

D-08: Low light adaptability of some rice varieties

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In certain periods of the year, due to thick cloud cover, irradiance becomes a limiting factor for the normal growth of rice (*Oryza sativa*). Under these conditions, rice yields may be significantly reduced. This could be remedied by cultivating low light adapted varieties. In this study, experiments were carried out to estimate the potential of some improved and traditional rice varieties for low light adaptability.

Two greenhouse experiments were carried out using 9 varieties of rice, namely Kuruluthuda Wee, Kuruluthuda, Deveredderi, Heen Dik Wee, Vellaikoluban, Pachchiperumal, Bg 407, Bg 450 and Bg 300.

The first experiment was designed according to Murty & Sahu (1987) to screen the varieties for low light adaptability. Screening was done using 17 day old seedlings grown in total darkness for 7 days. A visual evaluation of these seedlings showed that Bg 300 was the most adapted and Vellaikoluban the least adapted of the varieties used.

The second experiment was designed to study the response of rice varieties to low light intensities. Three different light intensities namely 100% day light, 70% daylight and 30% daylight were used. The parameters measured in order to study the responses were: total chlorophyll, chlorophyll a/b ratio and leaf area (fresh weight). After growing the rice plants for one month in these light conditions, total chlorophyll (expressed in fresh weight basis) and leaf area (fresh weight) increased with decreasing light intensities, whereas chlorophyll a/b ratio decreased. The changes of the measured parameters were very prominent in low light adapted varieties.