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Host induced gene silencing for pest/pathogen control

Amy L Klocko

University of Colorado, USA

Commercial crops, such as corn, wheat, and soy are subject to damage from a variety of biotic and abiotic sources, leading to reduced yields and a loss of income. There are a variety of strategies available to mitigate damage from biotic sources, including breeding for improved resistance, the application of pesticides, and crop rotation. Genetic engineering methods offer additional methods. One such method, host induced gene silencing (HIGS) is an approach that shows promise for the control of a variety of problematic crop-damaging organisms, ranging from nematodes and insects, to fungi and parasitic plants. In general, HIGS utilizes RNA interference (RNAi) molecules produced by the plant, which then target key genes in pests/pathogens, ideally leading to improved resistance of the plant and a reduction in damage. This approach has been demonstrated to be effective in both laboratory and field settings, in a variety of host plants and targeting diverse pests/pathogens. Currently, no HIGS-protected crops are being used in a commercial setting. As this area of research is still very much in development, the possible off-target and non-target effects need to be assessed, as do the long-term stability and effectiveness. Practical implementation of HIGS to commercial crop production will rely on extensive field-testing, as well as regulatory and marketplace acceptance of new varieties.

aklocko2@uccs.edu