No. 68

Bactris gasipaes H.B.K. - production factors in agro-ecosystems

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Bactris gasipaes H.B.K. (also called peach palm, pupunha, pejibaye and chontaduro) is a monoecious multistemmed palm tree which is native in southwestern Amazonia. The palm was planted for the production of palm fruits or heart of palm as part of the SHIFT-polycultural area near Manaus. As fruit trees they reached up to 20 m in height, with 15-25 pinnate fronds in the crown. The fruit bunch contains 50-1000 single seeded fruits. The drupe fruit contains high quantities of starch (30-80% dry weight), oil (2-60% dry weight), protein (1-14% dry weight), fiber (3-13% dry weight) and carotene (0-70 mg/100 g fresh mesocarp). Therefore it could play an essential role in food supply for the local people.

B. gasipaes forms a dense root system in the upper soil horizons. Together with its unique root surface structure this allows an efficient soil exploitation and thus high nutrient uptake.

The N content of its litter is high thus enabling a rapid decomposition. However, due to the small amount of litter and the efficient N uptake by *B. gasipaes* this does not result in a increased N content of the soil organic matter.

The litter from *B. gasipaes* contributes with only 110 kg/ha or 0,1 % of total soil C to the C budget of the system. On the other hand *B. gasipaes* produces high quantities of root exudates. About 16500 kg/ha C or 15% of total soil C respectively are released into the soil. Taking into account the C loss by microbial respiration and root respiration *B. gasipaes* contributes with 10700 kg/ha or 10% of total soil C respectively to the C budget of the system. Compared to C from root exudates the quantity of C from microbial biomass under *B. gasipaes* is low. Only 45 kg/ha or 0,0004% of the total C originate from the microbial biomass.