

Category	: International Rice Research Conference
Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Yield gaps
Keyword 2	: Ecological approaches
Keyword 3	: Sustainable management practices
Title of Entry	: Sustainable rice production by ecological engineering approach using PyraXalt™ insecticide
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Rice is an important food crop of South and Southeast Asia. More than 90 percent of the world's rice is produced in this region with India and China alone contributing to 55 percent of production. With the rapidly growing Asian population that is expected to reach 5 billion by 2035, current production will not suffice. Without expanding arable land, it will be difficult to maintain annual yield growth at 1.0–1.2%. Moreover, climate change is anticipated to lead to greater incidence of pests, create new production challenges. In South and Southast Asia rice is grown in warm, humid environments conducive to the survival and proliferation of insect pests including rice planthoppers and leafhoppers. Planthoppers suck sap from the rice plant leading to “hopper burn” and ultimately plant death. Under severe infestations, paddy plants are left with only empty straws and no stalks. Planthoppers and leafhoppers are also important virus vectors. In 2017, planthoppers wreaked havoc in India causing significant yield losses and leading farmers to take unprecedented step of setting fire to their crop. Insecticides are one of the primary tactics used in rice for planthopper management. In most Asian countries, rice yields average between 3-5 t/ha. However, in experiments where rice is managed for optimal insect control, yield potential of rice varieties can be increased up to 10 t/ha. Therefore, significant efforts have been placed on Good Agricultural Practices and judicious use of pesticides to bridge the production gap in Asia to meet food security goals. Introduction of selective insecticides that are relatively safe to natural enemies has improved the management of rice insect pests. One such insecticide is PyraXalt™ (triflumezopyrim), which

has been developed by DowDuPont™. Pyraxalt provides excellent initial and residual control of plant and leafhoppers, including populations that have developed resistance to neonicotinoids. Studies have demonstrated the safety of Pyraxalt™ to common predators and parasitoids of planthoppers. Residual activity and conservation of beneficial arthropods that is demonstrated with Pyraxalt™ provides a reliable solution with reduced number of seasonal applications, compatibility in ecological engineering, and optimizes yield culminating in reduced anxiety and “farmer-confidence of a good harvest”.

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