The VEGETARIAN Newsletter

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Prepared by Extension Vegetable Crops Specialists

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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLES AND HORTICULTURE) AND OTHERS INTERESTED IN VEGETABLE CROPS IN FLORIDA

FROM: James Montelaro, Extension Vegetable Specialist

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A. Results, NJHA Horticultural Contest, November 1-4, 1975

Florida produced four national winners at the recently held National Junior Horticultural Association (NJHA) Convention, Biloxi, Mississippi, November 1-4, 1975. All the 4-H members representing Florida were from St. Johns County. Kay Parker and Sandy Brubaker were national winners in the Use Demonstrations; Keith Fuller was grand national winner in the Production Demonstrations; Pam Frawley and Linda Cooksey were national winners in the Artistic Arrangements category. For Horticulture Judging, Keith Fuller was national winner in the open division; the 4-H team of David Dinkins, Greg Griner, Lisa Wolfe, and Dina Thomas placed 13th. Fredda Thomas also placed well in the open division. Paul Dinkins, Nettie R. Brown, and Jim Stephens accompanied the group to Biloxi. Next year's convention site is King of Prussia, Pennsylvania.

B. Vegetable Judging Contest Undergoes Major Changes in 1976

The Florida Vegetable Judging Contest will be expanded to include fruits and ornamentals. It will be called the Horticulture Identification and Judging Contest. Co-leaders of this contest are Jim Stephens (VC), Julian Sauls (FC), and Bob Black (OH). New materials for study will be out shortly.

II. COMMERCIAL VEGETABLE PRODUCTION

A. Watermelon Production Checklist for Advance Planning

Each season we see problems in watermelon production which could have been avoided by careful planning and a check of information in the County Extension Office. A little planning in advance can mean the difference between success and failure. Following is a checklist of ten important items with brief comments. Growers should check these items before planting to be sure that well-organized plans are made to produce a good crop of watermelons.

1. Land selection - Fusarium wilt is a soil-borne disease which can live for many years in a soil after it becomes infested. Land never planted to watermelons in the past is the most desirable. In the absence of new land, try to find land that has been out of watermelon production for ten to twelve years. Land that has had watermelons in the recent past should be avoided. However, if old land has to be used, seed at a heavier rate, thin plants to final stand in steps—delaying final thinning until just before plants fall over and vines start to run.

2. Variety selection - Standard varieties—'Charleston Gray', 'Crimson Sweet' and 'Jubilee'. (Note—'Jubilee' has lost practically all Fusarium wilt resistance over the years. Try to get 'Registered' or 'Special Stock' seed of this variety). Other varieties—'Allsweet', 'Smokylee'.

3. Liming and pH - Take a soil sample as soon as the land has been selected. Land not in cultivation with a pH of 5.7 to 5.8 may show a 0.5 to 1.0 pH unit drop when it is put into cultivation and adequately fertilized. We recommend a ratio of calcium/magnesium of 5:1. Choose dolomite or high calcic limestone based on soil test information. A pH of 6.0 to 6.5 is recommended for watermelons.

4. Fertilization

A. Basic (initial) fertilizer application
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(7) **Irrigation** - High levels of fertilization make timely irrigation extremely important. Irrigate before plants begin to wilt in dry weather.

(8) **Pollination**

A. Need for honeybees - The cucurbit crops, including watermelons, must have bees working the flowers for good pollination. Use one or more hives of bees for every five acres. Distribution of hives should be such that bees do not have to travel long distances to work flowers.

B. Insecticide use - Bees work actively in warm weather until mid or late afternoon. Apply insecticides in very late afternoon to reduce injury to bees.

(9) **Disease Control**

A. Viruses - The mosaic diseases are not seed-borne. Control is practically impossible as they are spread by aphids from other cucurbits and wild hosts. Destruction of host plants may help reduce severity of mosaic viruses.

