

Consumer-Driven Demand Analysis for Locally Grown and Organic Wool in the Upper Midwest

Survey Analysis (Apr. 28, 2016)

1. Research Overview

This research project mainly consists of two components. First, we conduct a survey aimed at the wool product manufacturers and intermediate processors on their attitudes towards the locally-grown and locally-grown-and-organic wool of the Upper Midwest (Iowa, Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin by our definition). Next, based on the analysis of the survey data, we develop a pilot product made of the Upper Midwest wool, with the cooperation among wool farmers, manufacturers, retailers and Natural Fiber Alliance.

2. Research Background and Motivation

The motivation of this research stems from the convergence of several emerging trends about the shopping habits of the US consumers. First, the affection for wool is reignited, due to a lack of sustained interest in the prevalent artificial textiles (for example, acrylic). The lauded characteristics of wool, such as breathability, durability, and the ability to resist water are again becoming attractive. Second, more and more consumers are buying environmental friendly, sustainable or organic products, and the rising of the organic food industry is a convincing example of such phenomenon. Last but not the least, local identity can be a unique advantage of a product while the buying-local campaigns are heating up, which are often considered as actions to support the local industries and economies. Besides, social, cultural and even emotional elements can also be built into locally made products, eliciting more interests from local consumers.

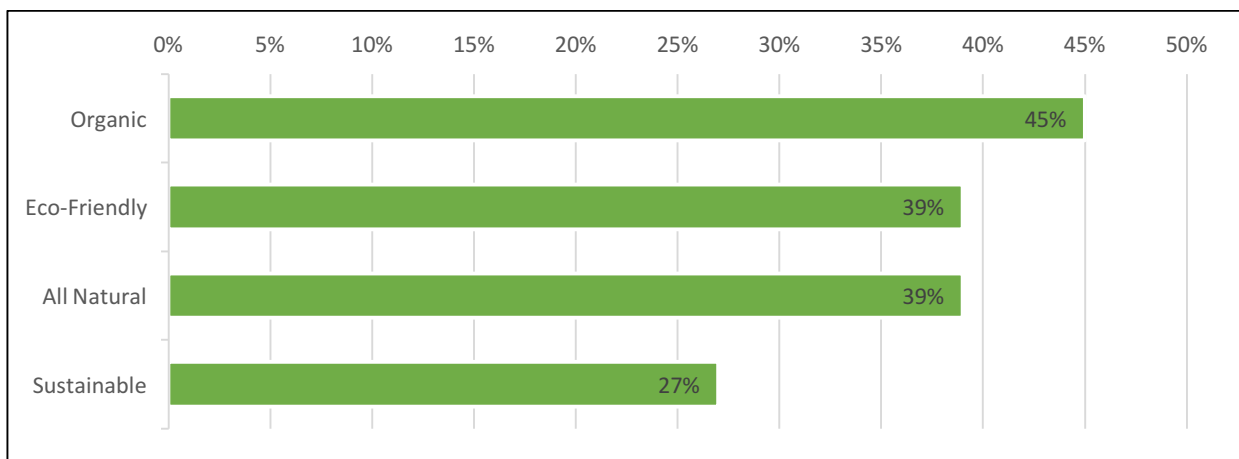
As the US economy rebounds from the Great Recession, demands for wool products, which can be considered as inherently natural and sustainable, are also ticking up. In the Midwest, for example, the Faribault Woolen Mill located in Faribault, Minnesota, a major local woolen product manufacturer, staged a comeback after shutting down for 18 months in 2009 and 2010¹. Such a resurgence signals the increasing local demand, however, the Midwest wool industry is still rather fragmented to our best knowledge, due to years of shrinking markets. In such a context, we are curious about how we can grasp the opportunity and re-develop the Midwest wool industry while taking advantage of the recent buying-local and shopping-natural trends. As a major part of our research, we developed a survey (elaborated below in detail)

¹ Schwartz, Nelson D. (2015, August 6). The Tale of an Anxious Economic Recovery, Told by a Revived Textile Mill. *The New York Times*. Retrieved from http://www.nytimes.com/2015/08/07/business/economy/the-tale-of-an-anxious-economic-recovery-told-by-a-revived-textile-mill.html?_r=0

asking wool product manufacturers and intermediates about their attitudes and willingness to pay of premiums for locally-grown and locally-grown-and-organic Upper Midwest wool, in order to get a first glance of the level of enthusiasm in the industry about such a business developing direction.

Prior to the survey design, we conducted a thorough literature search and review on the topic of local and sustainable fibers. Surprisingly, such literature is very scant in number and the following are the two most relevant research we have found up to date.

The first one was a USDA-supported study^{2,3} carried out by researchers from Texas State University, University of Delaware and Kansas State University. In this research, conducted in Texas, Virginia and Georgia and finished in 2012, the researchers find out that many consumers are willing to pay a 27%-45% premium for locally grown and “organic”, “all natural”, “eco-friendly” or “sustainable” labeled animal fiber products (see Graph 1).



Graph 1: Premiums (compared to the products labeled as conventional) that the sampled consumers are willing to pay for locally grown animal fiber products with different labels (Hustvedt et al., 2012)

Additionally, another study⁴ published in 2012 using Internet survey by researchers from Kansas State University, Texas State University and National Chung Hsing University of Taiwan concludes that most US consumers prefer wool to acrylic and distinguish wool products by origin⁵.

We believe that such results indicate an emerging consumer-driven demand for local and organic wool products, as well as the accompanying profit opportunities for local wool farmers

² Hustvedt, Gwendolyn, John Bernard, and Hikaru Peterson. (2012). Marketing of locally grown sustainable animal fiber." *USDA: Sustainable Agriculture Research and Education*.

³ This project and all associated reports and support materials were supported by the Sustainable Agriculture Research and Education (SARE) program, which is funded by the U.S. Department of Agriculture-National Institute of Food and Agriculture (USDA-NIFA). The consumers were provided with a definition for the alternative labels.

⁴ Peterson, Hikaru Hanawa, Gwendolyn M. Hustvedt, and Yun-Ju Kelly Chen. "Consumer preferences for sustainable wool products in the United States." *Clothing and Textiles Research Journal* 30.1 (2012): 35-50.

⁵ The authors also find that most US consumers valued organic certification less than combined environmental sustainability and animal welfare claims and, surprisingly, lowered their valuation for wool products in response to the information provided on wool attributes. Such findings indicate the possible (and interesting) convolutions of labeling strategies in the wool business, which we have not explored further at the current stage of this project.

and manufacturers in the US. However, it should be noticed that USDA has only set standards for “organic” certification and labeling⁶, and the practice of acquiring organic labeling for wool product is very rare to our best knowledge.

We identify that a majority of these target consumers should belong to the segment who are interested in “lifestyles of health and sustainability” (LOHAS). These consumers are believed to have driven the dramatic growth of the organic food industry. The US fiber producers seem to have lagged far behind in the production and marketing of fibers with the attributes of interest for the LOHAS market. However, the “buy local” trend has already spread to the fiber markets including cotton and wool from the food sector, even though at a relatively limited scale (e.g., “Go Texan”, “Jersey Fresh” and “Minnesota Grown” projects).

In our survey, we would like to explore the market potentials for the local and local-and-organic wool products in the Upper Midwest (Iowa, Michigan, Minnesota, North Dakota, South Dakota, and Wisconsin by our definition). It should be noted that the two research mentioned above are both concentrated on the demand side of the actual products, and any evidence from the supply side is even rarer to find. However, we believe that it is essential to attain the attitudes of the supply side about such consumer-driven demand and find out if the local wool industry can benefit from such unexploited revenues. Therefore, we focus our survey on the manufacturers and intermediate processors in the wool industry.

Meanwhile, we understand that multiple obstacles exist in expanding such a market. For example, the prevalence of intestinal parasites in sheep means that producers must choose between potentially losing infected animals or treating them with medications prohibited under current organic standards. The costs of production hence are likely to rise.

However, on the other hand, the premiums paid by targeted consumers for the local and local-and-organic wool products in the Upper Midwest can be high enough to offset and even surpass the incurred extra costs, bringing more attractive profits to the farmers, producers and retailers. Therefore, based on the results we obtained from the survey, we would like to continue to explore the budget feasibility of developing a local or local-and-organic wool product in the Upper Midwest, with the cooperation among wool farmers, manufacturers, retailers and Natural Fiber Alliance.

3. Survey

3.1. Survey Design

The targeted participants in our survey are the wool product manufacturers in the Upper Midwest and the wool intermediate processors (such as wool buyers, wool warehouse owners, wool scouring processors, etc.) in the US. The reason that we do not confine the intermediate processors in the Upper Midwest is that the wool from the Upper Midwest could end up being dealt in the other states, due to a lack of major middle players in the Upper Midwest.

⁶ Items must be certified to the USDA’s Organic standards, and must be inspected and certified before labeling. This means no synthetic pesticides, hormones or antibiotics, no irradiation, no artificial coloring or genetically modified (GM) ingredients, and no petroleum or sewage sludge fertilizers. Organic also means that animals were fed organic feed, and had access to pasture or the outdoors.

