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TO: VEGETABLE AND HORTICULTURE AGENTS  
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VEGETARIAN NEWSLETTER 82-8

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The use 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. New Publications

(1) "Know Your Minor Vegetables" - you agents should be advised that your office may receive several requests for this mimeographed publication VCER 17-1982. The publication was "plugged" in a recent newspaper article by a well-known food columnist.

I suggest that if you do not wish to duplicate this rather thick publication to fill their requests, you might choose to mimeograph copies of the index page to send them. Add a brief note indicating that they should check the vegetables for which they want more information. Then you need send them only a copy of those particular pages.

The Vegetable Crops Department does not maintain a sufficient supply of these publications to provide more than five copies per county.

(2) Evaluation of Herbicides for Weed Control in Spring Transplanted Tomato, Research Report BRA 82-11 by J. P. Gilreath.


(4) Fusarium Wilt of Tomato, Research Report BRA-13 by J. P. Jones, J. B. Jones and J. W. Scott. Items (2), (3), and (4) are all available from the Bradenton AREC, 5007 60th Street, East, Bradenton, Florida 33508.

(5) Fusarium Wilt of Tomato, Plant Pathology Circular #237, by J. P. Jones, J. B. Jones and J. W. Miller is available from the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Bureau of Plant Pathology, P. O. Box 1269, Gainesville, Florida 32602. This publication contains colored pictures of Fusarium symptoms.

(6) Sh2 Sweet Corn Cultivar Trial, Zellwood, Florida, Research Report SAN 83-1 by J. M. White is available from the Sanford AREC, P. O. Box 909, Sanford, FL 32711.
III. COMMERCIAL VEGETABLE PRODUCTION

A. Diagnostic Characteristics of Salt Damage

Salt injury to vegetable seedlings is a common "emergency" during peak planting periods in Florida. Salt injury is usually a seedling stage problem in the field or seedling plant production house, but older plants can be severely damaged, too.

The salt level of the soil solution can change from low (and innocent) to high (and disastrous) in a very short time depending on the level of moisture in the top few inches of the soil near the seedling. A reading of 200-400 ppm salt in the soil solution can double or triple in a few hours as hot, dry winds pass over soil near the young seedling in a containerized tray or planting hole in the mulched bed.

Recognition of seedling salt injury is not always easy to distinguish from damage caused by fungi (such as Rhizoctonia or Pythium);
nematodes (such as sting or root knot); or physical abrasion due to blown sand or mechanical pinching of the seedling.

Symptoms of salt damage are seldom "typical". One or more of the following may be associated with salt damage of seedlings and older plants.

A. Seedlings

1. Stem destruction: The soft tissue of the seedling at the soil line may "pinch in" and the seedling may fall over if the damage is severe enough. As soon as woody tissue develops, the fall-over symptoms decrease. The fungus Rhizoctonia causes a destruction down to the more woody vascular tissue (the stele) and gives a wire-stem appearance, thus appears slightly different than salt damage. The lesion of Rhizoctonia may be quite extensive, whereas, salt damage is usually restricted to the immediate soil line zone of the seedling. Phythium fungi cause a "wetter" rot than the Rhizoctonia do, and are usually associated with rather wet soil or media conditions.

2. Root destruction: Salt damaged seedlings usually show varying degrees of root browning and die-back of the tips and these symptoms can be easily confused with similar damage caused by sting or root knot nematodes. In all three situations tissue may fall from the young roots.

3. General: Other symptoms associated with excess salt damage of seed or seedlings include poor germination, uneven growth, wilting, yellowing of leaves smaller leaves, and marginal burn of leaves.

B. Older plants

1. Yellowing and stunting of plant. Salt damage resembles (and really is) drought damage. The high salt level in the soil solution causes the plant roots to "work harder" to get water from the soil and the result is the same as growing the crop under moisture stress.

2. Marginal leaf scorch. Usually the stunted, yellow plant develops a scorch or marginal leaf burn as salt damage or drought continues.

3. Decreased root activity. The browning of root tips can be an
early symptom. If advanced, one notes wilting, smaller leaves, and uneven growth. In mature plants, roots should be checked for nematode, insect damage, fungi and bacterial diseases. A soil crust with brownish cast often indicates salt build-up, and should be observed, too.

