



Rehabilitating degraded forest land in central Vietnam with mixed native species plantings

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Abstract

This paper examines the use of Acacia as a nurse crop to overcome some of the ecological and economic impediments to reforestation of degraded areas dominated by grasses including *Imperata cylindrica*. The study site at Hai Van Pass in central Vietnam was initially reforested using *Acacia auriculiformis*. After 8 years these stands were thinned and under-planted with *Hopea odorata*, *Dipterocarpus alatus*, *Parashorea chinensis*, *Tarrietia jaranica*, *Parashorea stellata*, *Scaphiunt ychnophorum*, *Peltophorum dasyrhadis* var. *tonkinensis* and other high-value native species. At the time of field assessment (early 2004), the Acacia trees were aged between 16 and 18 years and basal area ranged from 9 to 13 m² ha⁻¹ after several thinning operations. Acacias facilitated the establishment of native species, but after 6–7 years of growth, further thinning is needed to maintain growth rates. In addition to assisting the establishment of native species, the Acacia nurse crop should provide a revenue stream (NPV about US\$ 180, or IRR 19%) sufficient to cover the establishment costs of the underplanted native species (about US\$ 100).

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1. Introduction

Forest cover in Vietnam diminished rapidly for most of the latter half of the last century declining from around 43% in the 1940s to 17% by the late 1970s (De Koninck, 1999). By 1995 the total area of land with grass or shrub cover was estimated to cover 9.7 million ha (Gilmour et al., 2000). Between 1976 and 1990, it is estimated that 185 000 ha of forest cover was being lost annually (Barney, 2005). There are a number of reasons for these losses including logging and over harvesting of forest products, slash and burn agriculture and by encroachment into forest lands by industrial agricultural (Nguyen and Gilmour, 2000; Lamb and Gilmour, 2003; Morris et al., 2004). Many forest areas in Thua Thien Hue province were also affected by the use of chemical defoliants and intensive bombing during years of war. Application of chemical defoliants was often followed by napalm bombing to ensure vegetation clearance (Filipchuk, 1990). As a result of this many previously forested areas of Vietnam were converted to fire-prone grasslands and

are unlikely to recover in the short term without specific interventions.

Forest policy in Vietnam has undergone several significant changes over the last decades in an attempt to overcome these losses, beginning with the National Forestry Action Plan developed in the early 1990s (Nguyen and Gilmour, 2000; Morris et al., 2004; Ohlsson et al., 2005). A recent development has been the introduction of the "Five Million Hectares Rehabilitation Program (5MHRP)", the target of which is to increase forest cover to 43% (MARD, 2001; Phan, 2004; Morris et al., 2004; Ohlsson et al., 2005). If successful this will return

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