

Gene technologies in weed management: what we need to know?

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Summary Contemporary gene technologies such as ‘gene silencing’ and ‘gene drive’ hold enormous potential to develop novel tools for weed management, and approaches to develop genetically-based tools are gaining significant momentum. These technologies can expose a variety of pathways for development of options for sustainable weed management. For instance, gene silencing can switch-off genes mediating adaptation (e.g. growth, herbicide resistance), and gene drive can be used to spread modified traits and to engineer wild populations with reduced fitness. Developing

and applying these technologies are expected to be inherently complex, however, as their application is constrained by several methodological, technological, regulatory, ecological (e.g. genome editing, delivery, resistance, reproductive biology) and ethical challenges. In this talk, we highlight these challenges and discuss strategies to accelerate the development of gene-tech based tools for weed control.

Keywords Gene drive, gene silencing, RNAi, CRISPR, gene-drive