

# **Detection of GMOs: Phenotypic and Progeny Analysis**

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The development of efficient gene transfer methodology for the creation of large number of transgenic rice plants from cultivars being developed today provides an invaluable tool to plant breeders to address problems that are otherwise difficult to solve in conventional breeding. Such experiments will be incomplete, however, unless transgenic plants are tested for heritability, stability, and expression of the transgene.

## **Progeny Analysis**

The first generation positively transformed transgenic plants ( $T_0$ ) are grown in the transgenic greenhouse for  $T_1$  seeds. These seeds are then grown and assayed for reporter or selectable marker gene expression or for the biochemical assay of the transgene product. A 3:1 ratio for positive response should be detected for a single locus insertion.

## **Phenotypic Analysis**

Phenotypic analysis for transgene expression is always conducted starting the  $T_2$  generation of transgenic plants. This is so that ample seeds are available for the purpose. It is important that the conduct of phenotypic and progeny analysis should be conducted in accordance to the biosafety requirement of the National Committee on Biosafety of the Philippines (NCBP). A discussion of the greenhouse field-testing of IR 72-*Xa21* will be conducted in detail. The paper was published in the Journal of Crop Science.

## **The Concept of Transformation Event**

In any genetic engineering of crops, several transgenic plants can be obtained, each one of them having transgenes introgressed in their genome in a differently unique way or different transformation event. Using the many technologies for molecular analysis, biochemical protein analysis, progeny and phenotypic analysis, one or two transformants will stand out to be the best in terms of the gene expression they possess. Each individual plant is given a unique notation that will identify them from the rest of the other transgenic plants. So each one of these notations is a transformation event.