B. Fungus diseases - Anthracnose, gummy stem and downy mildew can all be controlled with complete coverage with any one of several recommended fungicides. These include all formulations of the maneb, difolatan and Bravo. Benlate controls anthracnose and gummy stem, but not downy mildew. Most important is good coverage and tightening of schedule when conditions are ideal for disease development (high humidity).

C. Bacterial spot - Common in South Florida. Use 3 lbs./acre of copper (48-53%). **CAUTION:** Excess copper can stunt small plants.

### Disease Control - Watermelons

<table>
<thead>
<tr>
<th>Disease</th>
<th>Spray</th>
<th>Min. Days To Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthracnose</td>
<td>Maneb 80%, 1½-2 lbs., or</td>
<td>5</td>
</tr>
<tr>
<td>Downy Mildew</td>
<td>Dithane M-45 80%, 1½-3 lbs., or</td>
<td>5</td>
</tr>
<tr>
<td>Gummy Stem Blight</td>
<td>Manzate 200 80%, 1½-3 lbs., or</td>
<td>5</td>
</tr>
<tr>
<td>Cercospora Leaf Spot</td>
<td>Difolatan 4 flowable, 2½ pts., or</td>
<td>NTL</td>
</tr>
<tr>
<td>Alternaria Leaf Spot</td>
<td>Bravo 75%, 1½-2½ lbs., or</td>
<td>NTL</td>
</tr>
<tr>
<td></td>
<td>Benlate, ½-1½ lbs./A</td>
<td>NTL</td>
</tr>
<tr>
<td>Bacterial Leaf Spot</td>
<td>Copper (48-53%) 3 lbs./A</td>
<td>NTL</td>
</tr>
</tbody>
</table>

(10) **Insect Control** - Leafminers, aphids, cutworms and rindworms can cause trouble.
1. Amount - Use about 2,000 lbs. of 6-8-8 in general for irrigated soil. Reduce by 25% on unirrigated soil. Adjust amount up or down depending on soil tests for phosphorus and potassium and use of cover crops.

2. Sources of fertilizer nutrients
   a. Organics are not necessarily needed, but can be used to an advantage in some cases. Organic nitrogen may prove superior to chemical nitrogen during seasons of leaching rains, but in most seasons, it will show no added benefits over chemical nitrogen. Organic nitrogen may be considered as partial insurance against temporary nitrogen deficiency during periods of heavy rains. Urea nitrogen reacts more like inorganic than organic nitrogen in the soil.
   b. Be sure to include one to two units of nitrate-nitrogen in the regular fertilizer to be used at planting.
   c. Check phosphorus sources. Heavy applications of diammonium phosphate may cause a copper deficiency. Heavily ammoniated superphosphate may not supply adequate phosphorus. Suggestion: Obtain a fertilizer that contains some phosphorus from superphosphate or triple superphosphate in addition to that supplied by diammonium phosphate or ammoniated superphosphate. The latter (ammoniated superphosphate) should be ammoniated only to the extent of 3 to 4% instead of 7% or above.

B. Micronutrients (minor elements)

1. Some of the micronutrients (zinc, manganese and copper) can be supplied, in part, by the fungicides used for disease control. This will not supply adequate amounts of these materials; therefore, the minimum amounts recommended below should be used in the basic fertilizer.

2. Supply micronutrients in the basic fertilizer application. The highly acid, flatwood soils are apt to be deficient in copper. Good insurance for watermelons is an application of 20 to 30 lbs./acre of FTE 503 or equivalent from a mix of the salts with the regular fertilizer.

5) Placement and timing of fertilizer

   A. About one week before seeding, apply one-third broadcast in a 36-inch band over row center and work well into soil.

   B. About three weeks later, apply additional one-third of fertilizer in 18-inch bands to each side of original 36-inch band and work into soil.

   C. Three weeks later, apply remainder in 18-inch bands at the edge of row and work into soil.

   D. An alternative is to split the fertilizer into 2 applications.

6) Sidedressing

   A. Make one or more applications of 150 to 300 lbs. of (1) 10-0-10, (2) 15-0-14 or (3) 100 to 200 lbs. of 23-0-22 (made up to equal amounts of ammonium nitrate and potassium nitrate), or (4) alternate ammonium nitrate (NH₄NO₃) and potassium nitrate (KNO₃).

