

Credence attributes and ESG investment – opportunities for New Zealand forestry marketing

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Abstract

This paper explores the emerging requirements of New Zealand's international markets for forest products. These requirements include green and ethical consumerism, and factors arising from Environmental, Social and Governance (ESG) investment within the natural resource sector. Product labelling through certification provides claims that support ethical purchase and investment, and this has become very important when forestry-related businesses adapt to this changing market environment.

Some timber products that are positioned for ethical purchase have certification labelling. More generic claims such as 'renewable', 'sustainable forest management' (SFM) and 'natural' cannot be easily evidenced and need to be taken on trust (i.e. credence attributes). While SFM and certification labelling is useful, we propose that marketing on individual credence attributes has the potential to obtain greater premiums in international markets. This paper describes the growing role of ESG in market access, and the potential for producers to gain price premiums in new markets and market segments through highlighting broader individual environmental and ethical credence attributes.

Background

Credence attributes – marketing and adding value to a product

In commodity markets, such as log sales, price is a critical aspect. However, only one competitor can be the cheapest — the rest rely on brand reputation and quality differentiation to trade competitively. Some features and attributes that impact on a customer's viewpoint of quality might need to be taken on trust (i.e. credence). Trust creation is a known fundamental goal of good brand design (Neumeier, 2005). Therefore, the level of trust that customers place in products, even commodities, is a fundamental aspect of market access, continued sales, the level of product demand and pricing.

Credence attributes have been a standard feature of the marketing literature since their introduction in 1973 (Darby & Karni, 1973). Unlike features of a product that can be easily used as markers of product fitness for purpose and quality, such as its appearance or performance, some aspects claimed cannot reasonably be checked by consumers, even once used. For example, how the product



Figure 1: Packaging on laminated veneer lumber displaying clear country of origin labelling

was grown, managed and the governance around the supply chain. These may impart environmental, animal welfare, social welfare or cultural benefit or risk, but it is difficult to know if the claims are real. The consumer must therefore give credence to the claims as there is no way for them to verify them at the point of sale through search or experience interaction with the product (i.e. assessing appearance, taste, texture etc).

In marketing, these attributes taken on trust are called 'credence attributes'. Some examples of credence attribute claims from the agricultural sector might be: 'organically grown', 'no additives or hormones' or 'free range'. A product's credence attributes therefore have the potential to add value to the product, which can lead to either a price premium, greater demand, or even new market segments (Yang & Renwick, 2019), for example, milk that contains only the A2 protein (Maida, 2022), or Halal meats (Hyde et al., 2016). Producers can add these claims when marketing their product, sometimes reinforced through brands (Salazar-Ordóñez et al., 2018), trademarks and certification labelling. However, customers will only trust claims if they are authentic (Dalziel et al., 2019).

The agricultural and food sector has long understood the role of a product's credence attributes in the marketplace for food and fashion (Miller et al.,

2014; Lees et al., 2015; Hilton et al., 2004), but these attributes are less explicit in forest product marketing. This is potentially due to more stringent regulations for food and cosmetics and, in the case of fashion, are more visible in the public eye than forestry commodities such as fibre, paper and building products.

The most common credence attributes relating to forestry products are highlighted within forest certification and sustainable forest management (SFM), both of which provide credence at a collective rather than product-specific level. That is, the forest company that the products come from is a certified company, or their forests have been managed sustainably, and therefore the product is seen as holding credence value (Sarre & Sabogal, 2013). The identification of key individual forest product credence attributes through market segmentation allows for a targeted approach, and may open up novel product line opportunities, as has been seen within agri-food industries.

Credence attributes within forest certification

At a collective level, SFM certification schemes incorporate many values that promote product credence to downstream markets. Forest certification schemes provide a broad range of credence attributes within their respective principles. These principles communicate compliant production of goods to national and regional regulations, impact assessment and proven monitoring systems being in place within forest management.

