

FW15-039 Making the Most of Fine Fleece
WSARE Funded Research on the Environmental, Economic, and Social Costs and Benefits of Alternative Markets for Sheep Wool

PRODUCTS AND VENUES	ECONOMIC INPUTS AND COSTS OF PRODUCTION*										SALES INCOME		ENVIRONMENTAL IMPACTS**				SUSTAINABILITY SUMMARY***			NOTES	
	Shearing Cost (per animal sheared)	Wool Handling Cost (per animal sheared)	Opportunity Cost of Wool Used	Mileage: Transport To and From Processor	Home-based Labor: hours spent per unit produced	Home-based Processing: Materials	Commercial Processing	Packaging and Labeling	Advertising, Entrance Fees	Other Costs	TOTAL COSTS	Average Gross Price of Product or Service Sold	Net Profit Margin (revenue minus all expenses)	On-site Water Quantity	On-Site Water Quality	Water Quality and Quantity at Processors	Carbon Footprint of Product, Packaging, Shipping	Financial: aims are to minimize financial risk; pay the shepherd a living wage; and avoid large capital expenditures	Environmental: goals are conservative use of water; no generation or use of toxic products; and low embodied mileage		Social: best circumstance is to work at home; create positive work environments; and foster success of beginning shepherds
Primary Products:																					
White fine (21.2 micron) wool; sold raw, bellies out, lightly skirted, bulk to Center of the Nation Wool	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb		230 miles, \$0.56/mile, average of 452 pounds per trip = \$0.28/lb							\$1.19/lb	\$2.44/lb	\$1.25/lb				230 miles transport; re-used wool bags	3	3	3	
White fine (22.5 micron) wool; sold raw, bellies out, lightly skirted, bulk to Center of the Nation Wool	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb		230 miles, \$0.56/mile, average of 452 pounds per trip = \$0.28/lb							\$1.19/lb	\$2.26/lb	\$1.07/lb				230 miles transport; re-used wool bags	3	3	3	
White medium (24.6 micron) wool; sold raw, bellies out, lightly skirted, bulk to Center of the Nation Wool	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb		230 miles, \$0.56/mile, average of 452 pounds per trip = \$0.28/lb							\$1.19/lb	\$1.61/lb	\$0.42/lb				230 miles transport; re-used wool bags	low probability of profit: 2	3	3	
White coarse (~30 micron) wool; sold raw and bulk to Center of the Nation Wool	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb		230 miles, \$0.56/mile, average of 452 pounds per trip = \$0.28/lb							\$1.19/lb	\$0.61/lb	(\$0.58/lb)				230 miles transport; re-used wool bags	low probability of profit; low wage: 1	3	3	
Belly wool from white, fine wool sheep; sold raw to Center of the Nation Wool	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb		230 miles, \$0.56/mile, average of 452 pounds per trip = \$0.28/lb							\$1.19/lb	\$0.83/lb	(\$0.36/lb)				230 miles transport; re-used wool bags	3	3	3	This product arises automatically from the skirting of higher value wools, and thus receives higher sustainability scores than it otherwise would, given the financial loss calculated.
Burry, chaffy wool skirted from white fine-wool sheep; sold raw to Center of the Nation Wool	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb		230 miles, \$0.56/mile, average of 452 pounds per trip = \$0.28/lb							\$1.19/lb	\$1.29/lb	\$0.10/lb				230 miles transport; re-used wool bags	3	3	3	This product arises automatically from the skirting of higher value wools, and thus receives higher sustainability scores than it otherwise would, given the financial loss calculated.
Prime, coated, heavily skirted, pristine, raw show fleeces sold to handspinners: white	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb	\$2.25	20 minutes to process a 5 lb fleece at \$10/hr, \$0.67/lb			\$0.20				\$3.87/lb	\$16/lb	\$12.13/lb					3	3	3	
Prime, coated, heavily skirted, pristine, raw show fleeces sold to handspinners: natural-colored	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb	\$2.20	20 minutes to process a 5 lb fleece at \$10/hr, \$0.67/lb			\$0.20				\$3.82/lb	\$24/lb	\$20.18/lb					3	3	3	
Uncoated, heavily skirted, raw show fleeces sold to handspinners; white or natural-colored	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb	\$2.25	6 minutes to process a 9 lb fleece at \$10/hour, \$0.11/lb			\$0.20				\$3.31/lb	\$14/lb	\$10.69/lb					3	3	3	
Skirtings moderately contaminated with vegetable matter from otherwise good quality fleeces; white or natural colors, sold to felters for making rugs/pet beds/dryer balls	\$6/hd, \$0.60/lb	\$3/hd, \$0.30/lb	\$0.83/lb	6 minutes to process a 9 lb fleece at \$10/hour, \$0.11/lb			\$0.20				\$1.89/lb	\$5/lb	\$3.11/lb					low wage: 2	3	3	
Processed wool: batts			\$2.26/lb; 1.6 lb required for 1 lb. of batts = \$3.62	660 miles; \$235 to transport 200 lb = \$1.18/lb			\$10/lb incoming weight, 61% yield, \$16.10/lb for finished roving or batts				\$20.90/lb	\$30/lb	\$9.10/lb			TMWM recycles water and composts wastes	660 miles	little chance of sales: 2	3	3	Processed at Thirteen Mile Wool Mill, which uses solar energy, petroleum-free soaps, and recycles water. Nearly no demand for this product as marketed at fiber festivals.

