

ASSESSING COMPATIBILITY OF *RHIZOBIUM* INOCULUM, FUNGICIDE, INSECTICIDE, AND SEED COATING POLYMER ON ROOT NODULATION, AND YIELD FORMATION ON SOYBEAN

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Soybean seeds lost their viability, and germinability quickly due to multiple factors during establishment. Seed coating materials were reported to improve the germination, and stand establishment in changing soil moisture levels in field conditions. Embedding a fungicide, and an insecticide to a seed coating polymer can reduce the risk of crop loss due to disease incidences during establishment. A field experiment was conducted to evaluate the compatibility of *Rhizobium* inoculum with a fungicide, an insecticide, and a seed coating polymer in combination on root nodulation, and yield of soybean at the Field Crop Research and Development Institute, Mahailuppallama during Maha 2020/2021. Experiment was laid out on a Randomized Complete Block Design with six treatments, and three replicates. Coated seeds, and non-coated seeds were tested, and seeds were coated using a polymer recommended of Okra at a rate 2g per 1kg of seeds. Fungicide (Thiophanate methile 50% + Thiram 30% i.e., *Homai*), and insecticide (Thiamethoxam i.e., *Cruser*) were added at a rate of 2g per 1kg of seeds. Peat based *Rhizobium* inoculation (*Ranilasara*) 250g ha^{-1} was used, and at each level, a benchmark was used for contrasting. Germination, growth, nodulation, and yield performances were measure at critical stages of the crop. Germination percentages of all treatments were similar ($p>0.05$) at 15 DAS. Leaf area index, plant dry weight, and weight of nodules were similar across treatments ($p>0.05$) at 50% flowering stage. The root, and nodule related parameters, yield related parameters, and final seed yield were not different among treatments ($p>0.05$). The combination of a fungicide, and an insecticide did not hinder the performance of the crop, and further showed no negative impacts with a presence of inoculum, and coating polymer. The technique can be useful in safeguarding soybean crops from disease incidents in field condition effectively.

Keywords: Fungicide, Insecticide, Rhizobium inoculum, Seed coating, Soybean