Vegetarian 91-10

October 10, 1991

Contents

I. NOTES OF INTEREST
   A. Vegetable Crops Calendar.
   B. New Publications
   C. Vegetable Crops Library

II. COMMERCIAL VEGETABLES
   A. Broccoli Variety Trial Results, Sanford 1991.
   B. International Symposium to Feature Commercialization of Specialty Vegetables.
   C. Improving Tomato Packing Efficiency.

III. PESTICIDE UPDATE
   A. EPA Proposed Definition of Melons and Muskmelons.
   B. Summer Squash Defined.

IV. VEGETABLE GARDENING
   A. National Junior Horticultural Association - Florida 4H History.

Note: Anyone is free to use the information in this newsletter. Whenever possible, please give credit to the authors. The purpose of trade names in this publication is solely for the purpose of providing information and does not necessarily constitute a recommendation of the product.
I. NOTES OF INTEREST

A. Vegetable Crops Calendar.


March 5-6, 1992. Postharvest Horticulture Institute. University Centre Hotel, Gainesville. (Contact Steve Sargent).

March 9-12, 1992. Harvest and Postharvest Handling of Horticultural Crops. Tour of Central and South Florida. (Contact Steve Sargent).


B. New Publications.


C. Vegetable Crops Library.

New books on vegetable crops or books that contain considerable information on vegetables are noted in this column from time-to-time:


Almost every fruit and vegetable grower will tell you that marketing is the most frustrating and weakest link in their operation. Will this book help to ease their frustration and provide them with the information needed to market their crops? Yes and no.

As one of a very few books on fruit and vegetable marketing, it is a welcome addition for both horticulturists and economists. It evolved from the author's 15 years of experience in teaching an undergraduate course on the topic, and this provides insight to the answer to the question posed previously.

The book is divided into four unequal sections. Part 1 deals with markets, sources, and the marketing system. Part 2 covers the market environment focusing on market information. Marketing operations and firms are discussed in Part 3. A concise epilogue that summarizes the author's thoughts on prospects of the industry is the concluding Part 4.

Very useful information on practical vegetable production, mostly for developing countries, is provided in a convenient and concise form. The value, usefulness, and classification of vegetables is covered in the first chapter followed by chapters on growth and development and environmental influences on vegetable production. The following three chapters are devoted to variety development and testing, seed production, and seed testing. Crop, soil, and water management are the focus of the next three chapters. The tenth chapter, almost 25% of the book, covers pest management. Mechanization, postharvest technology and economics are included in the final three chapters. The book is amply illustrated with line drawings and colored pictures.


Tables of elemental composition for over 302 horticultural and agronomic crop plants are featured in this book. In addition, there are chapters on essential elements, plant tissue sampling, sample preparation and analysis, interpretations, applications, factors affecting composition, and tissue testing. The appendix provides laboratory procedures of analysis.

If availability of funds permits, all of these books will be welcome and useful additions to your Vegetable Crops library.

(Maynard, Vegetarian 91-10)

II. COMMERCIAL VEGETABLES

A. Broccoli Variety Trial Results, Sanford 1991.

So few acres of broccoli are grown in Florida the Florida Agricultural Statistics Vegetable Summary does not include any data. There has been an increase in the acreage in the Zellwood area in the past two years with some potential for more expansion. Zellwood area production is estimated to be about 140 acres with a value of $380,700.