Processed wool: white roving			\$2.26/lb; 1.75 lb raw wool per lb roving = \$3.96	660 miles; \$235 to transport 200 lb = \$1.18/lb			\$10/lb incoming weight, 57% yield, \$15.70/lb for finished roving or batts	\$0.10/lb			\$20.94/lb	\$30/lb	\$9.06/lb			TMWM recycles water and composts wastes	660 miles	little chance of sales: 2	3	3	Processed at Thirteen Mile Wool Mill, which uses solar energy, petroleum-free soaps, and recycles water. Average of 57% yield of finished roving from raw wool. Low sales of this product at fiber festivals; white top much preferred despite higher price.
Processed wool: natural-colored roving			\$2.26/lb; 1.75 lb raw wool per lb roving = \$3.96	800 miles; delivery costs of \$285 for 300 lb = \$1.05/lb			\$10/lb incoming weight, 57% yield, \$15.70/lb for finished roving or batts	\$0.10/lb			\$20.81/lb	\$30/lb	\$9.19/lb			MMW recycles water and composts wastes	800 miles	3	3	3	Processed at Mountain Meadow Wool, which uses eco-friendly products and processes, including recycling water and composting wastes. Average of 57% yield of finished roving from raw wool. Natural colored roving with minimal vegetable matter sold well; black roving, not as soft and with more veg, did not sell as well.
Processed wool: white or natural-colored top			\$2.26/lb; 2.4 lb raw wool per lb top = \$5.42	800 miles; delivery costs of \$285 for 300 lb = \$1.05/lb			\$15.50/lb incoming weight, 41% yield; \$21.89/lb finished top	\$0.10/lb			\$28.46/lb	\$48/lb	\$19.54/lb			MMW recycles water and composts wastes	800 miles	3	3	3	Processed at Mountain Meadow Wool, which uses eco-friendly products and processes, including recycling water and composting wastes. Average of 41% yield of finished top from raw wool
Processed wool: acid-dyed top			uses top rather than raw wool; \$28.36/lb		0.5 hr, \$5/lb for dyeing and skeining top	\$58 for dye and citric acid for 100 pounds; \$0.58/lb		\$0.10/lb			\$34.04/lb	\$48/lb	\$13.96/lb	3 - 5 gallons water used for every pound of wool dyed	exhaust water unsuitable for irrigation or stockwater	MMW recycles water and composts wastes	dyes unknown but likely >3000 miles; bags unknown but likely greater than 2000 miles; wool 800 miles	3	water quality impacts, high mileage: 1	3	Uses Mountain Meadow Wool top. Brisk market for clear, bright, handpainted colors on white base. Less buying interest in rich muted colors from overdyed gray top.
Processed wool: plant-dyed top			uses top rather than raw wool; \$28.36/lb		0.5 hr, \$5/lb for dyeing and skeining top	\$98 for dye and mordant for 50 pounds; \$1.96/lb		\$0.10/lb			\$35.42/lb	\$48/lb	\$12.58/lb	3 - 5 gallons water used for every pound of wool dyed	exhaust water unsuitable for irrigation or stockwater	MMW recycles water and composts wastes	dyes unknown but likely >3000 miles; wool 800 miles	3	water quality impacts, high mileage: 1	3	Uses Mountain Meadow Wool top. Colors produced were soft and natural. While handspinners report they prefer "natural" i.e., plant-based dyes, these dyed tops were slower to sell than the clear bright acid-dyed tops.
