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PROGRESS REPORT  
To  
North Carolina SweetPotato Commission

TITLE: Sweetpotato Breeding and Variety Development Support

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DEPARTMENT: Horticultural Science

REPORT:

**Project Objective(s):** The objectives of the Sweetpotato Breeding and Genetics Program are: 1) to develop high quality sweetpotato varieties for North Carolina growers that possess exceptional yield, appearance, quality, and disease and insect resistance characteristics; and 2) to conduct basic and applied breeding and genetics studies focused on identifying and incorporating traits of economic importance into sweetpotato germplasm and new cultivars.

**Project Summary**

Funds provided by the North Carolina Sweetpotato Commission supported all aspects of the breeding program's research. Highlights of our 2008 activities are listed below. A detailed description of the overall activities of the breeding program, advanced clone comments, and tables presenting the results of our advanced, preliminary and National Sweetpotato Collaborators trials follow the project summary. Overall, we experienced a very productive year.

1. Covington, officially released during 2005, continued to grow in importance in NC during 2008 with over 30,000 acres of Covington reportedly produced. Many, but not all, reports on the performance of Covington (yield, shape, storage quality, pack-out potential, plant bed productivity and plant stand establishment) have been very favorable. Like most other sweetpotatoes, Covington's planted during the first week in June 2008 were severely impacted by the extreme heat.
2. The U.S. Patent and Trademark Office officially issued the Plant Patent for Covington (US PP18,516) on Feb. 26, 2008. Revenue generated from this variety will benefit the breeding program and contribute to its long-term sustainability.
3. NC99-573 was released by NCSU as the variety Hatteras in Nov. 2008. Hatteras performed very well in both research station and on-farm trials this year. It was evaluated by five seed growers in large-scale trials during 2007-2008, and in 2007-2008 in commercial storage and processing systems. It performed well in most, but not all locations. Hatteras is Plant Patent Pending and is available in limited quantities to certified seed growers who have purchased a license to produce and sell seed of Hatteras.
4. In our paired-cross and polycross breeding nurseries we harvested over 120,000 true seed. These crosses represent the foundation of our program's efforts. Roughly one-thirds will be planted in the field for evaluation during 2009.
5. In our table-stock early generation breeding plots, we planted 44,800 true seed in research station and on-farm sites, and made 903 new seedling selections. We also planted 987 second-year and 97 third-year selections at the HCRS and CRS as 25-hill and 100-hill plots from which 216 and 47 selections were made, respectively. Each of these selections has the potential to be a new variety.
6. In our preliminary and advanced clone evaluations, we conducted 9 replicated yield trials of at the Horticultural Crops Research Station (HCRS), Clinton and the Cunningham Research Station (CRS), Kinston. Hatteras was the top performer in eight of those trials for total marketable yield, and in seven of those for bushels of No.1 roots produced. Covington was the only clone to out produce Hatteras in any trial. Appearance, shape and size uniformity of Hatteras was among the

- top 2 in all trials. Virus indexed Hatteras has shown a good boost especially for appearance ratings.
7. We completed our eleventh year of the Grower-Participatory Breeding Project (GPBP) and evaluated 27 advanced or preliminary lines in unreplicated trials at our two GPBP sites. Detailed results of these evaluations are reported on in the GPBP report.
  8. In our disease nurseries, we evaluated 230 clones for field resistance to *Streptomyces* soil rot (SSR) in replicated 5-hill plots in our disease nursery at the HCRS. These clones were also screened for *Fusarium* wilt and root-knot nematodes in replicated greenhouse trials.
  9. With the MPU, we continued our long-standing collaboration with Dr. Zvezdana Pesic-VanEsbroeck by providing new clones for clean-up and testing, and assisting with the evaluation of the “seed source” tests conducted at the HCRS. These evaluations are reported on in the MPU report.
  10. We continued our collaboration with Dr. Den Truong, USDA-ARS to evaluate the processing and fresh cut potential of several orange-fleshed clones including Beauregard, Covington and Hatteras, and continued our project to determine the inheritance of anthocyanins in purple-fleshed sweetpotatoes and their potential nutraceutical and natural colorant properties.
  11. We continued a long-term project to identify and develop sweetpotatoes more resistant to soil insects. We have established a permanent field insect nursery at the NCDA&CS, which should allow us to increase pressure from grubs and flea beetles. Wireworm *Diabrotica* and *Systema* pressure remains very high. Several putative insect resistant parents have been identified in this project to date and we have begun making paired crosses amongst them.
  12. We continued our collaborative project with Dr. Mike Jackson, Entomologist and the new Leader of the USDA-ARS Sweetpotato Breeding Program at the US Vegetable Laboratory in Charleston to bring in insect resistance from USDA material into NC adapted clones.

#### Project Cooperators

Researchers	Extension	Growers
Dr. Bryon Sosinski	Mr. William Little	Jones Farms
Dr. Zvezdana Pesic-VanEsbroeck	Mr. Allan Thornton	Williams Farms
Dr. Jonathan Schultheis	Mr. Howard Wallace	
Dr.		
Dr. Gerald Holmes		
Dr. Charles Averre		

#### 2008 Polycross Breeding Nurseries

Two polycross nurseries were established at the Central Crops Research Station (CCRS) in Clayton in 2008. The **Elite Nursery**, designed to produce materials with the potential to become varieties, contains cultivars and near-commercial clones that are outstanding for particular characteristics, such as yield, appearance, and disease and insect resistance and are combined and crossed. The **Streptomyces Soil Rot (SSR) Nursery**, dedicated to developing parents with high levels of soil rot resistance has parental breeding material developed by NCSU, LSU, and the USDA. Table 1 provides results of the seed harvests per maternal parent for the Elite and SSR nurseries. This was a good year for seed production. Flowering was good for most of the summer and though seed set was only modest, enough seed was obtained. Distribution across parents was good, with most parents meeting our seed goals. We also have a large amount of very good remnant seed from the previous several years. We will look at the performance of the offspring from these nurseries and plant seed from the lots that produced the best advanced and breeding clones. This may actually increase the average quality of the seedlings in 2009.

#### First-Year Seedling Selections

##### Research Station Trials

Over 40,000 true seed from the 2007 Elite and SSR polycross nurseries were grown in the Horticultural Department greenhouses starting in February. In addition to seed from our polycross nurseries, we planted 234 seed from elite paired crosses, 1388 remnant seed from 1976-1984 to evaluate for different horticultural traits, and 2374 seed from Dr. Mike Jackson of the USDA Vegetable Lab, Charleston SC selected for insect tolerance. In the field, the seedlings were planted thirty inches apart so they remained as distinct hills at harvest. Selection at harvest was based on relative yield, shape, flesh color, skin

texture, size distribution, root number, earliness, and observable diseases or defects.

