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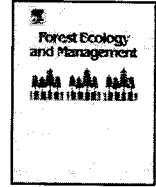
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Tree plantations on farms: Evaluating growth and potential for success

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ABSTRACT

Interest in native species is growing across the tropics as reforestation of degraded lands becomes more widespread. In this study four tree species native to Panama – *Cedrela odorata*, *Pachira quinata*, *Samanea saman*, and *Tabebuia rosea* – were grown on rural farms at two dry tropical sites in Panama for up to five years. Survivorship and growth data at these “on-farm” trials are compared to data recorded from nearby experimental or “species selection” trial sites and evaluated in terms of soil fertility and management. Participant farmers were also asked about their interest in planting trees in general as well as their interest in 61 species grown in the species selection trial.

Although, on-farm survivorship was variable and generally lower than that found on the species selection trial, one species (*S. saman*) experienced high and consistent survivorship. High survivorship combined with growth data from farms at both sites for this species suggests it would be a good candidate for extension projects working with rural farmers. Survivorship of other species appears more sensitive to farmer management and/or local site conditions. Generally lower growth on the Los Santos farms as compared to the species-selection trial is attributed to the lower soil fertility (plant available P) at the on-farm sites compared to the species selection trial. In contrast, only one species – *P. quinata* – had a growth variable found to be significantly lower between the on-farm and species selection trial sites in Rio Hato. *C. odorata*, *P. quinata* *T. rosea* can all be used in on-farm conditions with consideration to specific site and management conditions.

By 2009, approximately 80% of the farmers planting trees still wished to participate in tree planting activities. All of the farmers no longer wishing to continue with the project expressed slow growth rates of trees as a principal reason. All but one of these farmers had growth rates for his/her trees markedly below those of the species selection trial nearby. Some farmers wishing to continue had very high mortality rates (>70% for all species), suggesting non-tangible benefits for participating in project activities. Other species that were not tested on-farm but grew well in the species-selection trials and were of interest to local farmers are discussed.

As long as specific site and management conditions are carefully considered, data from species selection trials can be useful in informing tree planting projects with rural farmers; however, care should be taken to manage expectations.

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1. Introduction

Tropical ecologists, conservationists, and policy makers have long recognized the environmental problems associated with tropical deforestation (Laurance, 1999; Steffen et al., 1998). However,

while deforestation continues (Asner et al., 2009; Curran et al., 2004; Laurance et al., 2001), in many countries there is a counter-trend towards abandonment of agricultural lands as people migrate to cities to seek jobs and improve their overall socioeconomic status (Chazdon, 2008; Páres-Ramos et al., 2008; Wright and Muller-Landau, 2006;). At the same time, as cities are burgeoning with recent arrivals, others seek a better life on the agricultural frontier (Wright and Samaniego, 2008).

The arrival of the 21st century has brought with it an increased awareness of the linkages between the plight of people and forests in the most remote areas of the world and the environmental

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