To identify potential participants, for manufacturers, we combined and double checked the contact data that we attained from both The Dun & Bradstreet® Million Dollar Directory (MDDI), Reference USA® and thorough Google searching using multiple relative keywords. For intermediate processors, we directly acquired the directory from the American Sheep Industry Association website.

Before the survey starts, we provide the participant a brief overview about the topic, covering both the potentials and challenges of the local wool industry. During the survey, we specifically ask if the participant thinks that there is any added value for the Upper Midwest locally grown wool, and if the participant thinks that there is any *extra* added value for the Upper Midwest locally grown wool *if it is certified as organic by USDA*. Besides, we ask about the range of the maximum premium that the participant is willing to pay for the Upper Midwest local wool if he/she thinks believes in the added value attached to it. Similarly, we also ask about the range of the maximum *extra* premium that the participant is willing to pay for the Upper Midwest local and *USDA-certified-organic wool* if he/she believes in the *extra* added value attached to it.

Besides the willingness-to-pay questions, we also ask the participant about the business location, the amount of the wool handled per year, the wool sources and the respective proportions, the wool source selection criteria, the consumer-driven demand awareness, the practice of using local wool, the most challenging barriers of using local wool, etc.

There are some slight differences between the surveys that we distribute to the manufacturer and the intermediate participants. For example, we ask the manufacturer participants what kinds of products they are specialized in, while we ask the intermediate participants which kind of middle player category they belong to. We also ask the intermediate participants about where they sell their wool to and what are the proportions.

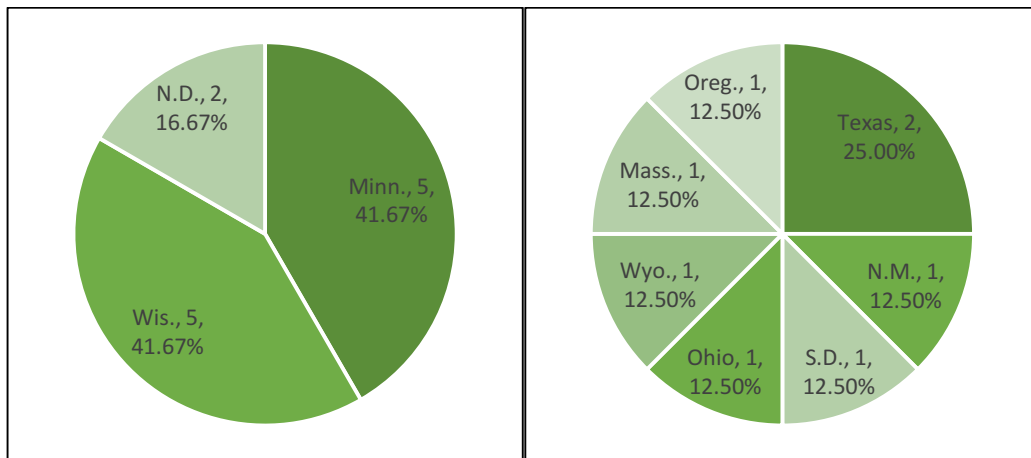
3.2. Results and Analysis

We use the form of online survey via Qualtrics with the license from the University of Minnesota. We have received 12 responses from the identified manufacturers and 8 responses from the identified intermediate processors. We are aware of the relatively small number of the responses received, however, considering the fact that the Upper Midwest local wool industry only occupies a fringe market, we believe that such a response rate is satisfying and that reaching a higher number in this survey is nearly unrealistic. (According to the latest data from the U.S. Census Bureau, nationally, there were only 15 recorded establishments in the categories of “wool, wool tops, and mohair merchant wholesalers” in 2012, which indirectly confirms the limited size of the wool industry in the U.S. As for the intermediates, we were able to identify 32 contacts from the website of American Sheep Industry Association.) Besides, after reviewing the answers, we consider that the feedback we have received of high quality, and a majority of the participants have left us with very substantial and informative text description of their personal opinions about the opportunities and difficulties that they have met in their daily practice about the Upper Midwest wool. In the following parts, we disclose our survey results in greater detail.

3.2.1. Business Location

Among the 12 manufacturer responses, 5 (41.67%) are from Minnesota, 5 (41.67%) are from Wisconsin, and 2 (16.67%) are from North Dakota (see Graph 2-a). Unfortunately, we have not received any responses of manufacturers from Iowa, Michigan and South Dakota. Iowa and South Dakota in fact host a very limited number of wool manufacturers based on our identification.

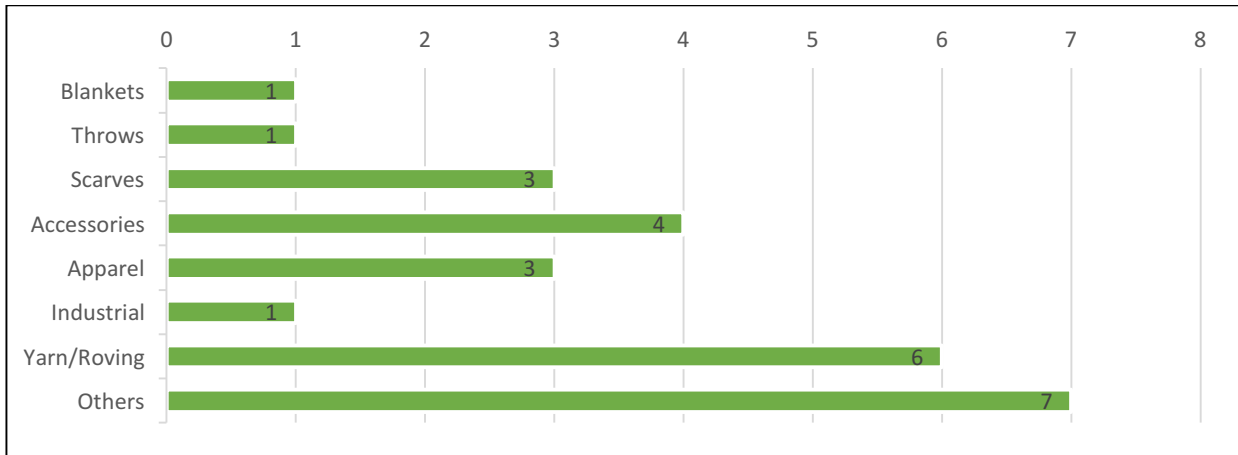
Among the 8 intermediate responses, 2 (25.00%) are from Texas and 1 from each of New Mexico (12.15%), South Dakota (12.15%), Ohio (12.15%), Wyoming (12.15%), Massachusetts (12.15%) and Oregon (12.15%) (see Graph 2-b). Such a composition, despite of the small sample, covers most parts of US and lends us an opportunity to gain a geographically well-balanced insight.



Graph 2-a (Left): Business locations of the manufacturer respondents; **Graph 2-b (Right):** Business locations of the intermediate respondents

3.2.2. Manufacturer Specialization

We allow the manufacturer respondents select multiple options on their product specialization. Among the 12 respondents, 6 (50.00%) choose “yarn/roving”, 4 (33.33%) choose “accessories”, 3 (25.00%) choose “scarves”, 3 (25.00%) choose “apparel”, 1 (8.33%) chooses “blankets”, 1 (8.33%) chooses “throws” and 1 (8.33%) chooses industrial (see Graph 3). It should be noticed that 7 (58.33%) (see Graph 3) also choose “others”, which includes “hand dyed wool for rug hooking and quilting”, “felt art”, “mattress toppers, comforters and pillows”, “tea cozies, mittens, hats, wall hangings, dryer balls, cat pods, foot stools, felted nativity sets and other miscellaneous felted items”, “comforters and batting for winter or summer”, “wool batting” and “crafts”, according to the explanation from the respondents. All the categories that we provide are chosen by at least 1 participant, indicating that the respondents basically cover all the main specializations of the consumer wool industry.



Graph 3: Specializations of the manufacturer respondents

3.2.3. Intermediate Categories

We do not allow the intermediate respondents select multiple options on the category they belong to. Among the 8 intermediate respondents, 4 (50.00%) select “wool warehouses”, 2 (25.00%) select “wool washing/picking/carding/spinning/blending/dyeing processors”, 1 (12.50%) select “wool brokers/buyers” and 1 (12.50%) selects “others” with the self-given description of “wool merchant who not only buys and processes but also sells to small mills, home operations and processors” (see Graph 4). All the categories that we provide are chosen by at least 1 participant, indicating that the respondents basically cover all the roles that we have identified as a kind of intermediate processor.



Graph 4: Categories of the intermediate respondents

3.2.4. Amount of Wool Handled

Among the 12 manufacturer respondents, 10 choose to give a numeric answer to the question about the amount of wool handled annually by the participant. In ascending order, the answers are 25 lbs., 50 lbs., 200-300 lbs., 3,000 lbs., 5,000 lbs., 15,000 lbs., 30,000 lbs. and 500,000 lbs. Such an array of responses reveals an extremely wide range of the operating scales of the participants. We will link such background information with the attitudes of the participants in the analysis below, and we think such a capacity spectrum will give us a more comprehensive

understanding of the issue. It should be pointed out that we do believe that the attitudes of the smaller manufacturers matter, who can be even swifter to make changes in product lines and more willing to carry out a trial product in a small amount.