Table 2 contains a list of the selections made by nursery and maternal parent at the CRS. A total of 293 selections were made from the 12,559 seed planted from the Elite nursery for a selection rate of 2.3%. The 13,007 seed from the Soil Rot nursery yielded 326 selections, a rate of 2.5%. Our long-term average is 1.5%. The on farm trials were planted during the 100 degree weather in early June and suffered significant mortality. The 7,075 seed from the 07 Elite nursery produced 137 selections (1.9%) while the 8,160 seed from the 07 SSR nursery yielded 130 selections (1.6%). Hopefully selections will be tolerant to hot planting conditions. The paired crosses gave us 4 selections (1.7%), the seed for insect tolerance 13 (0.5%) and the remnant seed no selections. The paired cross and remnant seed were grown in Clinton and in a field where there appeared to be growth regulator carryover from a previous test, reducing the selection percentages.

### On-Farm Trials

For the Grower-Participatory Breeding Project, two on-farm sites were used to evaluate 15,235 seedlings. The parents and selections are shown in Table 3. A more detailed report on this project is presented in our GPBP report. Cooperators involved in this project were:

<u>Extension Personnel</u>	<u>Growers</u>
William Little	Jones Farms, Nash County
Allan Thornton	Williams Farms, Sampson County

Field sites were located within commercial fields and the trials were treated in the same fashion as the commercial fields (fertilizer, herbicides, etc.) except for the three-foot in-row spacing of seedlings. Selections were made in cooperation with extension personnel and growers. Growing conditions varied between the sites. Selection criteria were based on the appearance of the check varieties Beauregard and Covington. These selections will be planted at the HCRS and CRS in 2009 as unreplicated 25-hill plots for the second cycle of selection. It is very useful for us to select under commercial conditions to identify material adapted to actual growing conditions. Selection percentage over the on farm tests was 1.8%.

During 2002, we established a second component to the GPBP and began evaluating promising breeding lines under commercial conditions. In 2008, 27 advanced and preliminary lines were evaluated. Notes on how they performed at each location were taken and these are combined with research station data to determine the potential of each as a variety.

### **Second-Year Selections**

In 2007, we made 987 first-year table-stock seedling selections. A few of these rotted in storage. The remaining clones were bedded in the new greenhouse at the HCRS in Clinton. These were planted in 25-hill plots at both the LCRS and HCRS in 2008. Selection criteria were essentially the same as for the first-year single-hill selections, but having a row instead of a hill allows for a better idea of shape and size consistency, and relative yield. This year we made 216 selections, a 20% selection rate, higher than the typical 15%. 47 selections were chosen at both sites for an overlap of 22%.

### **Third-Year Selections**

The 97 second-year selections made in 2007 were planted as unreplicated 50 to 100-hill plots at the HCRS and CRS in 2008. We selected 47 for further evaluation with nine being selected in both locations. Our evaluation criteria remain the same as our second-year selections, but we become stricter for any flaws in appearance, yield and disease susceptibility, etc. at this stage. Next season these clones will go into replicated yield tests in multiple locations. The most promising will be entered into the on-farm trials for a more rapid assessment of their adaptability across environments.

### **Advanced Selection Trials**

Thirty-seven advanced selections were evaluated this year. Twenty have been dropped, four have been designated as breeding lines only, and the remaining 13 will be tested again in 2009. The most promising clones are described below.

### Hatteras (NC99-573)

This clone produces attractively shaped, smooth skinned, rose-colored roots. Yield is high with a growing season similar to or slightly longer than Beauregard. Rows of eyes are a concern for appearance, and lenticels are fairly prominent in wet conditions. It is susceptible to root-knot nematodes like Beauregard, but appears to resist cracking in the same fashion as Beauregard also.

#### Average performance of NC99-573, B94-14, Beauregard and Covington over 34 yield trials 2002-2008 (1 test in 2002, 4 in 2003, 4 in 2004, 4 in 2005, 5 in 2006 and 7 in 2007 and 9 in 2008).

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
<b>NC99-573</b>	<b>942</b>	<b>864</b>	<b>125</b>	<b>116</b>	<b>54</b>	<b>26</b>	<b>12</b>	<b>8</b>
Covington	815	758	110	100	58	23	12	7
B94-14 G2	865	745	100	99	49	21	16	14

### SUMMARY DESCRIPTION – Hatteras (NC99-573)

**Parentage:** L87-95, open pollinated from the 1998 Parallel nursery

#### Plants:

Vine: Trailing, dense canopy  
 Leaves: Heart-shaped to slightly lobed, green  
 Sprout production: Good  
 Transplant survival: Good

#### Storage roots:

Shape: Fusiform to blocky  
 Skin color: Rose  
 Flesh Color: Moderately deep orange, uniform  
 Skin Surface: Smooth

#### Characteristics

Yield: High  
 Season: Mid to early  
 Fusarium stem rot: Resistant  
 Pox: Resistant  
 Root-knot nematodes: Susceptible, but appears tolerant to cracking  
 Storability: Good  
 Consumer quality: Good baking quality, canning quality being tested  
 Remarks: Desirable attributes include highly attractive, smooth skinned fusiform roots. Yields are very high. Storage appears to be good so far, testing in commercial conditions continues. Occasionally can set a high number of roots making it late. Spacing and fertility need to be optimized. Very similar shapes and appearance to Beauregard. Rows of moderately deep eyes. This year a couple of sites had excessive latex causing black stains on the roots, these sites were very wet when harvested, this needs to be watched as these roots may be unmarketable.

Yield Trial Data: see table above

Disposition: Released. Plants available from the MPU pending license approval

No other advanced lines performed as well as Covington or Hatteras. A number have outstanding characteristics for certain traits and will be used in the 2009 breeding nurseries. The results of yield tests that included these clones and other promising selections are presented in Tables 4-12. The comment codes used in the tables are described in the Comment Codes Section after the tables. All yields are reported as 50 lb. bushels per acre units.

### **Purple-Fleshed Breeding Project**

Eight years ago we began breeding for sweetpotatoes with high levels of anthocyanin content. Our initial efforts focused on identifying material with purple flesh from the US germplasm repository, and acquiring germplasm from international sources. During the last five years we made paired crosses using the best purple-fleshed material we had, with well adapted US clones. Considerable progress has been made for incorporating shape and appearance traits and fusarium wilt resistance. Soil rot and root-knot nematodes resistance is still lacking in most lines. Fresh weight yields are low compared to orange fleshed tablestock material. There are two reasons for this; the first is because most have a high dry matter content, which requires significant energy. When compared on a dry weight basis the yields are similar or higher than tablestock clones. The second is that there is a yield cost associated with producing the anthocyanin pigments. We continue to collaborate with Dr. Den Truong in Food Science to determine the levels and ratio's of the various purple pigments to develop profiles for the various uses of purple fleshed sweetpotatoes, and to gain a greater understanding of the nutritional value of these pigments. Our goals are quite diverse for the purple-fleshed materials and include 1) fresh market cultivars, 2) chipping lines, and 3) as a natural colorant. Crosses have been made between purple-fleshed clones and clones varying widely in dry matter and beta-carotene content to produce a wide range of physical properties suited for these different purposes. Evaluation for horticultural traits is being done the same as for tablestock lines, though selection standards will not be as strict until better lines are obtained. Prototype lines were tested on the GPBP trials starting in 2005. This will continue in 2009 to help us identify clones adapted to NC growing conditions. So far none have held up well across our trials.

