

USE OF BIOLOGICAL ORGANIC FERTILIZERS AND PESTICIDES TO IMPROVE POTATO CULTIVATION IN SLOPE ANDISOLS

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Abstract	<p>In the 1990s, potato yield in the Andisols of Dieng, Central Java, Indonesia, was approximately 30 t ha⁻¹, but this value decreased rapidly to 12 t ha⁻¹ in recent years. This rapid decline could be attributed to the use of unbalanced organic and chemical fertilizers, without the application of conservation techniques. Therefore, this study aimed to sustainably improve the local potato cultivation pattern of farmers on Andisols using biological organic fertilizers and pesticides (BOFP). A randomized block design was used with two factors, namely: 1) 20 t BOFP, 300 kg Urea, 500 kg SP 36, 300 kg KCl, and 200 kg lime ha⁻¹, and 2) comparison with the pattern of farmers, consisting of 20 t of chicken manure, 1 t NPK, and 250 kg ZA ha⁻¹. The potato plant mounds were tilted 10% to the contour direction, and each treatment was carried out with 16 replications. Granola seeds were used to plant potato during the rainy season from March-June 2022. The results showed that the plants cultivated using the local pattern of farmers were affected by wilt from <i>Fusarium</i> spp, while the use of BOFP decreased the incidence of the disease by 80%. Furthermore, the BOFP pattern significantly increased Andisols organic-C from 1.78% to 3.83% and total soil P from 5.20% to 11.34%, compared to the pattern of farmers. It also increased potato yields from 12.31 t ha⁻¹ to 22.93 t ha⁻¹ and the R/C from 0.85 to 1.23, compared to the pattern of farmers. Based on the results, the use of BOFP pattern decreased wilt attacks by <i>Fusarium</i> spp, improved the productivity of Andisols, as well as increased potato production and profits of farmers.</p>
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Author	AKHMAD RIZQUL KARIM, S.P, M.Sc.