   B. At least 50% of nitrogen in mixed goods for sidedressing should be in nitrate form.
### Insect Control - Watermelons

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticides and Formulations</th>
<th>Amounts Per Acre</th>
<th>Min. Days To Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaf Miners</td>
<td>Dimethoate (Cygorn, De-Fend) 2.67E</td>
<td>3/4-1 pt.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Azinphosmethyl (Guthion) 2E</td>
<td>1 qt.</td>
<td>1</td>
</tr>
<tr>
<td>Aphids</td>
<td>Dimethoate (Cygorn, De-Fend) 2.67E</td>
<td>3/4-1 pt.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Parathion 4E</td>
<td>½ pt.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mevinphos (Phosdrin) 2E</td>
<td>1 pt.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Endosulfan (Thiodan) 2E</td>
<td>1 qt.</td>
<td>NTL</td>
</tr>
<tr>
<td>Cucumber Beetles, Melonworm, Pickleworm, Squashbug</td>
<td>Lindane 25% WP</td>
<td>1 lb.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Parathion 4E</td>
<td>½ pt.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mevinphos (Phosdrin) 2E</td>
<td>1 pt.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Carbaryl (Sevin) 80% WP</td>
<td>¼ lbs.</td>
<td>NTL</td>
</tr>
<tr>
<td></td>
<td>Endosulfan (Thiodan) 2E</td>
<td>2 qts.</td>
<td>NTL</td>
</tr>
<tr>
<td>Rindworms on Watermelon</td>
<td>Bacillus thuringiensis</td>
<td></td>
<td>NTL</td>
</tr>
<tr>
<td></td>
<td>Guthion (Azinphosmethyl) 2E</td>
<td>1 qt.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Methomyl (Lannate, Nudrin) 90% SP</td>
<td>1 lb.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mevinphos (Phosdrin) 2E</td>
<td>1-2 pts.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Endosulfan (Thiodan) 2E</td>
<td>1 qt.</td>
<td>NTL</td>
</tr>
<tr>
<td>Cutworms</td>
<td>Chlordane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mole Crickets</td>
<td>Aldrin, Chlordane, or Diazinon</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*(NOTE: For complete information on insect and disease control, see University of Florida, Extension Circular 193H entitled "Commercial Vegetable Insect & Disease Control Guide."

There are other items which have not been covered but are just as important. Harvesting and handling should receive careful attention. Watermelons should be harvested fully mature and handled with care.

(Montelaro)

### B. Herbicide Recommendations for Potatoes on Florida's Sandy Soils

Several herbicides have been labeled for use on potatoes during the past year. The purpose of this article is to point out research experiences with these materials under Florida conditions and to review the recommended materials for Florida.

The herbicides referred to are metribuzin (Sencor and Lexone) and alachlor (Lasso). These materials have been added to our recommended list for use on a trial basis. It is suggested that with these, as with any "new" material a grower uses for the first time, a limited acreage be treated initially to allow the grower to determine how to handle the material and how effective it is under his growing situation.

Dr. Jim Shumaker, Associate Horticulturist at the Hastings Agricultural Research Center, has tested these materials in his potato herbicide evaluation program since 1970. He has provided the following list of important points to be emphasized based on his work.

**Metribuzin (Sencor, Lexone)**

1. "Postemergence (after emergence of potatoes) applications have caused reduction in potato yield. Only preemergence (prior to emergence of potato plant) applications are suggested for trial purposes at the rate of 0.5 lb. ai/acre."


"Avoid applications to non-target areas—cabbage is extremely sensitive to metribuzin. Aircraft application of metribuzin is not recommended in Hastings unless potatoes are isolated from cabbage and other sensitive crops—check the labels."

Emerged weeds can be controlled provided they are less than 1" high.

Do not incorporate.