### **Tablestock Clones with Improved Processing Quality**

Interest in sweetpotatoes as a food ingredient continues to increase. Current major cultivars do not cover the full range of characteristics required to meet the needs of all the products. To address some of these needs we have begun screening germplasm for suitable dry matter, sugars and starch profiles, and pigment contents. Our goal is to identify clones that can be used first for tablestock, but whose seconds could be used to enhance the range of products derived from sweetpotatoes. Tables 13-14 show the yield and appearance results for clones that have low reducing sugars or higher dry matter content and produce superior chips and fried products to Covington, Beauregard or Hatteras. Higher dry matter content, while useful for certain cooked products, also tends to reduce fresh yield or require a longer season to size up.

### **Disease Resistance Screenings**

In addition to the selection and yield evaluation trials, we screened 230 advanced, preliminary, and parental lines for resistance to *Streptomyces* soil rot in the field and 150 of these in the GH. Nearly sixty of the field lines were dropped prior to rating. Of the remaining 126, 26 were resistant, 30 moderately resistant, 21 moderately susceptible and 49 susceptible to soil rot. Of the nearly 150 clones tested in the greenhouse, 18 were resistant, 23 moderately resistant, 29 moderately susceptible and 74 susceptible. Most of the susceptible lines were either high dry matter or purple-fleshed clones. Greenhouse screening of 115 clones for southern root-knot nematode revealed 56 resistant, 11 moderately resistant, 15 moderately susceptible, 33 susceptible clones. Our Fusarium test included 214 clones with 95 resistant, 41 moderately resistant, 21 moderately susceptible, and 57 testing susceptible. All cultivars released from the program must have fusarium resistance.

Our field SSR screening nursery has completed its eleventh year. Soil rot incidence was good. There was also considerable root-knot nematode damage and some circular spot, though less than the past

couple of seasons. In the replicated trial we saw several clones with root-knot nematode damage and subsequent infection with fusarium and other rots. The presence of other diseases makes it harder to rate for soil rot damage, but any clones thriving in this site have high levels of multiple disease resistance. This plot has allowed us to pick parents with multiple disease resistances under field conditions for use in our nurseries. Part of the plot is used for a replicated yield trial used to measure yield reduction caused by SSR on advanced clones being considered for release. Results of the 2008 test (Table 12) show large differences in marketable yield, this year mostly due to reduced production, but in some cases due to culls for cracking and rotting. Covington was a standout with the highest marketable yield, bushels of No.1 roots and appearance, and a very low cull rate of 8% for this test (mean of test was 22%). Hatteras had considerably higher culls, due to shape and root-knot nematode cracking. However its overall appearance was still good and most of the damage not severe. Besides affects on yield the field trial gives information on whether SSR is able to form lesions on the storage root. Our greenhouse test, while very useful, doesn't give us storage root lesion data. Soil rot may affect primarily fibrous roots, storage roots or both depending on the clone and knowing this will help us in developing clones resistant to both.

### **2008 National Sweetpotato Collaborator Trials**

In 2008 we conducted two National Sweetpotato Collaborators trials, one at the HCRS in Clinton, the other at the LCPRS in Kinston. Tables 4 and 5 present the results of the trials. Trial results were similar, Hatteras had the highest total marketable yield, bushels of number one roots, and appearance. Covington was also a standout, not quite as high in total yield as Hatteras, but with a higher percent No.1's. Both had very low cull percentages. Beauregard (B94-14 G2) had a high yield in the LCPRS trial, but also by far the highest percentage jumbo's. In the HCRS trial both yield and appearance were way off and there was significant russet crack. B63 Beauregard had severe russet crack in both trials with culls, primarily due to russet crack, in excess of 40%. Evangeline performed fair in the LCPRS trial, though significantly fewer bushels of ones than Hatteras or Covington. It did poorly in the HCRS trial, with low yields and heavy cracking and russet crack. This is the second year in a row it has underperformed Covington and Hatteras.

Murasaki-29 (L01-29) is a purple-skinned, cream-fleshed cultivar aimed at replacing the current Japanese clones. It has much better disease resistance, including soil rot, fusarium and root-knot nematode resistances. It did not do as well as Japanese in either trial this year, yields were low and there was significant cracking. Both these lines are longer season lines and would perform much better given an extra few weeks to size.

Below are descriptions of the clones in the National Collaborators Trials.

Overall appearance was rated using a subjective 0-9 scale with 0 = very poor, 3= poor, 5=fair, 7=good and 9= excellent. Appearance ratings such as a 6 mean that a clone, in our opinion, was a little bit better than fair (6), but still not good (7).

## **Lower Coastal Plains Research Station National Sweetpotato Collaborators Trial - 2008 Description of Official Entries -**

**Beauregard (B94-14 G2)** - Rose skin, orange flesh with some yellow cortical rings, moderately smooth skin, blocky shapes, mid to early season. Significant curved roots and some cracking, length/diameter ratio = 2.5. Overall appearance = 5.5.

**Beauregard (B63 G2)** - Rose skin, orange flesh with some yellow cortical rings, moderately smooth skin, blocky and irregular shapes, mid season. Severe russet crack and cracking, significant early season cracking and curved roots, length/diameter ratio = 3.0. Overall appearance 3.

**Covington (G2)** - Rose skin, orange flesh, slightly flakey skin, blocky and fusiform shapes, mid season. Nice shapes, very few crooks, length/diameter ratio = 2.0. Overall appearance = 6.5.

**Evangeline (L99-35)** – Rose skin, deep orange flesh, slightly flakey skin, elliptic shapes, mid season. Mix of shapes, length/diameter ratio = 2.5. Overall appearance = 5.8.

**NC99-573 (G2)** – Rose skin, deep orange flesh, moderately smooth skin, blocky and elliptic shapes, mid to early season, nice shapes, some latex, significant insect damage, length/diameter ratio = 2.5. Overall appearance = 7.2.

**L02-32 (G2)** - Rose skin, deep orange flesh, moderately smooth skin, strong elliptic shapes, mid season, significant cracking, moderate tails, length/diameter ratio = 2.0. Overall appearance = 4.2.

**Murasaki-29 (L01-29 (G3))** – Purple skin, cream flesh, moderately smooth skin, elliptic shapes, late season, moderate cracking, little here, length/diameter ratio = 2.5. Overall appearance = 5.8.

**NC Japanese (G2)** – Purple skin, cream flesh, moderately smooth skin, blocky shapes, mid season. Deep eyes, some sprouting and some russet crack, lots of crooked roots, shows skinning, length/diameter ratio = 2.5. Overall appearance = 4.5.

## **Horticultural Crops Research Station National Sweetpotato Collaborators Trial - 2008 Description of Official Entries -**

**Beauregard (B94-14 G2)** - Rose skin, orange flesh, moderately smooth skin, blocky and elliptic shapes, mid season. Mostly curved roots, terrible shapes, a little russet crack, length/diameter ratio = 3.0. Overall appearance = 3.2.

**Beauregard (B63 G2)** - Rose skin, light orange flesh, moderately smooth skin, irregular shapes, late season. Nearly all curved roots, v. severe russet crack, length/diameter ratio = 3.5. Overall appearance = 1.2

**Covington (G2)** – Dark rose skin, orange flesh, moderately smooth skin, round elliptic and blocky shapes, early to mid season. Chunky, moderate secondary roots, fairly prominent lenticels, length/diameter ratio = 2.0. Overall appearance = 6.4.

