

Usage of seaweed base organic fertilizer as yield booster at volcanic soil: effect on soil quality and yield of patchouli (*pogostemon cablin*)

ABSTRACT

Patchouli (*Pogostemon cablin* Benth.) is a bushy herb and native to tropical region of Asia, and now cultivated for its essential oil which usually used in perfume productions. It is also widely been used throughout the world to treat skin conditions, relieving depression, controlling appetite, and antifungal agents. It is cultivating commercially in Tawau, Sabah for export purposes and the average oil production is up to 26–29 mt per acre in 2016. As they enter the second and third harvesting cycle, the production starts to decline and reach 2.6 mt of oil per acre. This drop-in yield is thought to be either due to soil variabilities, low nutrient levels in volcanic soil, and diseases. Soil nutrient analysis and leaf coloration patterns are studied before conducting the study. Seaweed extract, banana peel, the mixture of Seaweed extract and banana peel, and pre-formulated 12-12-12 (N-P-K) organic fertilizer (PFF) fertilizer treatments were engaged in the Patchouli plot field experiment. Besides, the agronomical practice for the cultivation of Patchouli is well documented. The pre-study showed that the study plot has a very low conductivity level, a very low organic Carbon level and low Cation Exchange Capacity (CEC) level. Meanwhile, there were no diseases or nematode occurrences in the area. Plant height, soil pH, and soil conductivity were studied with all the four treatments that have shown a positive significant impact compared with standard estate practice. The treatments using seaweed and seaweed mixture had the highest significant level with a slight reduction in soil pH. Whereas plant height data analysis showed that the seaweed mixture was significantly different compared with other treatments at a 0.05 level. Hence, we recommend the Patchouli plantation to use organic fertilizers including the mixture of seaweed since it is cheap and easily available in Sabah.