

OUR FIRST RESULTS TOWARDS THE USE OF RNAI FOR WEED MANAGEMENT

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Destaque: Exogenous application of dsRNA in rice leaves caused morphological changes compatible with PDS gene silencing, being a tool for use in other targets.

Resumo: Exogenous application of RNA molecules capable of activating the interfering RNA (RNAi) system in cells have been used in the attempt to control insects and diseases that affect the main crops. Gene silencing via RNAi can occur in the target cell by the supplying of RNA molecules in double-stranded RNA (dsRNA) or small-interfering RNA (siRNA). Thus, aiming at developing an efficient method of RNAi exogenous application in plant cells, we used a dsRNA targeting the Phytoene desaturase (PDS) as a gene silencing in rice (*Oryza sativa* L.), used as a plant model. We also temporally screened the phenotype upon dsRNA application. Many different delivery strategies were tested in rice leaves at V3 stage. The delivery of the dsRNA combined with sucrose and the adjuvant Silwet showed suitable results. The application of the mixture dsRNA+sucrose+Silwet using micropipette and microspray were the most efficient methods. The delivery strategies tested revealed the phenotype compatible with the silencing of the target gene, indicating that the delivery was efficient and that the dsRNA molecule used is capable of silencing the target. The optimal timing of target silencing was identified 72 hours after dsRNA application. The results obtained in this study provide basic and essential information for the development of a protocol for exogenous application of RNAi molecules inducing gene silencing with potential use in weed species.

Palavras-chave: gene silencing; dsRNA; exogenous application; *Oryza sativa* L.

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