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Identification of volcanic ash and soils, remediation of degraded soils after the recent eruption of Mount Sinabung in Karo highlands North Sumatra, Indonesia

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Volcanic ash, emitted by Mount Sinabung in Karo Highland, North Sumatera Indonesia since September 2013 up to February 2015 from different locations were evaluated for its agricultural soil fertility value. Volcanic ash and soil samples were collected from 6 villages related to the distance from source and distribution area of volcanic ash. The objective of the study is to estimate the agronomic potential soil fertility and to find out some methods of soil remediation. This preliminary research focused on the evaluation based on soil fertility criteria and measurements of soluble nutrients and total elements which determined with various solutions and standard methods. Generally, the results showed the available or soluble nutrient in the volcanic ash of Mt. Sinabung were very high in iron content (vary from 2500 ppm to 3887 ppm) followed by sulfur (130-222 ppm), manganese (56-67 ppm), and low content in potassium (0.15–0.36 me/100 g), calcium (3.12–7.64 me/100 g), sodium (0.027-0.56 me/100 g), and magnesium (0.15-0.36 me/100 g), with pH(H₂O) value vary from 3.5 to 4.8 and texture of volcanic ash was loamy sand. While the total elements in volcanic ash has the highest content of SiO₂ (84.72%), followed by Al₂O₃ (7.12%), and SO₄ (5.66%), MgO (0.37%), Na₂O (0.30%), K₂O (0.27%), CaO (0.20-0.25%), Fe₂O₃ (0.10-0.21%), P₂O₅ (0.05-0.16%), and MnO (0.01-0.02%), respectively with pH value of 3.5 to 4.8. Generally, the available nutrients of the volcanic soils around the slopes of Mt. Sinabung are dominated by calcium (2.02-6.04 me/100 g), magnesium (0.24–2.42 me/100 g), potassium (0.28–1.48 me/100 g), sodium (0.10–0.24 me/100 g), P₂O₅ (0.02–1.48%), K₂O (0.12-0.55) < P-Olsen (26–408 ppm), respectively with pH range from 3.7 to 6.8 and soil texture was loamy sand. The eruption of Mount Sinabung has impact in light and heavy damage on agricultural commodities and land in the 3 sub districts covering sub district Naman Teran in about 5467 ha area, subdistrict Simpang Empat about 3888 ha, subdistrict Payung in about 2325 ha of land. Series of experiments are still on going.

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Estimation of physical and financial value of post-harvest losses in millet from harvest to store in Kebbi, Sokoto and Federal Capital, Nigeria

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Post-harvest loss is every crop, livestock or food affair. The study examined post harvest losses in millet from harvest to store by vulnerable households in Kebbi, Sokoto and Federal Capital in the territory, Nigeria without considering all the other part ways along the food chain. At first, two communities were chosen from Bwari LGA in Federal Capital Territory, two communities from two LGA of Kebbi state and 8 communities from 4 LGA of Sokoto State with a total of 70 villages were chosen. Five respondents were chosen randomly from each village given a total sample size of 350 respondents. Primary data were collected through the use of detail questionnaire administered to respondents. Data generated were subjected to budgetary and descriptive analysis. Results indicate that 2 Kgs were recorded as losses per vulnerable household per day with a financial value of 160 Naira. The loss is substantial if considered on monthly or annual basis and the entire vulnerable household. The loss represents 25% of the annual yield of respondents.

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