Among the 8 intermediate respondents, 6 choose to give a numeric answer to this question. In ascending order, the answers are 250,000+ lbs., 3,500,000 lbs., 3,500,000 lbs., 4,000,000 lbs., 4,000,000 lbs. and 4,700,000 lbs. These numbers suggest that at least more than half (5) of the respondents are major intermediates dealing with at least 3,500,000 lbs. of wool annually.

3.2.5. Ranking of Wool Source Selection Criteria

In this question, we give 9 criteria for wool source selection and let the respondent rank them in the preference order. The 9 criteria given are “animal rights concerns”, “diameter”, “environmental concerns”, “grade”, “length”, “local identity”, “price”, “quantity” and “supplier reliability”. The most preferred criterion is scored as 1 while the least preferred criterion is scored as 9.

Among the manufacturer respondents (see Table 1-a), we find that averagely, “grade” and “diameter” are the most preferred criterion with a mean score of 3.67 and 3.75, while “animal rights concerns” is the least preferred criterion with a mean score of 7.42. We also notice that “local identity” is ranked in the middle among the criterions. Such results suggest that quality is obviously the most important criterion and that local identity is actually comparably influential.

Among the intermediate respondents (see Table 1-b), we find that averagely, again, “diameter” and “grade” are the most preferred criterion with a mean score of 2.38 and 2.50, while “animal rights concerns” is the least preferred criterion with a mean score of 7.88. However, we also notice that “local identity” is ranked as the second least preferred criterion with a mean score of 6.38, suggesting that the intermediate respondents care less about the local identity of the wool compared with the manufacturer counterparts. We guess such a difference may be due to the fact that there is less profit margin for the intermediate processors to deal with the local wool, at least at the current stage. The intermediates also need to gather the wool from different sources with similar characteristics to sell them in bulk, and the local constraint may cast higher cost to their handling process.

Table 1-a: Wool source selection criteria ranked by the manufacturer respondents

Criterion	Min	Max	Mean	Stand. Dev.	Rank
<i>Grade</i>	2	6	3.67	1.44	1
<i>Diameter</i>	1	9	3.75	2.45	2
<i>Price</i>	1	7	4.33	2.42	3
<i>Length</i>	1	9	4.42	2.15	4
<i>Local identity</i>	1	8	4.75	2.7	5
<i>Supplier reliability</i>	1	9	4.75	2.96	6
<i>Quantity</i>	1	9	5.17	2.72	7
<i>Environmental concerns</i>	1	9	6.75	2.3	8

<i>Animal rights concerns</i>	3	9	7.42	1.93	9
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Table 1-b: Wool source selection criteria ranked by the intermediate respondents

Criterion	Min	Max	Mean	Stand. Dev.	Rank
<i>Diameter</i>	1	4	2.38	1.06	1
<i>Grade</i>	1	5	2.5	1.6	2
<i>Length</i>	2	6	3.63	1.3	3
<i>Supplier reliability</i>	1	6	4.5	2.27	4
<i>Price</i>	2	7	4.75	1.39	5
<i>Quantity</i>	1	9	5.25	2.82	6
<i>Local identity</i>	2	8	6.38	1.85	7
<i>Environmental concerns</i>	4	9	7.75	1.67	8
<i>Animal rights concerns</i>	3	9	7.88	2.03	9

3.2.6. Wool Sources

3.2.6.1. Manufacturers

We give the manufacturer respondent 28 options of possible wool sources, including “wool farmers/warehouses/brokers in Iowa/Michigan/Minnesota/North Dakota/South Dakota/Wisconsin/other US states/foreign countries/of unknown origin” and “others”, and we request the respondent to select which of these sources they buy wool from and what the respective proportions are.

The option, “wool brokers from other US states” turns out to be a dominant source for the manufacturer respondents, with an average percentage of 29.17%, confirming that local major intermediates are scarce in the Upper Midwest. It should be stressed that none of the respondents directly buys wool from wool farmers/warehouses/brokers in Minnesota, despite the fact that 5 out of 12 respondents are actually from Minnesota. Such result possibly indicates a rather underdeveloped wool growing/sourcing/collecting business in Minnesota currently. It should also be stressed that even though we have no manufacturer respondents from South Dakota, the wool farmers and warehouses in South Dakota share a combined average percentage of 16.25%, suggesting a relatively strong wool growing and even processing business in South Dakota. Please see Table 2 for more details.

Table 2: Wool sources and corresponding proportions (%) of the manufacturer respondents

Source	Min	Max	Mean	Stand. Dev.
<i>Wool farmers in North Dakota</i>	0	100	8.33	28.87
<i>Wool farmers in South Dakota</i>	0	90	7.5	25.98
<i>Wool farmers in Wisconsin</i>	0	100	9.58	28.64
<i>Wool warehouses in South Dakota</i>	0	95	7.92	27.42
<i>Wool warehouses in Wisconsin</i>	0	50	5	14.46

<i>Wool warehouses in other US states</i>	0	90	7.5	25.98
<i>Wool brokers in other US states</i>	0	100	29.17	45.02
<i>Wool brokers in foreign countries</i>	0	5	0.42	1.44
<i>Others</i>	0	100	24.58	44.49

Note: The options not selected by any manufacturer respondent are omitted from this table.

3.2.6.2. Intermediates

In order to look at wool origins from another spot in the supply chain, we are curious about the wool sources of the intermediates and the differences between the answers of the two groups. We give the intermediate respondent 19 options of possible wool sources, including “wool farmers/other wool intermediates in Iowa/Michigan/Minnesota/North Dakota/South Dakota/Wisconsin/other US states/foreign countries/of unknown origin” and “others”.

Within expectation, the wool sources of the intermediate respondents (from across the nation) turn out to be much more diversified than the manufacturer respondents (from the Upper Midwest). We find that the wool farmers in all the six Upper Midwest states sell wool to the participating intermediates in our survey, validating a rather important role of the intermediates in collecting and distributing wool from different geographic areas in the US. But still, the wool from the Minnesota farmers only occupied a niche percentage (0.5%) on average, while the wool from the South Dakota farmers takes up a larger share (5.5%) on average, which is consistent to our survey results from the manufacturer respondents. Please see Table 3 for more details.

Table 3: Wool sources and corresponding proportions (%) of the intermediate respondents

Source	Min	Max	Mean	SD
<i>Wool farmers in Iowa</i>	0	5	0.63	1.77
<i>Wool farmers in Michigan</i>	0	7	0.88	2.47
<i>Wool farmers in Minnesota</i>	0	3	0.5	1.07
<i>Wool farmers in North Dakota</i>	0	14	2.63	4.93
<i>Wool farmers in South Dakota</i>	0	35	5.5	12.06
<i>Wool farmers in Wisconsin</i>	0	5	0.63	1.77
<i>Wool farmers in other US states</i>	0	100	60.25	37.13
<i>Wool farmers in foreign countries</i>	0	2	0.25	0.71
<i>Other wool intermediates in Iowa</i>	0	5	0.63	1.77
<i>Other wool intermediates in Michigan</i>	0	6	0.75	2.12
<i>Other Wool intermediates in Minnesota</i>	0	5	0.63	1.77
<i>Other Wool intermediates in North Dakota</i>	0	2	0.25	0.71
<i>Other Wool intermediates in South Dakota</i>	0	10	1.63	3.54
<i>Other Wool intermediates in Wisconsin</i>	0	6	0.75	2.12

<i>Other Wool intermediates in other US states</i>	0	80	16.25	31.14
<i>Other Wool intermediates in foreign countries</i>	0	50	7.88	17.37

Note: The options not selected by any intermediate respondent are omitted from this table.

3.2.7. Clients of the Intermediates

For the intermediate respondent, we add a question to ask them about where their clients are located and what the respective proportions are. We give the intermediate respondent 19 options of possible wool sources, including “retail consumers/woolen mills in Iowa/Michigan/Minnesota/North Dakota/South Dakota/Wisconsin/other US states/foreign countries/of unknown origin” and “others”.

The woolen mill categories earn a way larger combined share (58.64%) than the retail consumer ones (17.03%), on average. However, we notice that the woolen mills in Iowa, North Dakota and South Dakota receives an averaged zero share, verifying our information that there are very few wool product manufacturers in Iowa and South Dakota. Interestingly, according to our survey results, South Dakota have a strong wool growing/harvesting business but a weak wool product manufacturing industry, while the situation is on the contrary for Minnesota. Please see Table 4 for more details.

