz in 2 gal | 88.4% | 32.0% | 0.899 | 6.0 | 1.4 | 0.0 | 0.6 | 7.4 | 6.6% | 0.751 |
| 5 | Regalia 3 qts/100 gal (= 6 oz in 2 gal | 91.5% | 19.5% | 0.827 | 5.8 | 2.6 | 0.0 | 0.2 | 8.4 | 1.5% | 0.718 |
| 6 | Maxim 4FS 1.5 fl oz | 94.4% | 1.7% | 0.718 | 15.4 | 5.2 | 0.0 | 0.4 | 20.6 | 2.0% | 0.721 |
| 7 | Maxim 1.5 oz with pulled plants | 92.2% | 0.0% | 0.707 | 14.8 | 6.3 | 0.0 | 0.4 | 21.1 | 2.5% | 0.724 |
| 8 | Mertect 2.5 oz with pulled plants | 98.7% | 9.4% | 0.769 | 9.7 | 4.8 | 0.0 | 0.6 | 14.5 | 4.9% | 0.735 |
| 9 | UTC with pulled plants | 96.8% | 11.7% | 0.783 | 14.6 | 4.1 | 0.0 | 1.5 | 18.8 | 6.6% | 0.758 |
| | Average | 91.4 | 15.2% | 0.801 | 11.1 | 4.1 | 0 | 0.7 | 15.2 | 4.9% | 0.740 |
| | LSD 0.05 | ns | 18.2 | 0.105 | 5.0 | 2.3 | --- | ns | 5.8 | ns | ns |
| | CV, % | 11.9 | 104.5 | 11.3 | 30.9 | 38.0 | --- | 136.3 | 26.1 | 132 | 5.8 |

1) Established plants after 2 weeks as a percentage of transplanted.
2) Plants showing symptoms of stem rot on this date as % of total plants in plot, % and square root corrected.
3) TMY = total marketable yield, sum of #1's and mediums. Culls are roots with stem rot.
4) Roots at harvest with stem rot as as compared to TMY, % and square root corrected.
LSD = Least significant difference at the 95% confidence interval. NS = not significant.
CV% = coefficient of variation

**Table 2. Soil test results for sweetotato trials 2015.**

| AMPLE # | DESC | NO3-N 312.03 ] ppm | Olsen-P 340.03 ] ppm | X-K 360.04 ] ppm | X-K 360.04 ] meq/100 | X-Na 360.04 ] ppm | X-Na 360.04 ] meq/100 | X-Ca 360.04 ] meq/100 | X-Mg 360.04 ] meq/100 | CEC (estimat 360.04 ] meq/100 | OM (LOI) 415.03 ] % | pH 205.02 ] | SAR calculati on |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Nimitz nematicide | 17.49 | 32.9 | 142 | 0.36 | 11 | 0.05 | 1.86 | 0.91 | 3.18 | 0.85 | 6.32 | 0.60 |
| 3 | **Yagi Fungicide** | 1.71 | 24.1 | 70 | 0.18 | 13 | 0.06 | 2.22 | 0.21 | 2.67 | 0.68 | 7.05 | 0.77 |
| 4 | NSPCG Trial | 6.94 | 22.5 | 89 | 0.23 | 84 | 0.36 | 5.38 | 0.40 | 6.38 | 0.89 | 7.61 | 2.99 |
| 5 | ALT2015 | 11.54 | 19.3 | 407 | 1.04 | 16 | 0.07 | 1.14 | 0.33 | 2.58 | 0.38 | 6.37 | 1.15 |
| 7 | Dominus Fumigation | 10.79 | 5.7 | 50 | 0.13 | 23 | 0.10 | 3.45 | 0.60 | 4.28 | 0.40 | 8.12 | 0.99 |
| 8 | 175 Hill selection | 5.03 | 11.9 | 64 | 0.16 | 6 | 0.02 | 1.19 | 0.25 | 1.63 | 0.43 | 6.88 | 0.33 |

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