Background: Mixtures of tropical acacia nurse crops and understorey native species have been established to aid forest restoration in Vietnam, but with partial success. Knowledge of physiological mechanisms underlying competitive interactions remains limited.

Aims: To examine growth and physiological responses of *Hopea odorata*, a shade-tolerant dipterocarp, established within an *Acacia* hybrid (*Acacia mangium* × *Acacia auriculiformis*) nurse-crop plantation.

Methods: *H. odorata* seedlings were planted within three 22-m diameter gaps in a 3-year-old *Acacia* hybrid plantation in Central Vietnam. Growth and physiology responses to an environmental gradient in gaps were examined over 2 years.

Results: Growth rate and maximum rates of photosynthesis and stomatal conductance of *H. odorata* saplings increased significantly with increases in relative daily incident photosynthetically active radiation from 24% at the gap perimeter (GP) to 61% at the gap centre. Leaf N, P, and chlorophyll concentration were unaffected by position in the gap. At the end of dry season, there were significant reductions in leaf water potential for saplings close to the GP suggesting interspecific competition for water.

Conclusions: Despite naturally regenerating in shade, the strong ability of *H. odorata* to acclimate to high light environments suggests that its re-establishment on degraded sites, using *Acacia* hybrid as a nurse crop should be possible, provided that competition for light and water are managed.