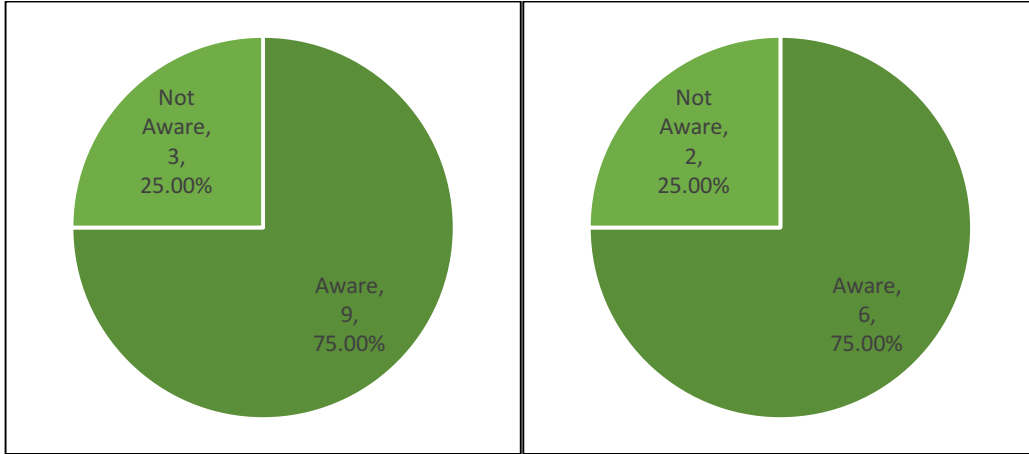
Table 4: Wool clients and corresponding proportions (%) of the intermediate respondents

Client	Min	Max	Mean	Stand. Dev.
<i>Retail consumers in Iowa</i>	0	1	0.13	0.35
<i>Retail consumers in Michigan</i>	0	3	0.38	1.06
<i>Retail consumers in Minnesota</i>	0	3	0.38	1.06
<i>Retail consumers in North Dakota</i>	0	1	0.13	0.35
<i>Retail consumers in South Dakota</i>	0	1	0.13	0.35
<i>Retail consumers in Wisconsin</i>	0	3	0.38	1.06
<i>Retail consumers in other US states</i>	0	40	7.75	15.14
<i>Retail consumers in foreign countries</i>	0	60	7.75	21.12
<i>Woolen mills in Iowa</i>	0	1	0.13	0.35
<i>Woolen mills in Michigan</i>	0	20	3.13	7.04
<i>Woolen mills in Minnesota</i>	0	20	2.88	7
<i>Woolen mills in Wisconsin</i>	0	20	2.5	7.07
<i>Woolen mills in other US states</i>	0	90	41.25	37.96
<i>Woolen mills in foreign countries</i>	0	30	8.75	11.26
<i>Others</i>	0	100	24.38	43.71

Note: The options not selected by any intermediate respondent are omitted from this table.

3.2.8. Awareness for the Emerging Local and Organic Wool Market

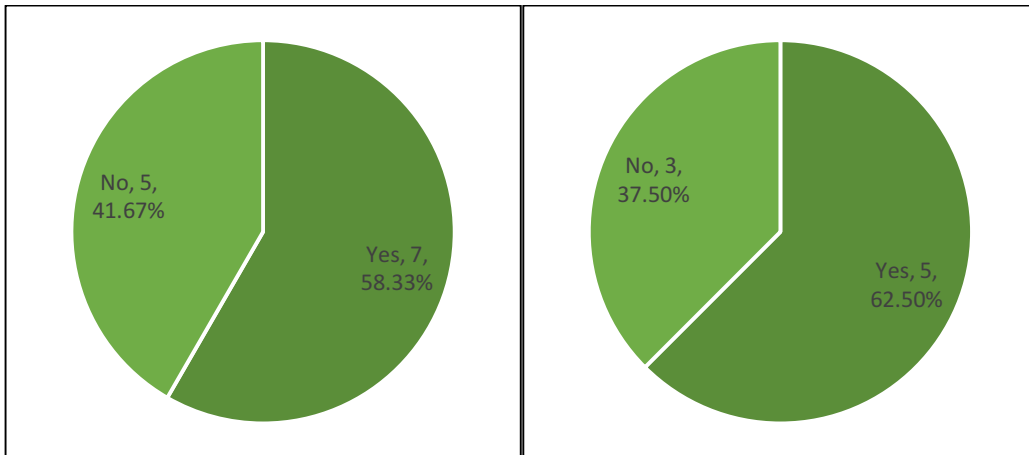
We ask the respondent if he/she is aware of the emerging consumer-driven market for locally grown, natural, sustainable and organic fibers. 9 (75.00%) of the manufacturer respondents and 6 (75.00%) of the intermediate respondents answer “yes”, revealing that a major part of both groups are aware of such a consumer-driven market (see Graph 5).



Graph 5: Awareness of the manufacturer (left) and intermediate (right) respondents on the emerging market for local, natural, sustainable and organic wool

3.2.9. Current Utilization of the Upper Midwest Wool

Here we directly ask the respondent whether he/she currently purchases Upper Midwest wool. Among the 12 participating manufacturers, 7 (58.33%) utilizes Upper Midwest wool while among the 8 participating intermediates, 5 (62.50%) purchases Upper Midwest wool (see Graph 6). We think that such results show the potential to further develop the local wool industry in the Upper Midwest.

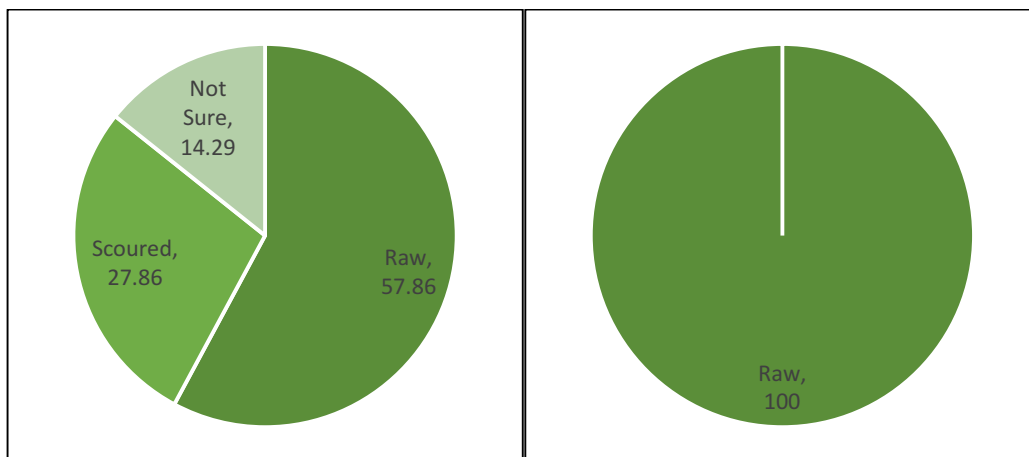


Graph 6: Does the manufacturer (left) or intermediate (right) respondent purchase the Upper Midwest wool?

3.2.10. Scoured Proportion of the Upper Midwest Wool Purchased

For the survey participant with a “yes” answer to the previous question, we ask about the raw and scoured percentages of the Upper Midwest wool they purchase. For the manufacturer respondents, the averaged percentages for “raw”, “scoured” and “not sure” are 57.86%,

27.86% and 14.29% respectively. Not surprisingly, all the wool purchased from the Upper Midwest by the intermediates surveyed is raw (see Graph 7). The relatively small percentage for scoured wool may have suggested the deficient processing infrastructure in the Upper Midwest, which will be discussed in greater detail at the end of the survey section of this report.



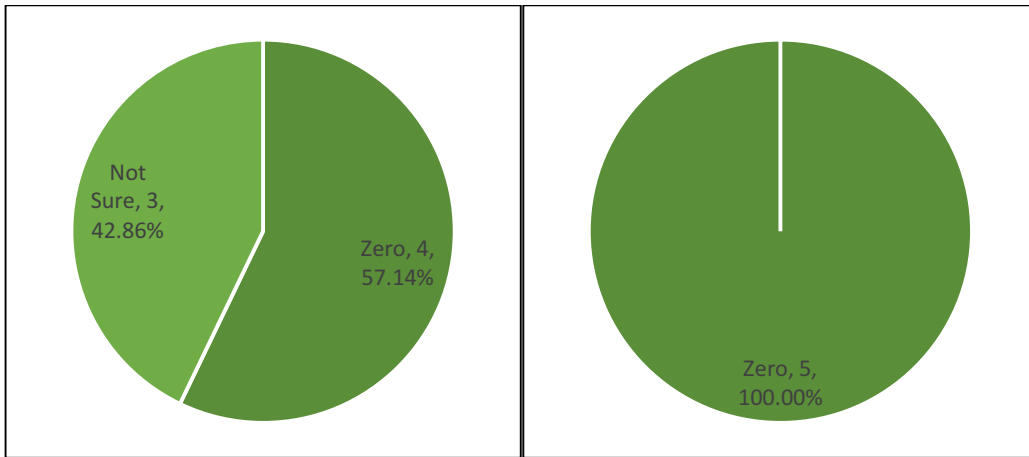
Graph 7: Raw/Scoured proportions of the Upper Midwest wool purchased by manufacturer (left) and intermediate (right) respondents

3.2.11. Organic Proportion of the Upper Midwest Wool Purchased

Even though USDA has set certification standards for agricultural products to be “organic”, such label is still a rare practice in the wool business to our best knowledge. We ask the participant who purchases the Upper Midwest wool what the organic proportion of the Upper Midwest wool purchased is. Within our expectation, for the 7 manufacturer respondents who purchase the Upper Midwest wool, 4 (57.14%) answer “zero” and 3 (42.86%) answer “not sure”. For the 5 intermediate respondents who purchase the Upper Midwest wool, all answered “zero” (see Graph 8). Such results validate our perception that the USDA organic label is very scantily used at least for the wool grown in the Upper Midwest, and some of the manufacturers may have very limited knowledge about such label.

