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MANAGING DISEASES OF TOMATOES IN HIGH TUNNELS

By Sally Miller, State Extension Specialist Vegetable
Disease Management, Department of Plant Pathology, The
Ohio State University, April 27, 2006

High tunnels offer Ohio farmers an opportunity to stretch the tomato season at both ends by allowing earlier planting, earlier first harvest, and extension of the growing season into the fall. High tunnel production includes elements of both field and greenhouse management. The protected culture of high tunnel production may result in lower incidence of diseases exacerbated by rainfall such as Septoria leaf spot and bacterial spot and speck. However, diseases that often occur in greenhouses, but are uncommon in open fields, may appear in high tunnels. Botrytis blight (Figure 1), white mold (timber rot) (Figure 2) and leaf mold (Figure 3) are among the most important of

these diseases. Late blight (Figure 4) may also occur under cool, moist conditions. These diseases can be managed by employing appropriate cultural tactics and by the judicious use of fungicides.



Figure 1. Botrytis blight Photo, M.

Ivey, OSU)



Figure 2. Tomato white mold (affected plant in high tunnel, left; close-up, right). Photos courtesy of Meg McGrath, Cornell Univ.



Figure 3. Tomato leaf mold, upper surface (left); lower surface (right). Photos courtesy of Meg McGrath, Cornell University.



Figure 4. Late blight of tomato (Photo S. Miller, OSU)

Cultural tactics. All of these diseases are favored by high relative humidity in the tomato canopy. Wider plant spacing and improved ventilation help to reduce the incidence of these diseases. Proper sanitation is also important diseased tissue should be removed and destroyed. Workers should avoid handling plants when free moisture is present to reduce the spread of

pathogen spores from diseased to healthy plants. Plants should be irrigated without applying water to the foliage. Further, tools used in training and pruning should be disinfected regularly.

Fungicides. According to the Ohio Department of Agriculture, for purposes of pesticide application, high tunnels are considered to be the same as greenhouses. Therefore, regulations PERTAINING TO GREENHOUSES, AND THE DIRECTIONS FOR USE ON THE PESTICIDE LABELS, MUST BE FOLLOWED WHEN APPLYING PESTICIDES in high tunnels. Restricted use pesticides can only be used by Certified Pesticide Applicators with THE greenhouse CERTIFICATION ON THEIR APPLICATOR LICENSE. Restricted use pesticides are identified prominently on the label.

Pesticides that are not restricted use and are labeled for tomatoes but without specific greenhouse use directions may be used in high tunnels (and greenhouses) unless greenhouse use is expressly prohibited on the label. Thus, a specific label for greenhouse use is not required; but the label must be carefully read to be certain the greenhouse use is not restricted. For more information about fungicide usage allowances in high tunnels and greenhouses, please

contact Jim Belt, Ohio Department of Agriculture (614-728-6389).

Copper products, and Manzate, Dithane and other EBDC fungicides may be used for management of leaf mold and late blight in greenhouses and high tunnels. The fungicide Gavel may be used for late blight suppression in protected culture, but Acrobat may only be used on field-grown tomatoes. Decree, Scala and Endura are labeled for Botrytis management in greenhouse tomatoes. Topsin M now has a Section 18 emergency exemption in Ohio and can be used in high tunnels for white mold/timber rot management. This exemption is valid between May 15 and September 30, 2006. Some fungicides commonly used in open field tomato production, such as Bravo Weather Stik and Quadris, are not allowed in greenhouse or high tunnel systems.

All of the diseases mentioned are difficult to manage once they become established, and an integrated approach including cultural tactics as well as fungicides is necessary. Where white mold has been a problem in tomatoes or in previous crops, growers may consider applying the biocontrol agent Contans to soil after the tomato crop to reduce the viability and

number of sclerotia of *Sclerotinia sclerotiorum*, the causal agent.

