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Factors Impacting Export Decisions of Small and Medium-sized Softwood Sawmills in North America

By: Daisuke Sasatani, Post-doctoral researcher and Ivan Eastin, Professor, Center for International Trade in Forest Products (CINTRAFOR).

It has been awhile since "go international" became a rallying call for the North American softwood export industry. After the housing crisis in the US, domestic softwood lumber consumption declined sharply and has yet to recover to its pre-crisis level. However, in this era of globalization, new export opportunities for wood products are continually emerging, and the weak demand for softwood lumber in the US has been partially offset by strong offshore demand. Some sawmills actively cultivate opportunities in offshore markets, while many other sawmills in North America remain hesitant to export their products to international customers. Experience suggests that the process of penetrating and then developing an international market can be a difficult task for a small or medium-sized sawmill. Many companies, even experienced ones, would like to know how to be more successful in export markets.

Using the assumption of "perfect information," some economists explain how firms should rationally choose the best way to commit to international business. However, most sawmills, especially small and medium-sized enterprises (SMEs), often enter international markets differently than economic theory predicts. In reality, firms generally expand into markets that are similar to their own domestic market, by exporting through external intermediaries and then replacing these agents with their own sales teams as their export sales and business experience grow. A firm usually initiates their exports into a culturally and/or geographically close country. Once a firm enters the foreign market, it can gain market knowledge through its business operations. As this knowledge accumulates, the firm can begin to adjust their degree of foreign business commitment in order to strengthen their position in the foreign market. Over time, the firm may expand its operations into more culturally and/or geographically diverse countries. Since firms often experientially learn before they engage in a higher level of international business commitments, a step-by-step pattern of foreign market expansion is often observed (Johanson and Vahlne, 1977).

However, this process of learning-based step-by-step internationalization cannot predict which firms are more likely or more prepared to expand into international markets. Since exporting is really just an extension of the business operations of a firm, firms generally decide to export based on their business strategies. Not exporting and focusing on the domestic market is a good strategy, if that makes their business operation more efficient and/or profitable. Thus, the business decision of whether a firm goes international or focuses on their domestic market is independent from the step-by-step internationalization process.

Consequently, combining those two processes leads to an augmented internationalization process (AIP) step-by-step model. The whole internationalization process of SMEs starts with the decision

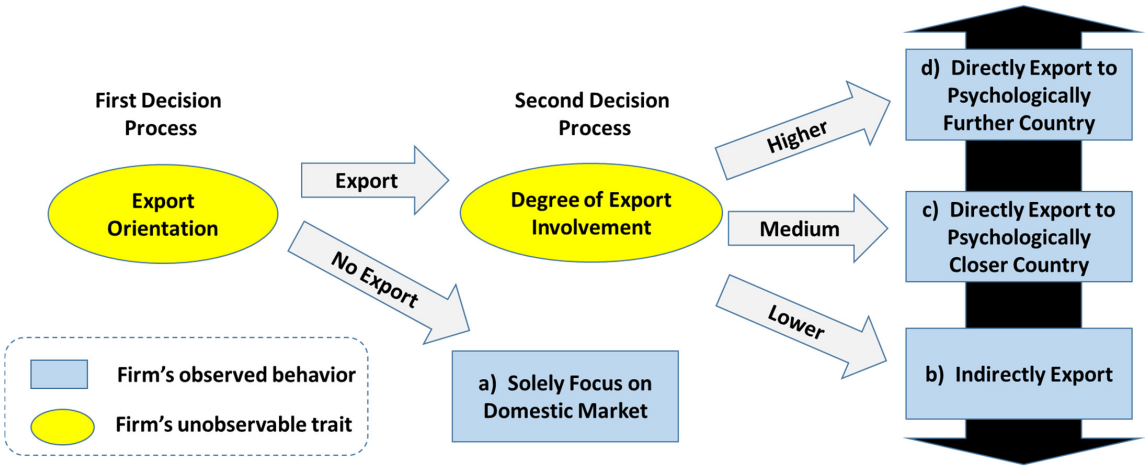

Figure 1. Conceptual framework of Augmented Internationalization Process (AIP) step-by-step model

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In This Issue:

Director's Notes

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The Center for International Trade in Forest Products addresses opportunities and problems related to the international trade of wood and fiber products. Emphasizing forest economics and policy impacts, international marketing, technology developments, and value-added forest products, CINTRAFOR's work results in a variety of publications, professional gatherings, and consultations with public policy makers, industry representatives, and community members.

