

Controlling Sunn Pest in Wheat, Naturally: ICARDA Shows the Way

Traditional methods of controlling Sunn Pest (*Eurygaster integriceps*) infestations in wheat rely on expensive insecticides. Farmers in the Central and West Asia (CWANA) region spend more than \$40 million each year on insecticides in affected areas. Insecticides are also environmentally harmful and often ineffective because the pests develop resistance quickly. ICARDA scientists collaborating with National Agricultural Research Systems in the region; the University of Vermont, and CABI Bioscience, UK have found naturally-occurring fungi that work as biological insecticides. The fungal spores lodge in the insect, then kill it by blocking vital life support systems.

After a spring in cereal fields, the Sunn Pest moves to nearby foothills to spend the summer, fall and winter, so this is where the ICARDA scientists and their partners concentrated their search for insect specimens infected by fungi. Trips to Kazakhstan, Kyrgyzstan, Syria, Turkey, and Uzbekistan resulted in the world's largest collection of fungi strains isolated from infected Sunn Pest specimens. Pathogenicity trials revealed that several isolates of *Beauveria bassiana* were effective, killing the insect within 10 days.

Researchers are now evaluating the isolates for their efficacy and determining the most effective way of using these fungi for the management of Sunn Pest. Using the insect-killing fungi has an added advantage because they are specific to Sunn Pest and environment-friendly. It will be used in concert with natural enemies, cultural methods, and other strategies in a comprehensive integrated pest management (IPM) program to mitigate the impact of this pest.



Wheat spikes damaged by Sunn Pest feeding. Even low-scale damage can ruin the bread-making quality of wheat.

In July 2004, ICARDA hosted the Second International Conference on Sunn Pest where over 130 participants from 23 countries discussed the socioeconomics of Sunn Pest, integrated management strategies, including chemical, biological and host resistance options; and the biology and ecology of the insect.

Wheat productivity in CWANA region is only 1.5 t/ha, compared with the world average of 5 t/ha. Sunn Pest is a leading cause of low yields, affecting about 15 million hectares of wheat annually, and crop losses can reach 100 percent. It damages crops by feeding on leaves, stems, and grains, and injecting chemicals that cause the grain's gluten to break down. If as little as 2-3% of the grain in a crop has been affected, the entire lot of grain becomes unsuitable for baking.