

Statement of: Dr. Terry R. Smith, Ph.D.,  
President/CEO, Dairy Strategies, LLC, Madison, WI  
On behalf of Dairy Farmers of America, Inc.

I am Terry R. Smith, Ph.D., and have attached my brief curriculum vitae. I am the President/CEO of Dairy Strategies, LLC, a dairy business consulting firm based in Madison, WI with offices in California, Minnesota, Texas and Wisconsin). Dairy Strategies, LLC has clients in over 25 states in the US and seven foreign countries. Our clients are dairy producers and dairy-related agribusinesses. In the context of this matter, our clients include dairy farm businesses that range in size from 40 cows to over 10,000 cows. I have been engaged by Dairy Farmers of America to provide my dairy business management and economics expertise to the issues relevant to this hearing.

### **Dairy Industry Overview, Challenges and Opportunities**

Long-run returns (excluding appreciation) in agriculture have been quite low over time and therefore it has often been difficult for many producers to justify making the necessary capital investments needed to take advantage of new technology and improved production and management systems. Capital investments in the dairy sector have typically resulted in low returns (2-4% Return on Assets, ROA), due in great part to the over-investment in machinery, buildings, equipment and land. The challenge for the future as margins continue to tighten is to focus on the operational systems that produce cost-effective levels of milk output while employing assets that will provide the greatest returns and reduce investments in the lower return assets. In many situations this may mean increasing the level of specialization within a dairy farm business and having other businesses provide inputs and services (feed, heifers, contract veterinary services, contract manure handling, etc.) to the business.

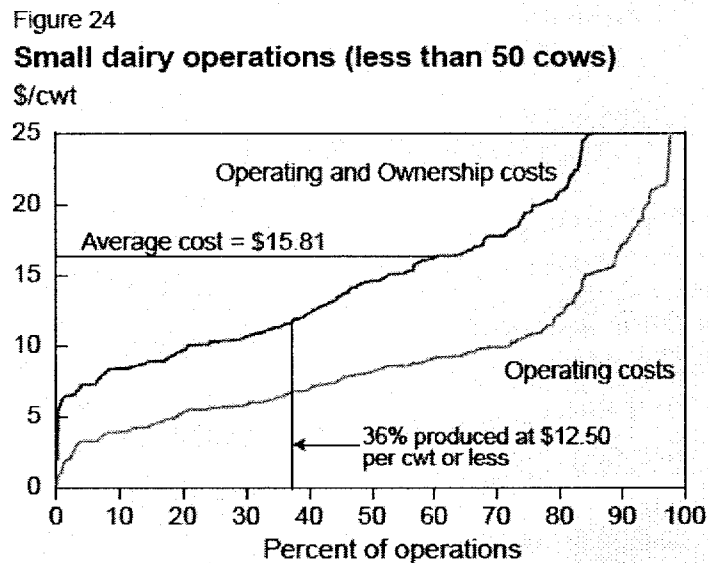
Profitable dairy farm businesses can be characterized by high production efficiencies, reasonable income levels and excellent cost control. A business's expectations of the possible future gains from an investment or change in management practices or technology, must be based in part on past performance, and in part on forecasts of expected future performance. The dairy profit equation is quite simple— profit = (price - cost) x volume. Therefore, there are three ways to increase profitability: 1) Increase price, 2) decrease cost, 3) increase volume. These are the dairy managers three primary control factors for maintaining or increasing profits. Management is challenged to find the best balance among these three factors. A change in cost, volume or price will likely affect one or both of the other two factors.

Terry R. Smith, Ph.D.  
Seattle, WA, November 17, 2003

The best a business can do is to make some estimate of the range of possible future costs and expected returns and the relative chances of earning a high or low profit on the particular investment(s). The producer-handler faces this complex of operational and investment decisions as they position their businesses for the future, the same as does any business.