**Evangeline (L99-35)** – Rose skin, deep orange flesh, moderately smooth skin, blocky and elliptic shapes, mid to late season. Many crooked roots, some russet crack, little here. length/diameter ratio = 3.0. Overall appearance = 2.6.

**NC99-573 (G2)** – Rose skin, deep orange flesh, smooth skin, elliptic shapes, mid to early season, nice shapes, length/diameter ratio = 3.0. Overall appearance = 7.0.

**L02-32 (G2)** - Rose skin, deep orange flesh, moderately smooth skin, strong elliptic shapes, mid to late season, many misshapen and bumpy roots, some cracking, length/diameter ratio = 2.5. Overall appearance = 2.4.

**Murasaki-29 (L01-29 (G3))** – Purple skin, cream flesh, moderately smooth skin, elliptic and blocky shapes, late season, little here, length/diameter ratio = 3.0. Overall appearance = 2.6.

**NC Japanese (G2)** – Purple skin, cream flesh, moderately smooth skin, blocky shapes, mid season. Deep eyes, russet crack, cracking, bumpy shapes, length/diameter ratio = 3.0. Overall appearance = 4.8.



Table 1. Sweetpotato True Seed Harvested in 2008.

Maternal Parent	No. Seed/Polycross Nursery		Total
	Elite	SSR	
1528	3780	---	3780
93-17	---	6752	6752
96-61	3206	---	3206
97-433	2854	---	2854
97A-45	3038	---	3038
99-026	2265	---	2265
99-524	1609	---	1609
99-573	4121	9457	13578
01-156	1400	2299	3699
01-214	4553	---	4553
02-350	---	4226	4226
02-423	2925	---	2925
02-459	4752	8547	13299
03-030	---	6075	6075
03-066	932	---	932
03-302	---	5539	5539
03-380	1243	---	1243
04-090	---	7376	7376
04-412	---	2461	2461
05-408	---	2300	2300
DM04-206	---	1106	1106
DM04-226	---	1	1
L01-29	---	5747	5747
L99-35	2936	---	2936
Ruddy	3374	7187	10561
Tib 4	1071	837	1908
TIS 70683	---	7643	7643
Totals	44059	77553	121612

'---' line was not in this nursery.

Table 2. 2008 Sweetpotato seedlings selected at the CRS, Kinston.

Maternal parent	No. of selections	Maternal parent	No. of selections
<i>Seed from the 2007 Elite nursery</i>			
NC96-61	15	NC01-214	14
NC97A-04	30	NC03-380	14
NC97A-45	11	NC C58	25
NC97-433	21	L87-95	28
NC99-026	13	L95-95	13
NC99-524	26	L99-35	28
NC99-573	29	Ruddy	20
NC01-156	6		
		<b>Total</b>	<b>293</b>
<i>Seed from the 2007 SSR nursery</i>			
NC96-61	17	NC 02-423	21
NC 97A-45	26	NC 02-459	27
NC 99-026	32	NC 03-030	17
NC 99-573	42	NC 03-302	22
NC 00-720	15	Murasaki-29	17
NC 00-748	12	Ruddy	24
NC 01-156	19	Tib 4	22
NC 02-350	13		
		<b>Total</b>	<b>326</b>
<i>Seed from paired crosses 2007</i>			
Evangeline OP	1	96-61 X Evangeline	1
97-433 X 02-459	2		
		<b>Total</b>	<b>4</b>
<i>Seed from Dr. Jackson, USDA Vegetable Lab, Charleston</i>			
W259	1	W333B	1
W296	1	W384	1
W316	1	W385	2
W317	1	W386	2
W323	1	W395	
W333	1		
		<b>Total</b>	<b>13</b>
<b>Grand Total</b>			<b>636</b>

Seedling Selections Continued on Next Page

Table 3. 2008 Sweetpotato seedlings selected on farm.

Maternal parent	No. of selections	Maternal parent	No. of selections
<i>Jones Farms, seed from the 2007 SSR nursery</i>			
NC 96-61	6	NC 02-350	7
NC 97A-45	6	NC 02-423	6
NC 99-026	10	NC 02-459	6
NC 99-573	30	NC 03-030	9
NC 00-720	3	Murasaki-29	10
NC 00-748	3	Ruddy	14
NC 01-156	6	Tib 4	14
		<b>Total</b>	<b>130</b>
<i>Williams Farms, seed from the 2007 Elite nursery</i>			
NC C58	13	NC 01-156	6
NC 96-61	7	NC 01-214	6
NC 97A-04	21	NC 03-380	5
NC 97A-45	17	Evangeline	14
NC 97-433	10	L95-95	7
NC 99-026	10	Ruddy	13
NC 99-573	8		
		<b>Total</b>	<b>137</b>
		<b>On Farm Grand total</b>	<b>267</b>

Table 4a. 2008 National Sweetpotato Collaborators Yield Trial, CRS, Kinston, NC Planted: 19Jun08; Harvested: 17Oct08; Days to Harvest: 121.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		Bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC99-573 G2 (Hatteras)	996	957	116	148	58	22	15	4
B63 G2	642	340	46	49	32	16	5	47
B94-14 G2	932	865	.	136	58	9	25	7
Covington G2	681	668	80	.	69	17	13	2
Evangeline	725	659	76	100	55	29	6	9
L02-32	548	466	55	77	49	35	1	15
Murasaki-29	369	364	45	57	47	51	0	1
NC Japanese	654	516	66	79	53	14	12	21
Grand Mean	693	605	70	91	53	24	10	13
CV (%)	21	24	28	27	14	32	57	58
LSD (p=0.05)	191	188	28	34	9	10	7	10

All trials are reported in 50 lb. bu.

Table 4b. 2008 National Sweetpotato Collaborators Yield Trial at CRS, Kinston, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC99-573 G2 (Hatteras)	ME	13	2.5	rs	ms	3.25	7	7	6,3	7	7.2	NS, ~LT, ID ^^ARC,^ESC,
B63 G2	M	15	3	rs	ms	3 ycr	8	7	6	5	3.0	CRK
B94-14 G2	ME	16	2.5	rs	ms	3	8	7	6	5	5.5	^CRK,~CR
Covington G2	M	16	2	rs	sflk	3	7	7	6,3	7	6.5	NS
Evangeline	M	15	2.5	rs	sflk	3.5	8	7	3	6	5.8	mixed shapes ^CR, strong
L02-32	M	18	2	rs	ms	3.25	8	7	3	6	4.2	elliptic shapes
Murasaki-29	L	23	2.5	pur	ms	1.75	7	7	3	6	5.8	~CR EY, ^CRK,
NC Japanese	M	25	2.5	pur	ms	1.5	5	7	6	6	4.5	~SPR,~RC

Comments: A rough test for appearance with, NC99-573 and Covington standouts for appearance. NC99-573 and Beauregard standout for yield and Covington for packout. B63 Beauregard had severe russet crack. Japanese outperformed Murasaki-29, a disease resistant Boniato type being considered as a replacement.

