EnviroScienteae Vol. 14 No. 1, April 2018
Halaman 29-32

ISSN 1978-8096 (print)
ISSN 2302-3708 (online)

STORM "GREEDY WATER" PALM OIL BASED ON ACADEMIC PERSPECTIVE

Badai "Rakus Air" Kelapa Sawit Di Tinjau Dari Perspektif Akademis

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Abstract

The tendentious issue of deforestation, biodiversity, "water greedy" attack ganoderma and carbon emissions continue to heat up in this decade has cornered palm plantations in Indonesia for allegedly either from outside or from inside the country becomes the base of why. To clarify these issues then this article aims to analyze the impact of oil palm plantations in terms of the water balance of plant oil palm. Water use in the oil palm plantations on average 92.05 mm/month or equivalent to 1104.5 mm/year over lamtoro stands is 3,000 mm/year, acacia 2,400 mm/year, sengon of 2,300 mm/year, amounting tea 900 mm/year, rubber amounted to 1,300 mm/year, bamboo amounted to 3,000 mm/year and teak amounted to 1,300 mm/year. The coefficient of oil palm crop of 0.93. The percentage amount of rainfall used palm oil amounted to only 39.60% of the annual rainfall. Percentage of evapotranspiration value is smaller than the value of evapotranspiration pine percentage of 64.5%, A. mangium 68.8%, amounting to 55.1% of ferns and eucalyptus (E.alba) amounted to 52.4%. Meanwhile, rubber plant has a value of 1 kc, other crops such as rice, during the period of growth has kc values between 1.05 to 1.2. Soil water content (KAT) which indicates the storage capacity of the root zone of oil lower than the root zone rubber (Rusmayadi, 2011). This is due to the oil more roots growing in the topsoil to a depth of ± 1 meter and as you go down the less. Rooting most densely contained at a depth of 25 cm. Therefore the ability of smaller savings in oil palm plantations compared to rubber, then the excess water will be removed or overflowed (Ro) is not taken ("greedy water") by palm trees. Palm oil as a commodity to be seen objectively with regard to the nature of biological (plant roots), physiological (crop coefficient), and environmental (water storage capacity). This is to straighten out the problems that it is not water but greedy oil plantation management who do not pay attention to aspects of water conservation.

Keywords: content; crop coefficient; evapotranspiration; soil water; water balance; water greedy; water use

INTRODUCTION

Tendentious issue of deforestation, biodiversity, "water greedy" attack ganoderma and carbon emissions continue to heat up in this decade has cornered palm plantations in Indonesia for allegedly either from outside or from inside the country becomes the base of why. According to Widodo (2011), found that the extensive development of oil palm plantations have a significant impact on the environment, such as reduced water availability, because of oil palm plantations are ecologically the most plants require much water in the process of growth, which is about 4.10 to 4.65 mm per day. Whereas other vegetation such as forest plants need water about 5.02 to 6.32 mm per day and seasonal crop water membutuhan approximately 1.83 to 4.13 mm per day for growth and productivity. The issue of oil palm voracious water which reduce the availability of water and decreased water level, it is feared will have an impact on

productivity levels and export volume of palm oil and derivatives production. Development of the agricultural sector is still a major program of economic development of Indonesia, because it involves the lives of the majority of the Indonesian people. Subsector which was instrumental in the development of agriculture sector is plantation. One commodity is oil palm plantations, which have a significant share in contributing to state revenues, the provision of employment opportunities and regional development. To clarify these issues then this article aims to analyze the impact of oil palm plantations in terms of the water balance of plant oil palm.

THE ATTACHED SOME OF PALM OIL AND ENVIRONMENT

Crop Water Requirement

Crop water requirements or evapotranspiration (ET) is a measure of the total loss or the use of water to a land area through evaporation from the soil surface and transpiration from plant surfaces. Coster (1938) showed that evapotranspiration in the stands lamtoro is 3,000 mm/year, acacia 2,400 mm/year, sengon of 2,300 mm/year, tea of 900 mm/year, rubber amounted to 1,300 mm/year, the bamboo of 3,000 mm/year and teak amounted to 1,300 mm/year (Figure 1). Meanwhile, palm oil palm plantations on average 92.05 mm/month or equivalent to 1104.5 mm/year.

