

**THE EFFECT OF APPLYING BOILER ASH AND PALM OIL MILL
WASTE SLUDGE ON CHANGES IN THE CHEMICAL PROPERTIES OF
PEAT SOIL**

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ABSTRACT

The utilization of peat soil is faced with various problems regarding soil fertility such as low pH, poor in macro nutrients such as N, P and K, making it difficult to be utilized as agricultural land. This study aims to determine the effect of giving oil palm waste boiler ash, oil palm waste sludge and a combination of both on the availability of pH, N, P, and K in peat soil. This research method uses the Completely Randomized Design (CRD) method consisting of 2 factors. The first factor is oil palm waste boiler ash (A) which consists of 4 treatment levels, namely 0 gr / 2 kg of soil, 20 gr / 2 kg of soil, 100 gr / 2 kg of soil, and 180 gr / 2 kg of soil, while the second factor is oil palm waste sludge (S) which consists of 4 treatment levels, namely 0 gr / 2 kg of soil, 20 gr / 2 kg of soil, 100 gr / 2 kg of soil, and 180 gr / 2 kg of soil, so that there are 16 treatment combinations, each treatment combination consists of 3 replications so that 48 experimental units are obtained. The parameters analyzed were pH, total N, available P, and available K. To determine the effect of treatment, observation data were analyzed using analysis of variance (ANOVA) followed by using Duncan Multiple Range Test (DMRT) at the 5% level. The results showed that the provision of boiler ash showed an increase in the parameters of available P and available K compared to peat soil before treatment, while the provision of palm oil waste sludge showed an increase in the parameters of total N and available P. The application of a combination of boiler ash and palm oil mill waste sludge (A3S2) showed an interaction with the pH parameter. The best combination of treatments to increase pH was boiler ash 45 tons/ha or equivalent to 180 gr/2 kg of soil and sludge 25 tons/ha or equivalent to 100 gr/2 kg of soil.

Keywords: N, P, K, peat soil, boiler ash, sludge.