Table 5a. 2008 National Sweetpotato Collaborators Yield Trial, HCRS, Clinton, NC Planted: 24Jun08; Harvested: 06Oct08; Days to Harvest: 105.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		Bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC99-573 G2 (Hatteras)	977	922	226	121	53	37	5	6
B63 G2	283	147	36	19	7	52	0	41
B94-14 G2	624	446	.	60	34	33	6	26
Covington G2	881	798	208	.	56	19	15	10
Evangeline	302	227	58	29	36	39	0	25
Japanese	580	478	112	62	39	36	6	18
L02-32	341	246	62	32	22	50	1	27
Murasaki-29	205	195	50	24	27	68	0	5
Grand Mean	524	432	107	49	34	42	4	20
CV (%)	25	26	39	38	33	32	135	71
LSD (p=0.05)	153	132	49	22	13	16	7	16

All trials are reported in 50 lb. bu.

Table 5b. 2007 National Sweetpotato Collaborators Yield Trial at HCRS, Clinton, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC99-573 G2 (Hatteras)	ME	17	3	rs	sm	3.25	7	7	3	7	7.0	NS
B63 G2	L	16	3.5	rs	ms	2.75	8	7	7	3	1.2	^^RC, CRK
B94-14 G2	M	15	3	rs	ms	3	8	7	6,3	3	3.2	~RC, ^CRK
Covington G2	EM	19	2	dk rs	ms	3	7	6	2,6	6	6.4	SS, ~2°R, ~PI
Evangeline	ML	17	3	rs	ms	3.25	7	7	6,3	3	2.6	RC, ^^CRK
Japanese	M	25	3	pur	ms	1.5	5	6	6	5	4.8	RC, ^CR, B
L02-32	ML	19	2.5	rs	ms	3.25	7	7	3	4	2.4	^MSH, B, CR
Murasaki-29	L	24	3	pur	ms	1.5	7	7	3,6	5	2.6	

Comments: This test could have used a couple more weeks to size as indicated by the high percentages of canners. Notably, Covington had the highest percentage of Jumbo's, unusual but it does this occasionally. NC99-573 and Covington are standouts for yield, and appearance. Beauregard was rough looking and yield was off. Russet crack pressure was very high at this site and affected Beauregard, especially the B63 mericlone severely. Evangeline showed severe cracking and some russet crack damage. Japanese outperformed Murasaki-29, a disease resistant Boniato type being considered as a replacement.

Table 6a. 2008 Advanced Yield Trial at CRS, Kinston, NC. Planted: 19Jun08; Harvested: 20Oct08; Days to Harvest: 124.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC04-090	614	564	74	71	65	19	8	8
NC04-531	621	612	79	78	61	25	12	1
NC05-198	1012	784	101	100	56	15	6	23
NC99-573 G2 (Hatteras)	1027	970	125	123	56	17	21	6
B94-14 G2	882	778	.	99	51	15	23	11
Covington G2	839	804	104	.	62	15	19	4
Grand Mean	832	752	97	94	59	17	15	9
CV (%)	11	11	10	9	11	27	32	35
LSD (p=0.05)	141	119	14	14	10	7	7	5

Table 6b. 2008 Advanced Yield Trial at CRS, Kinston, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC04-090	ML	19	2	pur	ms	2.75	6	6	3	5	4.8	B, ~2 <sup>o</sup> R
NC04-531	ML	20	2.5	dk rs	ms	3 ycr	7	5	3	7	6.0	NS, ^LE
NC05-198	M	16	3.5	rs	ms	3	8	7	6	6	5.0	^L, ^CR, RC?, ^CRK
NC99-573 G2 (Hatteras)	M	15	2.5	rs	ms	3	7	7	6	7	6.5	Nice
B94-14 G2	EM	16	3	rs	ms	3	8	7	6	5	5.0	^CR, ^CLSH, ^CRK
Covington G2	M	17	2	rs	sflk	3	7	7	6,3	7	6.5	NS

Comments: A good test, most clones did well. NC05-198 had a very high yield but far too many culls for cracking and poor shapes. NC99-573 and Covington had both high marketable yield and good appearance scores.

Table 7a. 2008 Advanced Yield Trial at HCRS, Clinton, NC. Planted: 24June08; Harvested: 06Oct08; Days to Harvest: 105.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	%Cov	No.1's	Canners	Jumbo's	Culls
NC03-066	457	259	49	33	17	37	1	46
NC03-311	454	415	79	52	14	78	0	8
NC04-090	373	340	64	43	46	43	2	9
NC04-531	553	534	101	67	55	41	0	4
NC05-198	670	549	105	69	44	26	12	18
NC99-573 G2 (Hatteras)	1105	1030	194	129	58	28	8	7
B94-14 G2	712	530	.	67	39	23	13	25
Covington G2	895	811	154	.	61	16	13	9
Grand Mean	652	559	106	66	42	36	6	16
CV (%)	16	16	16	16	16	16	71	42
LSD (p=0.05)	154	132	25	16	10	9	6	10

Table 7b. 2008 Advanced Yield Trial at HCRS, Clinton, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC03-066	LM	17	3.5	co rs	ms	3.25	7	6	3,4	6	3.0	^^CR,CLSH,SF
NC03-311	L	21	3.5	rs	ms	3.25	7	7	4,3	6	4.8	L,~CR,^roots
NC04-090	ML	22	3	pur	ms	3	7	6	3	6	5.0	B,~RC?
NC04-531	ML	23	3	rs	ms	3	7	5	3	7	6.3	^LE,~VN
NC05-198	EM	17	3.75	rs	ms	3	7	7	3,4	7	5.0	^L, ~CR,~VN, D?
NC99-573 G2 (Hatteras)	E	17	3	rs	sm	3.25	7	7	3	7	7.5	N, ~LT,~VN
B94-14 G2	E	17	3.25	rs	ms	3	7	7	6,3, 7	5	4.5	^CLSH,^CRK
Covington G2	E	19	2.25	dk rs	ms	3	7	6	6,2	7	6.5	N, ~CLSH

Comments: This was a tough site, a lot of cracking and misshapen roots. It could have used a couple more weeks to size as indicated by the percentage of canners. NC99-573 and Covington were standouts for both yield and appearance.