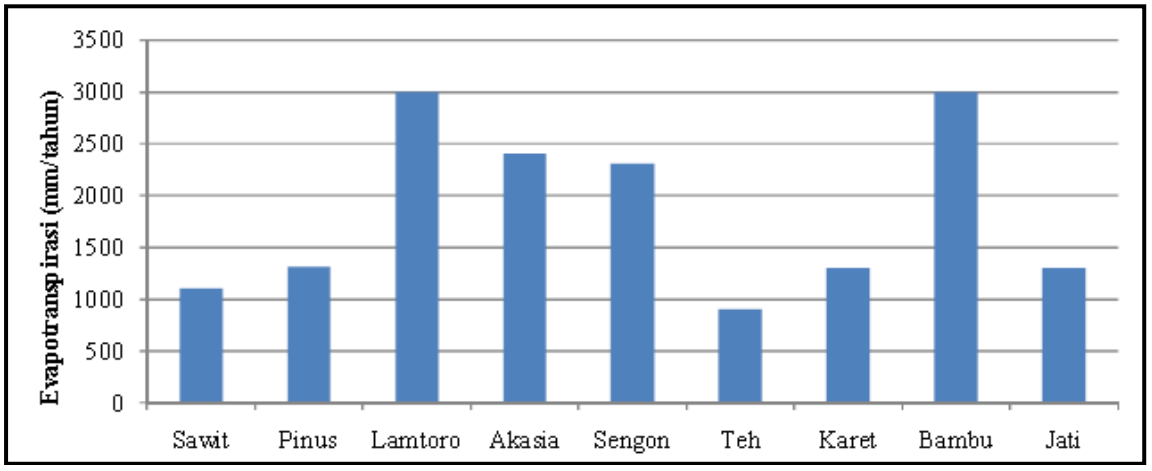

Figure 1. Evapotranspiration on various types of plants

If we look in terms of the percentage of the amount of rainfall that is used only by palm oil amounted to 39.60% of the annual rainfall (Pasaribu H, Mulyadi A & Tarumun, S, 2012). The percentage value of evapotranspiration is small if compared with the results of research Pudjiharta (1995), who reported that the percentage value on pine evapotranspiration of 64.5%, A. mangium 68.8%, amounting to 55.1% of ferns and eucalyptus (E.alba) of 52.4% (Figure 2).