Based on our interviews with several industry experts, there are a few reasons why the “organic” label is seldom used for wool. First, many farmers raise sheep mainly to sell meat and wool just comes as a byproduct. Raising sheep organically tends to lift the costs, and the farmers simply decide not to do so to maximize the profits. Second, the organic label is more oriented to the characteristics of food instead of fiber. Even if some farmers raise sheep mainly to harvest wool, they have to obey multiple rules, which can actually only make a difference on the meat quality, to live up to the “organic” standards. Complying with such redundant rules can also be quite expensive. Third, the demand for organic wool is simply not strong enough to catalyze the growth of organic wool.

Therefore, we believe that a set of fiber-oriented “organic” standards are in urgent need to further develop the production of organic wool. More education and promotion is also necessary.



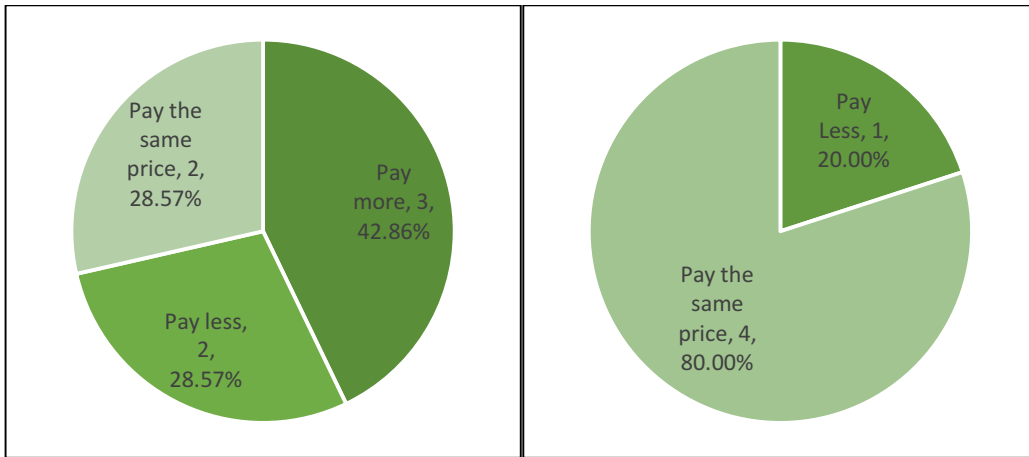
Graph 8: Organic proportions of the Upper Midwest wool purchased by manufacturer (left) and intermediate (right) respondents

3.2.12. Special Products Made of Upper Midwest Wool

For the manufacturer respondent who purchases/utilizes the Upper Midwest wool, we ask if he/she uses the local wool to make some products serving for special purposes. 5 (71.43%) out of 7 respond “yes”, and their descriptions for such special products are “hand felted wool vessels, necklaces and other art objects”, “yarn for hand knitters”, “for all of our products”, “yarn” and “wool quilt batting”. We suppose that maybe some manufacturers have already racked some products with the Upper Midwest local identity as the selling point.

3.2.13. Buying Price of the Upper Midwest Wool

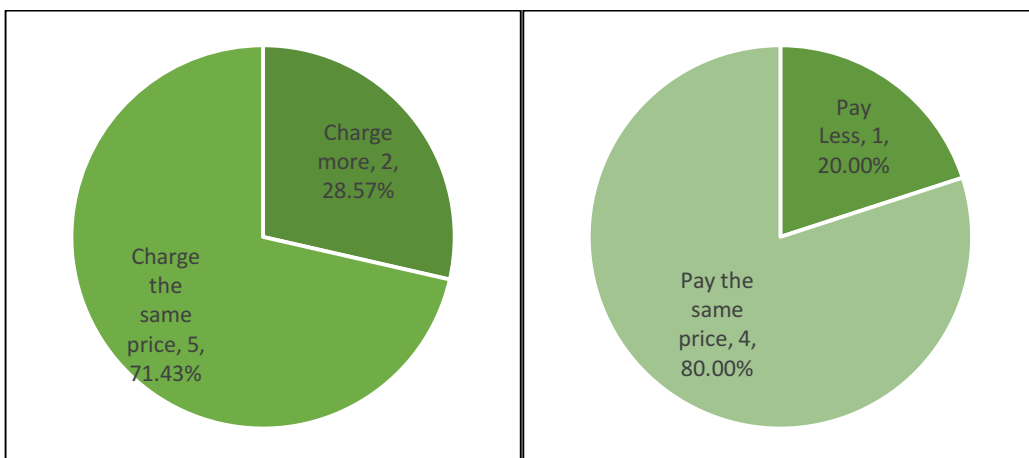
For the respondent who purchases the Upper Midwest wool, we ask if he/she pays more or less for the Upper Midwest wool, compared with the average buying price of the wool from elsewhere. 3 (42.86%) out of the 7 manufacturer respondents who purchase the Upper Midwest wool answer “more”, 2 (28.57%) answer “less”, and 2 (28.57%) answer “basically at the same price”. 2 manufacturer respondents give the estimated premium they pay for the Upper Midwest wool, which are 40% and 50%. 1 manufacturer respondent discloses paying 40% less for the Upper Midwest wool. For the intermediate respondents who purchase the Upper Midwest wool, 4 (80.00%) of out of 5 answer “basically at the same price” while only 1 (20.00%) answers that he/she pay 10% less. (See Graph 9.) From the results we see that the intermediates may pay very limited attention to the local identity of wool, but instead may care more about the cost of acquiring wool to maximize their profits.



Graph 9: Buying price of the Upper Midwest wool for the manufacturer (left) and intermediate (right) respondents compared with the average price of the wool purchased elsewhere

3.2.14. Selling Price of the Upper Midwest Wool/Wool Products

For the respondent who purchases the Upper Midwest wool, we also ask if he/she charges more or less for the Upper Midwest wool (for intermediate respondents) or wool products (for manufacturer respondents) that they sell, compared with the average selling price of the rest wool/wool products. 2 (28.57%) out of the 7 manufacturer respondents who purchase the Upper Midwest wool answer “more”, and 5 (71.43%) answer “basically at the same price”. 1 manufacturer respondent discloses charging 25% more for the Upper Midwest wool. For the intermediate respondents who purchase the Upper Midwest wool, still, 4 (80.00%) of out of 5 answer “basically at the same price” while only 1 (20.00%) answers that he/she charges 10% less. (See Graph 10.) From either side, we cannot observe a prevalent premium for the Upper Midwest upper wool/wool products.



Graph 10: Selling price of the Upper Midwest wool products/wool for the manufacturer (left) and intermediate (right) respondents compared with the average price of the rest wool products/wool

3.2.15. Challenges Met in Dealing with the Upper Midwest Wool

For the respondent who buys the Upper Midwest wool, we also ask he/she what the challenges that have been met in dealing with the Upper Midwest wool. This is an open-ended question with voluntary text entry.

4 manufacturer respondents have given feedback on this question. 1 respondent points out that they are a small mill and do not buy through a broker, and that they have to wait for a long time before getting their small amount of wool scoured in Texas, due to a lack of local scouring service. 2 respondents speak of the lack of reliable and sufficient supply sources in the area. And there is 1 respondent expresses the confusion about the definition of “organic wool”, inquiring how sheep is fed and how the wool is scoured and cleaned.

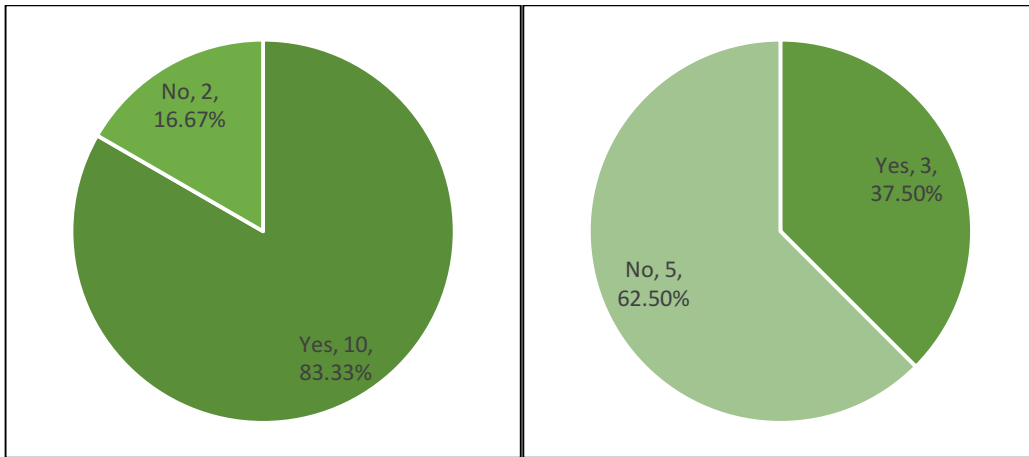
5 intermediate respondents have given feedback on this question. 2 respondents also mention about the insufficient amount of wool grown in the area to reach the economies of scale. The other 3 all express the concerns about the relatively inferior quality of the wool of the Upper Midwest. 2 respondents specifically point out that the wool in this area is more prone to be more contaminated by farm-lot conditions, such as higher vegetable matter, poly twine bits, etc. 1 respondent also suggests that color can be an issue, for there is more yellow/creamy wool and more black fiber in the area. 1 respondent states that the wool grown in western South Dakota and North Dakota ranges performs better, nearly free from the environment impacts listed above.

