

Demand for sustainable farming fuels growth of 'GMO-free' gene silencing tools to combat pests

Since its discovery more than 20 years ago, RNA interference (RNAi) has been extensively used in crop protection platforms. So far, RNAi approaches have been conventionally based on the use of transgenic plants expressing double stranded RNAs (dsRNAs) against selected targets.

However, the use of transgenes and genetically modified organisms (GMOs) has raised considerable scientific and public concerns. Hence emerged the need for alternative approaches that avoid the use of transgenes and resort instead to direct exogenous application of RNA molecules that have the potential to trigger RNAi.

Here, we highlight the most important advances in this field, discussing the various methods of RNA delivery in plants against diverse targets, such as plant genes, viruses, viroids, fungi, insects, mites, and nematodes. In addition, we examine the possible shortcomings of these methods, underline the critical parameters that have to be met for a desired outcome, and explore feasible possibilities to increase their efficiency and applicability, even against bacterial pathogens.

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In summary, exogenous application of RNA molecules with the potential to trigger RNAi is a very powerful tool in modern crop protection and improvement platforms, considering the political and public pressure for sustainable solutions to current agricultural problems.

Read full, original article: [GMO-free RNAi: exogenous application of RNA molecules in plants](#)