Processed wool: semi-worsted, 3 ply, Aran weight yarn			\$2.25/lb opportunity cost of wool used; 1.75 lb of wool per pound of yarn produced; \$3.94 wool cost per lb of yarn	800 miles; delivery costs of \$285 for 300 lb = \$1.05/lb	Skeining and washing yarn from cones, reskeining yarn to sell, ~0.5 hr/\$5/lb		\$22/lb incoming grease weight, 57% yield; \$34.54/lb finished semi-worsted yarn from carded roving				\$44.53/lb	\$80/lb	\$35.47/lb			MMW recycles water and composts wastes	wool 800 miles	large expenditure for processing, high financial risk, low wage: 0	3	unlikely to be sustainable for beginning shepherds: 2	Processed at Mountain Meadow Wool, which uses eco-friendly products and processes, including recycling water and composting wastes. Yarn sales were glacially slow at fiber shows in comparison to sales of top and roving. Natural-colored yarns were spun semi-worsted from carded roving and the black especially had significant, visible vegetable matter. Mountain Meadow Wool said their customers like this yarn with "terror" and "traces of the land" but my customers object. I've sold only 5% of the black "rustic" yarn and will have to slash prices to get it sold.
Secondary Products:																					
Handcraft kits: felted soaps			0.125 lb at \$34.04/lb; \$4.25/kit		0.075 hr, or \$0.75/kit	\$0.85/kit		\$0.18			\$6.03/kit	\$7.50/kit	\$1.47/kit	3 - 5 gallons water used for every pound of wool dyed	exhaust water unsuitable for irrigation or stockwater	MMW recycles water and composts wastes	dyes unknown but likely >3000 miles; bags unknown but likely greater than 2000 miles; wool 800 miles; soap 1165 miles	low wages, low probability for profit: 1	water quality, waste and mileage issues: 0	3	Kits might be able to be assembled with more earth-friendly components. Similar kits sell for \$10 - \$12.
Handcraft kits: nuno felted scarves			0.25 lb at \$34.04/lb; \$8.51/kit		0.2 hours, \$2	\$6.90/kit		\$0.46			\$17.87/kit	\$20/kit	\$2.13/kit	3 - 5 gallons water used for every pound of wool dyed	exhaust water unsuitable for irrigation or stockwater	MMW recycles water and composts wastes	dyes unknown but likely >3000 miles; bags unknown but likely greater than 2000 miles; silk ~6300 miles	low wages, low probability for profit: 1	water quality, waste and mileage issues: 0	3	Kits might be able to be assembled with more earth-friendly components. Similar kits sell for \$27.
Wool-stuffed pillows (prices per firm, standard-size pillow)			2 lb at \$0.61/lb; \$1.22 per pillow	\$6.00	one hour, \$10	\$0.20	\$15/pillow				\$32.42 per pillow	\$70/pillow	\$37.58 per pillow	three gallons water used for every pound of clean wool	exhaust water unsuitable for irrigation	unknown	wool 1800 miles; cotton ticking; cotton probably from TX 1400 miles to MN	3	high mileage: 2	3	Medium wool from Clun Forest crossbreds. Scoured at home, mailed to MN for carding and sewing. Product sold is the finished pillow. Demand for this product is expected to be moderate. Find a nearer processor?
Fine- and medium-wool sheepskins, from market lambs/yearlings (prices per pelt)				\$20 per pelt	two hours, \$20		\$50 per pelt				\$90 per pelt	\$180/pelt	\$90/pelt			probably not acceptable	1194 miles one way	3	water quality, waste and mileage issues: 0	3	Pelts carefully removed from lambs at slaughter, then fleshed, salted, dried, mailed to WI for chrome tanning. Natural-colored sheepskins sold at first offering or a year in advance. White sheepskins did not sell. Find a nearby tannery?
Sales Venues:																					

