

SILVICULTURAL MEASURES TO REDUCE THE IMPACT OF *S. NOCTILIO* IN KWAZULU-NATAL: CHALLENGES AND OPPORTUNITIES

Grant Boreham

Sappi Shaw Research Station, P O Box 473 Howick, 3290 South Africa
Grant.boreham@sappi.com

Approximately 54% of South Africa's 1.3M ha of commercial forests is established with pine species, with over 30% of this pine resource managed for pulpwood production. The major species include *Pinus patula*, *P. elliottii*, *P. taeda*, and the *P. elliottii* x *caribaea* hybrid with *P. patula* being the most widely planted. If the pine plantations of Swaziland are included then over 90% of all pine pulpwood area is ahead of the *Sirex* front and currently non-infested. Thinnings are not standard practise in pulpwood stands and maximizing fibre per hectare remains a primary objective.

A total of four thinning treatments were established at each of four trial sites in the KwaZulu Natal midlands in 2005. The treatments included a systematic 3rd row thinning, two selective thinning treatments, and a control (no thinning). Two of the sites were located within the *Sirex* front, one site on the front and one site ahead of the front. A total of 120 permanent monitoring plots were established within all the treatments across all four trial sites in October 2006. Detailed field observations and measurements including growth and yield, *Sirex* population numbers, tree moisture and resin yield were collected.

Where *Sirex* has established, its activity is restricted to suppressed trees within either the unthinned or 3rd row treatments with larger sized trees producing higher numbers of adult emergences. Selective thinning, which removes suppressed and damaged trees, is more successful in reducing the risk of *Sirex* infestation than systematic third row thinning. Thinning improved stem moisture, particularly within the more susceptible, smaller diameter classes. In unthinned stands, larger stems have higher stem moisture than smaller diameter stems. Resin yield was very low from most of the stems measured, and this technique will need to be refined if resin yield is seen to have an impact on tree resistance to *Sirex* attack. The size of *Sirex* adults decreased with increasing height up the stem, with no adults emerging in the top 30% of the tree.

Based on these preliminary results an additional trial will be implemented to test various levels of phytosanitary thinning and the impact on *Sirex* establishment and development over time in pine pulpwood stands.



Grant Boreham has been employed by Sappi Forests as a Research Officer in the Land Management programme since 2003. His responsibilities include silvicultural research, growth and yield, site/species matching, monitoring sustainability, and minimising risks on Sappi's landholdings. Since *Sirex* was first detected in pine plantations in Southern KwaZulu Natal Grant has been involved in projects to increase the understanding of the impact of silvicultural practises such as thinning on *Sirex* population levels in Sappi's pulpwood stands.

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