IMPACT OF PULSED ELECTROMAGNETIC FIELD TREATMENT ON SEED YIELD AND QUALITY OF SOYBEAN

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An exposure of seeds to pulsed electromagnetic field (PEF) before planting is known to change and stimulate a series of biochemical and biological effects in the seeds. The plants raised from such PEF treated seeds are reported to perform better in the field by exhibiting increased field emergence, vigorous growth and increased seed yield and quality. The field experiment was carried out with two soybean seed lots viz., fresh and revalidated seed lot and five pulsed electromagnetic field treatments viz., 0 Hz (control), 1 Hz, 10 Hz, 50 Hz, and 100 Hz to study the effect of PEF treatments on seed yield and quality parameters in soybean over two seasons (2012 and 2013).

The pooled analysis indicated significantly highest number of pods per plant (55.53), pod length (4.60 cm), number of seeds per pod (3.42), seed yield per plant (23.35 g) and seed yield (22.63 q/ha) and seed recovery (77.78%) in the 50 Hz PEF treatment as against other PEF treatments and control. In respect of seed quality parameters, significantly higher 100 seed weight (12.30 g), seed germination (92.5%), shoot length (15.82 cm), root length (17.98 cm) seedling length (33.80 cm), seedling dry weight (1.134 g), seedling vigour index- I (3127), seedling vigour index -II (104.91), seed protein (37.65%), seed oil (18.04%) content and lower electrical conductivity of seed leachates (0.356 dSm-1) were recorded in the 50Hz PEF treatment as compared to other treatments. Application of 50 Hz pulsed electromagnetic field treatment is better for getting higher soybean yield.

Key words: pulsed electromagnetic field (PEF), Seed yield, Seed quality, Soybean