The following is a summary of 22 cultivars and/or breeding lines of broccoli evaluated for marketable yield in central Florida. Seedbeds were sown January 9, 1991. Seven lines, Galleon, Sultan, Augusta, Gaelic Pride, Early Emerald, Ninja, and Premium Crop had to be replanted on January 17 due to animal damage of the seedbed. Seedlings were transplanted to a Myakka fine sand on February 28. Single row plots 25' by 2.5' with in-row spacing of 11" were replicated four times. Harvests were on May 1, 10, and 17. Yield was considerably lower than normal. More rainfall than normal for March and April (16.3 in) may have contributed to lower yields. Only Sprinter, of the five top yielding entries, had both good head color and shape. Galleon produced attractive heads with medium head size, but yield was significantly less than Sprinter. The early varieties of Ninja, Gaelic Pride, and Early Emerald had acceptable yields in relation to Sprinter, but their head shape and color were poor. Table 1 is a summary of 11 selected varieties. A more complete report may be obtained by requesting Research Report SAN 92-02, Broccoli Cultivar Trial, 1991.
Table 1. Selected varieties from the spring broccoli trials, CFREC-Sanford, 1991.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Seed Source</th>
<th>Crates/A</th>
<th>Head wt. (lb)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprinter</td>
<td>Sakata</td>
<td>225</td>
<td>0.47</td>
<td>good color &amp; appearance</td>
</tr>
<tr>
<td>So. Comfort</td>
<td>Am. Takii</td>
<td>203</td>
<td>0.53</td>
<td>uneven heads</td>
</tr>
<tr>
<td>Brigadier</td>
<td>Petoseeds</td>
<td>194</td>
<td>0.48</td>
<td>uneven heads</td>
</tr>
<tr>
<td>Pinnacle</td>
<td>Am. Takii</td>
<td>126</td>
<td>0.65</td>
<td>uneven, pale green</td>
</tr>
<tr>
<td>Sultan</td>
<td>Sakata</td>
<td>122</td>
<td>0.48</td>
<td>uneven, poor color</td>
</tr>
<tr>
<td>Headline</td>
<td>Am. Takii</td>
<td>116</td>
<td>0.48</td>
<td>uneven heads</td>
</tr>
<tr>
<td>Galleon</td>
<td>Petoseeds</td>
<td>113</td>
<td>0.41</td>
<td>some flowers</td>
</tr>
<tr>
<td>Augusta</td>
<td>Amsa</td>
<td>110</td>
<td>0.59</td>
<td>uneven heads</td>
</tr>
<tr>
<td>Ninja</td>
<td>Sakata</td>
<td>105</td>
<td>0.43</td>
<td>uneven, poor color</td>
</tr>
<tr>
<td>Gaelic Pride</td>
<td>Am. Takii</td>
<td>101</td>
<td>0.44</td>
<td>poor color</td>
</tr>
<tr>
<td>Galleon</td>
<td>Abbott &amp; Cobb</td>
<td>85</td>
<td>0.34</td>
<td>good appearance</td>
</tr>
</tbody>
</table>

(comments omitted for brevity)

B. International Symposium to Feature Commercialization of Specialty Vegetables.

A special session on commercialization of specialty vegetables will be featured at the Second International Symposium on Specialty and Exotic Vegetable Crops. The Symposium will be held on 15-19 March 1992 in Miami, at the Sheraton Brickell Point Hotel. It is sponsored by the International Society for Horticultural Science in cooperation with the American Society for Horticultural Science and the Interamerican Society for Tropical Horticulture. The Center for Tropical Agriculture at the University of Florida, Florida Agricultural Experiment Station, Florida Fruit and Vegetable Association, and Florida Seedsmen and Garden Supply Association are co-sponsors.

Karen Caplan, President of Frieda’s, Inc. of Los Angeles will discuss her firm’s leadership role in marketing exotics. The development and marketing of branded specialty vegetables will be discussed by David Marguleas, Vice-President of Sun World, Indio, CA. Sun World is well known for it’s seedless watermelon, DiVine tomato, and La Rouge Royale and La Jaune Royale peppers. Exotic tropical vegetables will be addressed by Bill Schaefer of J. R. Brooks & Sons, Inc., Homestead, FL. Although ethnic consumers constitute the bulk of Brook’s current sales, there are great opportunities for mainstreaming many of these tropical treats. Another aspect of commercializing specialty vegetables will be covered by Leo Zanoni of Asgrow Seed Company, Kalamazoo, MI. He will review the development and promotion work being done by Asgrow on colored peppers, seedless watermelons, cukettes, and other vegetables.

