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Prepared by Extension Vegetable Crops Specialists

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TO: COUNTY EXTENSION DIRECTORS AND AGENTS (VEGETABLE AND HORTICULTURE)

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I. NOTES OF INTEREST

A. New Publications

"Fall Slicer Cucumber Cultivar Evaluation" by J. M. White is available as Research Report CF 81-2 from the Sanford Agricultural Research and Education Center, P.O. Box 909, Sanford, FL, 32771.

Research Report SV81-1 which summarizes current research at the strawberry center is available from the Dover ARC, Rt. 2, Box 157, Dover, FL., 33527.

(Maynard)

B. Dr. George Marlowe Returns

After two years on leave of absence to the Jordan Valley Water Authority, George has returned to Florida. He will assume his former title of Professor and Extension Specialist in the Vegetable Crops Department. He will be located at the Bradenton AREC.

George's responsibilities include primary specialist for counties in Extension District 4, statewide cultivar demonstrations and recommendations, coordination of Extension aspects of tomato IPM in the Hillsborough - Manatee area, and involvement in the water program.

Welcome home, George, we're glad you're back.

(Maynard)

C. Vegetable Calendar

April 16 -- 1:00PM, Vegetable Field Day, Hastings ARC, Yelvington Farm
June 3 -- 1:30PM, Watermelon Field Day, Leesburg ARC
June 4 -- 9:00AM, Vegetable Crops Department Field Day, Hort Unit, Gainesville

(Maynard)

D. Slide Tape Series Complete

At last all counties should have in their possession Parts IV and V of the "You Can Grow Vegetables" slide tape series. Part IV (80 slides) deals with pests and problems, while Part V (80 slides) covers harvesting tips. The five parts should now give you a complete
program on the basics of backyard vegetable gardening in Florida.

If you find the slide sets useful in your county, I know you will want to express your appreciation to the sponsor, Mr. Edward H. Boeckel, Rohm and Haas Co., 345 Whooping Loop, Altamonte Springs, FL, 32701.

(Stephens)

E. Watermelons - Preliminary Report on Intended Acreage for 1981 Season

The Florida Crop and Livestock Reporting Service estimates that Florida growers will plant 51,000 acres of watermelons in 1981. A breakdown of acreage distribution by area along with comparisons for the 1979 and 1980 seasons is as follows:

<table>
<thead>
<tr>
<th>Areas</th>
<th>1979 Planted</th>
<th>1979 Harvested</th>
<th>1980 Planted</th>
<th>1980 Harvested</th>
<th>1981 Intended</th>
<th>% of Last Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>5,000</td>
<td>3,000</td>
<td>4,000</td>
<td>2,800</td>
<td>4,500</td>
<td>113</td>
</tr>
<tr>
<td>North</td>
<td>31,000</td>
<td>27,500</td>
<td>27,500</td>
<td>26,500</td>
<td>31,000</td>
<td>113</td>
</tr>
<tr>
<td>Central</td>
<td>8,800</td>
<td>7,400</td>
<td>7,800</td>
<td>7,600</td>
<td>8,700</td>
<td>112</td>
</tr>
<tr>
<td>South</td>
<td>5,200</td>
<td>5,100</td>
<td>5,700</td>
<td>5,600</td>
<td>6,800</td>
<td>119</td>
</tr>
<tr>
<td>State</td>
<td>50,000</td>
<td>43,000</td>
<td>45,000</td>
<td>42,500</td>
<td>51,000</td>
<td>113</td>
</tr>
</tbody>
</table>

(Gray)
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II. PESTICIDE UPDATE

A. 24(c) Labels for Monitor

The State of Florida has temporarily granted Chevron's applications for section 24(c) labels for the use of Ortho Monitor 4 spray for the control of insects on eggplants and melons.

On eggplant, Monitor 4 can be used at 1-2 pints (0.5 to 1.0 lb, ai) per acre for the control of spidermites, aphids, leafminers and lepidopterous larvae. There is a 7 day spray limit before harvest.

On melons, the product can also be applied at 1-2 pints for the control of the Rindworm complex (cabbage looper, tobacco budworm, granulated cutworm), melon worm, pickleworm, and leafminer. There are variable 7-14 day waiting periods before harvest depending on the crop.

Check the label before application of these products for other directions and restrictions for use.

B. Loss of Vegedex

The Monsanto Agricultural Products Co. has announced that they have ceased production of the herbicide Vegedex. All manufactured material will be diverted to California and Florida. This should be adequate for a one year supply for these two states.

