Alfalfa seedling and root diseases

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Abstract
Soil conditions so far this spring are drier than normal, which means fewer problems with seedling disease in early alfalfa plantings. But things can change quickly, because the fungi causing these diseases are sensitive to surface soil moisture. With rain events around the time of planting, seedling diseases can appear rapidly. The most important fungi attacking alfalfa seedlings are *Aphanomyces euteiches*, *Phytophthora medicaginis*, and several species of *Pythium*.

Keywords
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Soil conditions so far this spring are drier than normal, which means fewer problems with seedling disease in early alfalfa plantings. But things can change quickly, because the fungi causing these diseases are sensitive to surface soil moisture. With rain events around the time of planting, seedling diseases can appear rapidly. The most important fungi attacking alfalfa seedlings are *Aphanomyces euteiches*, *Phytophthora medicaginis*, and several species of *Pythium*. Seedling diseases should be suspected when emergence is poor and/or there are obviously stunted, discolored, or dead seedlings. Like other crops, alfalfa seedling diseases are more severe in wet conditions.

Genetic resistance is the best way to avoid seedling diseases or any other alfalfa disease. The Iowa State University Crop Performance Test report shows disease resistance for all the varieties entered in the test. This report is available at county extension offices or from the Extension Distribution Center on campus. For seedling disease protection, it is best to plant varieties with an R or HR resistance rating to both *Phytophthora* and *Aphanomyces*. Recently, some seed companies have begun to market varieties with resistance to races 1 and 2 of *A. euteiches*. Currently, there are only a few of these varieties available, but in the future, all *Aphanomyces*-resistant varieties should be identified according to race. If a resistant variety does not have a race designation, it is safe to assume it has only race 1 resistance. Resistance to race 1 is beneficial, but in Iowa race 2 appears to be common. A lack of performance from a race 1-resistant variety may be a good indication that race 2 is present. Figure 1 is an example of the yield performance of a susceptible variety (Columbia), a race 1-resistant line (WAPH-1), and a race 2-resistant line (WAPH-4) in a Wisconsin field infested with race 2. The race 1-resistant line performed no better than the susceptible, whereas the race 2-resistant line retained a higher yield.
Yield effects of Aphanomyces race 2

Figure 1. Yield (in metric tons/ha) for three alfalfa lines grown in a Wisconsin field infested with *Aphanomyces euteiches* race 2.


To protect against *Pythium*, a fungicidal seed treatment is needed. Allegiance and Apron XL seed treatments are effective against *Pythium* and *Phytophthora*, but there are no registered seed treatments effective against *Aphanomyces*. Ridomil Gold is a soil fungicide registered for use in establishing alfalfa. Ridomil Gold contains mefenoxam, the same active ingredient as Apron XL. Some studies have shown that a soil fungicide applied at seeding can be beneficial, but seed treatment appears to be a more cost-effective way to control *Pythium* and *Phytophthora*.

If an alfalfa seeding fails, it is usually safe to replant alfalfa because compounds believed to cause autotoxicity do not accumulate in seedlings. A *Phytophthora* - and *Aphanomyces*-resistant variety (treated with Apron XL) is recommended for replanting failed seedings. However, the timing is a factor because alfalfa seedings that are done too late in the spring may fail because of inadequate moisture.

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