In sum, we can see that the the biggest challenge would be how to elevate the quantity and quality of wool grown in the Upper Midwest. Besides, the absence of scouring service can be impeding for some manufacturers too.

3.2.16. Attitude to the Added Value of the Upper Midwest Wool

We ask every survey participant if they, after reading our research background information, agree that there is any added value for the Upper Midwest wool due to its local identity. Among the 12 manufacturer respondents, 10 (83.33%) agree with the notion. In contrast, among the 8 intermediate processor respondents, only 3 (37.50%) agree. (See Graph 11.) Such difference reveal asymmetry beliefs about the outlook of the locally grown Upper Midwest wool between the two groups. The intermediates’ gloomier perception may be due to their narrower profit margins in handling the Upper Midwest wool, and they believe that they can earn higher profits by distributing wool regardless of the local identities (maybe because reclassifying the wool based on local identity can increase their costs). Also, we speculate that more local transactions between wool farmers and wool manufacturers can be business-stealing for some intermediates.

Considering the fact that the manufacturers are actually selling the products to consumers, their responses reveal the market potential for such a business. But it should also be stressed that since the intermediates also play an essential role in collecting and distributing, there should be multiple sourcing and budget challenges.



Graph 11: If the manufacturer (left) or intermediate (right) respondent agree that there is added value for the Upper Midwest wool due to its local identity

In Table 5, we link the information of the amounts of wool handled annually by the respondents with their attitude. For the manufacturer respondents, we see that there are both small- and large- scaled manufacturers supporting the Upper Midwest local wool business. This suggests that we have multiple possible cooperation options to develop a pilot product made of the local wool. For the intermediate respondents, we can also see that the attitude is not likely to be relevant to the operating scale.

Table 5-a: The attitudes to the added value for the Upper Midwest wool of the manufacturer respondents, linked with the information of the amounts of wool handled by the respondents

Attitude	Count of Respondents	Amount of Wool Handled Annually by Respondents
Yes	10	25 lbs., 50 lbs., 200-300 lbs., 5,000 lbs., 15,000 lbs., 500,000 lbs., thousands, undisclosed, undisclosed, undisclosed.
No	2	3,000 lbs., 30,000 lbs.

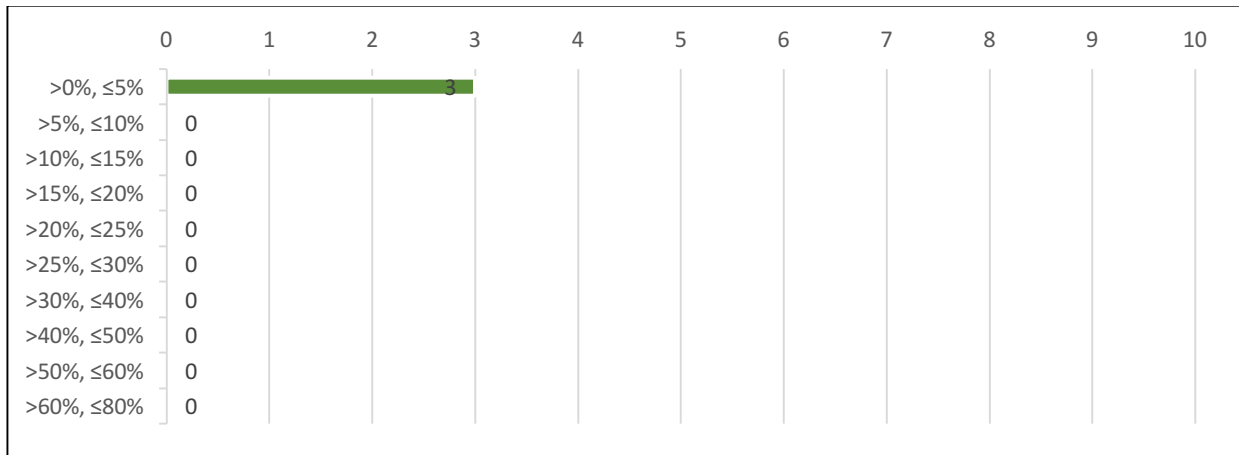
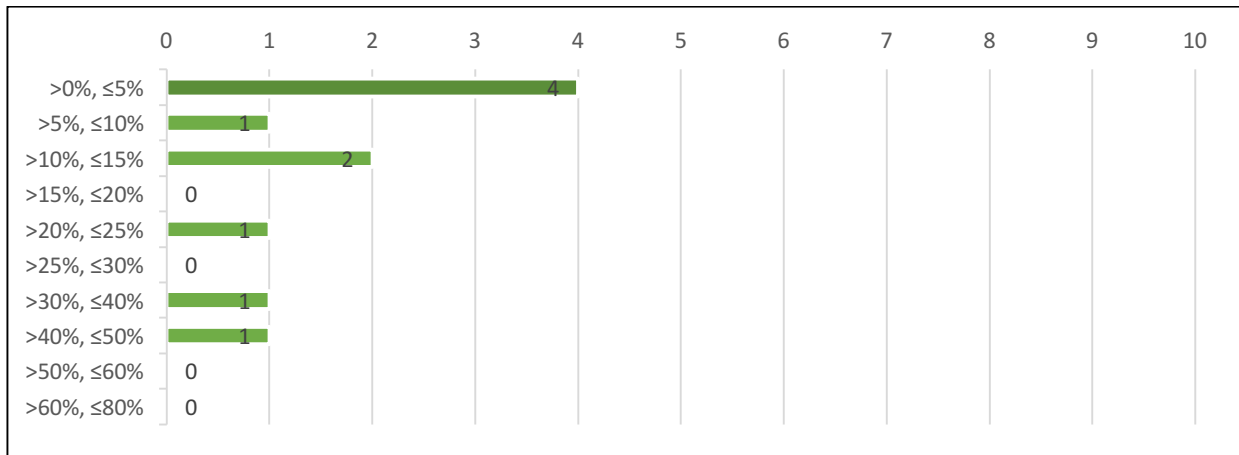
Table 5-b: The attitudes to the added value for the Upper Midwest wool of the intermediate respondents, linked with the information of the amounts of wool handled by the respondents

Attitude	Count of Respondents	Amount of Wool Handled Annually by Respondents
Yes	3	3,500,000 lbs., 4,000,000 lbs., 4,700,000 lbs.
No	5	250,000+ lbs., 3,500,000 lbs., 4,000,000 lbs., undisclosed, undisclosed.

3.2.17. Premium of Willingness-to-Pay for Upper Midwest Wool

If a respondent agrees that there is added value of the locally grown Upper Midwest wool, we then continue to ask he/she about the maximum premium that he/she is willing to pay for the Upper Midwest wool, which is the percentage above the average price of the other wool that he/she purchases. We provide the following ranges for the respondent to select from, which are (0%, 5%), (5%, 10%), (10%, 15%), (15%, 20%), (20%, 25%), (25%, 30%), (30%, 40%), (40%, 50%), (50%, 60%), (60%, 80%), (80%, +∞). Among the 10 manufacturer respondents who agree on the added value of the Upper Midwest wool, 4 choose (0%, 5%), 1 chooses (5%, 10%), 2 choose (10%, 15%), 1 chooses (20%, 25%), 1 choose (30%, 40%), 1 choose (40%, 50%). All the 3

intermediate respondents who agree on the added value choose the range of (0%, 5%). (See Graph 12.) Interestingly, more than half of the manufacturer respondents are willing to pay for a higher premium than the intermediate counterparts, which may again suggest the profit potential in the supply chain of the Upper Midwest local wool. We think it is important for the intermediates to know that the manufacturers are generally willing to pay for a higher, if not equivalent, premium for the Upper Midwest local wool than them, so the profit margins for the intermediates can be actually higher than they originally expected.



Graph 12: Premium willingly to be paid by the manufacturer (up) and intermediate (down) respondents who agree with the added value of the Upper Midwest wool

3.2.18. Reasons of Disagreeing with the Added Value of the Upper Midwest Wool

If a respondent disagrees with the added value of the Upper Midwest wool due to its local identity, we then inquire what the reasons are. This is an open-ended question with mandatory text entry.