(Stall)

III. COMMERCIAL VEGETABLE PRODUCTION

A. On-Farm Testing As An Economic Tool

Vegetable growers can do something big about rising costs of production by challenging every practice and material used in their operation. One of the best ways of telling whether a fertilizer rate applied is too high or too low is to set up one or more simple test rows in the field, mark them and observe them closely.

The days of "apply-plenty-it-costs-so-little" are just about gone. Luxury levels of fertilizer, and all other inputs, can and should be challenged. The "rate" my neighbor uses needs to be tested, too. Your fertilizer salesman can be very helpful in setting up test
rows to determine what is best for your crop, your farm, and your pocketbook.

Growers should select the most typical area of their field for these simple rate tests. The tests should be large enough to represent the effect of using one-half, one-fourth (or whatever rates are selected) of the material in comparison to the rest of the field. The test rows, usually one or two rows of each level, are enough to give the grower fairly good information without causing a serious cultural, cost, or loss problem.

The test rows should be labeled with some marker that will last through the season. Frequent comparisons should be made, and written down somewhere so that conclusions can be made after the harvest. Growers should compare the growth and vigor of the crop as well as the yield. If one gets the same yield from less vines maybe a closer spacing will give a higher yield per acre.

The Extension Agent is usually very happy to assist growers (or growers and salesmen) in setting up these simple but very valuable comparison tests. Usually the cost, growth, and yield information produced by these tests are large enough to measure by rating the test rows as equal to, better than or lower than the regular or standard rows in the field.

Growers should give their test rows the same care they give the rest of the field. Good judgement in setting up the test rows, careful observation, and a hard look at the cost-benefit relationship of nearly every operation in vegetable crop production can make a big difference in the profit column.

(Marlowe)

IV. HOME VEGETABLE GARDENING

A. Florida Has National 4-H Gardening Winner

Anthony Flowers, 15, of Taylor County is the national 4-H gardening winner for 1980. After his recordbook was selected as a state winner in July, it was forwarded to regional competition where it again placed first. Winning in regional competition earned Anthony a trip to National 4-H Congress in Chicago, courtesy of Ortho Division of Chevron Chemical Company. Chevron is also the donor of the $1000 scholarship Anthony won when selected as the national gardening winner.
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All of these awards are the result of much hard work and dedication by Anthony. With the help of his county 4-H program leader, a local volunteer leader and specialists in Vegetable Crops, he designed his own project. His interest in developing a project began when he visited the demonstration gardens at Florida A & M University and got the idea of organizing a community garden program in Perry. From this basic idea, the project grew to include experiments with various types of mulches; different types, rates and application methods of fertilizer; and varying depths for seeding.

Doctors Memorial Hospital in Perry donated an acre of land for the project and other Taylor County businesses also donated supplies and services. Thirty-four 25' x 40' plots were rented to interested residents as community gardens. The County 4-H Council grew beans, tomatoes, peas and squash on a 20' x 150' area and donated these vegetables to the hospital for patient meals.

Fifty-three different vegetable varieties were grown in a 25' x 20' area to provide study materials for 4-H horticultural identification classes. The remaining areas (25' x 40' and 25' x 20') were used by Anthony for his experiments.

To enter state, regional and national competition, Anthony submitted a record describing his project from start to finish, included the results of his experiments, along with photos and diagrams. The book also contained a report of his previous 4-H projects and activities and a story about his 4-H career.

Ortho Division of Chevron Chemical Company sponsors the 4-H gardening project each year. Projects may be done in any area of horticulture—vegetable crops, fruit crops or ornamental horticulture. Anthony's success shows what planning and hard work can achieve. We hope to see increased interest in this project area each year.

(Gray)

B. Understanding The Routine Soil Test Report for Vegetable Gardens

Many agents have found the current computerized "Soil Test Report and Standard Fertilizer Recommendations" for vegetable gardens to be quite confusing (in the recommendations section). Recommendations for lime,
N, \( P_2O_5 \), and \( K_2O \) are made on the basis of pounds per acre. The conversion factors for changing to smaller areas such as pounds per 100 square feet are given; however, there is considerable concern that this procedure needs to be simplified. The main objection to the current reporting system is that the gardener is given no help in converting to actual fertilizer kinds and amounts per 100 square feet.

Therefore, it should come as good news to most agents that the report will undergo considerable changes very soon. The exact nature of the changes are not concrete at this time; however, the basic philosophy behind the recommendation format that will come out later is discussed here.