"Do not plant treated area to crops other than potatoes for one year after treatment. Sensitive crops (cabbage, other cole crops, onions, lettuce and cucurbits) should not be planted during the next growing season following applications of metribuzin as injury may occur."

"If a major change in growing practice is made (such as a change in variety or fumigation practice), the grower should determine tolerance of metribuzin by applying it only on a limited scale without jeopardizing a large part of the crop."

Alachlor (Lasso)

"Caution should be used when considering use on early-maturing potato varieties." The label carries the precaution "Lasso may delay maturity and/or reduce yield of 'Superior' and other early-maturing potato varieties if cold wet soil conditions occur after treatment."

Note that Lasso is labeled for use on white-skinned potatoes only.

Alachlor is not effective on emerged weeds thus, it is critical to apply the material prior to weed emergence.

A grower should always read the entire label of the materials he uses in his operation. In many instances, problems can be avoided by heeding the usage and precautionary statements placed on the label for that very reason.

The following table contains the recommended herbicides for potatoes grown on sandy soils in Florida.

<table>
<thead>
<tr>
<th>Herbicides</th>
<th>Time of Application to Crop</th>
<th>Lbs./Acre (Active Ingredients)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dalapon (Dowpon, Basfapon)</td>
<td>Preplanting</td>
<td>7.4 Sandy Soils</td>
<td>For control of perennial grasses. Apply to weed foliage and then plow under 2 weeks later. Do not apply to red-skinned varieties.</td>
</tr>
<tr>
<td>Alachlor (Lasso)</td>
<td>Preemergence</td>
<td>(2) 10 Sandy Soils</td>
<td>White-skinned potatoes only. Lasso may delay maturity and/or reduce yields of some varieties under certain conditions. Refer to label.</td>
</tr>
<tr>
<td>DCPA (Dacthal)</td>
<td>Preemergence</td>
<td>10.5</td>
<td></td>
</tr>
<tr>
<td>Dinoseb (Premerge, Sinox PE)</td>
<td>Preemergence</td>
<td>3 to 6</td>
<td>Apply at least one day before crop emerges.</td>
</tr>
</tbody>
</table>
Potato Herbicides (Cont'd)

<table>
<thead>
<tr>
<th>Herbicides</th>
<th>Time of Application to Crop</th>
<th>Lbs./Acre (Active Ingredients)</th>
<th>Sandy Soils</th>
<th>Remarks (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphenamid (Dymid, Enide)</td>
<td>Preemergence</td>
<td>4 to 6</td>
<td></td>
<td>Do not incorporate. Check label for sensitive crops and subsequent plantings.</td>
</tr>
<tr>
<td>Metribuzin (Sencor, Lexone)</td>
<td>Preemergence</td>
<td>(4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dalapon (Dowpon, Basfapon)</td>
<td>Postemergence</td>
<td>(3.7)</td>
<td></td>
<td>Apply after last cultivation where perennial grasses are a problem. Apply directionally to base of crop plants. Do not apply to red-skinned varieties.</td>
</tr>
<tr>
<td>EPTC (Eptam)</td>
<td>Postemergence</td>
<td>3</td>
<td></td>
<td>Incorporate immediately after application. Apply after last cultivation or not later than 45 days before harvest. Suggested for marl soils, also.</td>
</tr>
</tbody>
</table>

(1) Rates given in parentheses are suggested for trial purposes only.
(2) Also refer to label for additional comments or restrictions.

C. Remote Sensing as a Vegetable Crop Management Tool

Several months ago one map maker, using information from an earth resources satellite, constructed in one week a map of all of the lakes, ponds, and reservoirs larger than 5 acres in size in the entire state of Georgia! To map these 35,000 bodies of water by ground methods would have cost the State over $1,000,000 and required several years work by many technicians. This is merely one example of remote sensing and how it can serve agriculture.

