TO: COUNTY AGRICULTURAL AGENTS

NO. 82

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1. Sweet Potato Notes.

Some notes from the Sweet Potato Short Course held at Abraham Baldwin Agricultural College, Georgia Coastal Plain Experiment Station, Tifton, Georgia, October 3, 1968.

Florida sweet potato growers should only use the information presented here where it is better suited to their production situation than that information presented in Florida Agricultural Extension Service Circular 97A, "Sweet Potato Production Guide."

A. Variety Evaluation.

Dr. S. A. Harmon gave an evaluation of varieties. He stated that now in Georgia 12,000 acres of sweet potatoes supplied more sweets to off-farm markets than 120,000 acres did a few years ago.

Seed potatoes certified are a direct measure of variety popularity. In 1968, the varieties were certified in this order: Georgia Red (61,000 bu.), Centennial (16,000 bu.), Rose Centennial (14,000 bu.), Red Early Sweet (2,300 bu.), Gold Rush (500 bu.), Bunch P. R. (60 bu.), Julian (25 bu.), and several others.
Atlanta market quotations show Georgia Red always quoted at a higher price than any of the others listed. Although monthly price average in 1968 for Georgia Reds was about $4.00, they start off in July at $8.00, and drop to $3.00 per bushel by September.

Coastal Sweet has by far the best eating quality and highest percentage of marketable yield, very good shape; skin color is dull, yellowish tan so that buyers do not like it. Late 160 days. Best variety for local sales to known, repeat customers.

Red Cliff - Looks excellent, high yield.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield</th>
<th>Market accept.</th>
<th>Keeping quality</th>
<th>Sprouting ability</th>
<th>Disease resistance</th>
<th>Processing quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgia Red</td>
<td>good</td>
<td>good</td>
<td>good</td>
<td>exc.</td>
<td>tolerant</td>
<td>fair</td>
</tr>
<tr>
<td>Centennial</td>
<td>exc.</td>
<td>fair</td>
<td>fair</td>
<td>fair</td>
<td>tolerant</td>
<td>good</td>
</tr>
<tr>
<td>P. R.</td>
<td>fair</td>
<td>fair</td>
<td>good</td>
<td>good</td>
<td>susc.</td>
<td>fair</td>
</tr>
<tr>
<td>Gold Rush</td>
<td>good</td>
<td>poor</td>
<td>fair</td>
<td>fair</td>
<td>tolerant</td>
<td>exc.</td>
</tr>
</tbody>
</table>

It takes at least 6 years and, more likely, ten years to produce an acceptable variety from a breeding project. Sweet potatoes are very mutable so that new strains and varieties have been developed from existing ones. In the last 25 years, over 50 varieties have been officially named in the United States. Only five or six are being grown commercially. Characteristics that cannot be observed directly are also occurring in sweet potatoes but are not being detected (such as internal quality).

In the development of a new variety, the following things are most important:

1. Yield
2. Appearance
3. Keeping Quality
4. Sprouting Ability
5. Culinary Quality
6. Disease Resistance
7. Insect Resistance
8. Drought Resistance

B. Weed Control.

Dr. Norman Glaze, USDA, recommended Eptam at 7 1/2 pounds per acre as a post-transplant over the top application; Vernam as a pre-plant application 4 inches deep and incorporated at 1 1/2 pounds per acre. (Vernam is not cleared as an over-the-top application.) He suggested Difenamld and Dacthal as also being labeled for use. He mentioned amiben but stated that methyl ester amiben was better, but not yet labeled on sweet potatoes.

C. Insect and Disease Control.

Insect and disease control was covered by a panel. Nothing new in control measures. Two publications were handed out and are available from the University of Georgia Cooperative Extension Service in Athens, Georgia.

"Control of Sweet Potato Insects," Ent. 2-3, Bul. 668.
"Diseases of Sweet Potatoes," Leaflet No. 47.
D. Fertilization.

Dr. Harmon thoroughly discussed the fertilizer requirements for sweet potatoes. He said nitrogen was only needed in low-to-moderate quantities and was essential for fibrous (feeder) root growth elongation.

Phosphorus needs are quite low; however, he does not recommend the elimination of phosphorus from fertilizer.

High potash is essential at fleshy root formation time for best yields.

Among the minor elements, only Boron has been found to be essential for good root production (applied at 10 pounds borax per acre). More than this may be harmful. Use of dolomitic limestone to correct pH is recommended. Calcium is also essential for good fleshy root formation. May be quickly corrected by applying gypsum to growing crop.

Sweet potatoes take the following quantities out of the soil:

<table>
<thead>
<tr>
<th>Yielded</th>
<th>N</th>
<th>P₂O₅</th>
<th>K₂O</th>
<th>Ca</th>
<th>Mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>75</td>
<td>20</td>
<td>115</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>400</td>
<td>100</td>
<td>26</td>
<td>153</td>
<td>46</td>
<td>13</td>
</tr>
</tbody>
</table>

A starter solution with 4 to 6 pounds of 10-52-8 in 100 gallons of water definitely pays. Phosphorus should be high and potash low to prevent salt burn. Apply ½-1 pint per plant.

Use 1,000 pounds 5-10-15 plus 500 pounds 10-0-10. Applications should be split with one-third at planting time in three bands placed as follows:

Second application or first sidedressing 30 days following planting and third at lay-by. First applications should include the 5-10-15 and the two sidedressings the 10-0-10. Dr. Harmon has had severe damage from liquid fertilizer applied in the soil.

Broadcast application of fertilizer requires the use of one-third more than banded and increases the weed problems significantly.

