Long term crop and herbicide rotation to managing weedy rice populations (771)

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Imazethapyr and imazamox are registered for use on imidazolinone-resistant rice (IRR) in the United States, and is used to control red rice (*Oryza sativa* L.). Hybrid rice has shattering characteristics and seed dormancy issues. Repeated reliance on imidazolinone-resistant hybrid rice (IRHR) can cause a serious weed problem. Outcrossing can also occur with red rice causing IR red rice to occur. A 4 year study was established to evaluate crop rotation to manage a weedy rice complex. A location was identified with a history of multiple growing seasons of IRHR with a weedy rice infestation. In 2013, a four year study was established consisting of five different crop rotations and utilizing non-genetically modified ACCase–resistant rice allowing for the use of quizalofop (QRR). The study also employed glufosinate-(GluRS) and glyphosate-resistant (GRS) soybean, and IRHR. The utilization these technologies allowed for crop and herbicide rotation. The study employed 0.2 ha plots. The rotations were: 1) GRS 2013/QRR 2014/GRS 2015/IRHR 2016; 2) Fallow 2013/QRR 2014/GRS 2015)/ IRHR 2016; 3) IRHR 2013/GluRS 2014/QRR 2015/IRHR 2016; 4) GRS 2013/GluRS 2014/GRS 2015/IRHR 2016; 5) GRS 2013/IRHR 2014/GRS 2015/IRHR 2016. Herbicides used during IRHR or QRR were imazethapyr at 105 g ai ha-1, imazamox at 44 g ai ha-1, or quizalofop at 115 g ai ha-1. GRS and GluRS were treated with glyphosate at 1120 g ai ha-1 or glufosinate at 820 g ai ha-1, dimethenamid at 945 g ai ha-1 and pyroxasulfone at 150 g ai ha-1. The fallow rotation was treated with glyphosate and tillage. In 2013, weedy rice plants counts were 0.3 to 17.2 plants m^{-2}, and decreased in 2014 to 0.004 to 2.6 plants m^{-2} with a GluRS or QRR rotation. In 2015, weedy rice decreased to 0 to 2.5 plants m^{-2}. Crop and herbicide rotation can impact weedy rice populations.

Keywords: Red rice, Imidazolinone-reisitant Rice, Weedy rice

Weed management in drip irrigated rice (626)

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A study was carried out in 2015 in northern Italy to assess the efficacy of weed control strategies in rice watered by drip irrigation. Two conventional and one Clearfield varieties were included. Six plots (20m x 18 m each) were randomly selected within each field: three were subjected to the planned weed control strategy, and three were maintained untreated (check). Water was supplied by means of superficial drip irrigation lines 90 cm spaced. All fields were treated in pre-emergence with pendimethalin (687.5 g_{ai}/ha) and clomazone (137.5 g_{ai}/ha). Post-emergence treatments were carried out with cyhalofop-butyl (240 g_{ai}/ha) + profoxydim (80 g_{ai}/ha) followed by MCPA (310 g_{ai}/ha) + byspiribac-sodium (33.6 g_{ai}/ha), in conventional varieties, and with imazamox (33 g_{ai}/ha) + byspiribac-sodium (33.6 g_{ai}/ha) followed by imazamox (37 g_{ai}/ha) + MCPA (266.4 g_{ai}/ha) in Clearfield variety. In each plot weed density and weed cover on the ground were assessed three times during the season. Yield and yield components were assessed at harvest. Weed infestation was mostly represented by *Digitaria sanguinalis*, *Chenopodium album*, *Portulaca olearacea* and *Sorghum halepense*. In check plots weed infestation was particularly high at the first assessment with, on average, 329 plants/m^2, without statistical differences between varieties and with a ground cover above 77%. In treated plots weed infestation was not higher than 17.04 plants/m^2 in conventional varieties, and 17.31 plants/m^2 in Clearfield variety. At the last assessment, weed density in treated plots was on average 43.55 plants/m^2 in conventional varieties, and 64 plants/m^2 in Clearfield variety. In these plots weed infestation was mainly represented by *Digitaria sanguinalis* and, in a less extent, by *Chenopodium album* and *Portulaca oleracea*. In treated plots the highest number of culms (428 culms/m^2) and the highest yield (3.5 t/ha) was observed in the Clearfield variety

Keywords: Drip irrigation, IMI resistant rice, irrigated rice