Remote sensing is defined as the detection and interpretation of the features of a surface without direct contact with that surface. Remote sensing may detect surface features by use of light and heat reflection, radar, sonar, or by measurement of beta, gamma and X-ray radiation. Surface characteristics which may be detected are texture, structure, shape, color, composition and temperature.

It is possible to detect small changes in light reflectance of leaves due to some stress; the relative moisture in a soil; the degree of water purity of a lake or river; and the presence of toxic gases in the air. Remote sensing had its big start in military and police reconnaissance. It now serves a wide variety of uses in chemistry, medicine, engineering and geology.

In agriculture much of the remote sensing now in use involves the recording of reflected light or heat on special types of photographic film. The detection is often achieved by aerial photography using fixed wing airplanes, helicopters and satellites. The film method provides an accurate, objective and permanent record of a very large area in a very short time. A photograph taken from 200 feet covers a smaller area more intensively, of course, than a photograph taken at 3,500 feet which may cover as much as 500 acres. The method used would depend on the management need.
The human eye and standard color film can detect reflected radiant energy only within a small portion of the total electromagnetic spectrum. The human eye can detect reflected light from the short wavelengths in the violet range all the way up to the longer wavelengths of red. Below the violet range, the germicidal ultraviolet and X-rays occur, and beyond the long red rays of human perception the infrared, heating, and radio waves exist. Special films are available which can record reflected radiation beyond these limits of human vision.

Most of us are familiar with film sensitive to X-rays used in medical diagnosis. In remote sensing for agriculture, film sensitive to infrared radiation is of importance. Black and white film sensitive to infrared energy records images in shades of black, white and gray; whereas, color reversal film sensitive to infrared records images in "false colors". The images of false color IR film are very unusual; healthy green leaves appear red, clear water appears black, and leaves of crops under stress may show purple, blue or white.

In normal vision, a green leaf appears green to humans because green wavelengths are reflected back to the eye, whereas red and blue are absorbed by the leaf. The red and blue wavelengths are the most important zones of radiant energy used in photosynthesis.

Infrared radiation is greatly reflected from the surface of a healthy leaf or it may be transmitted through the leaf. Highway reflectors operate on a similar principle as they return the headlight beam back in the direction of the light source. It is believed that if plants did not have this reflective capability that they would not be able to survive the intense heat rays of sunlight.

As the plant leaf loses its ability to reflect infrared energy due to stress, the infrared sensitive film exhibits dramatic changes in color and density. Healthy leaves reflect great amounts of infrared, giving the intense red color on the IR film; but as the stress intensifies and reflecting ability is reduced the leaves express color changes from light to red to magenta, to purple, or to greenish blue on the film.

A brief comparison of true color and IR false color images may be of interest.

<table>
<thead>
<tr>
<th>True Color</th>
<th>IR False Color</th>
<th>True Color</th>
<th>IR False Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy green leaf</td>
<td>Red</td>
<td>Very wet soil</td>
<td>Black</td>
</tr>
<tr>
<td>Stressed leaf</td>
<td>Magenta-blue</td>
<td>Dolomitic limestone</td>
<td>Gray-brown</td>
</tr>
<tr>
<td>Seriously stressed</td>
<td>Yellow-white</td>
<td>Rocks</td>
<td>Blue-gray</td>
</tr>
<tr>
<td>Leaf</td>
<td></td>
<td>Clear water</td>
<td>Black</td>
</tr>
<tr>
<td>Dry soil</td>
<td>White</td>
<td>Muddy water</td>
<td>Gray-blue</td>
</tr>
<tr>
<td>Mod. wet soil</td>
<td>Blue</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dr. Carlos Blazquez, Plant Pathologist, ARC-IFAS, Immokalee, has been doing research in remote sensing on vegetable crops for the past 5-6 years. His research has shown that infrared photographs can detect plant stresses which were later diagnosed as late blight on tomatoes and potatoes, downy mildew on cucumbers and watermelons, target spot on cucumbers, and mosaic on celery as much as 5-7 days before their appearance was visually obvious. With this advanced warning, the grower could use the aerial photograph to pinpoint the trouble spot on the ground which needs intensive investigation.

