Department of Plant and Soil Science

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Vegetables On The Web

Dr. Richard G. Snyder, Vegetable Specialist

For those of you with internet access, you may find the following information very useful. There are many web sites with libraries full of current horticultural information available at your fingertips. You can find everything from vegetable and fruit production guides, hydroponics, pest management and IPM, gardening, organics, and yes, even the Vegetable Press is now online.

Rather than list every possible site here (which would take many pages) I will just give you one URL (internet address) from which you can launch to any of the others. I have assembled a home page which has links within it to the best horticultural sites in the country. If you are using Netscape Navigator or Microsoft Explorer, enter this address in the box:

http://www.ext.msstate.edu/~ricks/

You can also use lynx (a text based or non-graphical web browser) to get to the same web site with the same links, it just doesn't look as fancy.

If you know of any other vegetable or horticultural web sites that I don't have listed, let me know. You can send email to me from the home page by clicking on the line "Send me email".

Management Strategy for Fusarium Crown and Root Rot of Greenhouse Tomatoes

Dr. Frank Killebrew, Extension Plant Pathologist

Several cases of Fusarium Crown and Root Rot (FR) have been identified in Mississippi greenhouse tomatoes over the past few weeks. This disease, caused by the fungus Fusarium oxysporum f. sp. - radicis-lycopersici, has been a sporadic problem for Mississippi growers, as well as for growers in surrounding states, since 1989.

Fusarium Crown and Root Rot is almost impossible to control without resistance varieties. This means that growers

should become familiar with symptoms of the disease and realize the need for proper variety selection for use in those greenhouses where FR has been detected.

The FR fungus, after initially infecting secondary roots, moves into larger roots and eventually invades the plant's vascular system. Symptoms of FR rot include stunted growth and wilting on sunny days, especially if plants have heavy fruit loads. Infected plants eventually die after repeated wilting.

FR can be distinguished from Pythium root rot if the base of the stem is cut longitudinally. Key symptom: Look for an intense dark to reddish brown discoloration of vascular root tissues. This discoloration is most pronounced in the crown area at the juncture of stem and upper root tissues. Few symptoms are found on secondary roots. Also, look for discoloration of vascular tissue up the stem as much as 12 to 18 inches above the growth medium line.

Considering the importance of greenhouse tomato problem identification, growers who need assistance on disease identification, or verification of disease presence, are encouraged to check with the local County Extension Office about the correct procedure for submitting specimens to the Plant Disease Clinic at Mississippi State. There is no charge for diagnosis.

The following varieties are suggested for management of FR:

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Trust       Match       Switch       Blitz
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Powdery Mildew Detected in Mississippi Greenhouse Tomatoes

Dr. Frank Killebrew, Extension Plant Pathologist

In mid-November, IPM Technician Andy Milling discovered powdery mildew while scouting greenhouse tomatoes in southwest Mississippi. The problem was confined to one greenhouse, and follow-up scouting in area greenhouses and at other locations in south Mississippi did not reveal additional cases of this fungus disease.

Greenhouse tomato growers should intensify scouting efforts to detect the presence of powdery mildew. Look for small (1/4 to 1/2 inch in diameter) scattered patches of white to gray fungus growth on the upper sides of leaves. Based on powdery mildew occurrence in other states, this disease is more likely to be found where tomatoes and cucumbers are grown in the same greenhouse.

Growers who detect powdery mildew should contact their county agents for further information on collecting specimens for routing to the Plant Pathology Laboratory at Mississippi State University.

The significance of powdery mildew for greenhouse tomato production in Mississippi is unknown. While it is likely that powdery mildew will not cause future problems for the industry, it is critically important that Extension Plant Pathologists be made aware of all locations where powdery mildew is present. This information will allow us to evaluate the need for devising management strategies for this disease.

Heat Illness Compared to Pesticide

{This article is being reprinted with permission from Mississippi's Environment, Volume 24, Number 9, September 1996 by Edna Ruth Morgan --- editor's note}

When a pesticide handler becomes ill from working with organophosphate (OP) or carbamate insecticides in a possible heat stress situation, it can be hard to tell whether the handler is suffering from heat exhaustion or pesticide poisoning. They have similar symptoms, but the treatments are different. The symptoms are compared below.