Currently the most widespread certification systems are those of the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). PEFC is the world's largest forest certification system covering more than 300 million ha of certified forests (PEFC, 2021), followed by FSC with 228 million ha (FSC, 2021), together covering 13% of global forest cover (FAO, 2022). Interestingly, in New Zealand, approximately 66% of the country's 1.75 million ha of production forests are certified (Forest Owners Association, 2021; Yao, et al., 2021). Four of the 23 certified forest companies in this country have both FSC and PEFC certification (Forest Owners Association, 2021).

Given the strong presence of certification schemes, and the importance of this and wider SFM to the forest sector for continued market access and the social licence to operate, it is somewhat surprising that unlike other primary sectors, individual credence attributes are less well branded within forest product markets. From a credence perspective, SFM is fundamental in the production of forest products, although it is unclear what that exactly means at an individual attribute level. Expectations for sustainability (economically, ecologically, socially) and multifunctionality (protection of the resource, timber production, job creation, recreation and biodiversity on the same area) in forest management vary substantially between countries as well as certification systems (Klinger et al., 2022).

It may be that the forest industry is using certification schemes as a catch-all default in providing trust and certainty to the consumers who value sustainable product attributes and to promote excellence in plantation forest management. However, it appears from recent work (Klinger et al., 2022) that as non-forestry bio-based products are increasingly being differentiated on their individual rather than collective credence attributes (Miller et al., 2014), it may be helpful for forest growers and producers to find ways to better authenticate credence claims derived from specific management regimes in order to generate greater value from these activities.

Methodology

During 2021, Scion undertook some initial work within the Forest Growers Research Resilient Forests research programme (<https://fgr.nz/>) to investigate the role of individual credence attributes of forest products, and whether better understanding of consumer interest in the credence attributes of forestry products can inform SFM and certification in terms of their underlying criteria and indicators, or the Environmental, Social and Governance (ESG) criteria of forest investments. Nineteen Delphi interviews (Dalkey, 1963) were undertaken with forestry and trade practitioners, as well as a follow-up survey conducted to assess the perceived merits of credence attributes in the forestry sector.

Results and discussion

The role of credence attributes in forestry

The authors found that only eight of the 19 interviewees (42%) had heard the term 'credence attributes', despite it being a well-known and long-established marketing term. A possible reason for this is that the term 'credence attribute' has been more widely used in the agriculture and food sector while rarely used in the forestry sector. Based on the authors' Delphi study, forest certification appears to be being used as a proxy for the credence space within forestry trade and investment.

Certain credence attributes, such as the legality of forest products (i.e. that it is not sourced from illegal logging) or carbon sequestration are practically taken for granted by many in the forestry supply chain, and it would seem odd to customers to see a marketing claim on forest products that stated 'legal timber' or 'sequesters carbon' for example. Making credence-based claims about forest products is therefore rather about meeting standards regarding ESG for investors, or for continued timber retailer market access (i.e. as a means of gaining market access for retailing timber products in big box stores like Home Depot in the US, B&Q in the UK, IKEA and Wal-Mart (Huang et al., 2013)).

From our assessment, a range of individual credence attributes were identified (Table 1) that could be used in the promotion or marketing of forest products from New Zealand's planted forests.

Table 1: Potential credence attributes of forestry products due to sustainable forest management practices

Regulatory aspects	Environment and ecosystem aspects	Social aspects
Legality	Without deforestation	Job creation
Political stability	Without clearcuts	Professional contractors
Country of origin	Biodiversity of the forest	Social licence
Pesticide-free/health of product	Prevented soil erosion/soil protection	Without child labour
Added chemical potency is of levels claimed	Water conservation	Community engagement
Natural chemical potency is of levels claimed	Protected species	
Disease and salvage-free		
Packaging waste		
PEFC certification		
FSC certification		
Fibre miles/carbon footprint		

New market opportunities from specifying individual credence attributes

Overall, forestry's social credence attributes were deemed to be less important in the current market than environmental credence attributes by many of those we interviewed. In contrast, survey respondents felt that the social and ethical aspects were paramount, ranking aspects such as lack of child labour, professionalism, social licence, community engagement and political stability ahead of environmental considerations such as biodiversity, waste and fibre miles. With the exception of the European Union and Asia, other countries that New Zealand trades with seem to have fewer concerns about how far our wood products have travelled to reach export markets. This contrasts with the strong concerns that have been previously raised about food miles from New Zealand (Stancu & Smith, 2006).