### Soil Testing

Soil tests are helpful in determining how much phosphorus and potassium the soil can supply. Fertilization recommendations based on soil test results are given by the IFAS Extension Soil Testing Laboratory. The amount of phosphorus and potassium recommended is the amount needed to supplement the soil's supply and to assure optimum plant nutrition. Soil nitrogen chemistry is such that nitrogen availability is not tested in Florida. The nitrogen fertilizer recommendation is based simply on the quantity found by experimentation to assure optimum plant nutrition for the majority of vegetables in the garden. Further refinement could be made on an individual crop basis.

A soil test acts as a guideline to fertilizing the vegetable garden. Its practical value is the fertilizer recommendation that accompanies it. For example, a soil test result may show that a soil is very high in available phosphorus. The accompanying recommendations would suggest that no phosphorus be added.

At this point there are two basic choices of kinds of fertilizers to buy and use. The first is to use a complete fertilizer such as 6-8-8. Since this fertilizer contains 8 percent available phosphoric acid, you would be applying a material that is not needed and you would be ignoring the practical value of the soil test. Gardeners who have used complete fertilizers have done so for the following advantages: availability, ease-of-application, storage properties, and product familiarity.
The second choice is to use single-element fertilizers (contains only one of the macro-nutrients) such as ammonium-nitrate, superphosphate, and potassium chloride. This is the only way to add only what is needed, thus ensuring full-advantage of the soil-testing procedure. It should be pointed out, however, that some inconveniences may be encountered with the use of single-element fertilizers. They are as not widely available in garden supply stores as the mixed fertilizers, and a little more time and effort is involved in their application. Furthermore, left-over materials need to be handled carefully to prevent hardening or loss.

The forthcoming new soil test report will give gardeners the choice of using a complete fertilizer, as most are accustomed to, or of using a combination of single-element fertilizers. Also, they will be advised on special fertilization requirements for high-pH soils.

Using the Soil-Test Report

Once the soil is tested, the results are returned from the computer in the form of a "Soil Test Report and Standard Fertilizer Recommendations" sheet. The report will give the amount of needed fertilizer in pounds per acre (LB/A) for nitrogen (N), phosphoric acid (P₂O₅), and potash (K₂O). To find out the kind and amount of actual fertilizer to recommend use the following tables. The materials suggested are commonly available; others could just as well be used but the amounts would vary with the nutrient content.

Refer to Table 1 if single-element fertilizers are to be used. Find the soil-test report recommendation in the first column and read across to determine pounds of single-element fertilizers needed per 100 square feet of garden. A gardener may thoroughly mix the fertilizers together (if more than one is needed) or apply them separately. For directions on how to prepare the soil and apply the fertilizer, refer to Extension Circular 104 or Extension fact sheet VC-5, "Fertilizing the Garden".

Because of the small quantities of fertilizer required for short rows and small plots, it is easy to apply too much fertilizer. Root injury or nutritional disorders in plants might result. Therefore, the chemical fertilizer to be applied should always be measured or weighed.
If it is more convenient to measure the material than to weigh it, pounds of complete fertilizers such as 6-8-8, and such other fertilizers as superphosphate and muriate of potash, may be converted roughly to pints or cups by allowing 1 pint (or 2 kitchen measuring cups or 32 tablespoons) to a pound. Ammonium nitrate is lighter, so allow 2 1/2 cups per pound.

Table 1. Converting your Soil Test Recommendations to Single-Element Fertilizer.

<table>
<thead>
<tr>
<th>Recommendation as shown on soil test report</th>
<th>Name and Grade of three single-element fertilizers</th>
<th>Total weight of fertilizer to use</th>
</tr>
</thead>
<tbody>
<tr>
<td>N P₂O₅ K₂O</td>
<td>Ammonium nitrate (33-0-0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ordinary Superphosphate (0-20-0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muriate of potash (0-0-60)</td>
<td></td>
</tr>
<tr>
<td>lbs/acre</td>
<td>lbs to use/100 sq. ft.</td>
<td></td>
</tr>
<tr>
<td>100-140-140</td>
<td>0.7 +</td>
<td>1.6 +</td>
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<td></td>
<td>+</td>
<td>+</td>
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<tr>
<td></td>
<td>+</td>
<td>0.5 =</td>
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<tr>
<td></td>
<td></td>
<td>2.8</td>
</tr>
<tr>
<td>100-140-70</td>
<td>0.7 +</td>
<td>1.6 +</td>
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<tr>
<td></td>
<td>+</td>
<td>+</td>
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<td></td>
<td>+</td>
<td>0.3 =</td>
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<tr>
<td></td>
<td></td>
<td>2.6</td>
</tr>
<tr>
<td>100-140-0</td>
<td>0.7 +</td>
<td>1.6 +</td>
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<tr>
<td></td>
<td>+</td>
<td>+</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>2.3</td>
</tr>
<tr>
<td>100-70-140</td>
<td>0.7 +</td>
<td>0.8 +</td>
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<tr>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
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<tr>
<td>100-70-70</td>
<td>0.7 +</td>
<td>0.8 +</td>
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</tr>
<tr>
<td></td>
<td>+</td>
<td>0.5 =</td>
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<tr>
<td></td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>100-70-0</td>
<td>0.7 +</td>
<td>0.8 +</td>
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<tr>
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<td>+</td>
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<td>+</td>
<td>0 =</td>
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<tr>
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<td></td>
<td>1.5</td>
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<tr>
<td>100-0-140</td>
<td>0.7 +</td>
<td>0 +</td>
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<tr>
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<td></td>
<td>+</td>
<td>0.5 =</td>
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<tr>
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<td>0 +</td>
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<tr>
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<td>+</td>
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<td></td>
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<td>1.2</td>
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<tr>
<td>100-0-0</td>
<td>0.7 +</td>
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<td></td>
<td>+</td>
<td>0 =</td>
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<tr>
<td></td>
<td></td>
<td>0.7</td>
</tr>
</tbody>
</table>
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Should a complete fertilizer be preferred, the following table (Table 2) shows how much 6-8-8 analysis fertilizer to use based on the recommendation from the soil-test report. You will note that in all cases it is 4 pounds per 100 square feet. This amount is necessary to provide the rate of nitrogen that is required for optimum growth of young seedlings and transplants.