Comparison of Heat Exhaustion and Organophosphate / Carbamate Poisoning Symptoms

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Heat Exhaustion                          OP / Carbamate Poisoning
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Sweating	Sweating
Fatigue	Fatigue
Headache	Headache
Confusion	Confusion
Loss of muscle coordination	Loss of muscle coordination
Nausea	Nausea/diarrhea
Dilated pupils	Possible small pupils
Dry membranes	Moist membranes
Dry mouth	Salivation
No tears	Tears
No saliva present	Saliva present
Fast pulse (slow if person has fainted)	Slow pulse
Fainting (recovery is prompt)	Coma (can't be awakened)

Combined problems of heat illness and pesticide poisoning may also occur. If there is any doubt about the illness, get medical help immediately. Both pesticide poisoning and heat stroke can be life threatening and require prompt treatment. Heat illness is preventable. For very detailed information, as well as very specific recommendations to minimize heat stress, request EPA's A Guide to Heat Stress in Agriculture. {From: Access Pesticides, University of Arizona}

Controlling Whiteflies on Greenhouse Tomatoes

Dr. Pat Harris, IPM Specialist

Whiteflies continue to be a common and persistent problem of greenhouse tomatoes. We generally have the regular greenhouse whitefly in our Mississippi greenhouse tomatoes and should not confuse it with the troublesome strain of sweetpotato whitefly presently occurring on vegetables in California. Some refer to sweetpotato whitefly as silverleaf whitefly, but actually they are two different strains. I will discuss this subject in a future article. We found a strain of sweetpotato whitefly in a couple of our greenhouse tomato operations last season. This whitefly strain is much more difficult to control than the regular greenhouse whitefly. Whiteflies are related to aphids (plant lice) and are not true flies.

Adults are about 1/16 inch long, white in color, and have four powdery wings. Feeding and egg laying generally occur on the undersides of leaves. Nearly 150 or more minute eggs are laid on the undersides of the leaves by adult females. Under greenhouse conditions, eggs hatch in about ten days into tiny, white, oval "crawlers". These move about on the undersides of leaves for 1 to 2 days searching for a suitable feeding site. Upon finding a site, the crawlers lose their legs and stop all movement for the remainder of the nymph's development. Nymphs go through three instars and a pupa stage before reaching adulthood. Full development generally takes from 25 to 30 days in greenhouses. Adults may live up to 30 days. Under greenhouse conditions, generations overlap, and all stages of the insect may be found on infested plants at any time.

Adult and immature (nymph) stages suck plant fluids from plant foliage with their piercing-sucking mouth parts. Further injury may result from the sticky honeydew secreted by whiteflies which adheres to foliage and fruit. This can result in a black sooty fungus (mold) growing on the honeydew which can interfere with leaf respiration.

Whiteflies can reduce yields of greenhouse grown tomatoes. To prevent yield loss, these insects must be controlled or kept to a low level during the growth period. Several insecticides are recommended for whitefly control on greenhouse grown tomatoes. These include dichlorvos (DDVP, Vapona) fog or mist; Thiodan WP, EC; malathion WP, EC; and naled (Dibrom EC, fog). Generally it is better to spray when temperature is 70 to 80 degrees F. Spray applications every second day may be needed for 21 days in order to break their life cycle. Alternate insecticides if necessary.

A product called M-Pede Insecticide (contains potassium salts of fatty acids) produced by Mycogen Corporation is cleared for use on several greenhouse vegetables including tomatoes. Use of it will increase control of whiteflies. Use 1 part M-Pede per 100 parts of spray solution containing the companion pesticide. If small volumes of water are used,

apply 1 ounce M-Pede per gallon of water. Overuse of M-Pede may cause phytotoxicity, especially when temperature is above 90 degrees F. Two of our major concerns in controlling whiteflies have been coverage and timing of our insecticide applications. Pyrellin EC (pyrethrin + Rotenone + cube resin) and Pyronone(pyrethrin + PB) may also be used alone or tank mixed with a companion insecticide. A product called Azatin EC (biological insecticide) may also be used on greenhouse tomatoes. This product, produced by AgriDyne, controls targeted immature (nymph) whiteflies after they ingest or come in contact with it, by interfering with the insect's ability to molt. It is effective on all immature stages. This product can enhance your whitefly control if used properly. Use Azatin EC at least once a week when whiteflies appear, with an adulticide and get complete coverage underneath and atop leaf surface.

