

Optimizing Weed Management Program in Rice: Challenges and Opportunities. Kassim Al-Khatib, University of California, Davis

Weeds are considered a serious problem in California rice fields. Decades of using a continuously-flooded rice cropping system in California have selected specific weed species that display similar ecological requirements and growing patterns to rice. Although effective preplanting weed control and proper cultural practices including water management is used in weed management program in rice, herbicides continue to be the most important component of any weed management program in rice. With the excessive reliance on a few herbicides and lack of crop rotation, however, several weeds in rice fields have evolved resistance to herbicides including California Arrowhead, Smallflower Umbrella Sedge, Ricefield Bulrush, Late Watergrass, Redstem, Barnyardgrass, Early Watergrass, and Junglerice. In California, rice has more herbicide-resistant weeds than any other crop or region in the United States which result in more complex and expensive weed management program. Proper identification of weed species and understanding their susceptibility/resistance to herbicides are essential to any successful weed management in rice. In addition, knowledge of the species and its competitive ability are critical to target the most important and potentially damaging weeds. Most California rice fields have between 10 to 15 weed species, however, not all of these species have similar damaging effects on rice. To develop effective weed control practices, it is not enough only to identify a particular species, but whether or not it exhibits herbicide resistance. Selection of any herbicide program in rice is difficult. Weed pressure, herbicide resistance, water management practices, weather conditions, herbicide formulation, and nearby nontarget susceptible plants influence the any decision to select herbicide programs. The ideal and most effective weed management program integrated prevention, good cultural and water management practices, and herbicides.