EKARISA WHANA ROSITA. Sensitivity of Palm Oil Production (*Elaeis guineensis* Jacq.) to Rainfall Variability Due to The Climate Deviation Impact. This study was supervised by YON SUGIARTO.

The aims of this study is to assess the impact of ENSO (El Nino and Southern Oscillation) and IOD (Indian Ocean Dipole) to rainfall variability in Marihat and Bekri Plantation and the reaction with palm oil production. The correlation between those ENSO and IOD events with rainfall variability and palm oil production was analyzed using Canonical Correlation Analysis. This method uses two variables, which are rainfall and palm oil production as a Dependent variables and SOI (Southern Oscillation Index), Sea Surface Temperature Anomaly of Nino 3-4 region (120°W-170°W and 5°S- 5°N) and DMI (Dipole Mode Index) as an Independent variables.

The result of this study indicates that SOI, SSTA and DMI not closely related to rainfall in those two plantations area. Statistical analysis revealed that ENSO and IOD significantly related to rainfall in Marihat plantation on the same month until 4th month (lag 0-4) and on the 8th - 12th month (lag 8-12). Fluctuation of palm oil production due to the impact of ENSO and IOD will start on 4th-11th month after water stress occurrence. The most impacted area in Marihat Plantation is Helvetia. In Bekri plantation, the correlation between climate deviation and rainfall is stronger. According to statistical analysis, ENSO and IOD significantly related to rainfall in Bekri plantation on the same month (lag 0) and 7th – 9th month (lag 7-9). It means that the impact of ENSO and IOD to fluctuation palm fruit production will be on the next 7th – 9th month after water stress occurrence.