



# Use of organic soil amendments to improve soil health and yield of immature pepper (*Piper nigrum* L.)

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**Abstract** At present, there is little information on the effects of organic amendments on black pepper farms particularly in Sarawak, Malaysia. The objective was to study the effects of organic amendments on selected soil properties, morphological

characteristics, and yield of immature vines and its economic viability on immature pepper productions. There were five treatments each replicated five times in a randomized complete block design. Treatments were (i) F0—NPK 15:15:15 compound fertilizers, (ii) F1—fermented plant juice (FPJ), (iii) F2—FPJ incorporated with biochar, and compost, (iv) F3—fermented fruit juice (FFJ), and (v) F4—FFJ incorporated with biochar, and compost. The soil organic amendments which were consisted of fermented juices, biochar, and compost have positively improved soil bulk density, soil porosity, pH, CEC, TOC, C/N ratio, available P, exchangeable Ca, soil respiration, and soil microorganism count (bacteria, actinomycetes, and fungi). The fermented juices only or fermented juices with biochar and compost had lower effect on LAI and fruit spike length. The effect of soil organic amendments on fresh berry yield was comparable to that of NPK fertilizer. The economic viability study showed that the organic approach was comparable to the conventional NPK fertilization program. Through the interaction of beneficial microorganisms, biochar, and compost, introducing organic amendments in immature pepper cultivation is a reasonable option due to its contribution to yield that can lead to income sustainability for farmers.

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