Soil potassium nutrient, temperature and rainfall required to generate 'honey taste' of cilembu sweet potato

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Indonesia produces normal and “honey taste sweet potatoes” (HTSP), but soil properties and climate factors that govern the unique honey taste and its sugar content have not yet comprehensively evaluated. The objective of the study was to assess and evaluate the soil nutrients and climate factors generating honey taste of Cilembu Rancing cultivar. Soils and plant tissues were sampled at different elevations for various macro- and micro-nutrient analyses and that tubers for sugar analysis. Results showed that the most suitable climate to produce the highest vine and tuber weight, and total tuber sugar of the HTSP was monthly temperature of 21–22oC occurring at 870–917 m soil elevation with monthly rainfall of 96-199 mm. The K nutrient was responsible in part to the high production and total sugar as revealed by significantly positive correlation between soil available K against K content of leaves and tubers, fresh weight of vines and tubers, and total sugar of tubers. The honey taste was driven by type of dominant sugar: fructose > sucrose > glucose. The balance of N, P, K, Ca and Mg to support generation of HTSP for Rancing cultivar was 2,067, 25, 304, 1,824 and 260 mg kg-1 soil, respectively. Further, the content of Fe, Mn, Cu and Zn micronutrient was 29, 177, 4 and 2 mg kg-1, respectively. Findings of climate factors and soil nutrients required by HTSP in this study could be used as a guidance to select the new areas for massive development of honey-taste sweet potato.