While certain credence attributes, such as forest product legality, already form the basis for trade and certification (Aguilar & Cai, 2010), others like 'place/country of origin' or 'the level of chemical potency/treatment' of forest products are becoming more desirable for investors and customers and could form the basis for new market opportunities, which include price premiums, improved market access and the emergence of niche markets. One particular credence attribute that is becoming more sought after is the human health aspect of forest products (Martin et al., 2005), both in terms of benefits from the forest environment itself for recreation and mental health, as well as edible food and medicinal non-timber forest products that might be grown alongside the trees, or as an understory crop.

There is an observed trend, with emphasis on where and how edible and pharmaceutical products (e.g. mushrooms, berries, honey, nuts, bark, roots and herbs) are sourced, especially for the Asian and North American markets. Of particular concern might be the avoidance of chemical use during growth and production, which can also affect the way these products are later packaged and labelled (Klinger et

al., 2022). For example, food harvested from forests or vegetation specifically undercropped in production forests (e.g. ginseng or pollen) could be required to be organically grown for some markets, or packaged in unbleached or non-treated materials.

This is similar to the 'organic' labelling that has grown a substantial product category in the New Zealand wine sector (Thompson, 2017) driven from international market access requirements for organic wines. Forest management aspects concerning the use of chemicals, such as pesticides and herbicides, during the growth cycle may become critical to accommodate market access or gain optimal returns from these non-timber forest products (NTFPs). The importance of this was recently highlighted where traces of glyphosate led to the rejection and disposal of New Zealand grown manuka honey in Japan worth NZD\$71 million (Morrison, 2021).

Further to this, purposeful forest management that improves individual credence attributes within niche products, both by enhancing existing credence attributes or by introducing new attributes of credence through production, may enable new market segments or product differentiation rather than using an overarching 'SFM' or certification label. Specifically, there is an opportunity to highlight individual aspects for certain market segments. Market segmentation can be used to define the most relevant attributes of concern to different groups of consumers and these can be highlighted to increase value to each segment.

New product lines, stamped with ecolabelling, provide a powerful marketing channel to reach niche segments – those products which differentiate on special health benefits, or have chemical or nutraceutical attributes that are particularly desirable (e.g. antioxidants from Enzogenol that claim brain and body health enhancement – www.enzogenol.com). This expands on already known attributes sought after for health and wellbeing, such as non-treated naturally durable timber for garden beds and planters, and cladding or furniture that are marketed from aromatic yet naturally durable tree species such as cypress and cedar.



Figure 2: Consumers want more detail on individual credence attributes of sustainable forest management – the fact that a forest is certified will not be enough

While SFM certification frameworks already cover a broad range of credence attributes, using statements to highlight individual credence attributes takes the investment appeal to a higher level than a ‘certified’ label. Provenance, governance and forest management that demonstrates community wellbeing benefits (e.g. local employment, recreational and educational opportunities, supporting indigenous economy or rural self-sufficiency) can also enhance a forest product’s value.

Building a brand story around an individual’s wellbeing in the supply chain (i.e. the wellbeing of individual people working in or living near production operations), or showing the unique and superior natural environment of a fibre product’s source (e.g. merino high country), is a technique being employed in other primary industries for obtaining price premiums and added trust (Pawson, 2018). Such brand stories outlining specific credence values could also be applied in the marketing of specialised and niche forest products. For the full brand story to resonate with customers it is key that reliable supply chain traceability and descriptions on how the product was superiorly grown and managed are able to be qualified (AgriCreative, 2020), along with proven social benefits for the community and labour force (Pawson, 2018).

