

Scientists could use CRISPR gene editing to combat 'superweeds' when herbicides fail

There is a pressing need for novel control techniques in agricultural weed management. Direct genetic control of agricultural pests encompasses a range of techniques to introduce and spread novel, fitness-reducing genetic modifications through pest populations. Recently, the development of CRISPR-Cas9 gene editing has brought these approaches into sharper focus. Proof of concept for CRISPR-Cas9 based gene drives has been demonstrated for control of disease-vectoring insects.

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Population suppression drives might be employed to introduce and proliferate deleterious mutations that directly impact fitness and weediness, whereas population sensitizing drives would seek to edit weed genomes so that populations are rendered more sensitive to subsequent management interventions.

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The technical, biological, practical and regulatory challenges remain significant. Modelling-based studies can inform how and if gene drives could be employed in weed populations. These studies are an essential first step towards determining the utility of gene drives for weed management. This article is protected by copyright. All rights reserved.

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