In addition to the commercialization session, researchers and extension specialists from around the world will report on breeding and other genetic improvements, culture, pest management, postharvest handling, and marketing of specialty and exotic vegetables.

Other special features of the Symposium are two half-day field tours of specialty vegetable production in the Homestead area and in eastern Palm Beach County.

For more information contact Donald N. Maynard, Gulf Coast Research
and Education Center, 5007 60th St. East, Bradenton, FL 34203, (813) 751-7636, FAX (813) 751-7639. The deadline for receiving pre-registrations and abstracts is 31 December 1991.

(Maynard, Vegetarian 91-10)

C. Improving Tomato Packing Efficiency.

Commercial tomato packing lines are designed to allow managers to maintain packouts with the highest quality despite quality differences between incoming lots of tomatoes or shortages of grading personnel. The individual components of conventional packing lines (such as the wash brushes, sort rolls, grade rolls, size belts) are designed to operate at a fixed speed for an average volume. The only means of changing the volume is to vary the dump rate.

There are three problems associated with fixed-speed packing lines. When the bins are dumped at a slow rate, the packing line is underfilled. Underfilling can increase bruising and other mechanical injuries by allowing excessive fruit-to-fruit impacts and fruit-to-conveyor impacts at the numerous transfer points. When the bins are dumped at a fast rate, overcrowding can occur and result in ineffective removal of undersize fruit, poor washing, waxing and grading.

The third drawback of fixed-speed packing lines is the tendency of workers to remove product at a fixed rate. When the line is running at low capacity, the amount removed per worker is determined by the number of fruit which can be picked up, regardless of quality. However, when the line is running at high capacity, the amount removed is determined by the number of fruit which the person can observe. In other words, at low capacity workers try to appear busy by removing product, while at high capacity they tend to reject fruit based on the quality. Therefore, the ideal packing line would synchronize the speed of the components with the dump rate so as to maintain nearly full capacity at all times. This would permit workers to properly grade fruit, resulting in improved packout and reduced costs. Operation at full capacity also lowers impacts at many transfer points by reducing roll distances down transfer plates.

A Variable-Speed Tomato Packing Line

The packing line at Tomatoes of Ruskin (Ruskin, Florida) was retrofitted with a computer-controlled system which allows the line speed to change in conjunction with the dump rate. It also integrates an on-line auditing system for packout inventory. This system was designed to be economically retrofitted to many packing lines using commercially available and reliable equipment. Drs. Bill Miller and Richard Gilbert, engineers at the University of South Florida, Tampa, designed the system. A programmable controller module was installed in the packinghouse which provides speed control for the various components of the main grading line, beginning with the elevator rolls and ending with the grading table. Variable frequency drives were installed on the existing drive motors for each of the components.

During packing the grading supervisor controls the dump rate and the speed of the packing line components using a thumb wheel located at the grading table. The audit system provides immediate information on quality, grade and size for each lot packed and continuous information on daily packout totals. This system consists of micro switches, photosensitive eyes and position sensors connected to the packinghouse's computer.
**Productivity and Quality Benefits**

A comparison of hourly packout before and 2 years after implementation of the system showed an increase of 35% in the number of boxes packed per hour. In addition to maintaining a higher capacity over the range of dump rates, the system also reduces the time between grower lots by allowing the packing line speed to be increased during this "dead time". Printed copies of packout information are given to accounting and to the ripening room supervisor; electronic copies are available to management and brokers. Increases in productivity also resulted in the offering of wage incentives to packinghouse workers.

Peak impacts were determined for transfer points on the packing line using an Instrumented Sphere data logger. The analyses were made during four dump rates: 80, 100, 130 and 200 bins/hour. We determined that the speeds of the dryer brushes and the size belts were better correlated with the dump rates of 130 and 200 bins/hour than the slower dump rates. At the faster dump rates these 2 transfer points had fewer impacts and lower intensities. This confirmed visual observations that the percent line coverage was higher at the two faster dump rates than at the slower dump rates. With more tomatoes covering the transfer plates at these two points, the roll distance was less; therefore, the transfer was more gentle.