Dr. Blazquez feels that remote sensing could be used: to make needed changes in spray programs in order to increase effectiveness and timing and improve the cost-benefit relationship; to determine soil type areas; to assess elevations for low and high areas; to spot rock outcroppings; to plan for drainage needs; to aid plant irrigation programs; and to detect weed advances, changes in soil moisture, stresses in crops due to disease or other factors.
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In summary, remote sensing is an additional tool available to vegetable growers to help them make wise decisions in the shortest time at the least cost and labor. It is estimated that this aerial reconnaissance system may cost as little as one dollar per acre on volume contracts in the future.

Remote sensing may someday be as commonplace as the farm map, soil survey and planting plan in vegetable crop management. Growers may be glad to have their crops in the "red" so their ledgers can show more figures in the black.

(Marlowe)

III. HARVESTING AND HANDLING

A. Uniform Grade Names for Fresh Produce

In a report to Congress earlier this year, the Secretary of Agriculture was requested to "make grade designations uniform and easier for consumers and industry to understand." The USDA published their proposed uniform grade nomenclature for fresh fruits, vegetables and nuts in the Federal Register on October 6, 1975. The proposed Federal regulation would permit only the following four grades: U. S. Fancy = premium quality, U. S. No. 1 = the chief trading grade representing good quality and the bulk of the quality range produced, U. S. No. 2 = intermediate quality, and U. S. No. 3 = the lowest merchantable quality practical to pack under normal conditions. All persons who desire to submit comments, either for or against, are requested to send them to the Hearing Clerk, U. S. Department of Agriculture, Room 112, Administration Building, Washington, D. C., 20250, before February 15, 1976.

The USDA grade standards for produce started with potatoes in 1917, and at present there are 152 standards for 82 different fresh fruits and vegetables. Although grade standards for each commodity were developed independently, the original purpose was basically to aid in marketing by providing a common language for wholesale trading and a means of measuring values or establishing prices. Grading is a process of classifying units of a commodity into groups that have significance in determining the degree of acceptability of that unit to the buyer. In general, consumer interests in grades and standards have received much less attention than commercial operational considerations. This is understandable, because the linkage between the commercial vegetable industry and the consumer is a comparatively remote one. Without direct access to consumers, growers and shippers receive little specific information to assist them in meeting consumer demands.

In the present U. S. Standards, there are at least four terms used to describe the top grade: U. S. Extra No. 1, U. S. Extra Fancy, U. S. Fancy and U. S. No. 1. Various state and commodity organizations have added their local standards to the grading nomenclature. Some commodities are naturally more variable than others, so more grades were developed to classify the entire range of values. Criteria for grade standards refer to the relative usefulness, desirability and value of a commodity or its marketability. Grading normally is not justified unless an economic basis for it exists.

Fresh produce standards are based on color, shape, maturity, size and number and severity of defects. Since grade is determined almost entirely by visible, physical factors, the judgment of individuals is involved. The use of Federal-State Inspectors to designate the grades of Florida vegetables has declined markedly in recent years. With buying and selling concentrated among fewer and larger organizations, these organizations often find it more feasible to have their own personnel make the grade-price decisions. This change may also indicate that industry is not satisfied with present grading procedures.
Changes in freshness and composition are not defined by the U. S. grades. Standards for processed fruits and vegetables are based on criteria such as tenderness, flavor and maturity. We often use the terms quality and grade interchangeably, but quality is a much broader term than grade. Consumers think of quality in terms of eating satisfaction that we don't know enough about to establish standards of measurement. It has often been stated that eating quality and shipping quality are more or less opposed. Why do we have this conflict in objectives and what changes can be made?

