ABSTRACT

SELVIE D. ANIS. Study of Brachiaria humidicola (Rendle) Schweick persistency growth underneath coconut plantation after grazing. Supervised by M. AHMAD CHOZIN as the chairman, SOEDARMADI HARDJOSOEWIGNYO, MUNIF GHULAMAHDHI, and SUDRADJAT as members of the advisory committee.

Actually, a combination of pasture and cattle system on coconut plantation is not a new practice. In fact, it has been applied for years in Indonesia but no promising results yet. This practice has always ended up with the so-called pasture run down. Therefore, it is not a sustainable practice. Various pasture and grazing management combined with shade tolerant forage were applied, but the production has not reached the target yet. Previous knowledge on the goal of defoliation or grazing is to trim plant’s shoot to fulfill cattle’s need (herbage allowance) without considering pasture health to grow and produce forage. Furthermore, grazing time is determined based on plant’s age. However, due to climate change phenomenon, the temperature has fluctuated irregularly affecting on plant’s growth and development. Therefore, using plant’s age as a threshold could be inaccurate. More accurate method can be used by measuring heat unit accumulation to produce one phyllochron.

Therefore, the main goal of this research was to increase the productivity of coconut plantation by combining pasture system with cattle. To analyse the persistency of grass plant Brachiaria humidicola, this research was conducted with three objectives: 1) to find out the number of heat units required to produce one phyllochron of single grass plant Brachiaria humidicola living within certain community, and growth patterns of them; 2) to find out effects of defoliation intensity and interval based on plant’s age (callender days) and daily temperature accumulation (growing degree days) to the production of dry foliage biomass and nutrient content; 3) to measure coconut plantation productivity that has been combined with pasture and cattle, grazing experiment with different grazing methods and stocking rate was used in this study. This research was conducted from April 2008 to October 2010 in the experimental plantation of Coconut and Other Palmae Research Institute, Manado, North Sulawesi.

The objective 1 was done to measure the needs of heat units to produce one phyllochron of Brachiaria humidicola plant growth and developed individually, compared to those in the community. Furthermore, growth pattern of the plant was also studied by measuring number of seedlings, nodes, and the length of stolon during of growth development (weeks). Analyses of t-test and deviation standard were used. With regard to objective 2, was studied the effects of intensity and interval of defoliation based on both the ages (days) of plant and the growing degree days, on the dried weight and nutrient content of foliage biomass. Treatments were arranged based on randomized complete block design. Objective 3 of this research was to understand effects of continuing grazing and rotational grazing at different stocking rates to pasture performance. This was measured with dried foliage biomass, population and the development of new shoot, botanical composition, nutrient content, dominant microorganism living