The VEGETARIAN Newsletter

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

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I. COMMERCIAL VEGETABLE PRODUCTION

A. Lettuce Seed Indexing for Better Mosaic Control in Florida

Mosaic is a very destructive disease of lettuce in all of the major producing areas. It is caused by a virus which attacks all types of lettuce. A rather unique characteristic of lettuce mosaic is that it can be transmitted through the seed. A very small percentage of mosaic-infested seed can result in almost total failure from lettuce mosaic disease in a commercial planting due to field spread by aphids.

Work done in California showed that incidence of lettuce mosaic could be reduced by at least 80 to 90% simply by the use of mosaic-free seed combined with good sanitation practices by all growers. The knowledge and experience gained in California are being put to use in Florida to help in the control of lettuce mosaic. Florida now has a regulation in effect for the purpose of excluding lettuce mosaic-infested seed from the major lettuce producing areas of central Florida and Belle Glade. Anyone wanting a copy of the regulation can obtain it from the Plant Industry Division of the Florida Department of Agriculture or from this office.

The regulation states that lettuce seed shipped into the two areas must be certified to meet the requirement of "0 lettuce mosaic in 30,000 seeds." Seed lots meeting the specifications set up in the regulation are referred to as "double-tested seed" since they have been actually tested twice—first by the seed company and secondly by a grower-controlled laboratory.

Growers outside the two regulated areas of Florida are not presently required to plant double-indexed lettuce seed. However, when it is available, growers are urged to use double-indexed seed since it would be to their advantage to do so.

It is important, therefore, for growers to familiarize themselves with the terminology used in the seed trade with reference to mosaic-indexed lettuce seed. It is somewhat confusing and can easily mislead a grower into thinking a lot of seed labeled "mosaic-indexed" to be the best available when actually it may not be.

There are now four general classifications of lettuce seed which are available in some of the seed catalogs under various names and descriptions. The descriptions given below will serve to identify the various groups or classes of lettuce seed available to growers:

Group I. Common or Non-indexed: Since it has not been tested, the chances for the development of mosaic are much greater than from mosaic-tested seed lots.

Group II. 0 in 10,000 seeds: Indexed and certified that when 10,000 seeds were tested, no mosaic virus was found.

Group III. 0 in 30,000 seeds: Indexed and certified that when 30,000 seeds were tested, no mosaic virus was found.
Group IV. O in 30,000 seeds (double tested): Indexed twice--first by seed company and secondly by grower-controlled testing laboratory. Certified to show no mosaic virus in both tests.

It has been said that good seed is cheap at any price and O in 30,000 double-indexed seeds (Group IV) is the best seed available. When Group IV lettuce seed is not available, growers should try to obtain the next best which is Group III seed, etc. There are times when growers may have to plant seed of Group II or even Group I, because Group III and Group IV seed will not be available for all lettuce varieties and types.

(Montelaro)

B. Onion Production Potential in Florida

For years, the Vegetable Crops Department of the University of Florida has stressed the potential of onions (dried bulbs) as a promising vegetable crop for the State of Florida. Very little interest was generated until last season when onions sold for a record price. It appears now from the number of inquiries received that some growers are seriously considering producing onions in hopes of obtaining record prices again. Rushing headlong into production of an "untried crop" on a large scale can be a financial disaster to growers as well as a setback to the orderly development of a potentially promising crop in the future.

Extension vegetable specialists of the University of Florida continue to advise caution as they have in the past. Onion production should be approached on a limited scale in the beginning. A five-acre planting is more than enough the first year to permit a grower to gain a lot of valuable know-how and experience with this crop. Such a planting is large enough to test the machinery and practices that might be used subsequently for large-scale production.

Onions can be harvested from late March in south Florida to early June in north Florida. Growers who plan to grow onions should familiarize themselves with recommended production practices. Extension Circular 176 entitled "Onion Production Guide" was recently revised and is available from county extension offices or from this department. Although the information is covered in the guide, it might be advisable to emphasize a few of the major points in onion production which can spell the difference between success and failure.

1. Do not use a soil fumigant which contains bromine. Onions are susceptible to bromine injury.

2. Use a short-day onion variety as recommended in Extension Circular 176.

3. Check seeding dates carefully. If planted too early, onions are apt to produce big necks and possibly seedstalks. On the other hand, onions planted too late will not bulb satisfactorily.

4. Plan to use herbicides on direct-seeded crops. Hand weeding can be very costly in onions.
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(5) Seeding rate should be adjusted in accordance with size of onions desired. Wide spacing encourages production of jumbos suitable for the hamburger or fried onion ring business. Closer spacing results in smaller onions for the general retail market trade.

(6) Do not over-fertilize. Onions are shallow rooted and susceptible to salt injury. Heavy fertilization, by producing rank growth, may cause undesirable onion "splits."

(7) Plan to artificially dry onion bulbs after harvest. Florida's humid climate in April and May is not conducive to field curing. Forced hot air at 110 to 112°F. for 36 to 48 hours is ample to dry onion bulbs.

(8) Check potential brokers and buyers for advice on market needs.

