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Poster

WEED COMPETITIVE RICE GERMPLASM; TOWARDS MINIMIZING HERBICIDE USAGE IN FUTURE

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ABSTRCT

Crop competitiveness against weed is the ability to maintain higher yields under weedy conditions. During green revolution varieties with erect leaves were promoted in order to have the low mutual shading effect which allowed direct sunlight to reach the ground and promoted weed emergence. In general, traditional varieties having more droopy leaves cover ground well, preventing weed emergence. Early droopiness of leaves and allelopathic effect of rice varieties are some characteristics which help them to be more weed competitive. Therefore, a necessity has arisen to screen weed competitive rice accessions. In order to find out such plants, a field experiment was conducted in a Split Plot Design (SPD) with three replicates where main plots were two levels of weed infestation (weed-free and weedy) and sub plots were 10 rice varieties namely At 306, AERON 9-3, Bg 352, AERON 10-26, At 10-1240, IR09N247, Zhonghua, Bw 11-3403, At 10-1327 and Suwandal. The experiment was established at the Rice Research and Development Institute, Batalagoda during 2015 *Yala* and 2015/2016 *Maha* seasons. Plot size was 18 m^2. Wet- Direct seeding at a rate of 100 kg/ha was practiced as the crop establishment method which is the most common establishment method in Sri Lankan paddy farming. Weed counts at six weeks after establishment, weed dry weights at six weeks after establishment, plant height at weekly intervals, leaf length at weekly intervals, and percentage canopy closure using Beaded

String method at weekly interval till varieties reach 100% ground cover and final grain yield were measured. Yield reduction percentage for each rice variety was calculated by formulae; (Yield Reduction %= [(Yield under weed-free –Yield under weedy)/ Yield under weed-free] x 100). Weed competitiveness was calculated according to formulae introduced by S. S. Harding and A. B. Jalloh. Data were analyzed using SAS software employing GLM procedure. Percentage data were subjected to Arc-sign transformation prior to SAS analysis. Varieties AERON9-3, AERON10-26, Zhonghua, Bw11-3403, At10-1327 showed competitiveness values > 0.88 and < 15% of yield reduction over weed free condition in both seasons. These lines showed a faster canopy closure over the time compared to other tested lines which is a favourable character for weed suppression. This weed competitiveness character can be used in future breeding programs. It will enable minimizing chemical herbicide usage in future.

Key words: Weed Competitiveness, Canopy Closure, Yield Reduction