Ethical investment factors

An important emerging factor for forestry, particularly plantation forestry globally, is the rise of the ethical investor (Kishan, 2022; Fu, 2020). The loss of investor confidence in forestry businesses can lead to dramatic share loss or even bankruptcy for forest

management TiMOs (Timber Industry Management Organisations) (Knight-Frank, 2022). For ethical investment, quantification of the environmental benefits, credence attributes and ‘environment and social goals’ of the company is paramount. ESG can be demonstrated through SFM certification, as well as at the individual credence level.

However, claims such as ‘natural’, ‘renewable’, ‘carbon neutral’ and statements pointing to ecosystem service indicators are often hard to prove. Reporting can therefore have vague definitions under ESG criteria, which has seeded doubt as to the sustainable nature of forest management, processing and distribution, and even led to accusations of greenwashing, particularly where the metrics on two competing products are not very clear. Vague definitions in the ESG criteria have led to doubts about the sustainable background of claims, which recently sparked fears across the wider investment industry and led to a notable loss of share price (Mooney & Flood, 2021).

This lack of standardised and precise ESG definition and the risk of having a predominantly market lens may separate sustainability from ESG (Winston, 2022). Therefore, the ability for investors to independently analyse the claims of individual credence attributes, through publicly acceptable evidence-based metrics, would improve authenticity and transparency. Major objectives of the global network called Natural Capital Coalition include the alignment of business accounting approaches for nature. This provides the impetus for large forest businesses to conduct guided in-house assessments of the value of the ecosystem services

Table 2: Importance of each credence attribute, the average global performance rating, and performance ranking for New Zealand from a survey of perceptions of international stakeholders in the forestry supply chain

Rank	Credence attribute	Importance score of attribute*	Performance by country**	
			Global average score	New Zealand ranking
1	Labour – forest products made without child labour	3.37	5.98	2nd
2	Place of origin/Country of origin – the source of the lumber	3.26	6.10	2nd
3	Deforestation-free/Regeneration – the forest source was reforested	3.22	5.60	2nd
4	PEFC certification – the supplier has PEFC certification	3.11	6.09	3rd
5	FSC certification – the supplier has FSC certification	2.89	7.17	2nd
6	Professionalism – forest products made using professional contractors	2.89	5.66	2nd
7	Added chemical potency – timber treatments present in the product are of the levels claimed	2.84	4.82	2nd
8	Social licence – level of public dissent around forest management practices or factory conditions	2.78	5.96	2nd
9	Political stability – the source nation has strong and stable government leadership	2.78	6.68	2nd
10	Community engagement – community engagement in forest management decisions	2.72	5.80	4th
11	Biodiversity – the forest source has a high degree of biodiversity	2.56	5.39	3rd
12	Natural chemical potency – nutrients/volatiles/active ingredients that are present in the product are of the levels claimed	2.53	4.72	2nd
13	Job creation – the number of employees associated with production of the product	2.35	5.92	2nd
14	Disease and salvage-free – the lumber source of the product is not from diseased or salvaged (fire/storm) lumber	2.22	5.31	2nd
15	Packaging waste – the amount of non-renewable packaging	2.17	4.39	2nd
16	Fibre miles – the distance the product travelled to get to end market	1.94	5.04	2nd
17	Pesticide-free – no pesticides used in nursery or forest growing cycle	1.79	5.15	2nd

Notes:

*Importance of each attribute was rated on a 7-point Likert scale (very important (6) – not at all important (0)) in response to the question ‘In the production of forest products that are imported by your country, which of the following claims about how the product was grown and processed are most important?’

