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# Activity of Non Productive Coal Powder and It's Humic Matter Extracted with Fertilizer to Improve Soil Chemistry Properties of Ultisol

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## ABSTRACT

Ultisol is one of minerals acid soil have low productivity for crops, it caused strong acid of soil reaction, low nutrient available, and high adsorption of Phosphorous (P). An increase productivity of Ultisols can be done by adding organic substances, like humic matter from non productive coal powder (*subbituminous*) which have a high reactivity and cation exchange capacity. Preliminary experiments, aims to examine the level of reactivity and solubility powder and humic substance of *subbituminous*. The trial continued with the test capability of *subbituminous* powder and its humic matter with mixed or extracted with artificial fertilizers (Urea and KCl) and NaCl and NaOH which have best chemical soil properties and characteristics that will be divided from preliminary research (125 % R for Urea and KCl and 0.25 N for NaCl and NaOH) that incubated with soil to improve soil chemistry properties of Ultisol. The results of this research are : Urea, KCl, and NaCl are more able to dissolve the powder of *subbituminous* and produce these humic materials, but Urea has a higher capacity than the KCl and NaCl and same ability with NaOH. In preliminary experiments obtained 125% recommendation dose for Urea and KCl, while the concentration of NaOH and KCl is 0.25 N, both mixed with powdered *subbituminous*, and it's humic matter obtaining the solubility, CEC and pH optimum. Improving the quality of Ultisol can be achieved by the addition of powder *subbituminous*, either in the form of powder or humic material. In technological applications of fertilizer and added of soil organic matter can be used mixture of Urea in dose 125% recommendation and concentration of 0.5% *subbituminous* powder.

**Keywords:** Ultisol; *Subbituminous* powder; Humic matter; Urea; KCl; NaCl; NaOH