Located in the Pacific Northwest, CINTRAFOR is administered through the School of Environmental & Forest Sciences at the University of Washington under the guidance of an Executive Board representing both large and small companies, agencies, and academics. It is supported by state, federal, and private grants. The Center's interdisciplinary research is carried out by university faculty and graduate students, internal staff, and through cooperative arrangements with professional groups and individuals.

We have arrived at the start of 2015 and the world of trade has changed significantly over the past year. Perhaps the most significant change from the perspective of an exporter is the incredible surge in the strength of the US dollar relative to the currencies of our major markets, particularly the Euro, the Canadian dollar and the Japanese yen. In just the past year alone, the dollar has strengthened by 16.6% against the yen, 9.2% against the Canadian dollar and 12.6% against the Euro (Figure 1). This trend has huge implications in our major export markets where the competitiveness of US wood products has declined significantly relative to our major competitors (including domestic wood in the case of Japan). Despite this, the value of US exports is still projected to rise by approximately 10% in 2014 (based on the January-October trade data), to reach a record $9.6 billion. If wooden furniture and wooden prefabricated buildings are included in the export total, then total US wood exports in 2014 are projected to reach a record $11.7 billion. And while the strong US dollar may slow export growth in the final two months of 2014, we are still safely on track to reach a record high in the value of wood exports.

Perhaps two of the biggest market developments outside of the currency realignment occurred in Japan: the designation of US Douglas-fir as a Japanese "local wood species" under the Wood Use Points Program and the implementation of the consumption tax increase from 5% to 8% (although the second phase of the increase has been delayed by 18 months). CINTRAFOR, working closely with the US Embassy and the Softwood Export Council, was successful in petitioning the Japanese government to grant US Douglas-fir "local wood" status under the Wood Use Points Program. To date, the US has been the only country to successfully complete the rigorous two-part application process which includes gaining national approval followed by approval by each of the 47 prefectures. In the case of the US, we received approval from 44 prefectures. This approval, in combination with a jump of building activity prior to the consumption tax increase, resulted in a huge surge in US wood exports (+15.8%) during the first four months of 2014, an increase of approximately $41.8 million over the same period in 2013! However, the toxic combination of the conclusion of the WUPP program, the increase in the consumption tax, the weakening of the yen and the start of a (hopefully) short recession in Japan during the second and third quarters of 2014 all contributed to a substantial weakening in Japanese demand for US wood products. By the end of 2014, it is expected that US wood exports to Japan will have gone from the 15.8% gain observed through April to an estimated 4% decline.

However, US exports of wood products globally were generally positive in 2014. US export growth for wood products was broad based across almost all major markets (with the exception of Japan) and across all major product categories (with the exception of plywood). The major export markets for wood products were China (28.8% market share) and Canada (23.5% share), followed by Japan (8.6% share), Mexico (6.8% share) and the UK (6.6% share). Particularly strong growth in US wood exports occurred in the Netherlands, (+66.6%), Turkey (+36.9%), India (+35.3%) and Spain (+31.7%), while several new emerging markets also exhibited strong growth in 2014, including Egypt (+24.4%), Vietnam (+23.4%), Pakistan (+28.8%), Malaysia (+16.6%) and Thailand

