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EFFECT OF PRESOWING SEED TREATMENT ON GROWTH OF WEEDS AND PERFORMANCE OF UPLAND RICE UNDER VARYING WEED SITUATIONS

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ABSTRACT

Field experiments, aimed at minimizing the crop-weed competition in upland rice using non-chemical (seed invigoration) weed management practices, were carried out for two consecutive years during wet season at the research farm of Central Rainfed Upland Rice Research Station, Hazaribag, Jharkhand, India. Seed invigoration involved three thermal hardening (seeds subject to alternate temperatures; 43/28, 39/28, 35/28^{o}C), two hormonal priming (50 and 100 ppm GA_3), one nutrient priming (K-salt solution @ 4%) and one hydro priming treatment (wetting and drying).Untreated seeds were used in the control treatment for making comparison with aforesaid invigoration treatments. Two weed regimes were single and two hand weeding. Supplementary laboratory and tray studies were also carried out to optimize the seed treatments and corroborate the findings related to growth and vigor obtained from field experiments. Results revealed that thermal hardening attained subjecting seed to alternate temperatures (43/28^{o}C), seed priming, and hormonal priming with 100 ppm GA_3 proved better in weed suppression and produced higher grain yield than untreated seeds. Furthermore, integration of application of hormonal priming using GA_3 @100 ppm with thermal hardening improved rice productivity by influencing growth and yield attributes of rice and reducing the weed pressure due to improved crop-competitive ability Combining seed treatment with effective weed management proved successful approach for improving rice productivity.

KEYWORDS: Weed Control, Seed Treatment, Invigoration, Upland Rice, Crop-Weed Competition