Mature green tomatoes were sampled at each of the dump rates, from the float tank and on the grading rolls after final grading but prior to transfer to the size belts. These tomatoes were rated for incidence of internal bruising (IB) after reaching the red ripe stage. For tomatoes sampled at 80 bins/hour, 22% had IB after final grading, while those sampled at 100 bins/hour had 14% IB. Tomatoes sampled at 130 and 200 bins/hour had negligible amounts of IB. There was a slight increase in external bruises and cuts/punctures at the two faster dump rates; however, these values were not sufficiently high to affect grade.

The modifications made so far to the packing line have greatly improved productivity, since the packing line speed can be quickly adjusted to match the quality of the tomatoes being packed. Further details of this system are available in the article by Sargent et al. in the Proceedings of the 1991 Florida Tomato Institute.

(Sargent, Vegetarian 91-10)

**III. PESTICIDE UPDATE**

**A. EPA Proposed Definition of Melons and Muskmelons.**

The Environmental Protection agency (EPA) has published in the Federal Register (Vol 56, No. 171/Wednesday, September 4, 1991) a proposed rule that would more clearly define for regulatory and research purposes the terms "melon" and adds the category "muskmelon".

Muskmelon now is defined for regulatory purposes: *Cucumis melo* (includes true cantaloupes, cantaloupe, casaba, Santa Claus melon, crenshaw melon, honeydew melon, honey balls, Persian melon, golden pershaw melon, mango melon, pineapple melon, snake melon, and other varieties and/or hybrids of these).

In the U.S. the terms "muskmelon" and "cantaloupe" are used interchangeably. The varieties of *Cucumis melo* are botanically and culturally similar. The plants are annuals, trailing, and vinelike. Climate and growing conditions for all muskmelons are similar. Similar pest problems should be expected, and control of such pests should be similar regardless of the melon variety. It is reasonably expected that when equal amounts of pesticides are applied to any of the muskmelons for control of a common pest, the residue levels will be similar.

For regulatory and tolerance purposes the term "melon" then includes:
muskmelons including hybrids and/or varieties of Cucumis melo (as defined above) and watermelons including hybrids and/or varieties of (Citrullus spp).

If I interpret this correctly, when the rule comes into affect the term "musk melon" on a label will include all Cucumis melo hybrids and varieties as stated and the term "melon" will encompass both muskmelons (as defined) and watermelons. The Interregional Research Project No. 4 (IR-4) requested this action for the purpose of establishing tolerances.

(Stall, Vegetarian 91-10)

B. **Summer Squash Defined.**

The term "summer squash" has a proposed rule change found in the same Federal Register article.

For regulatory, research and tolerance purposes summer squash will be defined as: Fruits of the Gourd (Cucurbitaceae) family that are consumed when immature, 100% of the fruit is edible either cooked or raw, once picked it cannot be stored, has a soft rind which is easily penetrated, and if seeds were harvested they would not germinate: eg. Cucurbita pepo (ie. crookneck squash, straightneck squash, scallop squash, and vegetable marrow); Lagenaria spp (ie. spaghetti squash, hyotan, cucuzza); Luffa spp. (ie. hechima, Chinese okra); Memordica spp. (ie. bitter melon, balsam pear, balsam apple, Chinese cucumber); and other varieties and/or hybrids of these.

(Stall, Vegetarian 91-10)

IV. **VEGETABLE GARDENING**

A. **National Junior Horticultural Association - Florida 4H History.**

During the week-end of Oct. 26-27, 1991, Florida will host for the third time the annual convention of the National Junior Horticultural Association (NJHA). This year's meeting will be held at the Altamonte Springs Hilton located alongside I-4 near the Orange-Seminole county line. The previous two conventions were: 1962 - Deauville Hotel, Miami Beach, and 1971 - Sheraton Beach Hotel, Miami Beach.

Due to this historical event taking place in Florida, I thought our readers might be interested (perhaps) in a brief history of Florida's participation in the only U.S. youth association dedicated solely to the promotion of horticulture. For now I will take you through the first 15 years (1960-1974), because I was personally involved since 1962.