C. Curing and Storage of Sweet Potatoes

A small acreage of sweet potatoes has been grown in the State this year. Several requests have been received for information on curing and subsequent storing of sweet potatoes. Successful curing and storage begin with good production practices. The processes of curing and subsequent storage do not improve the quality of sweet potato roots. However, if properly done, these processes will maintain the original quality over a relatively long period of time. In other words, to have a good storage crop, you must first have a good crop to store.

The following are a few pointers to keep in mind when setting out to cure and store the crop.

(1) Sanitize the curing and storage facilities thoroughly and adequately before using. This includes crates, grading equipment, etc. A disinfectant such as a chlorine compound can be utilized at about 100-150 ppm to wash the empty house, etc. There are several fungicide materials which can also be used to help clean up the operation before its use.

(2) Select only healthy, high-quality potatoes for curing and storage. Attempts to cure and store low-quality or diseased sweet potatoes can only end in failure. If it is decided that the crop will not cure and store well, wash, grade and sell the crop uncured as soon as possible. However, if it is judged that the crop has good storage potential, the crop can thus be cured, stored, and then washed, graded and sold as required.

(3) Make sure the curing and storage equipment (heaters, ventilation equipment, fans, etc.) is in proper working order.

(4) Stack crates of sweet potatoes correctly in the facility to allow for circulation of air.

(5) Begin curing operation as close to harvest as possible. Avoid unnecessary damage to roots during harvesting.
(6) Maintain the curing conditions scrupulously at 80 to 90°F and 85 to 90% relative humidity for 5 to 7 days.

(7) Excessive time (greater than 10 days) between curing and storage temperature (i.e. cooling down period) should be avoided. The higher temperatures will cause the roots to lose excessive moisture and cause shriveling.

(8) Storage temperature should be in the range of 55 to 60°F. Maintain relative humidity at 75 to 80%.

(Kostewicz)

II. HARVESTING AND HANDLING

A. Marketing Red-Ripe Tomatoes

For many years, Florida tomato growers have been marketing tomatoes which were harvested mature-green. There is a number of reasons for this which includes (1) less frequent harvesting of the crop than is required for the traditional "vine-ripes" or "pinks", and (2) mature-green tomatoes will tolerate rougher handling than will riper fruit. There are some very distinct disadvantages to marketing mature-green fruit. There is a number of steps in the tomato marketing chain, and while mature-green fruit may tolerate rougher handling to a certain degree, they are extremely sensitive to temperature. If, for example, someone in the chain overbuys and has a surplus of fruit, the normal practice is for that individual to lower the temperature to reduce the ripening rate and try to hold the fruit until he can market it. Such practices greatly reduce the quality of tomatoes. Although the grower may harvest and sell top-quality fruit, the quality of the product the consumer purchases may be far removed from the original level.

The riper a fruit is before harvest, the less chance that someone in the marketing chain will ruin the quality. Riper fruits are more tolerant to low temperature, and in addition, they do not need to be handled as often although they do require more gentle handling. The release of 'Florida MH-1' has presented an opportunity to introduce a new concept into tomato marketing. Because the fruit will remain firm even after attaining "full color" (or becoming completely red), it is possible to harvest fruit of this variety at a red-ripe stage and deliver an extremely high-quality tomato to the consumer. Since the fruits are harvested fully ripe instead of at the "breaker" stage as is done with vine-ripes, the frequency of harvest is greatly reduced.

Since quality is an elusive term and sometimes appears to defy definition, it was decided to let the consumer measure the quality of this product. Taste panels have been conducted at the University of Florida, in cafeterias, in a number of counties throughout the State, and in Chicago. In addition, sales have been monitored in retail outlets in Florida and in Pennsylvania. In all of these tests, the quality of the 'Florida MH-1' tomato rated very high. In sales, the 'Florida MH-1' harvested red-ripe far outsold another variety which was harvested vine-ripe.

These tests have demonstrated that it is possible to harvest and market a 'Florida MH-1' tomato after it becomes completely red-ripe. In fact, in order
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for machine harvesting of fresh market tomatoes to become a reality, it will probably be necessary to handle ripe fruit. Regardless of how the fruit is harvested, the handling procedures will have to be adapted for red-ripes. The consumer response has certainly been encouraging and should warrant some commercial grower-packer trials. Because of geographical location and proximity to terminal markets (which means less handling and/or shorter transportation time), Florida growers would certainly have an advantage on any market developed for red-ripe tomatoes.

The work mentioned involved numerous people in both research and extension. (Hicks)

III. VEGETABLE GARDENING

A. Arsenic in Chicken Fertilizer

Calcium arsenate (Kilmag) is quite often used by Florida poultry producers to kill housefly larvae in bird droppings, although other materials such as Cygon, Rabon and Supona are probably more extensively used. The value and use of poultry manure as fertilizer have been well established in vegetable gardens and other cropping systems. Such utilization provides a beneficial solution to waste disposal problems. Yet, many have expressed concern that manure treated with arsenic and then used for fertilizer would present a safety hazard for both the plants and consumers.

