

Research projects of counterparts funded at UNJA

Name	Counterpart	Title
Bambang Irawan Gindo Tampubolon, Hasbi Hasibuan (PT. Humusindo)	B11	Effects of fertilizer regime and time of planting in a Biodiversity Enrichment Experiment

Background

In reference to the B11 Biodiversity Enrichment Experiment of EFForTS we applied a similar scheme at a large-scale oil palm plantation at PT. Mekar Agro Sawit (which belongs to PT. Humusindo Makmur Sejati) located in Aur Gading, Jambi. We specifically wanted to assess the effects of fertilizer and time of planting on the growth and survival rate of the trees and the production of oil palms.

Objectives

The specific objectives were: (1) to study the interaction between the age of the oil palms when the enrichment trees were planted and the fertilizer regime, (2) to study the impact of the age of the oil palms when the enrichment trees were planted on the growth and survival rate of the trees and production of oil palm and, (3) to study the impact of fertilizer on the growth of trees and the production of the oil palms.

Method

The experimental applied a split plot randomized design with the age of oil palm as the main plots and fertilizer regime as the sub plots. The first factor consisted of three levels: a1, one year old oil palm; a3, three year old and a5, five year. The second factor consisted of two levels: f0, no additional fertilizer to trees and f1, additional fertilizer calculated based on soil nutrient content. There were thus six treatment combinations each with five replicates. There was therefore a total of 30 plots.

Four different tree species were selected based on economic considerations. These were, in the main, the economic value of their products and their ecological effects. The selection consisted of two fruit tree species petai (Parkia speciosa) and jengkol (Archidendron pauciflorum). And also two wood producing species bulian (Eusideroxlyon zwageri) and sungkai (Peronema canescens). A total of 600 trees were planted, 150 of each species. Each enrichment tree was planted centrally between four oil palm trees.



Figure 1. a) Bulian (*Eusideroxylon zwageri*) 6 months after planting, **b**) Jengkol (*Archidendron fauciflorum*) 6 months after planting **c**) Petai (*Parkia speciosa*) 6 months after planting **d**) Sungkai (*Peronema Canescens*) 6 months after planting.

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Results

Preliminary measurements of height and diameter of trees planted in the oil palm landscape are depicted in figure 2 and figure 3, respectively. Jengkol had the highest standard deviation for height and also for diameter. Petai has the lowest standard deviation on both measures. Bulian has the greatest mean height and the biggest seedlings compared to other species and petai the smallest seedlings. Details of height and diameter performance of each species in each of the treatment combinations show the variability between treatments.



Figure 2. The mean height (cm) of each species in each of the treatment combinations.



Figure 3. The mean diameter (mm) of each species in each of the treatment combinations.

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