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## ECO-AGRO-CLIMATIC CONDITIONS TO EXPANSION OF PALM OIL IN THE STATE OF PARA

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With the release in 2009 of the National Oil Palm Program (*Elaeis guineensis* Jacq.) was included as an alternative for use of biofuels in the energy matrix in Brazil, demanding the productive sector and the scientific community new studies related to its supply chain. The objective of this work is evidence pointing response of palm oil to eco-agro-climatic condition to support decisions making in the process of expanding cultivation in the state of Para.

The water balances were calculated considering the available water capacity in the soil of 125 mm. We also calculated the vapor pressure deficits (VPD) and eco-agro-climatic zoning was generated in ArcGIS 9.3 and exported to TerraView 3.2 to create space for the cellular integration of variables in TerraME. Another factor that was considered was a disease called Fatal Yellowing (FY) associated with excess of water in the soil analyzed daily rainfall data for the period 1993 to 2008, in the cities of Moju, Cameta and Belem.

According Barcelos et al. (1987) the ideal temperature range for the culture is between 24° and 30°C and in this paper showed that in Para annual average ranging from 23.3 to 27.3°C. For Scotton (1982) annual rainfall should be above 2,000 mm and water deficit should not exceed 150 mm. The eco-agro-climatic zoning showed that areas near Belem present conditions able to express the potential of culture to 125 mm of water deficiency, which can reach a maximum of 150 mm deficits year. It is noteworthy that in areas with higher values at 200 mm indicative of present need of fluid, resulting in effects on "water footprint" of culture. Vapor pressure deficits between 0.3 to 0.5kPa tracks indicate preferential expansion of palm oil. In the southwestern portion water deficits are in bands below 150 mm, but they are primary forest and have legally protected areas and it is necessary attention by the peculiarity of environmental constraints. As to FY disease there was intensification of cases during March and April, which are the rainy months pointing effects of excess soil water. In 2006, counted up more than 80% of days with rain in April, which may have influenced the 1440 cases of plants with FY in May, indicating gradual effects of soil moisture associated with this disease. We conclude that Para has eco-agro-climatic conditions to the expansion of Palm crops, but periods of high rainfall offer may be associated with fatal yellowing (FY), limiting the success of entrepreneurs in the chain of biofuel in the Amazon. Annual water deficit exceeding 125 mm, increased "water footprint" to ensure crop productivity.

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