The cause for the concern, of course, comes from the fact that at sufficiently high concentrations, arsenic compounds are toxic to living organisms, including man. Such compounds as calcium arsenate, lead arsenate, and cupric arsenite (Paris green) have been used as insecticides for a long time, and others, such as sodium arsenate, have been used as weed killers. Small amounts are not harmful to man, however, as is evidenced by the treatment of certain human diseases with organic compounds of arsenic, and the fact that most plants and living cells contain minute amounts of arsenic.

Gardeners should be advised that manure properly treated at recommended rates with calcium arsenate is not harmful to plants or persons consuming those plants. This advice is based on many studies exploring the activity and effects of arsenic compounds when applied to the soil. Yet, the home gardener would be wise to avert any possibilities of hazard by obtaining, where possible, manure which had not been treated with arsenic. Where treated manure is the only source available, he should not apply more than a ton per acre (5 pounds per 100 square feet) per year where yearly successive applications are made to the same plot, or not more than 3 tons per acre (15 pounds per 100 square feet) where only one application is to be made.

Only a very small amount of arsenic is applied to the soil when treated manure is used as fertilizer, if the spray was used as directed. The present recommended rate is 1 pound of 83% calcium arsenate in 2 gallons of water sprayed on 500 square feet of droppings. An application of one ton of poultry manure per acre would result in only one pound of calcium arsenate applied per acre. Thus, the amount of calcium arsenate applied to the top 6 inches of soil would
be about 1 ppm (less than 1 ppm arsenic). If the gardener applied the very large amount of 10 tons per acre, as might happen with successive applications, the amount of arsenic applied would be less than 10 ppm. Usually, less than 6 tons of manure per acre are applied at any one time, so we are talking about less than 5 ppm arsenic applied through treated manure. Many natural soils have as much as 5 to 10 ppm, or more. With only 10-15 ppm arsenic present in an acre of soil, extremely large amounts of plant material would have to be eaten before levels dangerous to humans would be reached.

The small amount of arsenic applied to the soil would be made less toxic due to a chemical tie-up with any aluminum or iron present, or by leaching out if sufficient metals were not present. Furthermore, it has been shown that organic matter and manures effectively reduce the soluble arsenic content of soils.

Even should the arsenic level be excessively high, as might be the case where 25 to 100 pounds of calcium arsenate per acre where applied in successive applications on coarse sandy soil, or 1,000 pounds on heavy clay soils, the initial major problem resulting would be plant injury. Where arsenic toxicity is the cause, plants exhibit one or more of these symptoms: (1) root rotting, (2) reduced seed germination, (3) reduced seedling growth, and (4) wilting tops, or other signs of root injury.

Most often, on soils with high levels of arsenic (15 to 2,500 ppm), the arsenic is confined to the soil or to the soil water. Where it does associate with the plant, it normally accumulates in or on the roots, with very little reaching the plant tops. Apparently, root growth is adversely affected before appreciable levels reach the foliage, although soils contaminated with arsenic have produced vegetation of higher arsenic content than uncontaminated soils. Thus, it might be surmised that vegetables grown for their tops would be even less likely to have arsenic contamination than the root crops.

In summary, arsenic treated manures appear safe when properly used as vegetable fertilizer due to the following reasons: (1) small amounts applied, (2) arsenic tie-up and leaching, (3) first evident as crop injury, and (4) limited accumulation in plants. Yet, anyone in doubt would best be advised to avoid using such treated manures to eliminate any chances for hazard, or to be very careful to avoid excessive applications.

(Stephens)

B. Know Your Vegetables - Scarlet Runner Bean

Other names for the Scarlet Runner Bean (Phaseolus coccineus) are Scarlet, Conqueror, Fire Bean, Mammoth, Red Giant, Scarlet Emperor.

This species belongs to a group of flowering beans that are of comparatively little importance in the U. S. Like the others in the runner group, Scarlet Runner is mostly planted as an ornamental climber due to its rapid growth and abundance of large, brightly colored flowers. The Scarlet Runner in Florida has been reported to climb up ground-based television antennas.
There are many strains of this variety in cultivation, all of which are similar, but differ slightly in length and width of pods and seeds. The following description applies generally to Scarlet Runner as a type of bean.

**Plant** - Large, 12-15 feet, climbing, open in habit, vigorously growing. Leaves are dark green, with underside of veins tinged with purple.

**Flowers** - Scarlet, very large, about 20 on each flower stalk.

**Pods** - Dark green, fair quality, somewhat brittle and stringy, firm flesh, but coarse. Size medium long to very long, broad and stout.

**Seeds** - Very large, lima bean shaped. Seed scar is large, white and flattened, somewhat incurved. Color varies from shining black to violet black mottled with deep red (ox-blood to carmine).

Another variety similar to Scarlet Runner is Butterfly. It has bi-colored flowers, white and orange; seeds are grayish olive, mottled with salmon and having a russet brown eye ring.

**Edibility** - Both the pods and the green shelled beans are edible in the fresh stage and sometimes are substituted for limas.

(Stephens)