

PLANT TOXINS AND COMPETITION IN ANNUAL
BLUEGRASS AND BENTGRASS TURFS

A. Douglas Brede and Todd Harris
Jacklin Seed Company
Post Falls, ID

Research was undertaken to help understand the competitive relationships present in Poa annua - creeping bentgrass turf. Research results showed that under bare seedbed, spaced-planting conditions, creeping bentgrass was equal to or slightly more competitive than annual bluegrass. Under sod-seeded conditions, the relationship was much different. Annual bluegrass seed established readily within annual bluegrass turf. However, establishment of creeping bentgrass seed into annual bluegrass sod resulted in nearly a 100% stand failure. Therefore, if a golf course superintendent was to overseed bent into a fairway or green which was infested with Poa annua-seed in the soil, he could expect more Poa to be the result.

Results from a study where annual bluegrass and creeping bentgrass were seeded simultaneously onto a bare seedbed revealed that nearby annual bluegrass increased the mortality of creeping bentgrass by as much as 20%.

Allelopathy, the effect of one plant on another as a result of the transfer of a toxic agent, was investigated as a possible causal agent of poor bent performance in the presence of annual bluegrass. A large field experiment was conducted over a two year period to evaluate the possible effects of toxins under actual mowed, field conditions. After two years, bentgrass turf that was watered entirely from Poa annua effluent grew no better or no worse than bentgrass that was watered with tap water.

Seedling research conducted in a controlled environment chamber, suggested a possible cause for the failure of the field experiment to produce significant findings. Evidently the toxin exuded from annual bluegrass is not water soluble and transfers only very short distances in water. Separating annual bluegrass and creeping bentgrass by more than an inch showed little or no effect of the Poa annua on the bent. On the other hand, when in close proximity, only one annual bluegrass seed was needed to show a significant response on creeping bentgrass seedlings. Preliminary results indicated that activated charcoal could deactivate the mystery toxin. Field confirmation of this hypothesis is needed before large-scale implementation takes place.