UNIVERSITAS GADJAH MADA
KARAKTER FISIOLOGIS PERTUMBUHAN DAN HASIL NIRA TANAMAN AREN (Arenga pinnata (Wurmb.) Merr.) PADA TINGGI TEMPAT DAN MUSIM BERBEDA DI KAWASAN LERENG SELATAN PEGUNUNGAN MENOREH
ROSI WIDARAWATI, Prof.Dr.Ir.Prapto Yudono, M.Sc.
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Judul : Karakter Fisiologis Pertumbuhan dan Hasil Nira Tanaman Aren (*Arenga pinnata* (Wurmb.) Merr.) pada Tinggi Tempat dan Musim Berbeda di Kawasan Lereng Selatan Pegunungan Menoreh.

INTISARI

Aren (*Arenga pinnata* (Wurmb.) Merr) merupakan palem penting menghasilkan nira, pati, ijuk dan bagian-bagian lainnya tanaman yang juga bermanfaat. Produk utama tanaman aren adalah nira sebagai bahan baku gula aren, nira dapat diproses menjadi gula,(Smits, 1996). Aren adalah tanaman perkebunan yang berpotensi untuk dikembangkan, tanaman tersebut mudah beradaptasi pada berbagai tipe tanah termasuk lahan kritis dan untuk reboisasi dan konservasi hutan. Tantangan yang perlu ditanggulangi untuk pengembangan tanaman ini meliputi input teknologi masih minim, perbaikan manajemen budidaya dan produksi, perbaikan pengolahan, pemasaran masih tradisional diseminasi masih terbatas pada sebagian kecil petani. Penelitian jangka pendek dan panjang perlu mendapat prioritas untuk memberikan kontribusi yang jelas dalam rangka menghasilkan produk nira sebagai gula aren dan meningkatkan produktivitas tanaman.

Tujuan penelitian untuk mengkaji pengaruh interaksi tinggi tempat dan musim terhadap karakter tanah, iklim mikro, proses fisiologis, pertumbuhan dan hasil nira tanaman aren. Menentukan karakter tanah dan iklim mikro oprtimal bagi proses fisiologis pertumbuhan dan hasil nira tanaman aren maksimum. Menentukan karakter tanah dan iklim mikro yang pengaruhnya nyata terhadap aktivitas fisiologis, pertumbuhan dan hasil tanaman aren.

Hasil penelitian menunjukkan bahwa terdapat pengaruh interaksi tinggi tempat dan musim terhadap karakter tanah, iklim mikro, proses fisiologis, pertumbuhan dan hasil nira tanaman aren. *(Arenga pinnata* Merr (Wurmb). menyebabkan pengaruh terhadap kadar lengas tanah dan terdapat interaksi antar musim. Iklim yang meliputi curah hujan, suhu, kelembaban tidak terdapat interaksi antar musim kemarau dan musim penghujan terhadap kadar lengas tetapi kecenderungan ada pengaruh pada tiap tinggi tempat. Terdapat pengaruh karakter tanah dan iklim mikro oprtimal bagi proses fisiologis pertumbuhan dan hasil nira tanaman aren maksimum. Pada tinggi tempat <350 m dpl, 350-700 m dpl dan >700 m dpl menyebabkan pengaruh terhadap proses fisiologis pertumbuhan dan hasil nira tanaman aren maksimum. Terdapat beberapa iklim mikro yang pengaruhnya nyata terhadap aktivitas fisiologis, pertumbuhan dan hasil tanaman aren terhadap suhu udara permukaan daun (^{0}C), suhu daun (^{0}C), laju transpirasi (µmol H_2O cm^{-2} s^{-1}), konduktansi Stomata (µmol H_2O cm^{-2} s^{-1}), karbon interseluler tanaman sedangkan karakter tanah tidak memberikan pengaruh terhadap pertumbuhan dan hasil nira aren. Terdapat pengaruh interaksi antara tinggi tempat dan musim pada variabel ,kadar lengas tanah, kadar prolin, suhu permukaan daun, suhu daun, H2O sel daun, kelembaban relatif daun, karbon interseluler, CO_2 sel daun, laju transpirasi, Volume nira, pH nira, kualitas nira berupa sukrosa, kadar air nira, kadar protein dan rendemen.

Kata Kunci : Aren, Iklim Mikro, Tinggi Tempat dan Musim

UNIVERSITAS GADJAH MADA
KARAKTER FISIOLOGIS PERTUMBUHAN DAN HASIL NIRA TANAMAN AREN (Arenga pinnata (Wurmb.) Merr.) PADA TINGGI TEMPAT DAN MUSIM BERBEDA DI KAWASAN LERENG SELATAN PEGUNUNGAN MENOREH
ROSI WIDARAWATI, Prof.Dr.Ir.Prapto Yudono, M.Sc.
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

Title: Physiological Characteristics of Growth and Yield of Arena (*Arenga pinnata* (Wurmb.) Merr.) In Different Altitude and Season in the Menoreh Mountains South Slope Area.

ABSTRACT

Sugar palm (*Arenga pinnata* (Wurmb.) Merr.) is type of palm that has various befit such as producing sap, starch, palm fiber and other parts of plant that are also useful in daily life. The main product of palm sugar is sap as a raw material for palm sugar and can be processed into sugar (Smits, 1996). Sugar palm is a plantation crop that has a potential to be developed as these plants are adaptable to various types of soil including critical land and been used for reforestation and forest conservation. However, the challenges that need to be solved for the development of these crops include minimal input technology, improved cultivation management and production, improved processing, and traditional dissemination marketing are still limited to a small number of local farmers. Both short- and long-term research need to be given a priority to make a real contribution in order to produce high amount of sap product as produced into palm sugar and increase crop productivity.

This study aims to several categories, first to examine the effect of interaction between altitude and season on the soil characteristics, micro climate, physiological processes, growth and yield of sap. Second, to determine the soil characteristics and an optimal microclimate for physiological processes of growth and yield that produce a maximum sap. The last to determine the soil characteristics and the micro climate that have a significant effect on physiological activity, plant growth and yield of sap.

The results showed that there was a significant effect from the interaction of altitude and season on the soil characteristics, micro climate, physiological processes, growth and yield of sap. Also, it showed an effect on soil moisture content which has an interaction with the season. The climate factor including rainfall, temperature, humidity showed no interaction with both the dry and the rainy season which will affect on the moisture level, but there was a tendency to be affected by the altitude. There was significant effect resulted by the interaction between soil character and optimal micro climate on the physiological processes of growth and yield of sap. There were several micro climates that gave a significant effect on physiological activity, growth and yield of palm sugar on leaf surface temperature (^{0}C), leaf temperature (^{0}C), transpiration rate (µmol H_2O cm^{-2} s^{-1}), Stomata Conductance (µmol H_2O cm^{-2} s^{-1}), and plant intercellular carbon. While the soil character did not give any significant effect on the sugar palm growth and yield of sap. There was an effect resulted by the interaction between altitude and season on the variables observed including soil moisture content, proline content, leaf surface temperature, leaf temperature, H_2O content in the leaf cell, leaf relative humidity, intercellular carbon, CO_2 content in the leaf cell, transpiration rate, sap volume, sap pH, quality of sap in the form of sucrose, water content in the sap, protein content and yield.

Keyword: Sugar palm, micro climate, altitude, and season