Session 16
WEED MANAGEMENT IN CROPS AND NON-AGRICULTURAL LAND: Weed Management in Rice

Keynote: The weedy rice threat to food security in Asia: global insights into management (521)

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Asia is the world’s largest and most important rice-producing region. Pressure on water resources and increased labour costs have led to a major change from transplanted to direct-seeded rice (DSR). DSR offers many advantages, however, weeds, including weedy rice are the main constraint to productive DSR systems. Despite the greater availability of herbicides weeds and weedy rice remain a serious global constraint. This work aims to raise awareness on currently documented weedy rice infestation levels in Asia rice fields and proactively anticipate issues related to the adoption of new and highly effective technologies such as herbicide-resistant rice varieties (Clearfield™). Recent surveys in Vietnam and Philippines indicate the urgent need to increase awareness on weedy rice among Asian growers. After 13 years since Clearfield™ rice commercialization, crop-to-weed gene flow has led to hybridization between weedy rice and the crop and ALS-resistant weedy rice plants have invaded fields where Clearfield rice was grown. The efficacy of a number of management strategies, established to be effective in rice ecosystems in the Americas and Europe, are reviewed and will be presented. Modeling simulations, parametrized on rice crops grown in temperate European conditions, show the importance of weedy rice biological traits and the interaction with several cultural practices such as soil tillage, water management, herbicide treatment efficacy and crop rotation affecting the population dynamics of weedy rice. Importantly, new tactics, based on improved understanding of weedy rice biology and herbicide-weed physiological and biochemical interactions, towards safe and selective chemical weedy rice control in rice crops will be discussed. Weeds in DSR represent an active, arylpicolinate herbicide, rice, weed control, herbicide resistance

Keywords: Food security, Asia, Weedy rice, Weeds, Herbicide resistance