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The Effect of Seed Bio-invigoration Using Indigenous Rhizobacteria to Improve Viability and Vigor of Upland Rice (*Oryza sativa* L.) Seeds

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Abstract : Seed vigor and germination ability directly affect seedling emergence and yield. Seed bio-invigoration using indigenous rhizobacteria was studied to improve viability and vigor of upland rice seeds. The research design using completely randomize design (CRD) with eighteen treatment ie. Control, Dithane, Hydration, KNO_3 + *Bacillus* sp. CKD061, KNO_3 + *P. fluorescens* TBT214, KNO_3 + *Serratia* sp. CMN175, NaCl + *Bacillus* sp. CKD061, NaCl + *P. fluorescens* TBT214, NaCl + *Serratia* sp. CMN175, matriconditioning using ground burned-rice husk + *Bacillus* sp. CKD061, matriconditioning using ground burned-rice husk + *P. fluorescens* TBT214, matriconditioning using ground *burned-rice* husk + *Serratia* sp. CMN175, matriconditioning using ground brick + *Bacillus* sp. CKD061, matriconditioning using ground brick + *P. fluorescens* TBT214, matriconditioning using ground brick + *Serratia* sp. CMN175, *Bacillus* sp. CKD061 + *P. fluorescens* TBT214, *Bacillus* sp. CKD061 + *Serratia* sp. CMN175, *P. fluorescens* TBT214 + *Serratia* sp. CMN175, with three replication. Research showed that seed bio-invigoration with *Bacillus* spp. CKD061 integrated with ground *burned-rice* husk or ground brick give the highest maximum growth rate, germination rate, relative growth, vigor index, and T_{50}. Seed treatment with *Bacillus* spp. CKD061 integrated with ground burned rice husk increased vigor index by 63% when compared to control.

Keywords : Bio-invigoration, Indigenous rhizobacteria, Upland Rice, Seed Viability and Vigor.

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