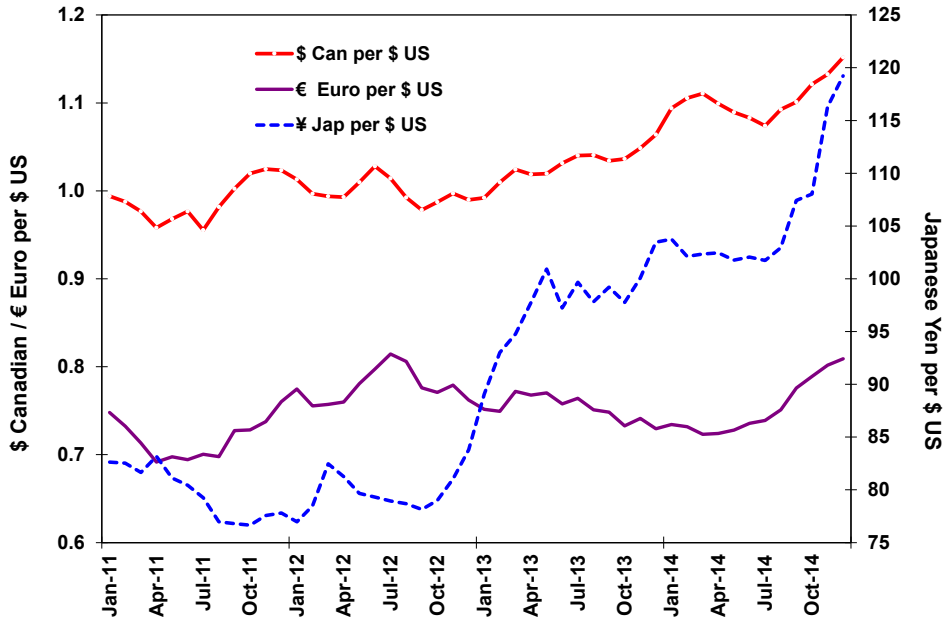

Figure 1. The US dollar strengthened significantly during 2014, particularly with respect to the Japanese yen

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(+12.9%). US wood exports were also strong across almost all products categories in 2014 with the value of lumber exports up by 18% (37% market share of all US wood exports), followed by logs (+4.6% with a 26.6% share), chips (+34% with a 9% share), builder's joinery (+2.9% with a share of 4.8%), plywood (-4.1% with a share of 4%), veneer (+2.1% with a share of 3.3%) and moulding and millwork (+1.1% with a share of 3.2%).

Looking at the major export markets and their product mix, exports to China were almost evenly split between logs (48.1%) and lumber (47.4%). US log exports to China were heavy to softwood species (71.8%) of which 31.4% were hemlock, 30.4% were Douglas-fir, 14% were spruce, 6.1% were southern pine and 12.1% were not specified. Lumber exports to China were dominated by hardwood species (oak: 39%, ash: 13% and unspecified hardwood species: 24.2%). Softwood lumber makes up just 17% of US lumber exports to China and this was split between Douglas-fir: 24%, southern pine: 23.9% and hem-fir 26.1%. In Canada, the major export products included lumber (22.8%), logs (13.8%) and builder's joinery (13.5%). Lumber exports to Canada were heavy to hardwood species (58.6%), primarily oak (23%) and maple (14%). Softwood lumber exports were comprised of eastern white and red pine (25.4%), Douglas-fir (18.8%) and western red cedar (14.6%). Log exports to Canada were heavy to softwood species (59.5%) with over half being spruce (52.4%), followed by pulpwood (14.8%) and posts (11.1%). Hardwood logs were primarily oak (12%) with the remainder being an unspecified mix of hardwoods (27.4%). Finally, exports of builder's joinery to Canada were dominated by wooden doors (29.7%), wooden windows (14.1%) and unspecified joinery products (50.5%) which was primarily fabricated structural wood members (65.5%). US exports of wood products to Japan were largely logs (53.9%), followed by lumber (27.5%) and wood chips (11%). US log exports to Japan were heavily skewed towards Douglas-fir (94.3%). In contrast, softwood species represent 61.3% of US lumber exports to Japan with hardwood species making up about 39%. The main hardwood lumber species were walnut (15% of total lumber exports), oak (8.9%), ash (3.6%) and maple (3.6%). Softwood lumber, similar to logs, was heavily dominated by Douglas-fir (87.6%), with some Sitka spruce (4.9%) and hemlock (4.2%).