Table 8a. 2008 Preliminary 1 Yield Trial at CRS, Kinston, NC. Planted: 11June08; Harvested: 10Oct08; Days to Harvest: 121.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC03-417	708	471	75	57	39	24	2	36
NC04-032	797	555	88	69	40	13	17	30
NC04-090	578	494	79	63	57	13	16	14
NC04-531	536	484	76	62	64	16	11	9
NC99-573 G2	1041	937	149	120	50	10	30	10
NC99-573 BS	812	673	106	87	52	15	16	17
B94-14 G2	891	640	.	81	26	10	35	28
Covington G2	822	799	126	.	61	14	23	3
Grand Mean	773	632	100	77	49	14	19	18
CV (%)	18	20	23	24	21	26	43	44
LSD (p=0.05)	202	183	33	28	15	5	12	12

Table 8b. 2008 Preliminary 1 Yield Trial at CRS, Kinston, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC03-417	ML	19	2	rs	ms	3.25	7	7	3,6	7	4.5	nice except for ^^CR
NC04-032	M	19	2.5	rs	ms	3.25	7	7	3,6	6	4.3	^^CR,^VN, ^2^R
NC04-090	M	17	2.5	pur	sm	3	7	7	3	5	4.5	B,^CLSH
NC04-531	M	18	2	rs	sm	3	7	7	3	7	6.3	Nice,^LE
NC99-573 G2	E	13	2.5	rs	ms	3.25	7	7	3	7	7.0	
NC99-573 BS		14									5.8	
B94-14 G2	E	15	3	rs	ms	3	7	7	6,3,	7	4	3.5 ^^MSH
Covington G2	M	17	1.5	rs	ms	3	7	7	6,2	7	6.3	chunky

Comments: A tough test for shapes and cracking. NC99-573 and Covington were standout for marketable yield and appearance. Note the difference between the G2 Hatteras (NC99-573) and breeder seed Hatteras (not virus indexed) in both yield and appearance.



Table 9a. 2008 Preliminary 1 Yield Trial at HCRS, Clinton, NC. Planted: 13Jun08; Harvested: 15Oct08; Days to Harvest: 125.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC03-417	796	771	92	76	46	50	0	3
NC04-032	961	872	100	85	57	30	4	9
NC04-531	771	747	92	76	58	36	3	3
NC99-573 G2	1296	1234	147	123	63	21	11	5
B94-14 G2	1136	913	.	91	35	18	25	21
Covington G2	1103	1043	124	.	61	27	6	6
Evangeline	977	860	101	88	62	23	2	12
Grand Mean	1007	922	110	90	55	29	8	8
CV (%)	18	21	18	21	15	19	71	51
LSD (p=0.05)	278	294	32	29	12	7	8	7

Table 9b. 2008 Preliminary 1 Yield Trial at HCRS, Clinton, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC03-417	L	21	2	dk rs	ms	3.25	7	6	3,5	7	5.5	~PI,~VN,~OV ^LE,^L,~CRK,
NC04-032	ML	20	3.5	rs	ms	3	7	5	3,6	6	5.3	~TP,~2°R ~VN,~LE,
NC04-531	L	23	2	rs	sm	3	7	6	3	7	5.8	^petites
NC99-573 G2	E	19	3	rs	sm	3.25	6	6	3	8	7.0	~LE,~T,~LT ^CLSH,
B94-14 G2	E	19	2.5	rs	sflk	3	7	7	3,7	4	4.3	^Jumbo's
Covington G2	M	20	2	rs	ms	3	7	6	6,3	7	6.8	~2°R,~LE,~PI
Evangeline	ME	20	3	rs	ms	3.5	7	6	3	6	5.0	^TP,^T

Comments: A high yielding trial. NC99-573 and Covington were best for marketable yield, pack out and appearance. B94-14 Beaugard had high total yield but also high levels of jumbo's and culls markedly reducing its value.

Table 10a. 2008 Preliminary 2 Yield Trial at CRS, Kinston, NC. Planted: 11June08; Harvested: 14Oct08; Days to Harvest: 125.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC05-106	929	866	101	85	49	7	37	7
NC05-198	862	744	82	84	53	8	25	14
NC05-257	914	755	84	83	51	18	14	17
NC05-284	793	654	72	73	61	11	12	17
NC05-349	976	908	101	102	64	16	14	7
NC05-431	812	721	81	78	57	21	9	12
NC05-528	697	627	69	71	52	14	24	10
NC05-536	719	593	65	67	54	14	15	17
NC05-553	1027	804	91	87	44	11	26	19
NC99-573 G2	1164	1136	126	126	57	12	28	2
B94-14 G2	1083	915	.	104	30	8	47	16
Covington G2	977	932	105	.	49	8	38	5
Grand Mean	912	803	88	87	52	12	24	12
CV (%)	15	16	16	16	15	33	41	67
LSD (p=0.05)	196	188	21	21	11	6	14	12

Table 10b. 2008 Preliminary 2 Yield Trial at CRS, Kinston, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC05-106	ME	12	2	rs	sflk	3	7	6	3	6	6.0	~T,CR
NC05-198	ME	15	3	co rs	ms	3.25	7	6	3,6	6	6.3	~CR ~CR,EY,~2°R,
NC05-257	M	16	2.5	dk rs	ms	3.5	5	6	6	5	5.5	mixed shapes
NC05-284	M	14	2.5	co	ms	3	7	6	6,3	6	6.0	~CR,RC? ~ESC,~VN,
NC05-349	M	14	2	lt org	ms	3.5	7	7	3,6	6	6.3	Cov. Shapes
NC05-431	M	13	3	rs	ms	3.25	7	7	6	6	6.3	~L
NC05-528	M	18	2.5	lt org	sflk	3.5	8	6	6	6	6.0	~CR
NC05-536	M	23	2.5	dk rs	ms	1.5	7	5	6,3	5	5.3	CLSH,^LE
NC05-553	EM	14	2	rs	sflk	3.25	8	5	3	6	5.3	^^LE+PI,CR
NC99-573 G2	ME	14	2	rs	ms	3	7	6	3,6	7	7.3	NS
B94-14 G2	E	15	2.5	rs	sflk	3	7	6	6	5	4.8	B,IRR
Covington G2	EM	16	2	rs	ms	3	7	6	3,2	6	6.3	

Comments: This trial should have been harvested earlier judging by the % jumbo's for most clones. Yields were high overall and appearance generally good. NC99-573 was a standout for both marketable yield and appearance.

Table 11a. 2008 Preliminary 2 Yield Trial at HCRS, Clinton, NC. Planted: 13Jun08; Harvested: 23Oct08; Growing Days: 132.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	%Cov	No.1's	Canners	Jumbo's	Culls
NC05-108	856	806	134	93	61	26	7	6
NC05-156	1259	1082	189	127	44	24	18	14
NC05-198	966	898	147	104	56	27	9	7
NC05-257	1042	922	158	107	52	28	9	11
NC05-284	710	546	91	64	49	28	1	23
NC05-349	990	815	144	96	43	34	5	17
NC05-431	1079	980	160	114	49	31	11	9
NC05-528	759	668	116	79	59	18	12	11
NC05-553	1406	1202	216	140	45	10	31	14
NC06-185	1025	959	162	109	58	19	16	7
NC06-557	994	879	123	95	41	46	1	12
NC99-573 G2	1386	1264	222	147	53	19	19	9
B94-14 G2	910	666	.	77	26	28	17	29
Covington G2	948	870	148	.	55	27	9	9
Grand Mean	1024	897	155	104	49	26	12	13
CV (%)	17	18	21	19	16	36	69	49
LSD (p=0.05)	249	230	47	28	11	13	12	9

