Algae: Is It A Problem In Tobacco Float System?

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Algae are a large and diverse group of simple, aquatic organisms that are capable of propagating and accumulating on the surface of almost any non-circulating water source. Tobacco float beds are an ideal environment for algae growth. Even in enclosed greenhouses, algae spores can enter the water through wind when curtains are down, rain splashing into the greenhouse near the curtains, or even contaminated plastic bed liners, trays, or other equipment in the float bed. Once algae spores enter the float bed water, all that is needed is warm temperatures, sunlight, and nitrates or carbon dioxide, all of which are readily available in a tobacco float bed. Although there are over 21,000 known species of algae, the green algae species are by far the most common in tobacco float beds, with black algae seen on rare occasions. Commercial products used specifically to prevent algae (algaecides) in float beds are not recommended due to their general lack of effectiveness and difficulties in proper application.

Although some algae can be found in almost all tobacco float systems, in nearly all cases it is more of a visual nuisance than an actual problem that affects tobacco plant growth. On very rare occasions, excessive growth of black algae that accumulates on top of cells before seed germination may cause delayed and sporadic germination. Green algae are much more common in tobacco float systems and much less of a problem. The unusually warm temperatures during late March and April of the 2010 transplant season have led to abnormally high algae growth in tobacco float beds. Although algae growth seldom causes a problem for tobacco plant growth, the following are some steps that can be taken to minimize algae in float systems:

• *Use Clean Float Trays* – Algae growth (as well as risk of Pythium soft rot) is always greater on old trays. Use new trays each season if possible. If old trays (up to 3-4 years old) are used, first remove any surface debris left from the field and sanitize trays by dipping and scrubbing with 10 percent bleach solution (1 gal bleach: 9 gal water), rinse with plain water and allow to dry before filling with media and seeding. Trays more than 4 years old should be discarded. It is also a good practice to sanitize all open surfaces of the greenhouse with a commercial greenhouse sanitizing product such as Greenshield or Physan. Bleach solutions are not recommended for sanitizing open surfaces in the greenhouse.

• *Avoid Open Water* – Algae growth is always more severe if the entire float bed is not filled with trays. Any open areas not covered by trays will fill with algae and possibly cause more algae growth on adjacent trays.

• *Heat And Air Circulation* – Target greenhouse temperature for newly seeded tobacco is 72 F. Temperatures should be maintained in a range of 65 F to 90 F if possible. Using heat and circulating fans to maintain this temperature range will also help to keep tray surfaces dry, which discourages algae growth. Once plants reach the 4-leaf stage, nighttime temperatures can be reduced to as low as 55 F and not have adverse effects on plant growth.

• *Timing Of Initial Fertilization* – Avoid adding fertilizer to the float water before or at the time of seeding and floating. Float plants do not need

fertilizer prior to germination. Adding fertilizer as beds are being filled or as trays are being floated only encourages early algae growth. A good recommendation is to add fertilizer at 7 to 10 days after seeding and floating. Also avoid overfertilizing. Nitrogen levels in float beds should be targeted at 100 ppm N (or at least within a range of 75 to 125 ppm N). Excessive fertilization encourages algae growth as well as bacterial soft rot.

• *Terramaster 4EC Fungicide* – although we associate Terramaster more with Pythium soft rot control, an added benefit is that Terramaster has also been shown to be fairly effective at controlling algae growth. 0.75 to 1.0 oz Terramaster 4EC per 100 gallons float water applied and circulated in the float water at 2 to 3 weeks after seeding can minimize risk of Pythium and also reduce the growth of algae. It generally takes 4 to 5 days after Terramaster application for the affect on algae to be noticeable, but algae will begin to appear "crusty" and begin to dry up.

Although algae are usually more of a nuisance than an actual problem, these are several steps that can be taken to reduce algae growth in tobacco float beds. Δ

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