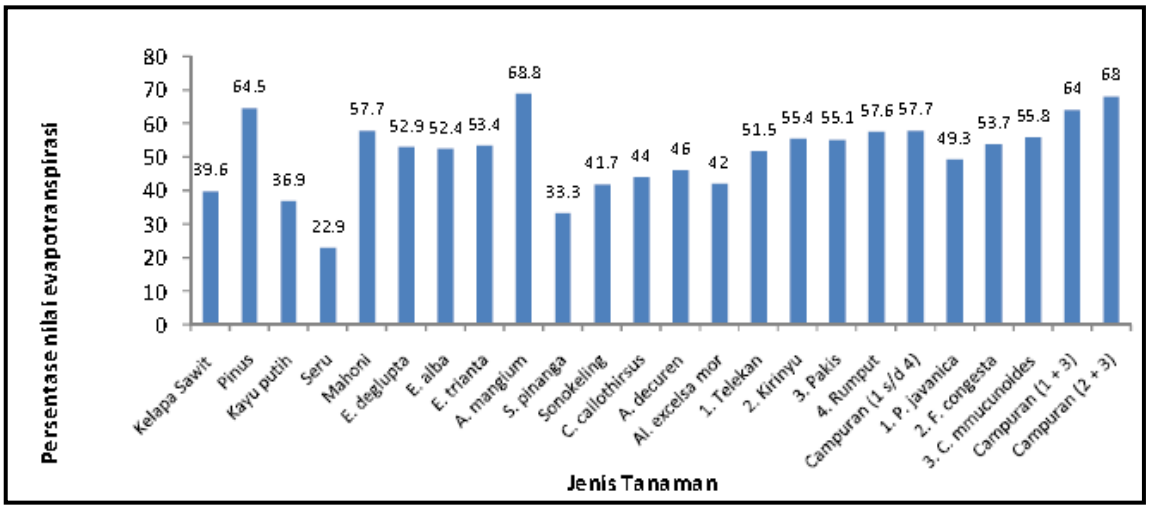

Figure 2. Percentage of different types of crop evapotranspiration

Crop Coefficient

The coefficient of crops (crop coefficient, kc) differ according to the particular plant. Crop coefficient empirically derived from experiments in the field that are specific to each type of plant and changed according to the phase of plant development. Kc value is what also determines the amount of water that will dievapotranspirasikan by plants. The larger the value, the greater the kc water dievapotranspirasikan by these plants. Kc value of palm oil is smaller compared to some other plants. Research Harahap (1999) showed that palm oil kc value of 0.93. Meanwhile, kc rubber plant has a value of 1, other food crops such as rice, during the period of growth has a value of between 1.05 to 1.2 kc (Dorenboos & Kassam, 1986).

Water Holding Capacity to Save Water and Surface runoff

Water storage capacity in soils is dependent on soil type and the type of coverage. Excess water will be stored in the soil as a reserve early for the next month with a maximum value on the value of soil water content (SWC). Palm root growth towards the vertical and lateral spreading following the development of plant age. Deployment of effective soil depth of only between 0.7 - 1.1 m (Allen *et al*., 1998). Meanwhile, according to the nature dikotilnya, rubber plants as a comparison has a taproot so much more vertical roots into and extends laterally to the effective depth between 1.0 - 1.5 m (Allen *et al*., 1988).

Soil water content (SWC) which indicates the storage capacity of the root zone of oil lower than the root zone rubber (Rusmayadi, 2011). This is due to the oil more roots growing in the topsoil to a depth of ± 1 meter and as you go down the less. Rooting most densely contained at a depth of 25 cm. Therefore the ability of smaller savings in oil palm plantations compared to rubber, then the excess water will be removed or dilimpaskan (Ro) is not taken ("greedy water") by palm trees (Figure 3).

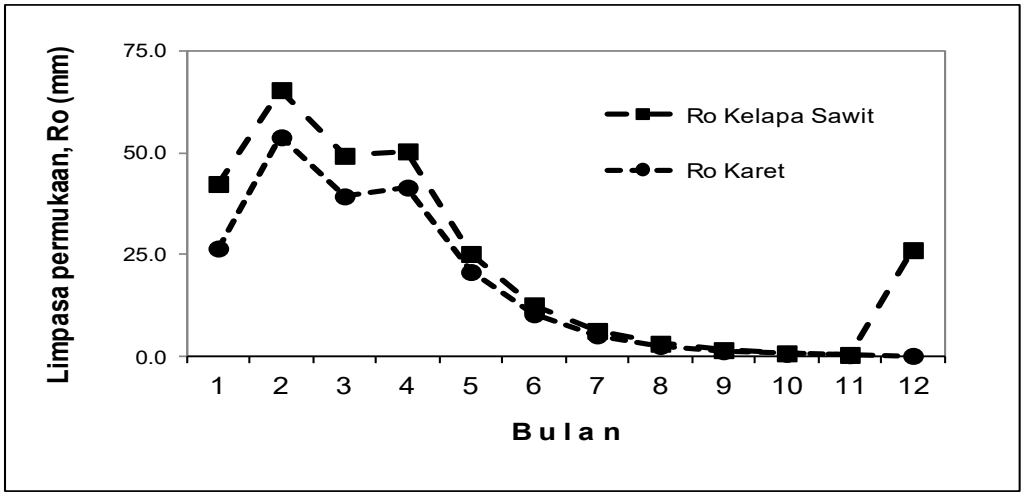

Figure 3. Surface runoff (Ro) area of oil palm and rubber (Rusmayadi, 2011).

Therefore, in the technical note palm cultivation farm management with attention to water conservation. Water conservation can be done by Technical rorak measuring 180 x 180 x 150 cm to increase water infiltration into the soil and create a large reservoir which covers dozens of hectares.

CONCLUSION

Palm oil as a commodity to be seen objectively with regard to the nature of biological (plant roots), physiological (crop coefficient), and environmental (water storage capacity). This is to straighten out the problems that it is not water but greedy oil plantation management who do not pay attention to aspects of water conservation. These findings suggested use in handling negative issues attached to palm trees.

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