The outlook for the demand for US wood products going into 2015 is mixed. Domestic demand is expected to increase substantially, driven by increasing housing starts and a relatively strong economy (GDP is expected to grow by 3% in 2015). Total US housing starts are projected to be approximately 1.2 million (+18.9%) in 2015 with demand for plywood (+5.1%), OSB (+11.3%) and softwood lumber (+8.5%) all expected to increase substantially. In contrast, weak oil prices combined with slowing economic growth in our major export markets in 2015 (Japan: +1.1%, Canada: +2.4% and China: +7.1%) are expected to maintain the strong US dollar while tempering the competitiveness of wood products in these markets. However, relatively strong demand for US wood products in China and Canada should help to increase the international demand for US wood products in 2015.

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of whether the firm should expand their efforts beyond the domestic market and into international markets. This decision is influenced by the firm's perception of risk and their export-orientation. Integral to this decision is the determination of what level of resources the firm is willing to commit to developing the export market, which is directly related to the firm's degree of export involvement. Figure 1 depicts the conceptual framework for the AIP model. The decision of whether a firm targets only the domestic market is nested in the decision to allocate firm resources to entering and competing in an international market.

The AIP model is applicable to many different industries, including the sawmill industry in North America, which can be segmented into four different types of sawmill firms in terms of their level of international business operations: a) the firm has never exported and focuses solely on the domestic market, b) the firm engages in indirect exports, c) the firm directly exports but only to a neighboring country, and d) the firm exports directly outside North America. Indirect exporting means selling through an intermediary and the sawmill manager is not directly involved in selling into an international market. In contrast, direct exporting occurs when the sawmill manager is directly involved in the selling and marketing of wood products to international customers even though they may use a forwarder to deliver their products.

The objective of our research was to understand what factors influence the level of international business operation within the North American sawmill industry. Since the AIP has two different decision making processes (export orientation and export involvement), the following two questions were investigated: 1) What factors cause a sawmill manager in North America to enter international markets? and 2) What factors influence sawmill managers to commit to a higher degree of export involvement? In order to answer these questions, questionnaires were developed and mailed to 406 softwood sawmill SMEs, which covered the vast majority of softwood sawmills operating in North America in 2011. It is important to note that the unit of analysis is at the firm level, since a firm may own multiple sawmills. A hurdle ordered probit regression was utilized to analyze the two-step AIP model. The location of the firm, firm's size, the firm's degree of product differentiation, forestland ownership, years in business, and financial performance were all used as explanatory variables during the analysis.

Results

Of the 96 responses received (23.6% response rate), 89 valid responses were used for the analysis. Among the survey respondents, 65 were from the US and 24 were from Canada. Table 1 shows a summary of the dependent variables and location of firms. The results show that all of the Canadian firms engage in some degree of international business. And more importantly, virtually all Canadian sawmills reported that they directly export their products. Thirteen sawmill managers reported that they export directly to the US, whereas ten of them reported that they directly export to other parts of the world. On the other hand, 26 (40.0%) of US respondents sold their products only within the US domestic market, 16 US firms (24.6%) indirectly exported through inter-

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Table 1. The level of internationalization commitment and location of firms

	Canada	US	PNW	SE	NE
a) Sell to Domestic Market Only	**0**	**26**	11	9	6
b) Indirectly Export	**1**	**16**	4	5	7
c) Directly Export to either US or Canada only	**13**	**7**	1	0	6
d) Directly Export outside of North America	**10**	**16**	11	3	3

mediators, seven US firms directly exported only to Canada, and just a quarter of US sawmills (16 firms) reported that they directly exported their products outside of North America.