Identification of a salt problem, determination of the extent of injury, and exclusion of other possible causes of agents which give similar symptoms is necessary to a sound corrective program. Even better and cheaper than correction is prevention.

(Marlowe)

B. Interim Guidelines Recommended for Reducing Cancer Risks Through Diet

The nutritional virtues of vegetables have been extolled for centuries without knowing specifically the role they play in body functions. We recognize their importance in providing essential vitamins, minerals and roughage in addition to their esthetic value of flavor, texture, and appearance. The following information was just released showing the beneficial association between vegetables and cancer prevention in humans.

The National Research Council on Diet, Nutrition and Cancer Risks has just released a report for the National Cancer Institute which links diet with cancer. While the Committee recognizes that "It is not now possible and may never be possible to specify a diet that protects all people against all forms of cancer", they do have evidence which suggests that most common cancers are influenced by diet. Current Committee recommendations are termed "interim guidelines" pending additional scientific evidence of how certain substances in food may initiate, promote, or protect against cancer at different sites in the body.

Vegetables and fruits:

Studies of human populations suggest that frequent consumption of foods containing vitamin A-producing carotenes or vitamin C, or of vegetables in the cabbage or cruciferous family can reduce susceptibility to cancer of the urinary bladder, large bowel, skin, lungs, stomach, and esophagus. Vitamins A and C and some nonnutritive chemicals in cruciferous vegetables have been shown to inhibit the formation of cancer-causing chemicals and to reduce cancer susceptibility in laboratory animals.
Scientists are still not sure whether it is the vitamins themselves, the carotenoids, or other nonnutritive compounds occurring naturally in certain vegetables and fruits that help protect against cancer in humans. Nutrients such as vitamin A and the mineral selenium can be toxic in concentrations higher than needed for optimum nutrition, therefore, it is recommended that people eat citrus fruits, carotenoid-rich (dark green and deep yellow) and cruciferous vegetables daily, rather than take high-dose nutrient supplements.

There is controversy concerning the association between dietary fiber and cancer. Strongest evidence so far is that specific components of fiber, rather than fiber per se, may have protective effects.

Fats:

The Committee found the strongest evidence for a connection between consumption of fats and cancer of the breast, large bowel, and prostate. It is suggested that the present 40% of calories from fat in the average American diet be reduced to about 30% of daily calories. It was not clear how higher fat consumption results in greater cancer susceptibility.

Salt-cured, salt-pickled, and smoked foods:

Higher incidence of esophageal and stomach cancer occur in parts of China, Japan, and Iceland, where such foods are eaten frequently, and therefore the Committee recommended that intake of such foods be reduced. These foods may be contaminated by the polycyclic aromatic hydrocarbons in smoke or by compounds such as nitrosamines. Both types of compounds cause cancer in laboratory animals and are suspected of causing cancer in humans.

Alcohol:

Excessive alcohol drinking, especially in combination with cigarette smoking, appears to increase the probability of cancer of the mouth, larynx, esophagus, and respiratory tract, and may also be linked with colon and rectal cancer.

Other diet components:

Among the other components studied were total calories consumed,
cholesterol, protein, carbohydrates, vitamin E, the B vitamins, and essential trace minerals such as copper and zinc. Results were either inconsistent or too incomplete to show definite links between these components and cancer.

General conclusion & suggested dietary guidelines:

*Most common cancers are potentially preventable, for they appear to be determined more by habit, diet, and custom than by genetic differences.

*Eat fruits, vegetables, and whole grain cereal products daily. Especially eat citrus fruits, carotene-rich (dark green and deep yellow) vegetables, and vegetables in the cabbage family.

*Eat less foods high in saturated and unsaturated fats. Reduce daily fat intake to 30% of calories.

*Drink alcohol only in moderation.


(D. D. Gull, Associate Professor Vegetable Crops Department)

C. Fusarium Wilt Disease of Tomato -- An Old Disease Revisited

Fusarium wilt of tomato, an old and familiar disease to tomato growers in Florida, has a new importance in the Manatee-Ruskin production area. Dr. John P. Jones, Plant Pathologist at AREC Bradenton, has reported a new race of the Fusarium wilt causal fungus from a number of farms in Manatee and south Hillsborough Counties.

