Estimated Adoption and Economic Impact of *Trichoderma koningii* in the Philippines

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Abstract

This study summarizes evidence of adoption and outcomes using the fungi *Trichoderma koningii* in highland agriculture in the Philippines and estimates the economic rate of returns to *T. koningii* R&D. Adoption rates were estimated from sales data of *T. koningii* pure culture and net incremental changes based on reviewed field experiments in the Cordillera Region, Philippines, and partial budget analysis based on farmer interviews. Findings showed that *T. koningii* is being used mostly by organic and good agricultural practice producers as biofungicide for disease management and as soil nutrient and compost enhancer. *T. koningii* pure culture annual growth rate of sales was at 30%, and overall adoption rate in Benguet in 2018 was estimated at 0.4% of total farm area. Identified constraints to adoption are high price, misconception that *Trichoderma* is for organic farmers only, slow effect of the technology, limited information, and limited market outlets and marketing strategies. The estimated change in yield due to the use of *T. koningii* ranged from 10% to 50% based on farmer interviews and 4% to 92% based on field experiments on various crops and uses. The net present value assuming a 10% real social discount rate is PhP 4.29 million (USD 8.3 M), and the rate of returns for the Philippine government investing resources in *T. koningii* development and promotion is estimated at 49% considering a ten-year period. Assuming the lowest estimate of net benefit at PhP 28,528 ha^{-1} (USD 544 ha^{-1}) and twenty years duration, the internal rate of return is 13%. The study contributes support to policy of continued government funding for effective biological control R&D.