Table 11b. 2008 Preliminary 2 Yield Trial at HCRS, Clinton, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
NC05-108	ML	20	2.5	rs	ms	3	6	6	3	6	5.3	^^TP,~VN,^T
NC05-156	ME	12	2.5	lt org	ms	3	7	5	3	5	5.0	~T
NC05-198		18									5.8	
NC05-257	ML	20	2.5	dk rs	sm	3	5	7	3	6	5.8	Hern SH, EY
NC05-284	M	16	2.5	cu	ms	2.75	7	6	3	7	5.8	~2°R
NC05-349	M	16	2	tan	sm	3.25	6	6	6,3	6	5.8	^ESC
NC05-431	LM	15	3	red	sm	3	7	7	3,6	7	5.8	L
NC05-528		20									6.3	
NC05-553	E	17	3.5	rs	ms	3.25	7	5	3,6	6	5.5	^LE
NC06-185	ME	21	2.5	pur	sm	3.25	7	7	6,3	7	6.8	hints purple in flesh
NC06-557	L	19	3	red	ms	3	7	7	3	5	5.7	~TP, too late?
NC99-573 G2	M	17	3	rs	ms	3	7	7	6	7	7.0	~LT
B94-14 G2	M	18	3	rs	ms	2.75	7	6	3,7	4	3.8	~CRK
Covington G2	M	19	2.5	co rs	ms	3	7	5	6	7	6.3	^LE

Comments: A high yielding trial. NC99-573 had the best appearance, followed closely by NC06-185 then Covington. Two clones, NC05-156 and NC05-553 yielded as well as NC99-573, but their pack out was not as good. Beauregard appearance was rough with variable sizes and many misshapen roots, and led in the culls produced. Covington was much more consistent for shape and appearance.

Table 12a. 2008 Soil Rot Yield Trial at HCRS, Clinton, NC. Planted: 08July08; Harvested: 05Nov08; Days to Harvest: 120.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
NC03-066	402	201	44	31	7	43	1	49
NC03-311	507	431	95	66	16	70	0	15
NC03-395	365	293	65	45	23	58	0	20
NC04-090	413	333	73	51	46	35	0	20
NC04-531	564	490	109	76	38	49	0	13
NC05-198	765	588	129	91	41	37	0	22
NC99-573 G2	781	594	131	92	29	47	0	24
B94-14 G2	581	460	.	70	31	46	2	20
Covington G2	708	653	143	.	41	51	1	8
Evangeline	606	509	112	78	46	38	1	15
Hernandez G2	651	496	106	76	33	40	2	25
Jewel	129	91	20	14	4	68	0	29
Grand Mean	539	428	93	63	29	48	1	22
CV (%)	16	19	21	21	24	14	201	41
LSD (p=0.05)	126	117	28	19	10	10	2	13

Comments: A mixture of soil rot, circular spot, and cracking produced very high numbers of culls.

Table 12b. 2008 Soil Rot Yield Trial at HCRS, Clinton, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
03-066	M		3	org	sflk	3	7	6	6,3	5	3.0	^^CR,
03-311	ML		2	rs	ms	3	6	7	6	6	4.3	CLSH,SSR,RE
03-395	ML		2	dk rs	ms	2.75	7	7	6	6	4.3	CR,RC,~rot ^T,CLSH, SSR
04-090	M		2.5	pur	ms	2.75	6	7	3,5	5	4.0	lessions
04-531	M		2	dk rs	ms	3	7	6	3	6	5.3	CLSH,CR
05-198	M		2.5	rs	ms	3	6	6	6	6	5.3	CR,RC,SF
99-573 G2	M		2.5	rs	ms	3	7	7	6,3	7	5.7	CLSH,CR, a little RC
B94-14 G2	M		3	rs	ms	3	7	6	7	4	4.0	SF
Covington G2	M		2	dk rs	sflk	3	7	6	3,6	6	6.3	CLSH
Evangeline	M		2	rs	ms	3	8	7	3,5	5	5.7	CR,CLSH
Hernandez G2	M		2.5	org	sflk	3.5	6	6	3	6	4.7	CLSH,~T,RE, infected LE's
Jewel	L		1.5	org	ms	3	6	6	2	5	2.0	^^SSR, low yield

Comments: A very tough site by design with high levels of soil rot, fusarium, circular spot and root knot nematodes making for high levels of culls. This trial is used mainly to test potential parents for their overall disease resistance. If a clone comes out clean here, it has broad disease resistance. Covington was a standout.

Table 13a. 2008 Tablestock/Processing Yield Trial at HCRS, Clinton, NC. Planted: 01July08; Harvested: 22Oct08; Days to Harvest: 114.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	% Cov	No.1's	Canners	Jumbo's	Culls
04-090	509	462	87	59	53	33	5	9
04-412	402	357	67	47	22	66	1	12
04-531	482	473	90	60	37	59	2	2
05-108	733	725	134	91	46	52	1	1
05-528	430	409	74	51	52	41	2	5
B94-14 G2	676	591	.	74	39	27	22	12
Covington G2	848	811	148	.	59	30	7	4
DM04-001	669	604	111	76	36	40	14	10
Grand Mean	605	565	104	67	44	42	7	7
CV (%)	19	18	20	19	20	23	107	87
LSD (p=0.05)	131	117	24	14	10	11	8	6

Table 13b. 2008 Tablestock/Processing Yield Trial at HCRS, Clinton, NC - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
04-090	ME	18	3.5	pur	ms	2.75	7	5	6	5	5	PI's, RC
04-412	L	15	3.5	rs	sflk	3.25	7	6	6,4	6	5	long and late
04-531	ML	20	3.5	rs	ms	3.25	7	5	3,4	7	6	long and late
05-108	M	17	3	dk rs	sflk	3.25	8	6	3	6	6	~LT
05-528	ML	18	2.5	lt org	mflk	3.5	7	5	3	7	6	late, nice flesh color var flesh
B94-14 G2	M	12	3	co rs	ms	2.75	7	7	7	4	4	color, YCR
Covington G2	EM	16	2	rs	ms	3.25	7	7	3	7	6	
DM04-001	M	29	4	red	mflk	2.5	7	6	4,6	6	5	v. long, ~VN

Comments: A late planted trial that could have used more time to size up. Shapes were long and slender for most clones. Covington had the best yield and packout. Beauregard produced significant jumbo's despite a modest percentage of No.1's. Jumbo's for DM04-001 were all for length. Most dual purpose clones are higher in dry matter and require a longer growing season to size up.

Table 14a. 2008 Tablestock/Processing Yield Trial at CRS, Kinston, NC. Planted: 26June08; Harvested: 28Oct08; Days to Harvest: 125.

CLONE	Total Yield bu/A	Marketable Yield		Size Distribution by Class (% of total yield)				
		bu/A	%Beau	%Cov	No.1's	Canners	Jumbo's	Culls
04-090	555	528	82	77	62	14	19	5
04-412	468	436	78	81	55	35	2	7
04-531	530	521	83	77	57	36	6	1
05-108	691	685	107	102	70	22	7	1
05-528	467	434	72	67	61	16	17	6
B94-14 G2	791	668	.	95	49	13	23	15
Covington G2	732	703	107	.	66	17	13	4
DM04-001	605	550	87	82	52	23	16	9
Grand Mean	618	578	89	84	59	21	14	6
CV (%)	18	19	17	18	15	40	62	82
LSD (p=0.05)	132	127	18	18	10	10	10	6

Table 14b. 2008 Tablestock/Processing Yield Trial at CRS, Kinston, NC. - Trait Data. Please see Keys to Tables section at the end of this report for descriptions to the abbreviations.