Disease symptoms on mature plants appear first as lower leaf yellowing, often one sided on the plant or affecting leaflets on one side of a petiole. Plants become increasingly more chlorotic until the whole plant is affected. Plant wilt accompanies yellowing (starting
at mid-day) and progresses for longer periods each day until the plant dies. Stems cut lengthwise characteristically exhibit a dark brown discoloration of the vascular tissue. The internal discoloration extends high up the stem and is obvious in the petiole scars. Seedlings infected with 'Race 3' may exhibit downward curve to the lower leaves, vascular discoloration, plant stunting and wilting prior to death.

Existing fresh market tomato varieties grown in Florida are resistant to the more common types of Fusarium wilt caused by Race 1 and 2 of Fusarium oxysporum f.s.p. lycopersici. The new race (a probable Race 3) can be damaging on all existing Florida tomato varieties. The causal fungus is soilborne and can survive for years in cropped or fallow land. Acidic, sandy soils are more favorable to the causal fungus rather than the alkaline soils of south Florida. The fungus is more damaging in the 80-90°F temperature range, thus affecting spring crops more severely than fall crops. The use of ammoniacal nitrogen rather than nitrate nitrogen will also favor disease severity in infested fields.

The Fusarium pathogen, like most soilborne pathogens, can be spread by physical movement of infested soil on stakes, tools, vehicles or machinery. Run-off surface water and infected transplants may also serve to introduce this fungus into clean fields. Seed transmission (at least for Race 1 and 2) has not been considered an important means of spread in the past.

Present status:

Helicopter surveys by Division of Plant Industry personnel have been conducted over several areas of the state. On May 20-21, 91 fields were surveyed in the Manatee-south Hillsborough area. There were 25 fields (27%) positive for Fusarium wilt based upon symptom expression. Several fields sampled, were confirmed to be infested with 'Race 3' by isolation and varietal test results obtained by Dr. J. P. Jones. Several infested fields sustained 50-80% plant loss from this pathogen.

Surveys were also conducted for about 850 acres in Gadsden county, 50 acres in Marion county, and 200 acres in Sumter county. Although suspect Fusarium wilt samples were collected from the locations, identification tests were negative for the 'Race 3' type of Fusarium oxysporum f.s.p. lycopersici. To date, 'Race 3' is restricted to the Manatee-Hillsborough county area.
Control:

Although one source of resistance to 'Race 3' is known at present, there are no presently available, resistant varieties. A number of years will be needed for the successful breeding, increase and release of seed of an acceptable resistant variety to 'Race 3'. For the present, the following controls are suggested:

1. Known infested fields should be rotated out of tomatoes (5-7 years) or fumigated with 3 chisels per bed with a broad spectrum soil fumigant and planted to fall crops of tomatoes only.

2. Broad spectrum soil fumigants (3 chisels per bed) should be used on fields in the infested area.

3. Avoid movement of machinery, vehicles, tools, and stakes out of the infested area unless they are well washed and free of soil, followed by steam-cleaning.

4. Do not flood infested land since this will spread the causal fungus.

5. Avoid use of ditch or pond water for irrigation that may be contaminated with this soil fungus.

6. Physically separate seedling production houses from production fields.

7. Manipulate the soil pH to 6.5-7.5 (if feasible from a nutrition standpoint), and choose nitrate nitrogen over ammoniacal nitrogen sources.

8. Scout all tomato production fields during the blossoming through fruit maturation period. Check for plant symptoms described above. If suspect plants are found, contact your nearest County Extension Agent to forward appropriate root and stem samples to: Extension Plant Disease Clinic, HSPP Building 717, Hull Road, University of Florida, Gainesville, Florida 32611.

Isolations of Fusarium spp. from these samples will be processed
for 'Race 3' verification. Responses will be directed to the grower through the County Extension Office.

(G.W. Simone)
(Extension Plant Pathologist)

IV. HOME VEGETABLE GARDENING

A. Know Your Minor Vegetables - Guar

Guar (Cyamopsis tetragonoloba (L.) Taub.), is also called "cluster bean" due to the manner in which its pods are clustered together. It was formerly referred to as Cyamopsis psoralioides.

