

Effect of sapstain on log prices: a survey of buyers and sellers in Australia and New Zealand

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Introduction

Sapstain is a discolouration in sapwood caused by various pigmented fungi infecting logs and lumber. This stain often appears blue, grey or black. Sapwood is much more likely to be attacked than heartwood as it is relatively rich in available nutrients and usually does not contain wood extractives that inhibit microbial growth (Uzonovic et al. 2008).

Sapstain is mainly a cosmetic problem and has little effect on the mechanical properties of wood (Schmidt 2006, Humar et al. 2008). Permeability, however, can be affected which in turn effects the absorption of water, antiseptic solutions, and finishing solutions for lumber products (Kreber 1994). Sapstain has no significant detrimental effect on pulp yields, refining energy or strength properties (Lindgren and Esllyn 1961, Hu et al. 2006). However, it can affect, positively or negatively, the response to pulp bleaching depending on the pulping process (Scheffer and Lindgren 1941, Hu et al. 2006).

While there is much information in the literature on the effects of season, species, bark loss, length of time since harvesting, harvesting system, mode of fungal spore spread (beetle or air), etc. on the incidence of sapstain (Lee and Gibbs 1996, Webber and Gibbs 1996, Uzonovic et al. 1999, Uzonovic et al. 2001, Yang and Beauregard 2001, Millers et al. 2017), there is very little quantitative information on the effects it has on the relative value of logs from either the buyers' or sellers' perspectives. Some information sources comment on a reduction in value, others indicate an increase in value for lumber from sapstained logs, especially in niche markets; e.g. "Denim Pine" in North America (Figure 1) (<http://peerlessforestproducts.com/timbers/>).

The goal of the survey described below was to gather some quantitative information on the effects of sapstain on log prices. With this knowledge more informed recommendations can be made on best operational supply chain practices.

Project description

A simple one-page survey form was designed to gather quantitative information. Since the information could be considered to be commercially sensitive (1) respondents were given the opportunity to remain anonymous, and (2) relative, rather than real, changes in log prices were sought. Four main questions were asked:

- "Are you a Log Buyer or a Log Seller?"
- "Is your main focus Domestic Markets or Export Markets?"
- "What percentage change in log price does the presence of sapstain cause (use a minus sign for a decrease in log price and a plus sign for an increase in log price)?" This question was repeated for APPEARANCE grade, STRUCTURAL grade, and FIBRE grade logs.

- "How prevalent does the sapstain have to be before this change in log price comes into effect?". Six levels of prevalence were listed: <5%, 5-10%, 11-25%, 26-50%, 51-75% and 76-100%. Example photos of each of the levels were provided to help guide the respondent (Figure 2).



Figure 1. Pine log disc showing incidence of sapstain (top), boards cut from sapstained logs (middle), and flooring manufactured from sapstained lumber (bottom).

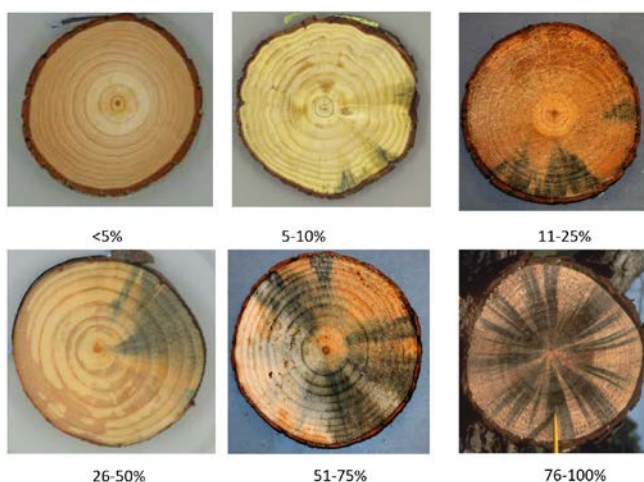


Figure 2. Visual cues based on the incidence of sapstain on log ends were provided to help survey participants answer the question “how prevalent does sapstain have to be before a change in log price comes into effect?”.

The survey form was sent to 35 companies in Australia and New Zealand. Twelve (12) Australian companies and sixteen (16) New Zealand companies replied. The companies included mainly log buyers and log sellers but also a few industry experts familiar with log markets. Some companies purchased or sold logs from more than one of the three broad log grade classes; APPEARANCE, STRUCTURAL and FIBRE. Some companies also sold logs to both DOMESTIC and EXPORT markets. This meant that more than one response could be obtained from a company.

The results were summarised using Excel spreadsheets. No attempt was made to carry out rigorous statistical comparisons because of the relatively low sample size.

Survey results

Nature of Responses

Eighty-six responses were obtained; 13 from log buyers, 41 from log sellers, 20 from companies that both bought and sold logs, and 12 from industry experts.