Much has been written about consumer reactions to poor-quality vegetables in the supermarket and the lack of labeling that would assist them in shopping for better quality. Most of the produce in retail store displays is not identified by a wholesale grade, even if the shipping container was labeled. There is seldom more than one grade of most produce items on display in an individual store at any one time, and if the wholesale grade was indicated, shoppers would have difficulty understanding its meaning. It is important to have a simplified grade nomenclature that not only the shippers understand, but also the employees in the retail store produce departments and the shoppers. With the use of understandable grades and labeling, consumers may be able to force growers and marketing agencies to offer more than one grade of produce for sale in individual stores. When this is done, consumers that want to purchase better eating quality and are willing to pay extra for it, will have the opportunity.

Since communications between the consumer and the grower were broken by the self-service supermarket, many marketing programs for both fruits and vegetables have emphasized minimum grade standards for the stated purpose of improving eating quality by keeping "junk" off the markets. Actually, the minimum grade often dominated the market supplies and although appearance was satisfactory, eating quality dropped far below optimum. Consumers now have an opportunity to influence adoption of more meaningful grade names. Although these standards are not synonymous with eating quality and their use by the industry is voluntary, this may be a stimulus for some improvement in consumer quality at the retail store.

(Showalter)

IV. VEGETABLE GARDENING

A. Timely Gardening Topics

These questions and answers are suggested for agents' use in developing periodic (weekly) radio or newspaper briefs. They are based on letters of inquiry from Florida gardeners.

(1) Timely Topic for week of December 14-20.

Question

As an organic gardener, what are some "natural" materials I can use to treat my acid soil?

Reply

If a soil test should indicate a need for a liming material, any one of the following materials may be used and are generally considered "natural" enough for organic gardener usage:

1. Ground limestone
2. Ground dolomite
3. Finely ground clam shells
4. Ground shell marl
5. Finely ground oyster shells
6. Wood ashes
Since many of these materials are slow to react in the soil, they should be finely pulverized and applied and worked into the soil months ahead of planting. For example, apply in the fall for the spring garden.

(2) Timely Topic for week of December 21-27.

Question

My garden yields a lot of vegetables, but they tend to all come at once. How can I extend the utilization period?

Reply

There are quite a few techniques you can use to make your garden yield longer and the produce from it go further. First, make periodic plantings every two weeks for those crops you enjoy most. However, such staggered plantings do not always result in different dates of harvest. Sometimes, weather conditions are such that the later planted crop will mature early along with the crop that was planted first. Second, plant early-maturing varieties alongside late-maturing ones. Third, store vegetables under proper conditions to make them useful for many months. Be sure to grade out the cull vegetables before storing, and periodically re-grade those in storage. Also some vegetables can be harvested before they reach full maturity, often yielding very high-quality produce weeks earlier than if all the planting were allowed to mature in a short period (e.g. small, not-too-firm cabbages make an excellent cooked or raw vegetable).

Last, canning or freezing provides for use of garden surplus year around. Proper freezing retains the color, flavor and food value of most vegetables better than canning, whereas, some vegetables such as beets and tomatoes are more suitable to canning.

(3) Timely Topic for week of December 28-January 3

Question

One of my "gardening expert" friends said some of my garden problems last year were due to my plants needing boron. Is this possible?

Reply

On soils which are neutral or alkaline in reaction--pH 7.0 or higher--borax is likely to be needed for turnips, beets, cauliflower, spinach, celery, cabbage, broccoli, Brussels sprouts, lettuce and rutabagas. The most noticeable symptoms of boron deficiency are black corky areas in the flesh of turnips, rutabagas, and beets; rough cankers on the outside of beets; blackened small center leaves in the case of head lettuce; internal stem browning of cabbage and cauliflower; small deformed center leaves on spinach; brown discoloration of cauliflower and broccoli heads; and cracking of celery stems. When the above-mentioned disorders have been observed, arrange the garden so the above-mentioned crops are in one section. Apply common borax at the rate of 4 ounces per 1,000 square feet of soil or use a fertilizer which includes a mixture of boron and other minor elements. Some crops such as beans and peas are sensitive to borax, so apply only the correct amount.

