



## **An investigation into the potential use and sustainability of surfactant coated turfgrass seed for the green industry**

Michael Fidanza (1), Mica McMillan (2), Stan Kostka (3), and Matthew D. Madsen (4)

(1) Pennsylvania State University, Berks Campus, Reading, Pennsylvania, United States (maf100@psu.edu), (2) Aquatrols Corporation of America, Ft. Lauderdale, Florida, United States (mica.mcmillan@aquatrols.com), (3) Aquatrols Corporation of America, Paulsboro, New Jersey, United States (stan.kostka@aquatrols.com), (4) USDA - Agricultural Research Service Burns, OR 97720 USA (madsen@oregonstate.edu)

Turfgrass seed germination and emergence is influenced mostly by water and oxygen availability, temperature, nutrition and biological activity in the rootzone. In many areas globally, seed germination and subsequent turfgrass establishment is greatly diminished due to inadequate irrigation water amount and quality, and the problem is further compounded due to water repellent soils. Successful turfgrass seed germination is critical when attempting to establish a more sustainable turfgrass species in place of an existing, high-input required turf stand. Greenhouse research investigations were conducted in 2013 in Pennsylvania (USA), to evaluate surfactant coated perennial ryegrass (*Lolium perenne*) and Kentucky bluegrass (*Poa pratensis*) seed for germination and emergence, seedling vigor and overall turfgrass quality. Both turfgrasses tested are cool-season or C3 grasses, and perennial ryegrass has a bunch-type growth habit while Kentucky bluegrass is rhizomatous. Perennial ryegrass is used world-wide as a principal component in sports turf mixes and in overseeding programs, and typically germinates rapidly in 3 to 10 days after seeding. Kentucky bluegrass also is used world-wide for sports turf as well as lawns and landscapes, and germinates slowly in 7 to 28 days. Research results indicate that surfactant coated seed of both species germinated one to three days faster compared to uncoated seed, and that seedling vigor and overall turfgrass quality was better with surfactant coated seed compared to uncoated seed. In a study with only perennial ryegrass, surfactant-coated seed without fertilizer (i.e. N and Ca) applied at time of sowing resulted in seedling vigor and quality considered to be similar or better than uncoated seed with fertilizer applied at time of sowing. Therefore, the potential benefits with seed germination and emergence, and seedling vigor and turfgrass quality also may be attributed to the surfactant coating and not only a fertilizer response. The utilization of a surfactant coated turfgrass seed could potentially reduce inputs (i.e. cost, time and labor, other materials) and improve water conservation (i.e. reduction in irrigation water need for establishment).