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 wil be discussed. Weeds in DSR represent an evolving challenge that will require a global and dedicated effort. Minimizing infestations of weedy rice and the co-evolving issues of herbicide-resistant rice weeds, will significantly contribute to sustain global food production and protect the income of small-hold Asian farmers.

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

Introduction of Rinskor™ active, a new arylpicolinate herbicide from Dow AgroSciences (617)

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Rinskor™ active (proposed ISO name in review) is a new arylpicolinate herbicide being developed by Dow AgroSciences with global utility in seeded and transplanted rice and other crops. Data from field trials conducted since 2010 (> 1000 global trials) demonstrates that Rinskor has broad-spectrum activity on certain grass, sedge, and broadleaf weed species in rice. Common use rates are 5 to 50 g ai ha^{-1} depending on use pattern and target species. When used at anticipated label instructions, rice shows excellent tolerance, and no impact on yield has been observed. Key species controlled within defined use patterns include: *Echinochloa crus-galli; E. colona; E. oryzicola; Urochloa plantaginea; U. platyphylla; Cyperus difformis; C. iria; C. rotundus; Schoenoplectus mucronatus; Abutilon theophrasti; Aeschynomene* spp.*; Amaranthus* spp.*; Alisma plantago-aquatica; Ambrosia* spp.*; Chenopodium album; Conyza* spp.*; Heteranthera* spp.*; Ludwigia octovalis; Monochoria vaginalis; Sagittaria trifolia; Sesbania exaltata; Ammannia* spp. *and Xanthium strumarium*. As compared to other auxin chemotypes, Rinskor demonstrates novel characteristics in terms of use rate (some species controlled at less than 5 gai/ha), spectrum (grass, broadleaf and sedge activity), environmental fate (rapid degradation of herbicidal activity in soil and plants), and molecular interaction (unique auxin receptor biding). Rinskor has demonstrated a unique spectrum of activity and the ability to control ALS-, ACCase-, propanil-, and quinclorac target site-resistant grass, sedge and broadleaf species. Rinskor has favorable environmental fate, toxicology, and ecotoxicology properties. Initial registrations are expected in 2017 or 2018.
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™Rinskor is not registered at the time of this presentation. The information presented is intended to provide technical information only and is not an offer for sale.

Keywords: Rinskor™ active, arylpicolinate herbicide, rice, weed control, herbicide resistance