The main market focus of the 86 responses was as follows: 50 were focussed on domestic markets, 30 were focussed on export markets and 6 focussed on both domestic and export markets.

Effect of Sapstain on Log Prices

None of the respondents indicated that sapstain had a positive impact on log prices; all indicated that sapstain either had a neutral or negative effect on log prices. It should be noted, however, that there were wide differences between the respondents in the level of change, as seen in the Range in Change % column in both Tables 1 and 2 and the distribution of response in Figure 3. This was evident for nearly all log grades, for both buyers and sellers, and for different market foci.

Unsolicited comments by respondents that help to explain some of the variation included: “I’m in a demand deficit region – I can’t be picky”, “the mills won’t accept any sapstain”, “I supply an MDF plant – it’s not a problem”. Another source of variation is undoubtedly how the respondents may have assessed the level of change in log price. Notwithstanding the wide variation in responses, it is worth looking at the average changes in log prices.

Grade	Respondent	Average Change (%)	Range in Change (%)
Appearance	Buyer	-43	-100 to 0
	Seller	-41	-100 to 0
	Expert	-76	-100 to -28
Structural	Buyer	-30	-100 to 0
	Seller	-25	-100 to 0
	Expert	-26	-100 to 0
Fibre	Buyer	-12	-26 to 0
	Seller	-42*	-100 to 0
	Expert	0	0 to 0

* Note that this set of responses was strongly bi-modal with foci around 0% change and 100% change.

Table 1. Effect of sapstain on log prices from buyers’, sellers’ and experts’ perspectives.

For appearance grade logs, there was agreement between buyers and sellers that sapstain reduced log prices by about 40% on average (Table 1). This is substantially lower than the average change supplied by the industry experts (76%). Similarly, for structural grade logs, there was agreement between buyers, sellers and experts that sapstain reduced log prices by 25 to 30% on average. On the other hand, there was little agreement between buyers and sellers on the effect of sapstain on log prices for fibre grade logs. This is evident in there being a four-fold difference between buyers and sellers.

Grade	Respondent	Average Change (%)	Range in Change (%)
Appearance	Domestic	-49	-100 to -8
	Export	-42	-100 to 0
Structural	Domestic	-35	-100 to 0
	Export	-13	-63 to 0
Fibre	Domestic	-45	-100 to 0
	Export	-29	-100 to 0

Table 2. Effect of sapstain on log prices where the focus is on domestic or export markets.

For all three log grades, the average reduction in log price was greater for domestic markets than for export markets (Table 2). The biggest relative difference between market foci was for structural logs (22%). The smallest relative difference was for appearance grade logs (7%).

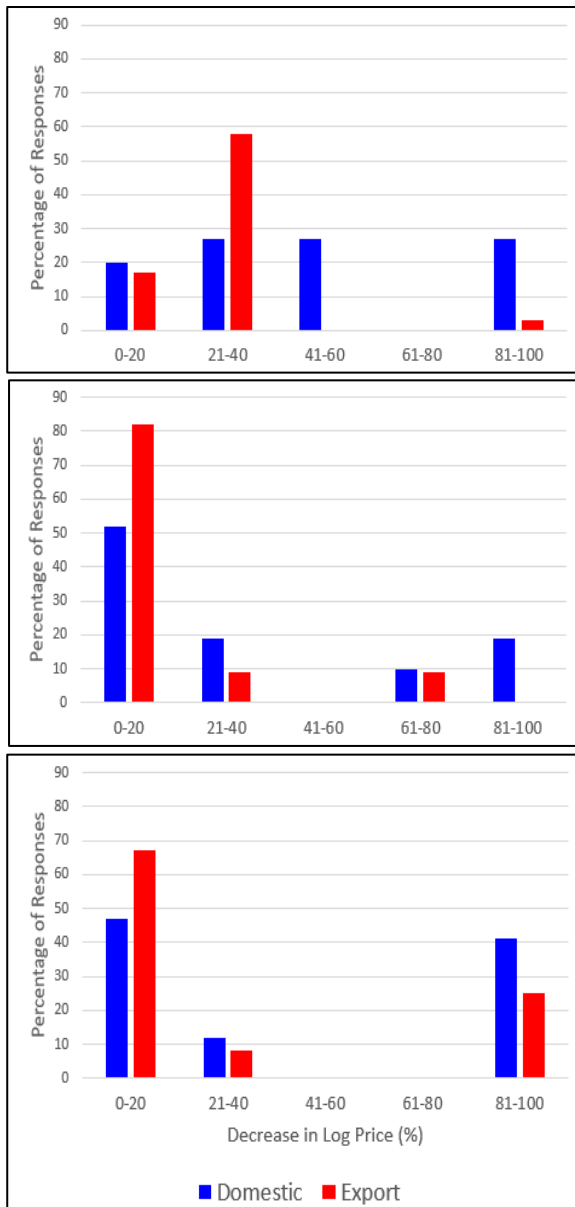


Figure 3. Distribution of responses for Appearance (top), Structural (middle) and Fibre grade logs (bottom) where the focus is on domestic or export log markets.

