



XIX International Plant Protection Congress IPPC2019



10-14 November 2019, Hyderabad, Telangana, India

Crop Protection to Outsmart Climate Change
for Food Security & Environmental Conservation

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Abstract Book

www.ippc2019.icrisat.org



O9-4. Effective and economic ecological weed management approaches for managing weeds in rice in the era of climate change

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Rice will continue to be one of the major staple food to feed expected 9 billion global population by 2050. Weeds are major constraints in limiting rice productivity to meet the increasing food demand. Weeds are more severe constraints in dry-direct-seeded with lower environmental foot print. Climate resilient rice cultivars, with greater competitiveness against weeds, play a key role in ecologically managing weeds. Crop competitiveness was found to increase with adequate land preparation using techniques like stale seed bed; early seeding/ planting, adjusting row spacing and seed rates, using allelopathic plant residue mulches; adopting brown manuring practice and optimal nutrient and water management in terms of application time and quantity. Limited knowledge is available on the impact of climate change on weed ecology, weeds competitiveness with rice and efficacy of weed management practices used in rice. The C4 weeds with increased temperatures and C3 weeds with increased CO₂, are expected to have greater competitive advantage. Weedy rice (C3) may become more problematic as it is more competitive than rice and it responds to climate change in the same way as rice (C3). The response of herbicides tolerant weeds to climate change will be critical for their effective management. Greater understanding of climate change impact, on weeds and rice, is essential for evolving effective and economical ecological weed management strategies for rice during the era of climate change.

A.N. Rao, Sreenath Dixit, S. Gajanan, K. Anantha and V.K. Singh. 2019. Effective and economic ecological weed management approaches for managing weeds in rice in the era of climate change. P.42-43. In: Abstract Book. XIX International Plant Protection Congress. IPPC 2019. Hyderabad, India