

# Chemical Options For Managing Diseases On Tobacco Transplants

Dr. Kenneth Seebold

*Extension Plant Pathologist, University of Kentucky*

**T**obacco producers in Kentucky are faced with several diseases each year that have the potential to cause serious losses, and the majority of these can be managed with an integrated strategy that includes cultural practices and fungicides/bactericides. In this article, we'll focus on the fungicide tools that can be used to manage fungal and bacterial diseases on tobacco transplants.

The most commonly encountered fungal diseases in the float system in KY are, in order of importance, Pythium root rot, target spot, Rhizoctonia damping-off, Sclerotinia collar rot, anthracnose, and blue mold. The latter does not occur each year, but can be devastating when it appears on tobacco seedlings. Bacterial diseases are found less frequently and include black leg (bacterial soft rot) and angular leaf spot/wildfire. Black leg is by far the most common of the bacterial diseases seen in float systems.

The following is a summary of labeled chemical products that can be used in the float system to manage diseases in 2009. Detailed information on these products and their use can be found in ID-160 (2009 Kentucky & Tennessee Tobacco Production Guide) or in PPFs-AG-T-8, the 2009 Fungicide Guide for Burley and Dark Tobacco.

**Agricultural streptomycin.** This material, an antibiotic, is sold as Agri-Mycin 17 and Firewall. Apply at rates of 100-200 ppm (1-2 tsp of product per gallon of finished spray) for control of angular leaf spot/wildfire and suppression of black leg. Use the lowest rate for prevention and the higher rate when disease is first observed. Apply 3-5 gallons of solution per 1000 sq. ft. of bed as a fine mist to achieve thorough coverage.

**Mancozeb.** Mancozeb, the active ingredient in Dithane DF, Manzate ProStick, and Penncozeb 75DF, is the only broad-spectrum material labeled for use in the float system. Adequate control of anthracnose and blue mold can be achieved with mancozeb, along with suppression of Rhizoctonia damping-off and target spot. The use rate is 0.5 lb of product 100 gallons of finished spray, or 1 tsp per gallon. Apply 3-12 gallons of solution per 1000 sq. ft. as a fine mist; increase spray volume as plants grow to get thorough coverage of leaves and stems. To avoid injury, begin applications when plants are dime-sized or bigger and continue on a 5-7 day schedule until transplanting.

**Terramaster 4EC.** Excellent control of Pythium root rot is possible if Terramaster EC is used as part of a preventive program. Proactive management of Pythium root rot is the recommended course, since diseased root systems are ideal targets for other root pathogens, such as Phytophthora nicotianae (the black shank pathogen) or Fusarium, after the tobacco is transplanted. Even if curative treatments of Terramaster are used, a certain level of disease remains and increases the risk of loss to soilborne pathogens after setting.

For preventive use, apply 1 fl oz of Terramaster per 100 gallons of float water 3 weeks after seed-

ing or when roots first enter the water. Follow up 2-3 weeks later with a second treatment at 1 fl oz/100 gallons of float water. Finish with a third application of 0.8 fl oz/100 gallons of float water two weeks after the second application. In systems with new or adequately sanitized trays, one or two applications beginning at 3-4 weeks after seeding should provide good protection against Pythium root rot. For producers still using the plug-and-transfer system, make the first application of Terramaster 1 week after plugging to allow initiation of root growth and minimal risk of injury. If disease appears prior to planned treatment with Terramaster, use the curative rate of 1.4 fl oz/100 gallons of float water, beginning no earlier than 3 weeks after seeding. Make a second application, if needed, at 1-1.4 fl oz/100 gallons of float water 2-3 weeks after the first treatment.

Phytotoxicity is a concern with Terramaster; however, the risk of damage caused by the fungicide is almost always outweighed by the benefits of its use. The most common type of injury that we see is root burn, followed by sloughing off of water roots following treatment. The degree of root burn increases when higher rates of the fungicide are used, but in nearly all cases plants will recover. Some delay of growth is also common but rarely causes lasting damage to seedlings. Foliar injury such as bleaching (whitening) and distortion of leaves is common in cases where excessive rates of Terramaster have been applied, or where the product has not been mixed thoroughly in the float bed (which results in "hot spots" in the bed). Injury tends to be worse in water with a pH above 7. We receive occasional reports of premature flowering associated with Terramaster use. It is not believed that Terramaster actually causes premature flowering, but can aggravate the situation if plants have been grown under environmental conditions known to cause this disorder. To minimize the risk of phytotoxicity, do not exceed recommended rates and take steps to ensure uniform distribution of Terramaster in float beds. If necessary, adjust pH levels in the float bed prior to treatment. Never apply Terramaster "over the top"; the risk of foliar injury increases substantially and poor control of Pythium root rot could result. Do not apply Terramaster any later than 8 weeks after seeding.

As you can see, the list of materials that can be used legally in the float system is fairly short and doesn't address all of our disease problems. For example, we don't have a labeled fungicide option for control of Sclerotinia collar rot. A number of products not included in this list show up in greenhouses and farms around Kentucky each year – it is critical to avoid unlabeled products or off-label uses. Plant injury (and loss) and worker safety are of concern, and ultimately illegal chemical use could make tobacco unacceptable to buyers. On the positive side, careful and preventive use of cultural practices and chemicals will give growers the best possible control of important tobacco diseases and allow them to build a strong foundation for the 2009 crop. Δ