

Research Note:
**The Growth of *Schinziophyton rautanenii* seedlings under
different shade conditions**

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Abstract

Two hundred Schinziophyton rautanenii seedlings were grown under different shade conditions to obtain an indication of their light requirements. The light requirements in turn reflect the structure of the vegetation in which seedlings are able to grow successfully.

The study showed that seedlings grew faster under moderate shade as opposed to open conditions or deep shade. This implies that very open conditions may not favour the reproduction of the species.

Keywords: Dry savannah woodland, Namibia, regeneration

Schinziophyton rautanenii (Schinz) Hutch. Ex Radcl.-Sm. (Radcliffe-Smith 1990) is a dioecous tree of significant socio-economic importance in northern Namibia. The tree produces an edible nut that forms part of the staple diet of the rural population (Büschel 1999). The fruit is of particular importance in times of low rainfall when agricultural crops are insufficient to satisfy local needs (Büschel 1999).

Although fire is known to play a role in regulating the amount of natural regeneration (Geldenhuys 1977) little else is known about the growth of the seedlings themselves. While numerous studies have investigated the breaking of dormancy of the seed (Keegan & van Staden 1981; Keegan 1982; Keegan *et al.* 1989), there are no reports on seedling development or survival.

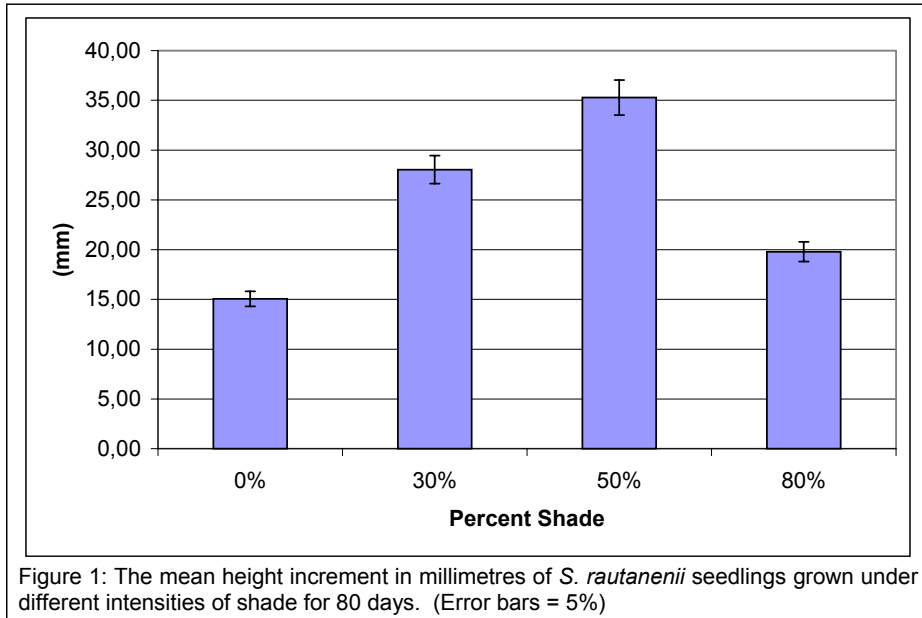
This research note reports on an investigation of the growth of *S. rautanenii* seedlings in relation to shading intensity. This information is to assist in the development of management strategies that may enhance seedling growth under natural conditions, as well as to indicate suitable nursery practices for artificial regeneration.

Fifty seedlings each were grown under 30%, 50% and 80% shade cloth and a further fifty as control in the open sun. The seedlings were numbered consecutively to

permit the tracing of height development of each plant. The height of the seedlings was measured at monthly intervals using a steel measuring tape.

The measurements were subjected to an Analysis of Variance (ANOVA) to determine significant differences in height increment between the different shade conditions.

Figure 1 shows the mean height increment from the initial assessment to 80 days under the various shade intensities. The graph clearly shows that growth was highest under 50% shade, while less shading and 80% shade resulted in poorer growth.



The results of this trial indicate that seedlings will grow faster under conditions of light or moderate shade. This is in line with the report by Lee (1973) who noted that saplings are generally found under the canopy of parent trees. While this is of importance for nursery managers, it also has implications for the management of the vegetation in which the species occurs naturally.

The findings imply that totally open or dense canopy under natural conditions may retard height growth of seedlings, thus reducing their ability to compete with other plants.

In order to promote the natural regeneration of the species, therefore, a woody canopy may need to be promoted, although this will need to be investigated further.

Future investigations should determine the growth requirements of woodland species in terms of light and competition for water and nutrients. In addition, the effect of the most important management tools, fire and herbivory, on vegetation development should be studied further.

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