Crop Reports – by Hal Kneen and Bob Precheur

Spring continues to challenge the vegetable growers in southern eastern Ohio. Moderating temperatures between 40–mid 70's and occasionally into the 80's along the Ohio River since April 6th, 2006 when field tomato planting began. Land in higher elevations, just a couple of miles away have had a couple light frosts in the past four weeks. Tomatoes, peppers and sweet corn on plastic mulched beds are growing well. Natural rainfall is scarce and spotty so some irrigation has been used. Melons transplants are next to be planted probably beginning of next week.

In Jackson County, Ohio visited vegetable grower who has planted tomatoes, eggplant, melons and sweet corn under poly row covers. Plants seem to be doing well. Most of the product is sold on the farm so he was looking to begin his selling season a little earlier than normal.

Local farmer markets are selling locally grown lettuce, spinach, onions, asparagus and beginning of the strawberries. Lots of bedding plants and vegetable transplants also being sold to the homeowner. Big push on heirloom vegetable varieties especially for tomatoes.

In central OH, peas are already 6–8 inches high. Snap beans stands are nice and just approaching the 3rd leaf stage. Plastic sweet corn is 6 – 8 inches tall and bare ground sweet corn planted in late April is just about 2 inches. Sweet corn planting continues in most areas. Plasticulture strawberry harvest season will begin in about 10–14 days if the nice weather and temperatures hold.

The Passing of Douglas Sanders

Information provided by Matt Kleinhenz

American Society of Plasticulture has recently learned of the death of Douglas Charles Sanders, Professor of Horticultural Science at North Carolina State University, Raleigh. In addition to being an active member of the ASP, he was well known throughout the horticulture world. The information below was shared by William Lamont and Mike Orzolek from Penn State. Douglas Sanders, who was known worldwide for his expertise in vegetable production, passed away after a brief illness on Monday, April 17, 2006. Doug developed his love of plants and horticulture at a young age while growing up on a family farm in Mason, Michigan. He received his B.S degree in Vegetable Crops in 1965 from Michigan State University. He obtained his M.S. and PhD. Degrees in Horticulture in 1967 and 1970, respectively, from the University of Minnesota. He began his professional career at North Carolina State University in 1970 as an assistant professor specializing in vegetable production and was promoted to full professor in 1982. Dr. Sanders was tirelessly committed to the teaching and research of vegetable

production systems and their application worldwide. His life was filled with numerous accomplishments and recognitions as he provided leadership in many facets of the vegetable industry. Doug worked closely with North Carolina farmers and county extension agents to improve their vegetable production knowledge. His advice was sought after by all who worked with vegetables not only in NC, but in throughout the U.S. and around the world. His accomplishments included the establishment of the NC Vegetable Growers Association, the introduction of numerous new vegetable technologies (drip irrigation, plasticulture, precision seeding) and the introduction of new crops to NC such as asparagus, broccoli, sweet onions and leaf lettuce. Dr. Sanders served as Vice President of the Extension Division of the American Society for Horticultural Science (ASHS) in 1992–93. In 1992 Doug was named a Fellow of ASHS, and he will receive the 2006 Outstanding International Horticulturist award at the ASHS Annual Conference in New Orleans in August. He served as President of the Southern Region ASHS in 2000. Doug distinguished himself as an international horticulturist with 38 trips abroad in the last two decades and while working with and mentoring many students from Uruguay, Venezuela, Peru, Chile, China, and Thailand. Dr. Sanders taught undergraduate and graduate courses and utilized new distance education technologies to reach audiences. Doug was a tireless worker with a passion for horticultural science and seemingly boundless amounts of energy. All who knew him benefited from his innovative ideas, unselfish encouragement and thoughtfulness. Doug will be missed not only professionally, but by all of his many friends for whom he was an inspiration and a great counselor, He is survived by his loving wife, Ellen and sister, Mary Sanders. An endowment in Doug Sanders name has been established. Contributions can be sent to the North Carolina Agricultural Foundation, Inc., Box 7645, NC State, Raleigh, NC 27695–7645.