Guar is a native plant from India where it is grown principally for its green fodder and for the pods that are used for food and feed. It has soil-building properties since it is a legume. Today, probably the primary importance of guar is in the commercial value of its seed-gum (galactomannan gum), according to the American Society of Agronomy. This gum has a wide variety of food and non-food uses.

Guar was introduced into the U.S. from India in 1903. Production in the U.S. is centered around Texas, Oklahoma, and Arizona, but it is also adapted to more tropical climates, such as in Florida and Puerto Rico. Very little information is available on the use of this crop in Florida.

Description:

Guar is a coarse, summer-annual, upright, bushy drought-resistant plant, ranging from 2 to 9 feet in height. It has pointed, angular toothed, trifoliate leaves, small purplish flowers borne in racemes (along the axis of a spikelet), and hairy pods 3 to 4 inches long in clusters. There are dwarf and tall cultivars.

Guar flowers are self-pollinating. A mature unopened bud starts out as white, then changes to a light pink as petals begin to open. Finally, the flower is deep blue.
Climatic adaptation:

Guar is sensitive to cold, so should be grown during the warm season. Soil temperature of 21°C is necessary for seed germination. Guar has an indeterminate growth habit, growing both vegetatively and setting pods from about 4 to 6 weeks following seedling emergence until death of the plant (cold or annual decline). Guar is considered to be a short-day plant, setting more dense clusters in winter (in Puerto Rico) than summer. Good yields may be expected with 13 to 14 hours of sunlight.

Although the plant is reported to be fairly drought resistant, it grows even better when irrigated. Drought during the prolonged fruiting period seems to reduce yields.

Production as a vegetable:

The culture of guar is similar to that for soybean (spacing and method of seeding). If grown in the garden, which seldom is the case, it should be grown much like the cowpea (southern pea).

It is suggested that guar be only lightly fertilized (800 lbs per acre 6-8-8 with 400 lbs applied at planting and the rest 3 - 4 weeks after emergence).

In south Florida, try planting guar during the period September through February, so that the fruiting period coincides more or less with the shorter day lengths of the year. Where there is danger from killing frosts, as in central and more northern areas of the state, plant a spring crop or a fall crop. Seeds weight 60 pounds per bushel. These cultural suggestions are for guar grown as a vegetable plant and should not be considered for its production as an agronomic crop.

Uses as a vegetable:

For use as a vegetable, pods must be picked when young before they become hairy and woody. They are eaten most often as a French bean or as a curry vegetable.

(Stephens)
B. Results of the 1982 State 4-H Horticultural Demonstration and Judging Contest

Once again the University of Florida Campus was filled with over 500 4-H members, leaders, and agents during the State 4-H Congress, July 26 - 30, 1982.

During the Congress, the State Horticulture Identification and Judging Contest was held on July 27, with a total of 16 teams participating in this event. Marion County received first place honors with Brevard and St. Johns County taking second and third, respectively.

Leigh Ann Cooksey and Susan Frawley, from St. Johns County received first place awards in the Horticulture Demonstration event. Leigh Ann and Susan, along with Dickie Bockoras, Todd Dailey, Mark Pacheco and Heather Dailey (the Marion County team) will compete at the National Junior Horticulture Association Convention, at Niagara Falls, New York.

(McDonald)

C. 2nd Annual Advanced Master Gardener Training

Approximately 100 Florida Master Gardeners who volunteer their time and skills working at their county extension office arrived in Gainesville on August 4 to attend the Second Annual Advanced Florida Master Gardener Course.

Representatives from the 13 participating counties, Brevard, Broward, Dade, Hillsborough, Lake, Leon, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk and Volusia, enjoyed the two-day program which included hands-on insect identification, spray equipment demonstration, tour of both the Soils Lab and a look at the Plant Disease Clinic. Also they made a trip to the IFAS Horticultural Unit, where turf grass problems were discussed. The training session ended with Master Gardeners attending either a session on vegetable identification, or a program on landscape design.

The highlight of the event was the dinner. Dr. K.R. Tefertiller, Vice President for Agricultural Affairs spoke on the importance of a successful volunteer program and how the Florida Master Gardener