CLONE	MAT	DM	L/D	SKC	SKT	FL	EYE	LEN	SH	SHV	APP	Comments
04-090	M	20	3	pur	ms	2.75	7	6	6	6	6	~shapes and flesh color
04-412	M	14	3.5	rs	ms	3.5	7	6	6	6	6	LE's,L
04-531	LM	17	3	rs	ms	3	6	6	6,3	6	6	YCR
05-108	M	19	1.5	rs	ms	3	7	6	3	7	7	compact, Cov. shapes
05-528	EM	18	2.5	org	ms	3.75	8	6	3,6	6	6	~2 <sup>o</sup> rts,~AC,g flesh color
B94-14 G2	E	13	3	rs	ms	2.75	6	6	7	5	5	poor shapes
Covington G2	M	17	2	rs	ms	3	7	7	3	6	6	
DM04-001	EM	34	3.5	pur	sflk	2.25	6	7	6	6	4	L,ESC,VN

Comments: A good test, though planted a bit late for the typically longer season for dual purpose tablestock and processing material. Dry matters were low due to wet conditions at the end of the season. Covington, Beauregard and NC05-108 were the top yielding clones. Note that while the average marketable yield is higher for Covington than 05-108, 05-108 has a 102% Covington for marketable yield. This is correct since the %Cov is averaged over all reps and 05-108 had one much higher yielding rep than Covington.

## Keys to Tables

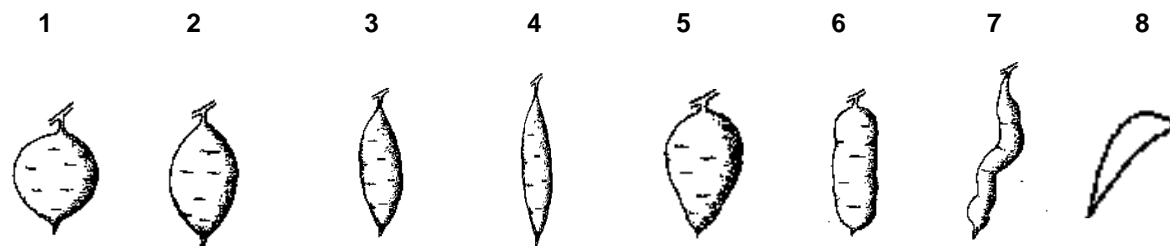
**Storage root data:** **MAT**=maturity E=early, M=mid and L=Late; **DM**=percentage dry matter; **L/D**=length/diameter ratio; **SKC**=skin color clr=clear cu=copper, lt=light, or=orange, pi=pink, pu=purple, rd=red, rs=rose, tn=tan wh=white; **SKT**= skin texture, m fl= moderate flakiness of skin, l fl= light flakiness to skin, ms=moderately smooth, sm=smooth; **FL**=flesh color (0-5 scale where 0=pure white, 1= cream, 2=yellow, 3= medium orange, 4=deep orange, 5= very deep orange; **EYE**=eyes(0-9); **LEN**= lenticels (0-9); **SH**=Shape (see diagram); **SHV**=shape variability(0-9); **APP**=overall appearance (0-9). All 0-9 scales go from low or poor to high or good.

**Comment codes:** **AC**=air cracking; **AT**=tough attachment; **B**=bumpy shapes; **BL**=blocky shapes; **BON**=Boniato type ;**BRD**=breeding only; **BSR**=bacterial soft rot; **CR**=cracking; **CRK**= crooked shapes; **CS**=circular spot; **CV**=skin color variation end to end; **D**=drop; **ESC**=Early season cracking; **EY**=deep eyes; **FB**=fleabeetle damage; **FS**=Fusarium root rot; **G**=Geotricum; **GR**=grooves; **HC**=horizontal constrictions; **ID**=unspecified insect damage; **IR**=insect resistance; **IRR**=irregular; **JL**=jumbo's for length; **L**=long; **LE**=lenticels; **LG**=longitudinal grooves; **LR**=Lateral rings; **LT**=latex; **MSH**=misshappen roots; **NS**=nice shapes; **OV**=ovate or pear shapes; **PD**=Plectris damage; **PI**=pimples (0-9); **PN**=pencil roots; **PP**=pulled plants; **R**=rodent; **RC**=russet crack; **RG**=restaurant grade; **RH**=root hairs; **RKN**=root-knot nematodes; **RND**=round; **RSK**=rough skin; **RT**=rot; **SC**=scurf; **SD**=skin discoloration; **SF**=surface Fusarium; **SG**=string roots; **SH**=sheen; **SK**=skinning; **SO**=souring; **SPR**=sprouts; **SR**=soft rot; **SS**=stays short; **SSR**=streptomyces soil rot; **STR**=striations; **T**=tails; **TP**=tapered roots; **TS**=tea staining; **VN**= veins; **WB**=whitefringed beetle; **WG**=white grub; **WW**=wireworm; **YCR**=yellow cortical ring; **YLD**=yield; **2°R**=secondary roots.

^ = lots or high amount of, ~ = moderate or some, ↓ = little or poor

(Rating scale: 0 = very severe to 9 = absent)

## Shapes



## Acknowledgements

The continued support of the NC SweetPotato Commission is gratefully acknowledged. The exceptional technical expertise and assistance of Meri Reeber, Jarred Driscoll, Ben Winslow and Mark Clough, Research Technicians with the sweetpotato and potato breeding programs, respectively is acknowledged. We also thank the research station staff at the HCRS, CCRS and CRS, and our summer helpers for excellent support, and Graduate Student Per McCord, for his assistance during the year.

FUNDS SPENT (2007): NCARS/NCCES CODE 00-03

FUNDS SPENT:	YEAR	YEAR	YEAR
	(2008)	(2009)	(2010)
EPA Salaries (Inc. fringe benefits)			
EPA-GRA Stipends			
Termination Date			
SPA Salaries (Inc. fringe benefits)	5,500	10,500	10,500
Part-time Labor (Inc. soc. sec. benefits)	5,500	5,500	5,500
Supplies	5,500	5,500	5,500
Equipment (greater than \$5,000)			
Travel	2,500	2,500	2,500
Other (Publication costs, etc)			
 TOTAL (REQUESTED)	 \$ 24,000	 \$ 24,000	 \$ 24,000
TOTAL (DISBURSED AND SPENT)	\$ 19,000		



IMPACT STATEMENT:

NCARS/NCCES Code 00-03

North Carolina is the largest producer of sweetpotatoes in the nation and new varieties are always sought to address new disease and pest problems, and ever-changing market conditions. The funds provided through this grant have enabled the Sweetpotato Breeding and Genetics program to establish a large and dynamic program focused on developing new varieties adapted to NC's growing conditions. Covington, our most recent release, was produced on over 30,000 acres in NC during 2008. NC99-573, released as the variety Hatteras in late 2008 is our latest release and will be available to growers in limited quantities. We also have several other promising conventional, specialty, processing-type and industrial clones under evaluation of varying flesh and skin colors, and we believe that we are making good progress developing improved varieties for NC's sweetpotato growers enabling growers to retain and/or expand into new markets.