He has found no significant difference among different formulas and sources except Rainbow mix 5-10-15 was slightly better--456 bushels marketable per acre versus 442 bushels.
Irrigation

<table>
<thead>
<tr>
<th>Irrigation</th>
<th>Total Yield (bu.) with 5-10-15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000 lbs.</td>
</tr>
<tr>
<td>½ in /4 days</td>
<td>566</td>
</tr>
<tr>
<td>1 in /8 days</td>
<td>506</td>
</tr>
<tr>
<td>None</td>
<td>419</td>
</tr>
</tbody>
</table>

Dr. Harmon recommends to keep soil wet for first 30 days. For the next 25-30 days, allow some water stress to occur and next 60 days apply 1 to 1½ inches every 10 days and never allow to dry out.

E. Harvesting and Handling.

A panel, moderated by Area Specialist Jim Barber, discussed problems and practices. A grower, Mr. Harry Lutz of Leesburg, Georgia, explained his successful operation. He showed a film of his Johnson Harvester, made in North Carolina, in use in his field. An extension of the steel-rodded digging belt took the roots past six graders who selected roots and placed them into pallet boxes. He pointed out that soil conditions need to be right—not too wet or too dry—to avoid skinning and damaging sweet potatoes. Some matted soil appears necessary on the belt to cushion roots as they pass down the grading line. The machine must be operated slow enough to avoid damage. His machine traveled at 1.5 mph.

Fork-lifts take the pallets to the curing house within a few minutes after digging. After curing, they are dumped into a washer, then feeder roots and stems are broken off and are graded out. They pass through a Botran (fungicide) tank and then are packed into corrugated fiber board cartons. He said 95 percent of Georgia sweet potatoes are packed in corrugated containers. Prior to digging, Mr. Lutz "conditions" his potatoes by moving the tops five days before harvest.

F. Marketing and Promotion.

A sweet potato broker said that 90 percent of the sweet potatoes he sells from Georgia go south (to Florida). He stressed a need for dependability of supply and quality for a grower to be successful. To promote sweet potatoes, a sweet potato queen has been selected.

Field demonstration conducted by Dr. S. A. Harmon showed bedding, transplanting, digging and grading.

G. Hot Water Bath for Sweet Potatoes.

Bathing sweet potato sprouts in hot water helps destroy fungi that cause scurf and black rot, diseases that can severely damage sweet potato crops.
Scurf and black rot fungi infecting a sweet potato seed root spread onto the sprouts and eventually onto the new crop of sweet potatoes produced by the replanted sprouts.

In the field test, ARS plant physiologist, L. J. Kushman at Raleigh, N. C., and plant pathologist, E. M. Hildebrand at Beltsville, Md., almost completely halted the spread of scurf to the new crop by immersing the basal portions of diseased sprouts for 10 minutes in water warmed to 120° F. before replanting.

Although the seed roots from which the sprouts were obtained contained some black rot, almost no black rot developed on the treated plants. This bath in no way injured the plants.

If hot water treatment of sprouts can be used commercially to control scurf and black rot, it may prove more effective than chemicals because heat may affect disease organisms within the tissue as well as on the surface.


The equipment on the attached drawing is used for mechanically applying plastic mulch and shaping the bed. These two operations are often done in separate operations presently, but the growers could save considerable expense and time by combining equipment and doing as many operations as possible at once.

The tractor which draws the mulch applicator can be equipped with a fumigant applicator mounted forward on the tractor. The fumigant used is only effective where the plastic traps it and keeps it from being lost to the atmosphere.

The operational principles of the equipment are:

1) At the beginning of each row the end of the plastic film is covered with dirt for holding the end stationary and for sealing.

2) The shaping sled (bed former) is lowered down onto the previously made bed to the desired position.

3) As the tractor moves forward, the trencher makes a small trench and the plastic film is forced into by the two tires which roll along on the plastic directly behind the trencher. The plastic is held in position by soil which is placed along the edge by the disc shown in the drawing. The disc is positioned to the outside of the plastic and the depth of the disc can be adjusted to get the best results.
PLASTIC MULCH APPLICATOR AND BED SHAPER
Short Notes

A. Two New Lettuce Varieties.

Two new head lettuce varieties developed in Texas and by USDA are Valtemp and Valrio.

B. Chemicals.

Zinophos has been cleared for use on strawberry plants as a bare root dip. Immerse roots only for 15 minutes at the rate of one pound active per 100 gallons of water (1,200 ppm active ingredient). Zinophos cannot be used on Fla. 90 or Dabreak at more than 300 ppm without phytotoxicity.

Trifluralin has been labeled for use on collards, kale, mustard greens, and turnip greens as a pre-plant soil incorporation treatment at 0.75 lbs. actual per acre with a tolerance of 0.05 ppm.

Du-Ter fungicide developed by Thompson-Hayward Chemical Company has recently been labeled for control of early and late blight on potatoes. Reports received indicate it is a very good material and should be used at 5 ounces per 100 gallons of water. The tolerance has been established at .05 ppm on tubers.

C. USDA Bulletins.

Received two USDA Bulletins.

Bul. 2232, "Commercial Growing of Asparagus"
Bul. 2233, "Commercial Growing of Watercress"

D. New Telephone Number.

Beginning November 9, the university is going on a direct dial system and anyone in the Vegetable Crops Department can be called direct by dialing 392-1794.

When we move into the new building later, there will be additional telephone numbers added. We will notify you when we get moved around the first of January, 1969.

Sincerely,

Mason E. Marvel
Associate Vegetable Crops Specialist

James Montelaro
Vegetable Crops Specialist

V. F. Nettles
Acting Chairman

James M. Stephens
Assistant Vegetable Crops Specialist