Regional, well-established fiber festival (Estes Park Wool Market in CO)				\$858.00					lodging, per diem, ranch sitting = \$690	\$1,548.00	\$493.50	-\$1,054.50				1560 miles	no possibility of marketing in this venue as a new business, except through sales of competition fleeces: 0	high mileage: 2	off-site work: 2	Definitely not a money-making trip for me but an incomparable learning experience. I spent one day helping the wool show managers sort and stage all the fleeces for judging. In reward, I got to work alongside them and the judge, getting inside tips on producing, evaluating, and marketing show fleeces. Vendor booths were very professional and some were stellar. Two of the best told me they spend 3-4 months a year criss-crossing the country dragging a 24' trailer packed with \$7,000 in display racks, shelves, rugs, ladders, banners, personalized canopies, etc. and up to \$40,000 in products. Get serious or get out of the craft booth business seemed to be a major message.
Entries into State Fairs, including sales of displayed fleeces			1856 miles = \$1039					\$80.00	per diem = \$160	\$1,279.00	\$2,475.00	\$1,196.00				465 miles x 4 trips	3	3	off-site work: 2	
In-state, newly established fiber festivals (Copper K Barn in Whitehall, MT, and Prairie Handspinners Fiber Fest in Billings, MT)			1202 miles = \$673					\$160.00	ranch sitter, lodging, per diem: \$775	\$1,608.00	\$4,382.00	\$2,774.00				740 miles, 462 miles	3	3	off-site work: 2	
Local crafts or ag fair (Harlem Seed Show)			162 miles x 4 trips = \$363					\$25.00	per diem = \$80	\$468.00	\$250.00	-\$218.00				162 miles	low wages, low probability for profit: 1	3	3	
Booth and invited talk at annual spinners' guild meeting			472 miles = \$264						ranch sitter, lodging, per diem = \$408	\$672.00	\$100 speaker fee; \$485 in fiber sales	-\$87.00				472 miles	low wages, low probability for profit: 1	3	off-site work: 2	
Teaching fiber arts classes			462 miles = \$259	12 hours at \$10/hr = \$120					ranch sitter, lodging, per diem: \$370	\$749.00	\$120 teaching fees; \$80 in fiber sales	-\$549.00				462 miles	low wages, low probability for profit: 1	3	off-site work: 2	Charge \$75 rather than \$20 a student; don't teach classes with fewer than 10 students
Internet sales				80 at \$10/hr = \$800					ads in SpinOff: \$770	\$380/yr for website for 3 years	\$2,710.00	\$2,059.00	-\$659.00				significant up-front expenditure: 2	3	3	Use Etsy, Facebook, or Ravelry instead of commerce website

* Component prices based on average actual expenditures from 2015 through 2017, adjusted to cost per pound

** Environmental impacts are a mix of quantitative and qualitative measures

*** Sustainability analysis is loosely based on MultiCapital Scorecard at www.multicapitalscorecard.com and www.sustainableorganizations.org. This analysis is qualitative rather than quantitative. Color coding: green meets sustainability thresholds; red fails to meet sustainability thresholds; yellow indicates cautions for sustainability.