** The performance of 13 countries, and the global average score, related to a 10-point scale where 1 = not good and 10 = very good in response to the question ‘In the production of forest products that are imported by your country, how do you feel [country] is performing around each of these attributes?’

provided by their forestry estate that are over and above timber production and carbon sequestration (www.naturalcapitalcoalition.org/protocol). This initiative enables governing bodies to assist businesses to establish standardised approaches to biodiversity measurement and valuation of the natural resources that they have been operating.

Of the plantations in New Zealand, 96% are privately owned and several large forests are managed for institutional investors (MPI, 2020). New Zealand forestry is therefore very exposed to the impulses and decision-making processes of investors who are likely to be quite discerning towards claims of ‘sustainable’ forest management.

Brand credence is more important for shareholders investing in a company than ever before. ESG factors

have recently become very important criteria for consideration in the decision-making processes of shareholders and investment firms. This development is expected to further increase the need for and allocation of assets to ESG reporting and actions, as well as increase the importance of credence attributes. The environmental values of planted forests will create an increasing opportunity to access value-added markets and attract investment from the global financial sector. In addition, governance factors are key to ESG investment, although it is recognised that governance indicators are not adequately covered within existing certification schemes (Knight-Frank, 2020).

A better understanding of forestry credence attributes at an individual product level can more effectively inform the management of forest products

and markets for ESG investment. This would enhance the already held perceptions that New Zealand is doing very well regarding quality forest products from plantation resources. Using a 7-point Likert scale, the authors have assessed the importance of 17 individual credence attributes, as well as how international producers (including New Zealand) are perceived to be performing on these. In our survey, New Zealand scored above the global average 10-point performance scale across all credence attributes, and ranked well on the three most important credence attributes, second only to Scandinavian countries (Table 2).

What does this mean for New Zealand forestry producers and growers?

New Zealand's forestry sector is predominantly planted forestry focused on unprocessed log exports and domestic structural timber production. The potential of NTFP from New Zealand estates is still relatively untapped, even though conditions in many of this country's pine forests are well suited for growing highly profitable pollens and understory crops such as the simulated wild ginseng (Yao et al., 2013), mushrooms (Guerin-Laguette, 2021) and other crops (Bayne et al., 2019).

To understand the market requirements for attributes relating to the forests in which NTFP products are grown (e.g. the use of herbicides, and social factors relating to labour or safety in production) requires substantial further work. A market branding strategy that leverages New Zealand's clean green image used for tourism could equally work for NTFP from agriculture and forestry and could help establish new markets and diversify returns from current forestry investments.

Several studies have shown that forest management should include a stronger emphasis on broader sustainability values around ecosystem services and social issues to recognise, sustain and enhance the multiple values provided by production forests (Müller et al., 2020; Yao et al., 2021). Better understanding of the strengths and importance to key markets of individual credence attributes in relation to SFM can improve certification schemes and ESG metrics to more pertinently address and validate claims made by forest producers. Being able to point to a strong individual attribute may also negate proponents who state that forestry companies are 'greenwashing' through the use of blanket SFM claims. In this case, schemes could also quickly provide a line of sight to customers seeking verification concerning more pertinent individual attributes than an overarching certification stamp or SFM assurance.

Acknowledgements

The authors wish to acknowledge the participation of the 19 interviewees who made this study possible. We also thank Graham Coker and Greg Steward for their helpful comments on the draft manuscript, as well as the anonymous peer reviewer.

