PB-10 MAIZE UBI-*1PROMOTER*-MEDIATED EXPRESSION OF *ARABIDOPSIS* PHYTOCHROME A IN RICE

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Plants grown under far-red light-rich environment such as canopy and dense plant standing exhibit shade-avoidance response (SR) that reduces agricultural crop productivity by stimulating plant elongation growth at the expense of leaf growth and seed production. As phytochrome is a photoreceptor that modulates SR, we generated phytochrome A transgenic rice plants and characterized their growth under white and far-red light to elucidate the precise role of phytochrome A in rice for the SR.

The *Arabidopsis* phyA cDNA (*PHYA*) linked to maize *ubi-1* promoter was transformed into embryonic rice calli which were in turn generated into whole plants. The transgene was stably integrated in to rice genomeand expressed in to an active phytochrome A as judged by both Southern- and Western-blot analysis of the transformant. The phytochrome A expression level of the transformants was at least 50 times higher that that of wild type plant. When grown under far-red light, the cotyledon length of the transgenic seedlings was shorter than that of wild type seedlings, but red light did not significantly change cotyledon growth of the transgenic lines. When grown under sunlight, plant height and culm length of the transgenic plants were also shorter than those of wild type plant. These results suggest that the phytochrome A overexpression in rice may be able to suppress SA in paddy field where the long wavelength radiation predominates by the process of light absorption, reflection and scattering by the neighboring plants of dense planting.