

Public Abstract

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Title:Allelopathic Effects and Removal of Overseeded Ryegrass on Bermudagrass

Allelopathy is a complex phenomenon among plants that involves the production of defensive chemicals that influence the growth and survival of adjacent plants. Plants like perennial ryegrass become suspect when bermudagrass cover is reduced by 88% when seeded into perennial ryegrass cover.

Over-seeding bermudagrass with ryegrass is a common cultural practice on golf courses and athletic fields in late summer as bermudagrass becomes dormant. In spring, removal of ryegrass is essential for bermudagrass to recover or decline of bermudagrass is inevitable. However, underlying reasons for this decline is unknown.

Objectives of this research were to assess allelopathic effects of ryegrasses on bermudagrass and determine best management practices for spring removal of intermediate and perennial ryegrass by cultural practices and herbicide applications.

Cultural practices (mowing and fertility) reduced intermediate ryegrass stand by 10% when mowing height was decreased and urea fertilizer was added. Mowing height and fertilizer applications, alone, are not sufficient in the removal of perennial ryegrasses.

Six herbicide treatments (chlorsulfuron, rimsulfuron, metsulfuron, trifloxysulfuron, foramsulfuron and sulfosulfuron) resulted in rapid removal (> 95%) of all ryegrass cultivars. All herbicide treatments enhanced bermudagrass recovery.

In vitro bioassays with ryegrass water extracts reduced bermudagrass seed germination by 62%.

While cultural practices alone may not be enough to remove perennial ryegrass, chemical removal of ryegrasses may be too rapid for a smooth spring transition. Bioassays with ryegrass water extracts did inhibit bermudagrass seed germination.