

## Effects of pre-anthesis drought stress on yield components and seed quality of rice (*Oryza sativa* L.)

### ABSTRACT

Sufficient supply of high quality planting materials is vital for a successful rice production. Pre-anthesis drought stress significantly reduces yield components of the lowland cultivated rice hence scientific information on its effect on seed quality is still very much lacking. This study was conducted to compare the effects of pre-anthesis drought stress on yield components and seed quality of two rice genotypes, a drought tolerant Moroberekan (V1), and local drought susceptible MR297 (V2). Three durations of drought stress used in this study were well-watered condition (S1), five days stress duration (S2), and ten days stress duration (S3). Complete (100%) spikelet sterility was observed for MR297 as compared with Moroberekan (31%) under S3. The seed germination rate of Moroberekan was significantly lower ( $p < 0.05$ ) under S1 (48%) as compared with S2 (80%) and S3 (70%). However, embryo of the non-germinated seeds of Moroberekan were still alive based on tetrazolium test thus indicated that the seeds were still viable yet dormant. In contrast, seed germination rate of MR297 was not affected by pre-anthesis drought stress (88% for S1 compared to 93% for S2). Therefore, seeds of MR297 produced under pre-anthesis drought stressed condition could be safely distributed in rice seeds supply chain.

**Keyword:** Yield components; Seed quality; Pre-anthesis drought stress; Rice