Seed coating effective on turfgrass under deficit irrigation

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Environmental factors can challenge the establishment of new turfgrass lawns grown from seed. Slow and nonuniform germination and emergence can result from conditions such as nonoptimal growing temperatures and drought. Turfgrass establishment can also be affected by a lack of water imposed in deficit irrigation conditions. To enhance speed, uniformity, and turfgrass seed germination rate, growers can apply a seedcoating before sowing. These products range from thin films to heavier coatings, and treatments can include macro- and micronutrients, plant growth regulators, protection products, growth stimulants, inoculants, and specialized polymers.

The authors of a study in the August 2106 issue of *HortTechnology* evaluated the effects of a low-dose concentration of nonionic, block copolymer surfactant applied directly to turfgrass seed within a film coating. Their results showed that coatings can promote seed germination and improve turfgrass establishment under deficit irrigation conditions.

The researchers conducted two separate experiments with tall fescue and perennial ryegrass at the Eastern Oregon Agricultural Research Center in Burns. The first experiment evaluated the influence of a surfactant film coating (SFC) treatment on seed germination. Germination was compared between seeds with a SFC and untreated seeds in growth chambers at three constant temperatures: 10, 20, and 30 °C. Analyses showed that the SFC decreased the time for seed germination and improved germination synchrony for both turfgrass species. Application

of a SFC did not influence final germination percentage.

The second experiment determined the effects of SFC treatments on seedling emergence and plant growth. Untreated and treated seed were compared in a grow-room study, with pots watered weekly to 70% of field capacity. Perennial ryegrass density, cover, and aboveground biomass from the SFC were ≈47%, 48%, and 46% greater than untreated seed, respectively. Tall fescue density, cover, and aboveground biomass from the SFC seeds were ≈22%, 23%, and 28% greater than untreated seed, respectively.

Corresponding author of the study Matthew Madsen said that the study was the first to demonstrate that a low-dose application of nonionic surfactant applied directly to seed as a component of a seed treatment is effective at increasing seed germination rate and synchrony. "Interestingly, a SFC was most effective at improving germination at suboptimal (10 °C) and supra-optimal (30 °C) germination temperatures for cool-season turfgrass," Madsen said. "These results may indicate that a SFC treatment could have particular utility in extending the window turfgrass can be planted during the year."

The authors said the second experiment demonstrated that that a SFC treatment can enhance emergence and plant growth under a less than optimal irrigation regimen, which could help to conserve limited water supplies and enhance urban landscapes by lowering water requirements for establishing new turfgrass.

More information: ASHS *HortTechnology*: horttech.ashspublications.org/ … nt/26/4/379.abstract

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