

Public Abstract

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Title:Competition and Management of Volunteer Corn (*Zea mays* L.) in Corn

Volunteer corn is the result of corn kernels remaining in the field following harvest and is a competitive weed in a number of subsequent crops. With widespread adoption of glyphosate-resistant (Gly-R) corn, Gly-R volunteer corn has become a troublesome weed. Little is known about the interference and management of Gly-R volunteer corn in corn. The objectives of this research were to: a) determine the extent of kernels remaining in fields following harvest; b) identify the competitive effects of volunteer corn in corn; and c) describe the efficacy of glufosinate or imazethapyr + imazapyr to control Gly-R volunteer corn in glufosinate-resistant or imidazolinone-tolerant hybrids, respectively. Research was conducted during 2008, 2009, and 2010 at multiple locations throughout central and northeast Missouri. Harvest inefficiencies resulted in kernels remaining in the field at densities ranging from 62,241 to 986,552 kernels per hectare. Volunteer corn was very competitive, reducing row corn leaf nitrogen, stalk diameter, and grain yield with as few as 0.5 plants per square meter. Glufosinate applied at all heights, and imazethapyr + imazapyr applied at 10 and 20 cm reduced the impact of volunteer corn and prevented grain yield losses. Overall, harvest inefficiencies will inevitably result in kernel losses, which may result in up to 99 volunteer plants square meter. Producers should minimize the impact of Gly-R volunteer corn by establishing a rotation system with glufosinate-resistant or imidazolinone-tolerant hybrids; other techniques may be needed to eliminate volunteer plants.