In the US, the Pacific Northwest (PNW), the Southeast (SE) and the Northeast/Upper Midwest (NE) are the three major softwood lumber production regions. In this study, the PNW region included Idaho, Montana, Northern California, Oregon, and Washington. The southeastern region included Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Oklahoma, Tennessee, Texas and Virginia. All other US respondents were from the Northeast and Upper Midwest region (NE) which included Minnesota, Wisconsin, Michigan, Ohio, Pennsylvania, New York, Massachusetts, Vermont, New Hampshire and Maine. The survey results indicate that eleven PNW firms (40.7%), nine SE firms (52.9%) and six NE firms (27.3%) sell only into the domestic US market. Another four PNW firms (14.8%), five SE firms (29.4%) and seven NE firms (31.8%) indirectly export through intermediaries. Just one PNW firm (3.7%) sold lumber directly to only Canada, while 11 PNW firms (40.7%) directly exported lumber outside of North America. In the SE, only three firms (17.6%) directly sold lumber to markets outside of North America and none exported solely to Canada. In the NE, six firms (27.3%) exported directly to Canada while three others (13.6%) exported outside of North America.

For people familiar with the lumber industry, these results may not be particularly surprising. Southeastern firms tend to be more "conservative" than PNW and NE firms in terms of international business engagement, largely because the huge growth in housing starts in the region has substantially increased the local demand for softwood lumber. In contrast, sawmill firms located in the PNW and the NE tend to be more exposed to foreign markets based on: their geographic proximity to these markets, strong offshore interest in PNW and NE timber species, particularly Douglas-fir and white pine, and strong export-oriented trade associations and market development programs.

To help better understand the survey data, a backward stepwise procedure was used with the hurdle ordered probit regression to determine which firm characteristics and interaction variables should be included in the final model. Table 2 shows the summary results of the final model where Export Orientation refers to whether or not a firm exports their products and Degree of Export Involvement refers to how involved a firm is in the export process. Firm age (how long a firm has been in business), forestland ownership and profitability were found to be independent of the international business activity of softwood sawmill firms and were not included in the final model. The location of the company headquarters, firm size and degree of product differentiation were found to directly influence the international business activity of a firm.

Discussion

In North America the geographic location of the firm influences how a firm commits to international business. All of the Canadian respondents reported that they participated to some degree in exporting. Since about 80 percent of the Canadian population lives within 200 miles of the Canada-US border, firms in Canada naturally target the larger US market. Canadian sawmills are born-international because of their inherent geographic advantage as well as the limited size of their domestic market relative to the large size of their domestic forest resource and sawmill industry. Also, because the Softwood Lumber Agreement limits their access to the US, Canadian firms have increasingly looked to markets outside North America. In other words, Canadian firms have to export in order to survive. In contrast, many US firms are less interested in exporting, even into neighboring markets such as Canada and Mexico since the US domestic market is large enough to absorb all of their production. Given the size of the domestic market for softwood lumber, international markets are often outside of the cognitive boundary of many sawmill managers in the US. Yet, as the survey results indicate, some US firms, particularly those located in the NE, export to Canada in 2010, perhaps because the Canadian dollar was historically high compared to the US dollar, and the momentum of the Canadian housing market was much stronger than that of the US at

Table 2. Summary of Results

	Export Orientation	Degree of Export Involvement
HQ locates in Canada	↑ (all firms export)	No relationship
HQ locates in South	No relationship	↓ (less involved)
Degree of Product Differentiation	↑ (only in Southern US)	↑ (more involved)
Firm Size	↑ (larger, more export)	No relationship
Firm Age	No relationship	No relationship
Forest Ownership	No relationship	No relationship
Profitability	No relationship	No relationship

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that time. However, whether a firm is located in the US or Canada does not significantly influence the degree of export commitment among exporters (i.e., indirect export vs direct export).

