

**MULTI-NUTRIENT SEED COATING AS A PLANT NUTRIENT
DELIVERY SYSTEM FOR RICE VARIETY 'Bg358'**

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Nutrient seed coating is an effective technique for improving seedling performances in many resources limited cropping systems, globally. However, effects of nutrient coating on germination and initial seedling vigour of rice was never tested in Sri Lanka. This study was designed to analyse the characteristics of novel multi-nutrient seed coating (MNSC) and assess the impact of MNSC on germination and early vigour of rice seedlings. The experiment was laid out as a Completely Randomized Design with three replicates under laboratory conditions. Seeds of rice variety, Bg358 were coated manually. The coating treatments included three types of multi-nutrient slow release compounds; T₁: N + growth promoting factor + Na + P, T₂: N+ growth promoting factor, T₃: N + Zn + K + P and three different combinations of starting materials of the above-mentioned compounds (T₄, T₅, and T₆). Naked rice seeds were maintained for comparison as a control (C). Slow-releasing behaviour of N in three types of MNSCs and their starting materials were studied through FT-IR spectroscopy. A germination study was carried out and the germination percentage was recorded seven days after incubation. Separate initial seedling growth study was carried out and shoot height, root length, SPAD reading, and seedling dry weight at 14 days after sowing were measured. Data analysis was done using an ANOVA and a contrast mean separation. FT-IR study revealed that N concentrations diffused from MNSC compounds were lower in water than the other starting materials. Seed germination was 100% for MNSC Bg358 seeds, while the initial compounds coated seeds resulted 94 – 96% germination. In contrary, germination of naked Bg358 seeds was 89%. The MNSC Bg358 seedlings showed significantly higher ($p < 0.05$) growth performances for shoot height, root length, SPAD reading and dry weight compared to the seedlings of the control. The slow-releasing behaviour of MNSC showed a potential of enhancing germination ability and early vigour of Bg358 rice seedlings.

Keywords: Early vigour, Multi-nutrient seed coating, Seed germination