

Phyton (Horn, Austria)	Vol. 46	Fasc. 2	205–206	11. 6. 2007
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Elevated Fruit Production of a Secondary Rainforest Tree at the Forest Edge – What Does it Depend on?

By

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The dioecious *Tapirira guianensis* AUBL. (*Anacardiaceae*), one of the most frequent tree species in the remaining Atlantic rainforest fragments of the state of Pernambuco (Brazil), is often cited as a secondary forest tree that profits from forest fragmentation. As fragmentation enhances the portion of forest situated near to forest edges, knowledge on the edge effects on plant species is essential for conservation and restoration programmes in this region.

In 2003 / 2004 we registered a significant lower number of flowering, and consequently, fruiting female tree individuals in the forest interior than at the forest edge. Thus we hypothesized that there could be a generally lower fruit production in interior than in edge individuals.

In 2005, in terms of fruit production, the weight of single fruits was the same in both habitats, and total number and mass of fruits accumulated per m² and seedling per m² were not significant higher at the forest edge. A significant higher stem diameter, crown volume, flower number and a lower height in the border trees was registered. Considering, however, this higher crown volume of the edge individuals, there was a higher accumulated number, a higher accumulated mass of fruits. The higher number of seedlings per edge tree individual was also higher (Table 1).

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Table 1: Differences in mean weight, accumulated weight per m², accumulated weight per m² of dried fruits; accumulated fruit number per m² and per tree individual, of *Tapirira guianensis* individuals at the forest edge (n = 19) and interior (n = 16).

	mean weight (g)	accumulated weight (g/m ²)	accumulated weight (g/individual)	accumulated fruits (per m ²)	accumulated fruits (per individual)
edge	0.0648	138.016	13,381	5,300	100,478
interior	0.0574	92.5643	8,009	3,738	66,374
mean	0.0607	117.238	10,925	4,585.4	84,887
(e & i)	n.s.	n.s.	p = 0.0314 M-W-U=87	n.s.	p = 0.04 M-W-U=90

Additionally, the rate of fruit predation was significantly higher in the interior, which is an indication also of higher fruit removing rates by primary dispersers.

The years 2004 and 2005 show two possible extremes in *Tapirira guianensis* reproductive phenology. In the first year, edge effects appeared to be stronger than in the second. A possible reason may be the prolonged dry period in 2005, which supposedly caused the formation of a high number of flowers in both habitats, when compared with the shorter and more humid dry period in 2004, when flowers were detected to develop almost only at the forest edge. We suppose that reproductive success of *Tapirira guianensis* should be higher at the forest edge than in the interior if climate continues varying between these extremes.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Phyton, Annales Rei Botanicae, Horn](#)

Jahr/Year: 2007

Band/Volume: [46_2](#)

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Artikel/Article: [Elevated Fruit Production of a Secondary Rainforest Tree at the Forest Edge - What Does it Depend on?. 205-206](#)