How Much Sapstain is Acceptable Before Log Price is Affected?

The amount of sapstain that was “acceptable” before a reduction in log price occurred was dependent on the log grade being bought or sold (Figure 4).

For appearance grade logs, almost three-quarters (73%) of the responses indicated that a price reduction would occur if the prevalence of sapstain was 10% or less. On the other hand, 7% of the responses indicated that it would have to be at least 75% before the price reduction occurred.

The tolerance of sapstain for structural grade logs was higher than for appearance grade logs. More than half of the responses (61%) indicated that a price reduction would occur if the prevalence of sapstain was 50% or less.

Fibre grade logs had the highest tolerance for sapstain. More than half of the responses indicated that the prevalence of sapstain could be 50% or more before a price reduction occurred.

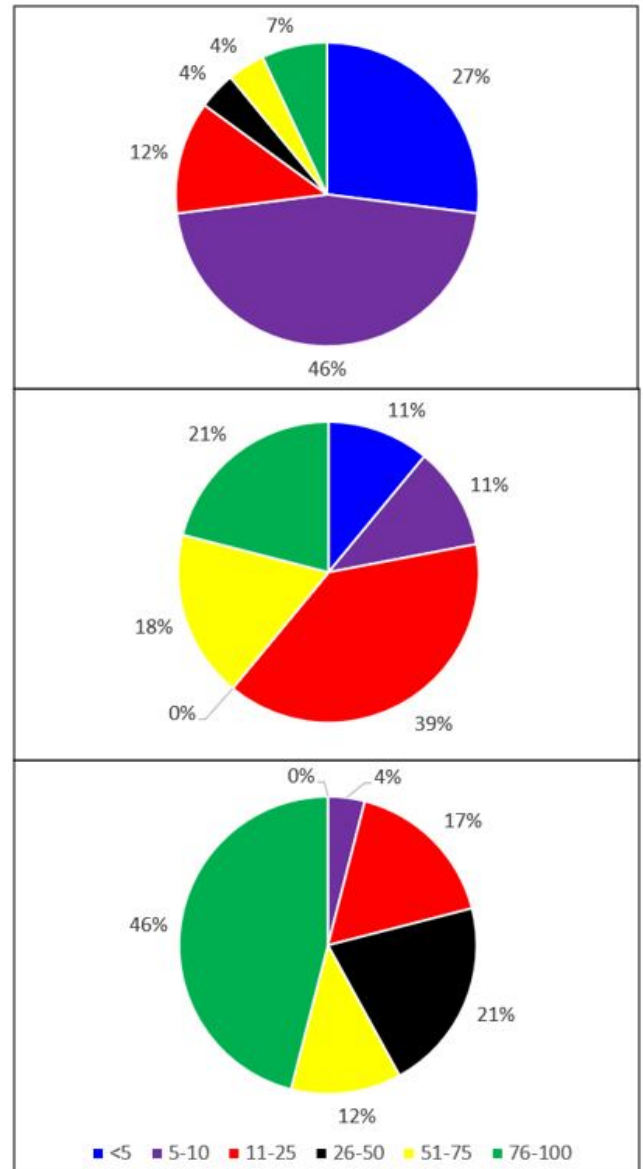


Figure 4. Distribution of responses for Appearance (top), Structural (middle) and Fibre grade logs (bottom) related to how prevalent sapstain has to be before log price is affected. The six categories are: <5%, 5-10%, 11-25%, 26-50%, 51 to 75%, and 76-100% of the log-end is affected.

Conclusions

- Literature and web-based sources indicated that the value of products produced from sapstained wood was often negative but could be positive in niche markets.
- There was wide variation in the survey responses on the effect of sapstain on log prices. None of the respondents indicated, however, that a price premium was paid for sapstained logs.
- Average reductions in log prices were greatest for appearance grade logs, followed by structural logs, then fibre grade logs.
- Buyers and sellers broadly agreed on the effect of sapstain on log prices for appearance and structural grade logs.
- The effect of sapstain on log prices for logs destined for export markets was lower than that for logs destined for domestic markets.
- The amount of sapstain that was “acceptable” before a reduction in log price occurred was dependent on the log grade being

bought or sold; the greatest tolerance being for fibre grade logs and the least tolerance being for appearance grade logs.

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MORE INFORMATION

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