

Controlling Pythium Root Rot In The Float System

Dr. Kenneth Seebold

Extension Plant Pathologist, University of Kentucky

Pythium root rot is the most common and damaging disease that we encounter in the float system, and it won't be long before tobacco transplants around Kentucky are affected by this problem.

The first symptoms of Pythium root rot tend to be yellowing and stunting of transplants in a well-defined area or areas of a float bay. Damping-off, or seedling death, can occur in severe cases. During the outbreak, seedlings wilt and root systems decay to some degree. Roots and sometimes lower stems of plants affected by Pythium root rot take on a darkened, necrotic appearance; roots may have a slimy appearance. Infected roots will eventually slough off and some re-growth may be observed; however, new growth likely will become infected.

Water temperatures greater than 72 °F favor rapid development and spread of PRR in float systems. Several species of Pythium, a fungus-like organism, are known to cause root rots on tobacco seedlings. Pythium species (spp.) require water, abundant in the float system, for reproduction and movement. Initial infections likely result from germination of resting structures (oospores) of Pythium spp., and production of zoosporangia. Swimming spores (zoospores) are liberated from zoosporangia, and find their way to tobacco roots. Zoospores encyst after encountering susceptible tissue and enter the root system to establish an infection. Many cycles of zoospore production and infection are possible after initial infections occur.

The most common ways for Pythium spp. to be introduced into float systems are contaminated water, infested soil, or recycled (and contaminated) Styrofoam trays. Pythium spp. are found widely in our soils and surface water and can be carried on shoes or implements. Pythium spp. can persist in the tissue of roots that have penetrated Styrofoam float trays, providing a source of inoculum when the trays are used the following season.

Sanitation is an important part in the management of Pythium root rot in the float system (refer to KPN No. 1151 for more details). Never use pond or surface water to fill float beds, since water from these sources is likely contaminated with Pythium and other plant pathogens such as Phytophthora or Fusarium. Make sure that shoes and tools are cleaned before bringing them into a transplant facility.

Terramaster 4EC is labeled for use in float systems and is very effective against PRR when used correctly. Detailed information on this fungicide can be found in the product label, or refer to ID-160 (2009 Kentucky-Tennessee Tobacco Production Guide) or PFFS-AG-T-8 (2009 Fungicide Guide for Burley and Dark Tobacco). For preventive use, apply 0.7-1 fl oz of product per 100 gallons of float water beginning 2-3 weeks after seeding, or when roots first enter the water. A second treatment of 0.7-1 fl oz per 100 gallons of water can be made 3 weeks after the first, and a final application of 0.8 fl oz can be made two weeks after the second treatment (if needed). Do not apply Terramaster later than 8 weeks after seeding; make sure that the product is mixed thoroughly in float bays to minimize the risk of plant injury. "Rescue" applications of Terramaster (1.4 fl oz/100 gallons of float water) in systems with active PRR will halt further development of disease and symptomatic seedlings will likely recover. However, the higher rates of Terramaster used in rescue treatments increase the risk of plant injury AND recuperating plants may still harbor Pythium and increase their susceptibility to black shank and Fusarium wilt. For these reasons, preventive use of Terramaster is recommended over curative applications of the product. Before using Terramaster, or any pesticide, refer to the label for specific instructions and safety information. Quality tobacco transplants are one of the most important parts of a successful growing season. Through careful management it is possible to achieve excellent control of PRR, good transplant quality, and a healthy bottom line! Δ