For the following trips I have reconstructed the individuals, teams, coaches, chaperons, and sponsors that represented Florida on these trips. I'll be sharing that information with interested parties in the near future. In the meantime, we look forward to another successful convention in Florida. So far we have over 350 signed up from around the U.S.
### FLORIDA HISTORY (1960-1974)

National Junior Vegetable Growers Association (NJVGA)

<table>
<thead>
<tr>
<th>No-Annual</th>
<th>Date</th>
<th>Hotel</th>
<th>City</th>
<th>FL Delegation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) - 26th</td>
<td>Dec. 4-8, 1960</td>
<td>Antler’s</td>
<td>Colorado Springs</td>
<td>(15)</td>
</tr>
<tr>
<td>(2) - 27th</td>
<td>Dec. 3-7, 1961</td>
<td>Sheraton-Cadillac</td>
<td>Detroit</td>
<td>(16)</td>
</tr>
<tr>
<td>(3) - 28th</td>
<td>Dec. 2-6, 1962</td>
<td>Deauville</td>
<td>Miami Beach</td>
<td>(21)</td>
</tr>
<tr>
<td>(4) - 29th</td>
<td>Dec. 8-12, 1963</td>
<td>Penn-Sheraton</td>
<td>Pittsburgh</td>
<td>(13)</td>
</tr>
</tbody>
</table>

National Junior Horticultural Association (NJHA)

<table>
<thead>
<tr>
<th>Date</th>
<th>Hotel</th>
<th>City</th>
<th>FL Delegation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 6-10, 1964</td>
<td>Sheraton-Charles</td>
<td>New Orleans</td>
<td>(18)</td>
</tr>
<tr>
<td>Dec. 5-9, 1965</td>
<td>Netherland-Hilton</td>
<td>Cincinnati</td>
<td>(22)</td>
</tr>
<tr>
<td>Dec. 4-8, 1966</td>
<td>Sheraton-Jefferson</td>
<td>St. Louis</td>
<td>(19)</td>
</tr>
<tr>
<td>Dec. 3-7, 1967</td>
<td>New Yorker</td>
<td>New York</td>
<td>(19)</td>
</tr>
<tr>
<td>Dec. 8-12, 1968</td>
<td>Dinkler-Plaza</td>
<td>Atlanta</td>
<td>(23)</td>
</tr>
<tr>
<td>Dec. 7-11, 1969</td>
<td>Sheraton-Lincoln</td>
<td>Indianapolis</td>
<td>(20)</td>
</tr>
<tr>
<td>Dec. 6-10, 1970</td>
<td>New Albany</td>
<td>Denver</td>
<td>(21)</td>
</tr>
<tr>
<td>Dec. 6-9, 1971</td>
<td>Sheraton Beach</td>
<td>Miami Beach</td>
<td>(29)</td>
</tr>
<tr>
<td>Dec. 3-7, 1972</td>
<td>Sheraton-Columbus</td>
<td>Columbus</td>
<td>(19)</td>
</tr>
<tr>
<td>Nov. 2-5, 1973</td>
<td>Skirven Plaza</td>
<td>Oklahoma City</td>
<td>(12)</td>
</tr>
<tr>
<td>Nov. 1-5, 1974</td>
<td>National 4H Center</td>
<td>Washington, DC</td>
<td>(13)</td>
</tr>
</tbody>
</table>

(Stephens, Vegetarian 91-10)

Prepared by Extension Vegetable Crops Specialists

Dr. D. J. Cantliffe  
Chairman

Dr. G. J. Hochmuth  
Assoc. Professor

Dr. D. N. Maynard  
Professor

Dr. S. M. Olson  
Assoc. Professor

Dr. G. M. Sargent  
Asst. Professor

Dr. W. M. Stall  
Professor

Mr. J. M. Stephens  
Professor & Editor

Dr. C. S. Vavrina  
Asst. Professor

Dr. J. M. White  
Assoc. Professor