References

- AgriCreative. 2020. *Branding Traceability*. Available at: <https://agricreative.com.au/2020/01/14/branding-traceability/>
- Aguilar, F.X. and Cai, Z. 2010. Conjoint Effect of Environmental Labeling, Disclosure of Forest of Origin and Price on Consumer Preferences for Wood Products in the US and UK. *Ecological Economics*, 70(2): 308–316.
- Bayne, K.M., Holt, L.J., Yao, R.T., Firm, D. and Clinton, P.W. 2019. *Scoping Alternative Uses for Trees in Northland Region*. Report for Northland Regional Council. Christchurch, NZ: Scion.
- Dalkey, Norman and Helmer, Olaf. 1963. An Experimental Application of the Delphi Method to the Use of Experts. *Management Science*, 9(3): 458–467. doi:10.1287/mnsc.9.3.458. hdl:2027/inu.30000029301680
- Dalziel, P.C., Saunders, C.M., Tait, P.R. and Saunders, J. 2019. *Credence Attributes and New Zealand Country of Origin: A Review*. Christchurch, NZ: Agribusiness & Economics Research Unit (AERU), Lincoln University. Available at: <https://ourlandandwater.nz/wp-content/uploads/2022/05/Introduction-to-Credence-Attributes.pdf>
- Darby, M.R. and Karni, E. 1973. Free Competition and the Optimal Amount of Fraud. *J. Law Econ.*, 16: 67–88.
- Food and Agriculture Organization of the United Nations (FAO). 2022. *The State of the World's Forests 2022. Forest Pathways for Green Recovery and Building Inclusive, Resilient and Sustainable Economies*. Rome, Italy: FAO.
- Forest Owners Association. 2021. *Facts and Figures 2020/21: New Zealand Plantation Forest Industry*. Available at: www.nzfoa.org.nz/resources/publications/facts-and-figures
- Forest Stewardship Council (FSC). 2021. *Facts & Figures*. 2021. Available at: <https://fsc.org/en/facts-figures>
- Fu, C. 2020. *ESG and Its Growing Influence in the Timberland Investment Sector*. CAIA Association. Available at: <https://caia.org/blog/2020/12/17/esg-and-its-growing-influence-in-the-timberland-investment-sector>
- Guerin-Laguette, A. 2021. Successes and Challenges in the Sustainable Cultivation of Edible *Mycorrhizal* Fungi – Furthering the Dream. *Mycoscience*, 62(1): 10–28.
- Hilton, B., Choi, C.J. and Chen, S. 2004. The Ethics of Counterfeiting in the Fashion Industry: Quality, Credence and Profit Issues. *Journal of Business Ethics*, 55(4): 343–352.
- Huang, W., Wilkes, A., Sun, X. and Terheggen, A. 2013. Who is Importing Forest Products from Africa to China? An Analysis of Implications for Initiatives to Enhance Legality and Sustainability. *Environment, Development and Sustainability*, 15(2): 339–354. doi:10.1007/s10668-012-9413-1
- Hyde, J., Miller, A., Morisco, S. and Ollendyke, D. 2016. *Marketing to Ethnic Segments: Halal Products*. Available