The table demonstrates how excess fertilizer is applied when a complete fertilizer is used.

Table 2. Using a complete (6-8-8) fertilizer based on the soil test.

<table>
<thead>
<tr>
<th>Recommendation as shown on soil test report</th>
<th>6-8-8 Fertilizer to use</th>
<th>Excessive fertilizer applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{N P}_2\text{O}_5 \text{ K}_2\text{O} )</td>
<td>( \text{6-8-8} )</td>
<td>( \text{Phosphoric Acid} )</td>
</tr>
<tr>
<td>100-140-140</td>
<td>4.0</td>
<td>0</td>
</tr>
<tr>
<td>100-140-70</td>
<td>4.0</td>
<td>0</td>
</tr>
<tr>
<td>100-140-0</td>
<td>4.0</td>
<td>0</td>
</tr>
<tr>
<td>100-70-140</td>
<td>4.0</td>
<td>70</td>
</tr>
<tr>
<td>100-70-70</td>
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<td>140</td>
</tr>
<tr>
<td>100-0-0</td>
<td>4.0</td>
<td>140</td>
</tr>
</tbody>
</table>
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C. Know Your Minor Vegetables - Bottle Gourd

The bottle gourd, Lagenaria siceraria (Mol.) Standl., is apparently the only species of its genus. The name is synonymous with L. vulgaris Ser. and L. leucantha (Duch.) Rusby. It is also called the trumpet gourd, the calabash gourd, and the white-flowered gourd. The name “bottle gourd” is especially appropriate, because this plant species is one of the few from which useful and lasting containers can be made.

Origin and Distribution

The bottle gourd probably originated in Africa and from there was widely distributed in pre-Columbian times. It traveled to India, where it has evolved into numerous local varieties, and from India to China and to Indonesia and as far as New Zealand. Archaeological remains show that the bottle gourd was used in Egypt about 3500 to 3300 B.C. First records in China are the 1st century A.D. and in New Zealand by the 12th century A.D.

Lagenaria also traveled to the New World. The dried gourds have been shown to survive in seawater for at least 224 days, and seeds have remained viable. The fruits might have traveled to the New World by sea. Remains found in Mexico date from 7000 to 5500 B.C. and in Peru from about 10,000 B.C. The bottle gourd is thus an ancient crop, widespread and well used, from warm parts of the Temperate Zone throughout the dry and wet Tropics. It is the only crop known to have been cultivated in pre-Columbian times in both the Old World and the New World.

Seeds and other remains of the gourd have turned up in several archaeological digs in Florida.

Description

The bottle gourd is a vigorous, annual, running or climbing vine with large leaves and a lush appearance. It is fast growing and may begin to flower only 2 months after seeding. The thick stem is furrowed longitudinally. The vine is much branched and climbs by means of branched tendrils arising from the stem with the leaf. The foliage is covered with soft hairs and has a musky or foul smell when crushed. The leaves of the bottle gourd are up to 15 inches broad, circular in overall shape, with a cordate base and smooth margins, or with a
few broad lobes, or with undulate margins. Leaves have a velvety texture because of fine hairs, especially on the undersurface.