Firms located in the SE are significantly lower degree of export involvement. Regardless of firm size, there are many so-called "spaghetti mills" in the SE, and the majority of them utilize smaller diameter Southern yellow pine logs to manufacture dimension lumber. Selling commodity-grade dimension lumber into international markets does not make a lot of sense for small and medium-sized mills since price competition is very high. Unless they differentiate their products (e.g., pressure treated lumber, machine stress-rated lumber, clears), it is difficult to obtain a large enough margin to justify the higher expenses associated with exporting softwood lumber. The survey results clearly show that the likelihood that firms in the SE will enter international markets is very low.

The survey results also show that product differentiation is one of the most important factors in influencing the degree of internationalization of small and medium-sized softwood sawmills. A company can choose to develop a competitive advantage, either via lower costs or by differentiating its products to command a higher price (Porter, 1980). In pursuing a differentiation strategy the firm looks to augment its basic product (e.g., lumber) with some combination of attributes valued in the target market (e.g., applying a preservative treatment, kiln drying the lumber, cutting to metric sizes, improving the lumber quality through a proprietary grade). Needless to say, many customers in offshore markets (e.g., Caribbean island nations, South Korea and China) are happy to purchase low priced lumber, but the profit margin that the sawmill obtains from selling this type of undifferentiated commodity product will be very low because of intense global competition. On the other hand, there are niche export markets which can generate a higher profit margin and where the size of the market segment may be too small for larger sawmills to pursue profitably. Other offshore markets may require that products conform to a local standard (e.g., the JAS standard for structural lumber in Japan) that differs substantially from North American standards. Thus, firms that differentiate their products can enter these international markets easier than firms that are focused on the production of low-cost standardized commodities, particularly since it is difficult for SMEs to compete on price against large sawmills that enjoy substantial economies of scale. The results of this study suggest that SMEs, especially smaller companies, can compete successfully and should consider adopting a well-designed differentiation strategy for international business success.

Finally, the survey results suggest that larger SMEs are more likely to decide to export outside North America than smaller firms in the US. However, after a firm has entered an export market, firm size does not influence their decision to pursue a direct or indirect export strategy. In general, firms selling complex, differentiated and diversified products, were more likely to export directly rather than utilizing intermediaries, perhaps because they can better explain their products and directly negotiate terms and conditions with customers. On the other hand, firms selling commodities were more likely to use intermediaries (e.g., traders or wholesalers) since hiring in-house sales specialists may cost more than outsourcing the sales function. As a firm grows, it may be less willing to focus on small, niche markets, preferring instead to target products with higher commodity contents to take advantage of their efficiencies of scale, which may explain why we found that larger SMEs tend to rely on intermediaries to facilitate exports.

Business Implications

While many sawmill managers are interested in exporting, others think they are not ready to export. Indeed, penetration of a new foreign market is a zero-base process. Initially, managers have little or no market knowledge about the new market and they perceive that there is a high level of risk associate with exporting. In that case, companies can mitigate the perceived risk by relying on export intermediaries to find international customers. Once engaged in indirect exporting, companies may decide to learn from their export partner with the express purpose of developing in-house export expertise. Since intermediaries are knowledgeable about international markets, they can help identify which markets to target. In order to accumulate export knowledge and experience, new-to-market firms should consider teaming up with export intermediators in the short to medium-term. However, it is important to choose an export partner who is willing to help the sawmill manager develop an in-house export capability, as not all traders are willing to do this.

