Potential Alternatives for Rising Bedding Costs in New England Dairies

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Rising costs for wood-based bedding materials create hardship for many New England dairy farmers. The past decade has seen a sharp increase in demand from the energy sector for wood burned as fuel for electricity production – New Hampshire alone has seven wood-fired power plants, burning about 1.8 million tons of low-grade wood annually. This added demand, combined with the closures of many sawmills across the New England states, results in more limited availability and higher costs of sawdust and wood shavings for regional dairy farmers.

Limited availability and high cost of bedding materials can hinder a farmer's ability to maintain optimal conditions for a healthy herd. The frequency of bedding material replacement influences bacterial loads, somatic cell counts (SCC), and overall cow health. Superior stocksmanship and proper maintenance of the bedding environment can be difficult to measure and quantify across various types of dairy operations, but a more abundant supply of clean bedding material enables a farmer to more frequently top dress or replace dirty bedding, thereby reducing the risks of infections to the herd.

The authors of this research project compiled a dairy farm survey across all six New England states (CT, MA, ME, NH, RI, and VT), to identify bedding material costs and potential low-cost alternatives. Out of 607 mailings and a subsequent online follow-up, 129 farmers responded. Responses were broadly representative of dairy farms across the region in terms of size, location and whether conventional (83%) or organic (17%); however, the smallest dairies (less than 100 head) were underrepresented in responses received.

KEY FINDINGS

Bedding Material Selection

Across all farm sizes and types, sawdust was the material most commonly selected for 50% or more of total bedding needs. Sand and shavings were the second and third most common materials. Some farmers used a variety of other materials in small quantities, including hay, straw, woodchips, paper and composted manure solids.

Bedding Materials and Milk Quality

No particular bedding material selection was correlated with the farmers' self-reported SCC (Table 1). For 2013, The Council on Dairy Breeding reported a regional SCC average of 173,000 from DHI herds, so it should be noted that these survey respondents reported relatively low SCC numbers, which were not confirmed by third-party measurements.

Main Bedding Type (# of cases)	Median Annual Bedding Costs Per Cow	Median Somatic Cell Count
Sand (26)	$100	130,000
Sawdust (70)	$144	148,000
Shavings (19)	$238	120,000
All other* (17)	$144	150,000

*hay, straw, woodchips, CMS, and paper fiber

Table 1: Cost and Milk Quality by Bedding

Bedding Material Costs

For all survey respondents, the median value for total annual bedding costs increased 150% from $4,000 in 2003 to $10,000 in 2013. Table 1 displays the variations in bedding costs by material for all survey respondents in 2013. Based on material costs only, sand was the cheapest of the available bedding options, while wood shavings were the most expensive. The total operating costs associated with each bedding material may vary significantly by region, competing markets (especially for wood-based bedding), and season.

Farm Size (# of cases)	Median Annual Bedding Costs Per Cow	Median Somatic Cell Count
Small Farms: less than 100 head (45)	$194	135,000
Medium Farms: 100-199 head (46)	$143	145,000
Large Farms: 200 head or more (34)	$102	140,000

Table 2: Bedding Cost by Farm Size

Farm Size and Bedding Costs

Table 2 illustrates that higher bedding costs are squeezing small farms most severely. Farmers with less than 100 head of cattle paid double that of farmers with 200 head or more. Farm size was also linked to housing type, with 73% of small farm dairies using tie-stalls, while 65% of large farm dairies employed free-stall housing systems.

ON-FARM PRODUCTION OF WOOD SHAVINGS

This survey was also designed to test the viability of on-farm production of wood shavings as a potential low-cost alternative for bedding material. Of all survey respondents, 77% owned woodlots connected to their dairy farms, with a median area of 100 acres of mixed hardwood and softwood – more than enough to produce a renewable supply of wood shavings for the average-sized New England dairy. Of all survey respondents, 58% indicated that they may be willing to participate in cooperative wood shaving production operations amongst local farmers and 83% indicated that they may be willing to purchase those wood shavings; 63% would require that those shavings be kiln-dried.
Of all the respondents expressing willingness to participate in wood shaving production cooperatives, 56% ran small farms (less than 100 head of cattle). These small farm operators would be the most likely candidates for wood shaving production cooperatives, as they incur the highest bedding materials costs, but do not use enough bedding to justify the purchase of a wood shaving machine on their own. Furthermore, many of these small farms use tie-stall housing, so utilizing cheaper sand material is not an option with their current manure handling systems.

VIABLE ALTERNATIVE FOR LOW-COST BEDDING?

Significant initial investments would be required to start a wood shaving production operation. At the very minimum, a farmer would need to purchase a wood shaving machine, along with any additional equipment necessary to harvest the timber, process the logs and transport the shavings. Additional machinery would be required to dry the shavings to sufficiently reduce microbial loads. Significant labor and fuel costs would also be associated with these operations. Locally clustered farmers could pool their resources to mitigate these expenses, and sales of surplus shavings – not limited to dairy farmers – could produce an additional revenue stream to help offset production costs. Studies at the UNH Organic Dairy Research Farm are underway to address these questions. Initial results are available at: www.aberlab.net.

When looking at the specific costs and benefits of on-farm wood shaving production, the economic feasibility will vary greatly on a case-by-case basis. Consequently, further research is needed to evaluate potential investments for any particular dairy operation considering this alternative for low-cost bedding materials.

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More info go to: www.aberlab.net