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Application of Empty Fruit Bunches of Oil Palm and *Indigofera zollingeriana* for Conservation of Oil Palm Plantation

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ABSTRACT

Oil palm empty fruit bunches are materials used as organic fertilizers that can be applied to oil palm plantations, thereby reducing the use of inorganic fertilizers. *Indigofera zollingeriana* is an appropriate alternative as an interplant because of its high branch and leaf development. Functions as a ground cover and a supplier of carbon stocks naturally plays a role in water and soil conservation. This study aims to determine the effect of oil palm empty fruit bunches and *I. zollingeriana* on land improvement to support oil palm growth and production. Variables observed included changes in soil water content, soil microorganism activity, and carbon stock. The results showed that the soil planted with *I. zollingeriana* and given the empty fruit bunches of oil palm had a higher soil moisture content. The highest soil carbon stock, oil palm carbon stock, and vegetation carbon stock were 81.6 t ha⁻¹, 36.60 t ha⁻¹, and 1.89 t ha⁻¹, respectively. The population and activity of microorganisms varies. The highest total microorganisms were treated with *I. zollingeriana* and oil palm FFB 1.05 (1.0⁴CFU g⁻¹), while the lowest was 60 (10⁴CFU g⁻¹). Planting *I. zollingeriana* and providing oil palm empty fruit bunches increased groundwater reserves by 36.71%.

Keywords: Carbon stock, *Indigofera zollingeriana*, Microorganisms