(4) Timely Topic for week of January 4-10

Question

What is the leafy green vegetable plant I sometimes see around houses growing on long spindly stalks sometimes 10-12 feet high?
Reply

It sounds like you are describing collards that have been "cropped" for a long time, leaving the base stems with a few leaves near the top. The collard plant is an esteemed cooking green here in the South. It is essentially a cabbage that forms only a large rosette of leaves instead of a solid head. It is more resistant to heat than cabbage and is hardy to cold, so it can survive over several seasons. Collard is a biennial vegetable which needs exposure to cool weather (1 month or more at 45°F or less) to produce a seedstalk. Unless it goes to seed, it may continue to grow. Collards may be harvested any time after the plants are large enough by either cutting of the entire rosette of leaves or picking the older leaves as they mature, leaving the younger upper ones to develop. When harvested in this latter fashion, the stem grows tall and often crooked much like a cabbage palm.

(5) Timely Topic for week of January 11-17.

Question

Do you have any guidelines as to which vegetables I can transplant and those that I cannot?

Reply

Certain vegetables may be transplanted with ease, others require more care, and some may not be transplanted except in containers. Here is a brief grouping of some of the vegetables as a guide. Those that easily survive transplanting are: beet, broccoli, Brussels sprouts, cabbage, cauliflower, chard, collards, endive, lettuce, tomato and sweet potato. Those that transplant well with care are: carrot, celery, eggplant, kale, kohlrabi, leek, onion, pepper and salsify. Those that are difficult to transplant are: bean, sweet corn, cucumber, cantaloupe, mustard, English peas, southern peas, squash, turnips, watermelons.

In general plants survive best and grow off the fastest when roots are not disturbed. Therefore, even for those crops that transplant easily, transplanting in containers will enhance liveability and insure greater success.

(Stephens)

B. Know Your Vegetables - Arrowroot

Arrowroot seems to be an all inclusive term applying to several species of plants which are either eaten fresh or from which flour is made. It is open to speculation whether the name comes from the pointed shape of the root or the belief that they cured arrow injuries. The term arrowroot applies both to the flour and the plant.

The main arrowroot of commerce is West Indian, reed, or Bermuda arrowroot (Maranta arundinacea). As usual, there are several varieties, distinguished as red and white, of which the former is most esteemed. The plant is of South American and West Indian origin. Purple arrowroot (Canna edulis) has been grown in Queensland with yields of 5 to 10 tons of tubers per acre. There seem to be many species of the genus Canna whose tubers can be eaten or from which starch is extracted. These include brick canna (C. discolor); Inca arrowroot (C. languinosa); Andean canna (C. paniculata); broad-leaved canna (C. latifolia); iris canna (C. iridiflora); and Mexican canna (C. glouca).
Similar arrowroot substances are derived from a member of the ginger family, the genus Curcuma. East Indian arrowroot, also called Tibur starch, comes from Curcuma angustifolia; another source is C. leucorrhiza; false arrowroot (C. pierreana) is cultivated in Indochina; the Indonesian one is C. xanthorrhiza; south sea arrowroot is product of the salep plant (Tacca pinnatifida) which is poisonous until cooked; finally, Hawaii arrowroot is derived from Tacca hawaiiensis.

Many of these plants in the arrowroot group are somewhat similar in appearance. They have underground rhizomes or tubers, from which arise reed-like, erect stems. Flat, beaded, long-pointed leaves are attached in a sheath-like fashion up and down the upright stems in typical canna or ginger-like fashion.

The starchy rhizomes of true arrowroot, Maranta arundinacea, are long, pointed and enclosed with bracts. It is propagated by tubers or suckers planted 6 inches deep and spaced 15 inches in furrows 30 inches apart. Arrowroot should be planted at a time when it will have 10 to 11 months of hot moist climate to mature. Under these conditions, yields of 4 to 6 tons per acre might be expected. Tubers are reported to contain 12% dry arrowroot (flour).

Although arrowroot is grown to a very limited extent in South Florida, very little information has been gathered concerning this crop's growth responses and possibilities in Florida.

(Stephens)