The bottle gourd is monoecious. Flowers are borne singly on the axils of the leaves, the males on long peduncles and the females on short peduncles. The flowers are white and attractive, up to 12 centimeters in diameter, with spreading petals. The ovary is inferior and in the shape of the future fruit. Otherwise, the male and female flowers are similar in appearance. The anthers are borne on short filaments grouped at the center of the flower. The stigmas are short, thickened, and branched.

The fruits of the bottle gourd show an immense amount of variation in shape, ranging from flattened forms to bottle-like forms with one to three swollen regions, to long club shapes, sometimes over 3 feet. Furthermore, the natural forms are further varied by artificially restricting growth with bands in order to develop special forms. The brownish seeds are numerous in a whitish-green pulp.

Varieties

Variation:

Lagenaria is a diploid with 22 chromosomes. All forms interbreed freely, and breeding is simple.

The bottle gourd shows great variation in vigor and horticultural characteristics. Adapted varieties are vigorous and rapidly climb to the top of supports, producing large quantities of foliage and many flowers. Varieties differ in earliness of flowering and fruit set by a month or more.

The most spectacular variation in bottle gourds is with respect to the fruits. The background color is either light green or dark green. Dark green color can be distributed as a solid color, as regular or irregular stripes and as an irregular blotch. The size of the fruit varies from 2 to 12 inches in diameter and from 4 to 40 inches in length. The shape of the fruit is variable. The fruit can have a sterile (seedless) neck, which varies from a few to 15 inches in length and 1 to 2 inches in width. Wider necks usually contain seeds, and the neck may have a seed-containing bulge. The seed-containing portion of the fruit varies from flat to
round, to cylindrical, club shaped, or long and narrow. The long, narrow forms are best for vegetables, and the round types serve as containers.

Cultivars

Cultivars of Lagenaria are known throughout West Africa, where the bottle gourd has been grown for containers, but these cultivars are largely unrecorded in terms of name and characteristics. Probably no region has as much diversity and so many named varieties of bottle gourd as India, where there are 36 named varieties.

Climatic and Cultural Requirements

Lagenaria can be grown anywhere in Florida during the frost-free periods of the year. The vines should be trellised to provide good aeration around the leaves for disease prevention. Best growth results when planted in the spring to coincide with the increased lengthening of days.

Space plants 9 feet apart. Plant seeds 1 1/2 Inch deep in raised beds or mounds.

Fertilize at the rate of 1/2 cup of 6-8-8 per plant, or place a shovel-full of compost or animal manure beneath the seed when preparing the planting site.

A trellis is advised, but vines may be allowed to run on the ground. With ground culture, the use of mulch is advised to prevent fruit rotting.

Pests and Disease

Lagenaria is likely to be attacked by powdery mildew mosaic virus, fusarium wilt, and fruit rots. Varieties differ in resistance.

Harvest and Yields

The young fruits of Lagenaria are the parts eaten, but bottle gourd fruits can be fairly large, up to two-thirds of mature size, before harvest. Large fruits are not as tender or tasty as small fruits but may be even more nutritive, because the seeds are more highly developed.
Fruits can be used as vegetables from a few days to 2 weeks after harvest, if kept at ambient temperatures, and they stay fresh somewhat longer under cool temperatures.

Utilization and Nutritional Value

Uses:

Young bottle gourd fruits are eaten as a boiled vegetable. Varieties differ, but the best are slightly sweet, tender, free of bitterness, but sometimes with a slight nutlike flavor, pale green, and attractive. Many varieties are bitter or may contain poisonous substances and are not attractive to most people. The fruits are often cooked with curries, which mask the natural flavors. The carefully selected varieties of India are choice vegetables, as good and as nutritious as the popular summer squashes.

When bottle gourds are to be used as containers, they may be constricted by bands to particular shapes. The gourds are permitted to obtain a maximum maturity on the vine before harvest. When harvested with a short length of vine, they can be hung from wires below a hot ceiling, where they dry out. However, the drying process is slow, and other measures are often used.

The top of the gourd is cut away and the seeds and pulp are scooped out. An excellent technique is to fill the partially cleaned gourds with clean, dry sand, and to cover them in a larger container with sand. This is heated over a fire for several days, and the gourds are carefully dried out. Patterns may be cut into the gourds before they are dried, or the shells may be forced into desired shapes. Dried gourds are cleaned again. The interior is scraped to remove dried pulp. The exterior may be painted, shellacked, or waxed. Well-treated gourds become durable containers. The dry hard shells are used for bottles, milk pots, churns, bowls, ladles, spoons, work baskets, floats, pipes, carved objects, and musical instruments. (Reference: Martin, F.W.: SEA/USDA).

(Stephens)