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**Small Scale Reforestation of Five Native Timber Species in a
Nutrient Rich Várzea of Central Amazon**

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Abstract

Our study aims to enhance the experience in reforesting endangered timber species in white water floodplains (várzea) of Central Amazon. Between 1 November and 6 December 2008 mixed plantations of *Cedrela odorata*, *Piranhea trifoliata*, *Schizolobium amazonicum*, *Calcophyllum spruceanum* and *Ocotea cymbarum* were established in the Mamirauá Sustainable Development Reserve. Two to six months old saplings were planted in 18 forest gaps of high and low várzea (less or more than 3 m inundation height during the high water period, respectively) and in ten agricultural stands of the high várzea being abandoned between one and 15 years. The longer the areas were abandoned, the closer their canopy. In each agricultural stand, four 324 m² plots with different methods of weed control with a machete (“weeding”; “mowing”; “mowing of strips”; no weed control) were established. In the forest gaps, weed was mowed. Weed control was performed always when the weed was higher than 50 cm. Sapling growth, sapling health and working demand for weed control were intensively monitored.

From December 2008 to March 2009 mean height increase was high for *C. spruceanum* (133,6 % of the initial height), *S. amazonicum* (129,4 %) and *C. odorata* (81,9 %), lower for *O. cymbarum* (23,7 %) and negligible for *P. trifoliata* (10,2 %). Canopy openness positively influenced growth of *C. spruceanum* ($R^2=0,56$) and *S. amazonicum* ($R^2=0,28$) but not growth of *C. odorata*.

Weed height reached 50 cm within one to four months in the agricultural stands. Forest gap weeds reached the same height only after a minimum of 2 months. Mean working demand for weed control in the agricultural stands was higher for the treatments “weeding” and “mowing” (58 and 46 min per plot, respectively) than for “strip mowing” (22 min). So far, the treatments had no clear influence on sapling development, but “strip mowing” seemed to hamper the attack of *C. odorata* with the shoot borer *Hypsipyla* sp. that occurred in three agricultural stands.

In conclusion, the fast growing species *C. odorata*, *S. amazonicum*, and *C. spruceanum* are appropriate for reforestation in the várzea, but high efforts for weed control are necessary for their establishment.

Keywords: *Calcophyllum spruceanum*, *Cedrela odorata*, *Ocotea cymbarum*, *Piranhea trifoliata*, *Schizolobium amazonicum*, weed control

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