Keep in mind that whitefly eggs and pupae are generally not controlled with insecticides and only Azatin EC is effective on immatures. Therefore, a grower must carry on a good IPM control program. If not, he will be over run with whiteflies. Correct timing and thorough coverage of insecticide is a must if whiteflies are to be kept under control in greenhouses. Read and observe all label usage and precaution statements.

Calendar of Coming Events All Over the U.S.

Dr. Richard G. Snyder, Vegetable Specialist

December 8-11 - National Pepper Conference, Naples Beach Hotel, Naples, Florida. Donald N. Maynard, (941) 751-7636.

December 9-11 - Southeast Vegetable and Fruit Expo; at Holiday Inn Four Seasons Koury Convention Center, Greensboro, NC. For information: Bonnie Holloman, Executive Secretary, Phone: 919-772-2204; FAX: 919-779-1685.

December 16-17 - Southern Illinois Vegetable School in Mt. Vernon, IL.

January 7-9 - International Cabbage Workshop, Sheraton Fallsview Hotel, Niagara Falls, Ontario, Canada.

January 9-11 - Illinois Specialty Growers convention and trade show, Crowne Plaza Hotel and Convention Center, Springfield, IL. Lowell Lenschow, (309) 557-2107.

Jan 10-11 - Annual Great Plains Vegetable Growers Conference and Trade Show; St. Joseph, MO. For more information contact Keith Hawxby, Horticulture Specialist, Buchanan County Extension Center, PO Box 7077, St Joseph, MO 64507, 816-279-1691, internet - hawxbyk@ext.missouri.edu

January 11 - Suwanee Valley Field and Greenhouse Vegetable Grower's Short Course and Trade Show; at Suwanee County Coliseum, Live Oak, FL. For information call Bob Hochmuth at (904) 362-1725, or fax (904) 362-3067, or email to LIO@gnv.ifas.ufl.edu .

Jan. 14-16 - Annual New Jersey Vegetable Meetings and Trade Show, Trump Taj Mahal Hotel and Casino, Atlantic City, NJ. Contact: Phil Traino, Exec. Secretary, VGANJ, 609-985-4382

January 16-18 - Southern Sustainable Agriculture Working Group Annual Conference and Trade Show; at Gainesville, FL. For information, call (352) 377-6345.

January 21-23 - Great Lakes Vegetable Growers Convention - Grand Rapids, Michigan.

January 22-23 - New England Fruit Meeting and trade show, Sturbridge Host Hotel, Sturbridge, Mass. Robert Smiley, (508) 422-6595.

January 28, 29, and 30 - 1997 Pennsylvania Vegetable Conference and Trade Show, Hershey, PA. Sessions will be offered on Processing and General Vegetables, Marketing, Bedding Plants, Vine Crops, Basics of Vegetable Production, and Small Fruit. For information, contact Bill Troxell, Executive Secretary, PA Veg Growers Assoc. at

(717) 473-8468.

February 5-8 - Mid-Atlantic Direct Marketing Conference, Sheraton Inn, Dover, Delaware. Carl German, (302) 831-1317.

February 11-13 - New York State Vegetable Conference and Trade Show; at Four Points Hotel Sheraton, Liverpool, NY. For information, call New York State Vegetable Growers Association at (607) 539-7648; or fax (607) 539-3150.

February 14 - Colorado Produce Convention and Trade Show; at Adams County (CO) Exhibit Hall. For more information, contact Nana Mejia at (303) 637-8100 or fax to (303) 637-8125.

February 15 - Colorado Onion Association Annual Meeting; at Embassy Suites Hotel, Denver, CO. For information, contact Vicki Idler, Executive Director at (303) 280-5208.

February 21 - North Carolina Specialty Crops School, Ramada Inn, Oxford, N.C. Carl Cantaluppi, (919) 603-1350, fax: (919) 603-0268, or send email to ccantalu@granvill.ces.ncsu.edu .

February 22-24 - United Fresh Fruit and Vegetable Association annual showcase, Orlando, Florida. (703) 836-3410.

March 5 - Mid-Atlantic Pumpkin School, Eden Resort, Lancaster, PA. This is an all day meeting put together by the 5 state Mid-Atlantic Extension Vegetable specialists and agents. The Mid-Atlantic region produces approximately 50% of all carving pumpkins sold in the US. For information, contact Dr. Mike Orzolek at (814) 863-2251 or email to mike_orzolek@agcs.cas.psu.edu .

Any listings that you would like to have included in this calendar should be sent in at least 60 days before the event. Send to me at the address, phone, fax, or electronic mail address below.

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