

## **Gene Flow Analysis from rice Transgenic and nonTransgenic Rice into Weeds Rice Under Field and Greenhouse Conditions**

This work is part of a project directed to analyze the gene flow from non-transgenic or transgenic rice into wild/weedy relatives in the Neotropics, and its effect(s) on the population genetic structure of the recipient species. We used a randomized plot designs, when the plant were planting intermingled with 20% weedy rice simulating farmers field conditions and reflecting the economic threshold level for weedy rice infestation in Colombia. The purple variety was used as control. Hybridization rates of about 0.03% to 0.3% were registered when either transgenes or anthocyanin marker genes are used to trace gene flow in about 24,000 derived progeny plants, and confirmed by microsatellite markers. An optimized methodology using DNA bulk analysis allows the analysis of large number of seed samples, using microsatellite with a high precision to detect hybrid candidates. This methodology is useful for tracking and monitoring gene flow at large scale in farmers' fields and in crop-to-wild contact zones. Outcrossing rates are higher in manual crosses made under greenhouse conditions respect to natural hybridization in the field. In general, hybridization rates are also higher (at least 2 fold) when rice is used as the male parent, probably suggesting a preferential gene flow rate from rice into the weedy.

**Key words:** Gene flow, *Oryza sativa*, weedy rice, microsatellite.

**Thematic Area:** Plant Biotechnology

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