According to one manufacturer respondent, he/she cannot easily make locally sourced wool machine washable (because of the absence of local scouring service in the Upper Midwest), which is important for hand knitter consumers. Besides, very few consumers ask he/she about

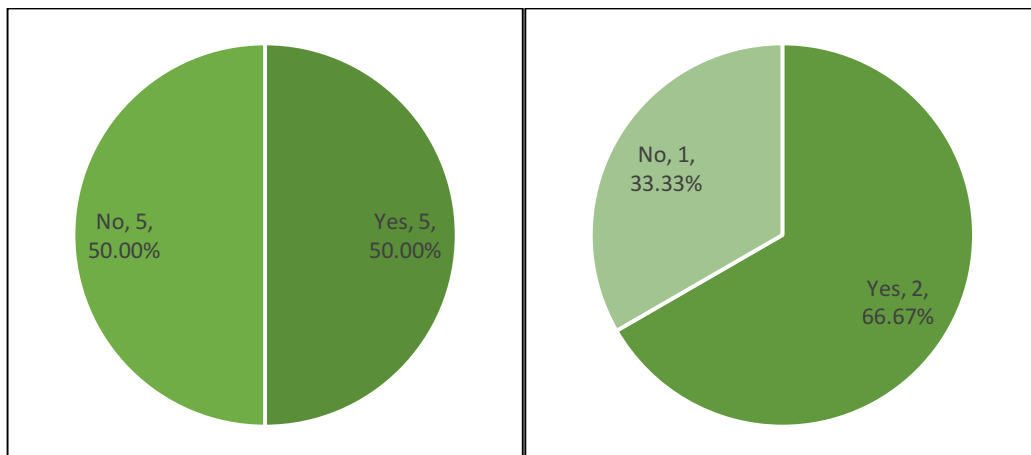
where the wool comes from, and the consumers generally cares about the machine washability and pretty colors of the wool. (Also according to this respondent, Faribault Woolen Mill used to help small spinneries do scouring but he/she is not sure if it still offers this service after re-opening.) The other manufacturer respondent simply states that he/she simply cares about the profits and has not seen the how local wool can increase profits.

Among the intermediate respondents, the main reasons for the disagreement are, again, both the unsatisfying quantity and quality of the wool in the Upper Midwest. 4 out of the 5 disagreement-holding respondents specifically mention that there is currently not enough high quality wool in this area to make an impact. 1 respondent says that once processed, there is no way to discern wool from the local identities. 1 respondent also thinks that although only part of the Upper Midwest wool may benefit from the business of local wool products, the majority has to go to the traditional commercial markets.

Therefore, we see that there are different reasons for the manufacturer and intermediate respondents to disagree with the possible added value of the Upper Midwest local wool. The manufacturer respondents are concerned with a lack of consumers' demand, while the intermediate counterparts feel that there is a lack of both quality and quantity for the Upper Midwest wool.

3.2.19. Attitude to the Extra Added Value of the Organic Upper Midwest Wool

If a respondent agrees that there is added value to the locally grown Upper Midwest wool, we also ask if the respondent agrees that there is *extra* added value to the Upper Midwest wool *if it is certified as organic by USDA*. Among the 10 manufacturer respondents, the attitudes are evenly split with 5 (50.00%) agreeing with the notion. Among the 3 intermediate processor respondents, 2 (66.67%) agree with the notion. (See Graph 13.) Such results suggest that even though a majority of the surveyed manufacturers are confirmative about the added value to the Upper Midwest wool due to its identity, the opinions are divided on if there is convincing market potential for the organic Upper Midwest wool, which could represent higher production costs and an even narrower market. We think that the sample for the intermediate respondents is too small to make any conclusion on this topic.



Graph 13: If the manufacturer (left) or intermediate (right) respondent agree that there is extra added value for the Upper Midwest wool if it is certified as organic by USDA

In Table 6, we link the information of the amounts of wool handled annually by the respondents with their attitude. There is a possibility that the manufacturers with a larger operating scale may be more suspicious about any extra added value for the Upper Midwest wool if it is certified as organic by USDA. But with some respondents choosing not to disclose the information on the operating scale, it is hard to confirm any speculation on this.

Table 6-a: *The attitudes to the extra added value for the Upper Midwest wool if it is certified as organic by USDA of the manufacturer respondents, linked with the information of the amounts of wool handled by the respondents*

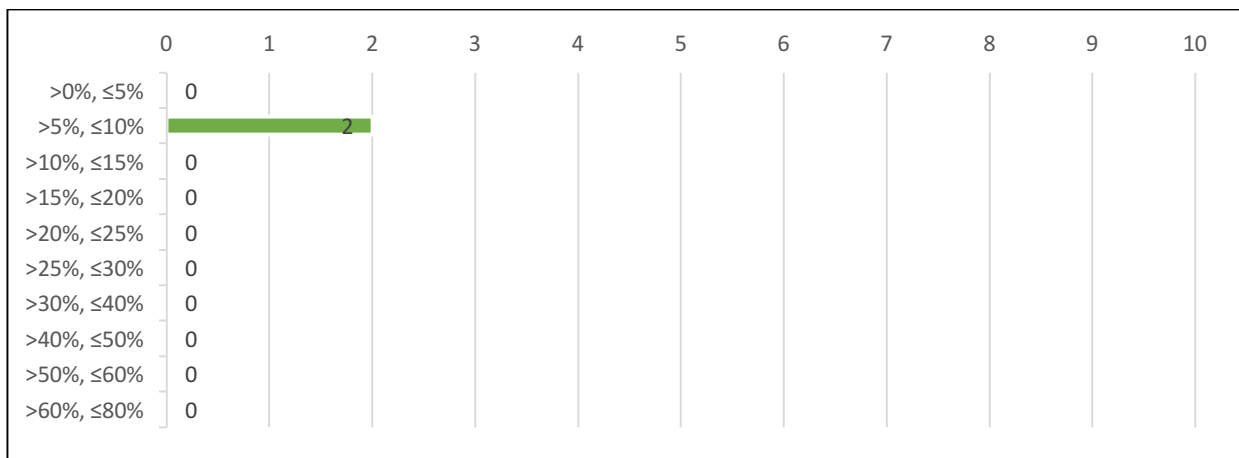
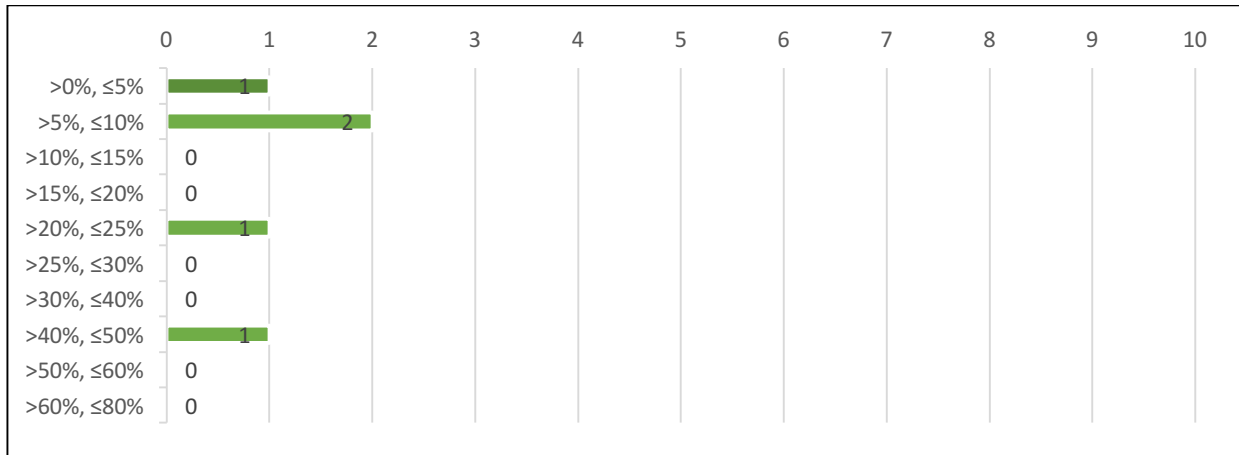
Attitude	Count of Respondents	Amount of Wool Handled Annually by Respondents
Yes	5	25 lbs., 5,000 lbs., undisclosed, undisclosed, undisclosed.
No	5	50 lbs., 200-300 lbs., 15,000 lbs., 500,000 lbs., thousands.

Table 6-b: *The attitudes to the extra added value for the Upper Midwest wool if it is certified as organic by USDA of the intermediate respondents, linked with the information of the amounts of wool handled by the respondents*

Attitude	Count of Respondents	Amount of Wool Handled Annually by Respondents
Yes	2	3,500,000 lbs., 4,000,000 lbs.
No	1	4,700,000 lbs.

3.2.20. Extra Premium of Willingness-to-Pay for the Organic Upper Midwest Wool

If a respondent agrees that there is *extra* added value to the Upper Midwest wool *if it is certified as organic by USDA*, we then continue to ask the respondent about the extra premium that he/she is willing to pay for the organic Upper Midwest wool, which is the percentage above the average price of the non-organic Upper Midwest wool that he/she purchases. We give out the following ranges to select from, which are (0%, 5%), (5%, 10%), (10%, 15%), (15%, 20%), (20%, 25%), (25%, 30%), (30%, 40%), (40%, 50%), (50%, 60%), (60%, 80%), (80%, +∞). Among the 5 manufacturer respondents who agree on the extra added value, 1 chooses (0%, 5%), 2 choose (5%, 10%), 1 chooses (20%, 25%), 1 choose (40%, 50%). Both of the 2 intermediate respondents who agree on the extra added choose the range of (5%, 10%). (See Graph 14.) Based on such results, we conclude that there may exist a portion, though a relatively small one, of the manufacturers and intermediates who are willing to pay for some extra premium (most likely not exceeding 10%) for the Upper Midwest wool if it is certified as organic by USDA. It is not impossible to further develop the organic Upper Midwest wool business, even though a more detailed and oriented set of marketing strategies are urgently needed to raise the awareness of both the consumers and producers.