- at: <https://extension.psu.edu/marketing-to-ethnic-segments-halal-products>
- Kishan, S. 2022. *ESG by the Numbers: Sustainable Investing Set Records in 2021*. Bloomberg Online. Available at: www.bloomberg.com/news/articles/2022-02-03/esg-by-the-numbers-sustainable-investing-set-records-in-2021
- Klinger, S., Bayne, K.M., Yao, R.T. and Payn, T. 2022. Credence Attributes in the Forestry Sector and the Role of Environmental, Social and Governance (ESG) Factors. *Forests*, 13(3): 432.
- Knight-Frank. 2020. *Environmental, Social and Governance Factors in Forestry Investment & Management*. Available at: www.knightfrank.com/research/article/2020-11-17-environmental-social-and-governance-factors-in-forestry-investment-management
- Lees, N.J. and Saunders, C.M. 2015. *Maximising Export Returns (MER): Communicating New Zealand's Credence Attributes to International Consumers*. Christchurch, NZ: Agricultural Economics Research Unit Agribusiness & Economics Research Unit (AERU), Lincoln University.
- Maida, J. 2022. *A2 Milk Market: Segmentation by Distribution Channel (Offline and Online) and Geography (APAC, North America, Europe, MEA, and South America) – Forecast till 2026, News Release*. Technavio. Available at: www.prnewswire.com/news-releases/a2-milk-market-segmentation-by-distribution-channel-offline-and-online-and-geography-apac-north-america-europe-mea-and-south-america-forecast-till-2026-technavio-301475697.html
- Martin, S. Emery, M. and Dyke, A. 2005. Wild Harvests From Scottish Woodlands: An Exploration of the Health and Well-Being of Non-Timber Forest Products Collection and Use. In Gallis, C. *Proceedings First European Cost E39 Conference: Forests, Trees, Health, and Well-being*. Thessaloniki, Greece: National Agriculture Research, Forest Research Institute: 2–12.
- Miller, S.A., Driver, T., Velasquez, N. and Saunders, C.M. 2014. *Maximising Export Returns (MER): Consumer Behaviour and Trends for Credence Attributes in Key Markets and a Review of How These May Be Communicated*. Christchurch, NZ: Agricultural Economics Research Unit Agribusiness & Economics Research Unit (AERU), Lincoln University.
- Ministry for Primary Industries (MPI). 2020. *Exotic Plantation Forests*. Available at: www.mpi.govt.nz/forestry/new-zealand-forests-forest-industry/new-zealands-forests/
- Mooney, A. and C.F. 2021. DWS Probes Spark Fears of Greenwashing Claims Across Investment Industry. *Financial Times*. Available at: www.ft.com/content/a3d6a8d1-0800-41c9-ab92-c0d9fce1f6e1
- Morrison, T. 2021. *Japan Rejects NZ Honey with Traces of Weedkiller Glyphosate*. Available at: www.stuff.co.nz
- Müller, A., Olschewski, R., Unterberger, C. and Knoke, T. 2020. The Valuation of Forest Ecosystem Services as a Tool for Management Planning – A Choice Experiment. *Journal of Environmental Management*, 271: 111008.
- Neumeier, M. 2005. *The Brand Gap* (Revised Edition). San Francisco, USA: Peachpit Press.
- Pawson, E. 2018. *The New Biological Economy: How New Zealanders are Creating Value from the Land*. Auckland, NZ: Auckland University Press.
- Programme for the Endorsement of Forest Certification (PEFC). 2021. *PEFC Global Statistics – June 2021*. Geneva, Switzerland: PEFC.
- Salazar-Ordóñez, M., Rodríguez-Entrena, M., Cabrera, E.R. and Henseler, J. 2018. Understanding Product Differentiation Failures: The Role of Product Knowledge and Brand Credence in Olive Oil Markets. *Food Quality and Preference*, 68: 146–155. doi:10.1016/j.foodqual.2018.02.010
- Sarre, A. and Sabogal, C. 2013. Is SFM an Impossible Dream? *Unasylva*, 64(1).
- Stancu, C. and Smith, A. 2006. *Food Miles: The International Debate and Implications for New Zealand Exporters*. Wellington, NZ: Manaaki Whenua, Landcare Research.
- Thompson, J. 2017. The Rise of Organic Wine. *Good Magazine*. Available at: <https://goodmagazine.co.nz/rise-organic-wine/>
- Winston, A. 2022. What's Lost When We Talk 'ESG' and Not 'Sustainability'. *Sloan Review: MIT*. Available at: <https://sloanreview.mit.edu/article/whats-lost-when-we-talk-esg-and-not-sustainability/>
- Yang, W. and Renwick, A. 2019. Consumer Willingness to Pay Price Premiums for Credence Attributes of Livestock Products – A Meta-Analysis. *Journal of Agricultural Economics*, 70(3): 618–639. doi:10.1111/1477-9552.12323
- Yao, R., Garrett, L. and Katu, G. 2013. *Profitability Analysis for Wild Simulated Ginseng Under Radiata Pine Forests*. Report produced for MPI. Rotorua, NZ: Scion.
- Yao, R.T., Palmer, D.J., Payn, T.W., Strang, S. and Maunder, C. 2021. Assessing the Broader Value of Planted Forests to Inform Forest Management Decisions. *Forests*, 12(6): 662.

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