The majority of softwood lumber firms in North America see international markets as opportunities to increase sales of existing products. They tend to adopt a "sales-push" approach rather than market-driven "pull" approach. However, the results of this study clearly show that is a bad idea. International marketing is different from home-country marketing. The strategy that works in the home-country will not necessarily work in a foreign market. Furthermore, foreign markets can differ substantially from one another. For example, the Japanese and Chinese lumber markets are completely different, even though they are both in Asia. For US lumber suppliers, the well-regulated wooden home construction sector is the main market in Japan, whereas the infrastructure and remanufacturing markets in China are the dominant drivers of wood demand and these markets prefer inexpensive wood materials. Consequently, a single marketing strategy generally will not be effective in multiple export markets. This study supports the idea that implementing a product differentiation strategy is important to increasing international commitment. If SME sawmills want to export successfully, they should consider differentiating their products for international markets. As previously discussed, there are often small, but profitable, niche market opportunities all over the world. In order to successfully penetrate and develop an international market, a firm should start by analyzing the market in order to identify the mix of product attributes that will best provide them with a competitive advantage. Q4

CINTRAFOR Grad Students Take Top Honors for Posters at AISES Conference in November

AISES - American Indian Science and Engineering Society "administers and is involved in many programs and events for American Indian and Alaska Native college students to increase access to, and boost success in, STEM. AISES' National Conference offers a unique perspective on ways tradition and STEM can be effectively bridged in the 21st century...It has become the premier event for Native American Science, Engineering & Math (STEM) professionals and students, attracting over 1,600 attendees from across the country."

This year two CINTRAFOR Native American graduate students, Clarence Smith and Cody Sifford, attended the AISES Conference held in Orlando, Florida from November 12-15. Both presented posters on their graduate research projects in the poster session. During the conference, the posters were evaluated and certificates for the top posters were awarded. In 2014, the CINTRAFOR graduate student representatives "swept" the poster competition, taking both first and second place with their submissions. We are extremely proud of Clarence and Cody for all their hard work and their strong performance at the AISES Conference. Congratulations to both of them.

Clarence Smith (Blackfoot Nation) (left) and Cody Sifford (Navajo Nation), placed 1st and 2nd respectively for graduate student posters at the 2014 American Indian Science & Engineering Society (AISES) conference.

Picture credit: Karl Wirsing, Director of Communications, SEFS

Cody Sifford

Poster Title: Developing an Impact Assessment of Local Air Quality as a Result of Biomass Burns

Authors: Cody Natoni Sifford, Indroneil Ganguly, Ernesto Alvarado, Ivan Eastin

Poster Abstract:

The prescribed burning of woody biomass in forests is a major source of greenhouse gas emissions in the western US. Biomass burning also adversely affects local and regional air quality, with acute negative impacts on human health at local levels. This project assesses where smoke particulates are dispersed and creates a local health impact assessment for the Pacific Northwest Region. The first part of the project includes cataloging slash pile locations and their respective volumes in Washington forests for the last three years. Emission, trajectory and chemical transport models are used to calculate chemical concentrations. Life cycle assessment methods are then utilized to calculate the impacts to local human health. These impacts are to be considered avoided impacts when residual pile burning is avoided and instead the slash piles are collected for bio-jet fuel production.

Clarence Smith

Poster Title: Measuring Economic Value of American Cultural Designs within the Wooden Gift market

Authors: Clarence Smith, Daisuke Sasatani, Ivan Eastin, Indroneil Ganguly

Poster Abstract:

The value of branding Native American symbolism needs to be examined and measured for the competitive advantage that it potentially brings to Native American entities that are participating within business markets. Tribal forest certification is vital in the distinction of tribal designs from other products manufactured by non-natives that use native symbolism/designs in their marketing. To understand the perceived value of tribal forest certification and designs, this research assesses the perception that surveyors hold when they are provided with the option of buying a wooden gift box with Pacific Northwest designs and logos. Cultural diversity awareness and ethnocentrism are essential in this study. When Native American entities promote future products in science (i.e. Bio-fuel, cement additives) that are environmental innovations which promote sustainable forest managment practices, it is vital to understand the market value of a Native American brand. Understanding the potential for prospective consumers to pay a premium for tribal certification is essential. The goal of this study is to help tribal governments, Indian entrepreneurs and other native organizations to understand the potential value of certification and to explore business opportunities that exist within regional and international markets.

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