Graph 12: Extra premium willingly to be paid by the manufacturer (up) and intermediate (down) respondents who agree with the extra added value of the Upper Midwest wool if it is certified as organic by USDA

3.2.21. Reasons of Disagreeing with the Extra Added Value of the Organic Upper Midwest Wool

If a respondent disagrees with the *extra* added value to the Upper Midwest wool *if it is certified as organic by USDA*, we then inquire what the reasons are. This is an open-ended question with mandatory text entry.

The feedback that we have collected from the manufacturer respondents are as following. 3 respondents state that based on their practical experience, few consumers pay attention to the organic attribute of wool (even though many consumers do prefer locally grown wool), and therefore they are skeptical of the market potentials. 1 respondent specifically says that in their application of wool, it does not touch the body and is already considered as natural, and therefore that the organic conception does not really apply to wool (and is more appropriate for the food industry). 2 respondents specifically express their concern that consumers may well have suspicion about third party certifications. Besides, 1 respondent expressed his/her confusion about the definition of organic, and 1 respondents believe that the raised production cost and a lack of marketing efforts tend to make the budget infeasible.

According to the only intermediate respondent, he/she thinks that the values driving for any wool purchase have to do with quality factors such as genetics, uniformity, color, length, strength, clean yield, classing, stain, and any other contamination issues, and that organically grown wool seems to be full of sheep ked, stain, and often burrs invading the pastures.

3.2.22. Additional Respondent Comments

Our last question is an open-ended one with voluntary text entry, inquiring for any additional comments on the issue or our project from the participants in the survey.

Some of the highlights from the comments we have received from the manufacturer respondents are as following.

“More locally grown wool could be used by more consumers if there were small machine knitter businesses out there. We used to spin yarn for people that would have it made into socks and lots of folks bought those socks. The company that knit the socks closed. There is one in MN now, but they don’t really do custom work and they use a lot of nylon and rubber. There used to be a business that made sweaters, but they have closed.”

“I have been looking for certified organic scoured Midwest wool. It is impossible to find...”

“The big thing is to even convince the consumer to actually buy and use wool products because they are so pampered with cheap and easy to use synthetics.”

“Please remember that my wool purchases are customer driven. That’s to say if they don’t want organic wool, I can’t sell it to them because they can’t justify the upcharge.”

Some of the highlights from the comments we have received from the intermediate respondents are as following.

“There is a large volume of wool in the ‘Upper Midwest’. Genetic variability and growing conditions vary widely between states or even counties. 1. How much organic wool is available, and what is the profile of the fiber supply? (Grade and quality factors?) 2. Do the processors’ fiber requirements match this volume or profile, and if so, do the respective mills process wool (scour or dye for example) to organic specs? 3. Does certified organic wool represent an advantage to the mills or processors?”

“You will have more than a difficult time in sourcing certified organic wool. If you find anyone that does meet the stated criteria, they won’t have any volume. Sorry, don’t see that this will have any impact on the sheep industry at all.”

“Organic definition needs to be cleared up and easier to reach. To start early adopters of organic or other local sustainable options shouldn’t be expected to pay more than for any non-organic wool so they can invest instead on developing the market and the need to be able to pay more to insure the program grows or continues.”

3.3. Conclusions

Based on the survey results discussed above, we wrap the survey section of the project with the following main conclusion.

1. A majority of the manufacturer respondents in our survey are in favor of the possible market potentials for the Upper Midwest wool due to its local identity, regardless of their operation scales, and they are generally willing to pay a premium of no larger than 15% for it. In contrast, less than half of the intermediate respondents are in favor of the notion, suggesting a possibly narrower profit margin for them. Despite of the more suspicious attitude from the intermediate respondents, we still think that further developing the local wool business in the Upper Midwest is feasible and promising.
2. Among the manufacturer respondents agreeing with the added value of the Upper Midwest wool, the attitudes towards some *extra* added value for the Upper Midwest wool if it is certified as organic by USDA are evenly divided, with an *extra* premium generally no larger than 10% from the supporters. It is still possible to exploit this narrower market, but properly designed marketing and awareness raising plans will be essential. In addition, a new set of organic standards tailored specifically to the wool or fiber industry will be of great help.
3. The most challenging difficulties for further developing the local wool business in the Upper Midwest are likely to be the insufficient quantity and unsatisfying quality of supply of the wool in this area. Besides, a lack of local scouring service is another major impediment.

3.4. Appendix: Upper Midwest Wool Processing Overview⁷

In the survey, we find out that a lack of wool processing infrastructure system in the Upper Midwest is a hurdle for further development of the locally grown wool business in this area. In this section, we provide a brief overview (to our best knowledge) of the current status of how the wool is processed for the commercial market in the state of Minnesota and the Upper Midwest.

Shearers are the buyers for the warehouses located throughout the US. The ones located the most closet to Minnesota could be in the Dakotas. The shearer buyers in the Midwest possibly work for Mid-States Wool Growers (Ohio/Kansas) or Groenewold Fur and Wool (Illinois). Center of the Nation in South Dakota possibly does not have shearer buyers in Minnesota. Some shearers could buy the wool themselves and sell it, but it is doubtful if many would be willing to take on that financial risk.

Warehouses perform a very critical logistical function in degrading the wool (sort out the various qualities produced at the farm/grower level) to meet the customer needs and specifications. They accumulate the wool at the farm level via the sheep shearer and once at the wool moves from the shearer to the warehouse, the warehouse sorts/grades and combines similar wool from various growers to meet the quality and quantity requirements and they repackage the wool for efficient shipping and handling.

Mid-States is a cooperative, which has 3 main ways to buy wool from growers: A) Cash or spot sale on the day; B) Grade and Yield; C) Consignment.

Cash sale is generally the least financially lucrative for the grower, because this is requiring the warehouse to speculate on the quality or value of the wool. This is the most financially risky for

⁷ Main materials written by Bob Padula and Jean Mueller and edited by Zhiyou Yang.

the warehouse and it is going to be priced accordingly. If quality is not what they thought, they paid more for lower valued wool. If world price for wool decreases – they paid more for the wool than what they can sell it for. The warehouse may pay for the wool at shearing time, and not get it to their warehouse for several months later.

Grade and yield is where the warehouse agrees to take in the wool, re-work it and pay the value of the different qualities of wool that the grower has. Often times there is a spot market price available for the various qualities based upon “standing orders” for specific types of wool which they routinely sell to customers. This takes out speculation or financial risk – since they separate the wool based upon quality and put it into “packages” they have already had a price for. The downside for the grower is that you may have better quality wool than what they grade it (for instance higher yield) and your wool helps bring up the average of the entire line or lot that is graded. The other risk is if you send in your wool today and the world price goes up, you have no upside market potential.

Consignment is similar to the grade and yield, but the grower is paid for the average of all the similar lines/lots of wool throughout the year. For example, your wool may have gone into load #4, which sold for a certain price based on the test data. However, the warehouse sold 10 loads of that quality and the grower is paid the average price for all 10 loads of that quality. This takes out the highs and lows.

Gronewold is a privately owned warehouse and entity. They buy wool from growers and operate as business for themselves buying wool from growers and selling it to customers. They determine their own prices and payments to the growers. They have a grade and yield program where they pay growers based on the quality of the wool as well as have a cash/spot market price. They grade the wool at the warehouse because they are selling to the customer based upon their assessment of the wool (and the core test of the line/lot).

In many cases, the customer – a *mill* or *broker* – will ask the warehouse to grade out a specific quality and quantity of wool for their needs/requirements. This ensures that the wool they buy is what they need. Because many flocks in the Midwest are small and/or variable – the warehouse must perform this function.

The wool can be scoured (washed) in basically two locations: Texas and North Carolina. Warehouses work to arrange the trucking from the warehouse to the wool *scouring plant*. Scouring plant, scours wool and charges customer for this service.

Then, the wool sent back is ready to be spun into yarn for a fabric or knitted into a wool product. It should be noticed that the next processor (*spinner*) to which the wool scourer sends scoured wool may or may not be the same company/mill as *knitter* or *weaver*. Next, the wool is sent to a company which prepares, *dyes* and spins the wool into the dimension they specify for their wool product. It should be noted that there can be multiple companies that do specific tasks, and that Faribault Woolen Mill is the only company doing it all except for the scouring in Minnesota.

Last, the manufacturers take the spun wool and makes it into their wool products, or they have the products made by another company and put their logo on it.

There are many different steps and requirements and each one operates a little differently. For instance, a company may buy their warp yarns – but spin their own weft/filling yarns – depending on the fabric. Others may do the spinning, but not have the equipment to weave a certain way – and will have this custom done – and then bring the woven fabric back in house for the final finishing of the fabric – before it is sent off to be cut/sewn.

Generally speaking, the more “simplified” the product, the fewer steps are involved and required. It is easier to knit a solid colored hat or sock with one type of yarn, than it is to weave a fabric with multiple colors and patterns.