



## Research projects of counterparts funded at UNJA in 2021

Name	Counterpart	Title
<b>Asmadi Saad, Kurnia Irvanda, Dwiana Ocviyanti</b>	<b>A01</b>	Physical characteristics of peat in various land use in Bram Itam Raya Village, Bram Itam District – Jambi

### Background and Objectives

The area of peatland in Indonesia is estimated at around 14.95 million ha, spread over the islands of Sumatra, Kalimantan and Papua, and a small portion in Sulawesi (Wahyunto *et al.*, 2013). Thick peat deposits accumulate as a result of conditions such as low topographical support, high biomass production and rainfall as well as tidal influences. Incorrect water management is the main cause of peatland degradation (Masganti *et al.*, 2014). This degradation is mainly related to the conversion of peatland for agriculture, such as oil palm plantations, mixed garden and other plantation crops, the depletion of the peat layer by drainage activities, and the destruction and depletion of the peat layer by fire events (Kurnain, 2006).

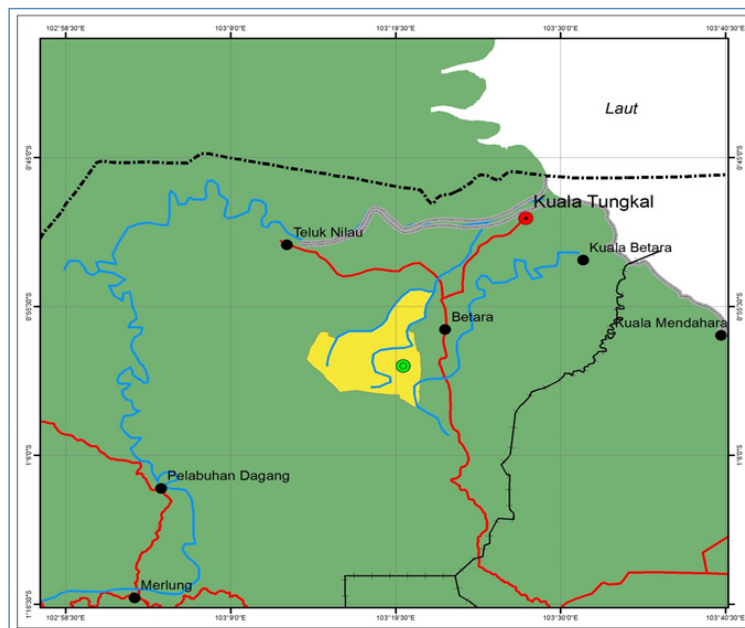
The characteristic physical property of peat is its very low volumetric weight compared to mineral soils. Peat can absorb water up to 13 times its weight. When the water content is <100%, the peat loses its ability to absorb water (irreversible drying) and becomes dry organic matter that is not suitable for use as a planting medium and loses its function as soil (Agus and Subiksa, 2008). Peatlands are very fragile soils and their productivity is very low.

This study aims to investigate the relationship between the physical characteristics of the soil peat and ash content in several land uses in Bram Itam Raya village, Tanjung Jabung Barat District Jambi

### Material and Methodology

The research was conducted in the village of Bram Itam Raya whose area includes the Bram Itam Peat Protected Forest, Tanjung Jabung Barat Regency, Jambi Province (Fig. 1). The research was conducted from May to November 2021. Observation were conducted at three locations, namely Bram Itam Raya 1 (BIR1), Bram Itam Raya 2 (BIR 2) and Bram Itam Raya 3 (BIR3) with sequential land use Oil palm, mixed plantations and Forest (Picture. 1).

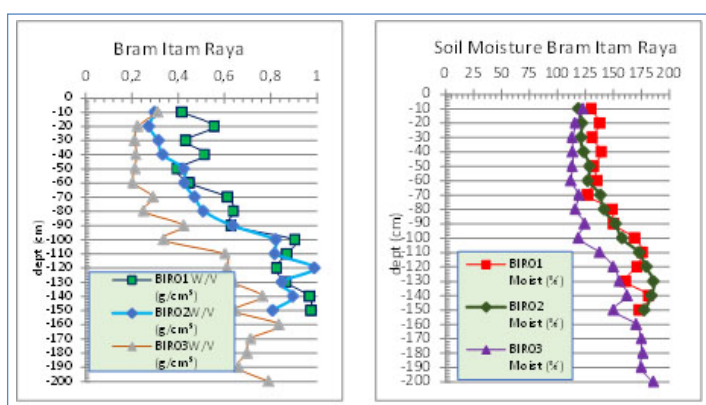
Soil samples were collected using a soil Auger (Core). Soil weight volume (W/V), soil moisture, ash content and C-organic were analyzed every 10 cm. Volume weight and water content were analyzed by gravimetry, while the ash content and C-organic were analyzed by combustion – Lol (furnace).



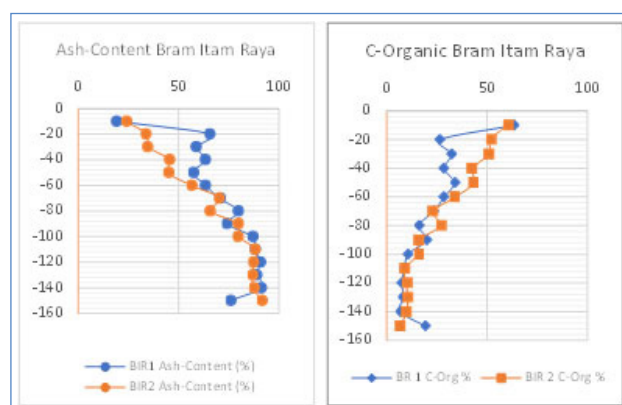
**Figure 1.**  
Map of Location Bram Itam Raya



**Picture 1.** Field work activities



**Figure 2.** W/V (gr/cm<sup>3</sup>) and Soil Moisture (%)



**Figure 3.** Ash content (%) and organic C (%)

## Result and Discussion

The value of the weight volume (W/V) of soil at the Bram Itam Raya location varies slightly. The highest value is at the BIR01, followed by BIR02 and BIR03 (Fig. 2). It can be concluded that the other three locations, namely oil palm land use, mixed plantations and forest have slightly different characteristics since they are located in the transition zone of peat to minerals and near the river. This is an indication that the peat is mature (sapric) and the composition of the peat is mixed with sand/clay grains due to flooding and the influence of tides. Soil moisture more than 100 % indicates water level influenced by tides twice a day (diurnal).

A high ash content shows that peat is mixed with sand/clay grains due to flooding from river and tides (Fig. 3).

## Conclusion

Physical characteristics of peat in various land use in Bram Itam Raya Village influenced by mixed of sedimentation from flooding and tides. W/V higher at oil palm than mixed garden and forest.

## References

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