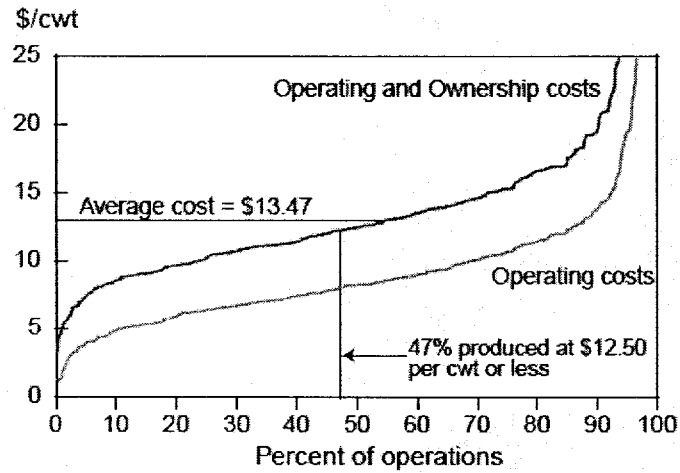
### Characteristics of US Dairy Operations – Operating and Total Costs

The following figures from a recent USDA-ERS publication (*McElroy, et. Al., 2002. Agricultural Income and Finance Outlook. USDA-Economic Research Service. AIS-79. Sept. 26, 2002*) depict the average estimated operating and full cost of production by size of business. These average cost and relationships reinforce the well-known economies of size characteristic of the US dairy farming sector.



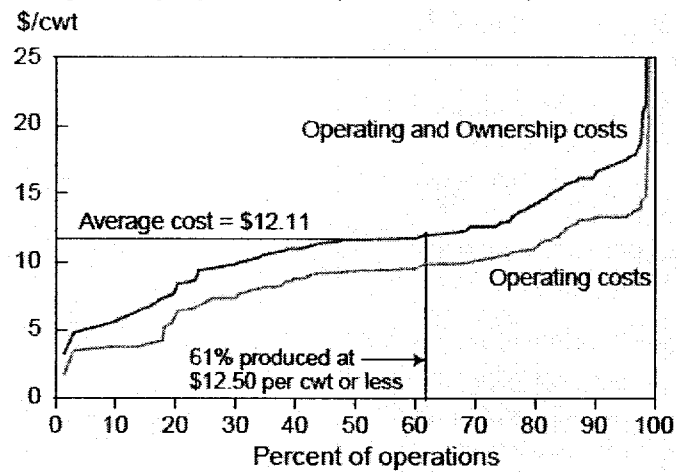
Source: 2000 dairy ARMS survey.

Figure 25  
**Medium dairy operations (50-199 cows)**



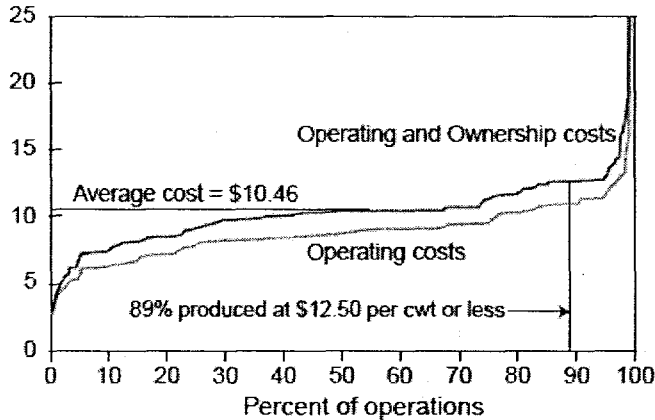
Source: 2000 dairy ARMS survey.

Figure 26  
**Large dairy operations (200-499 cows)**



Source: 2000 dairy ARMS survey.

Figure 27  
**Industrial-scale dairy operations (500 cows or more)**  
 \$/cwt



Source: 2000 dairy ARMS survey.

The well managed smaller-sized operations can be very cost competitive with larger sized dairies in relationship to operating costs or operating efficiencies as depicted in the four figures above (Figures 24-27, from McElroy, et. al., 2002). Note in particular that the percent of farms with operating costs below say \$10/cwt are reasonably similar across herd size ranges. However, the advantage is typically reduced when ownership costs and other fixed costs are added to arrive at total economic costs of production (operating and ownership costs, see figures, above). Therefore, the short-run survivability of many dairy farm businesses is achievable while not being concerned with capital replacement costs, which of course are real costs and must also be accounted for when planning for the longer-term viability and sustainability of the business. In the short-run, a focus on improving operational efficiencies (eg. operating expense ratio) will help improve operating profits. However, a dairy business with high capital investments per cow or pound of milk produced will negatively impact the ability of the business to grow, which is characteristic of many average-size dairy operations in the US. Many dairy farm businesses are over-capitalized and/or have invested in lower-return assets that dramatically impact the ability of the business to produce competitive returns. Taking a critical look at both the operating efficiency and capital efficiency of any business are important to the future success and sustainability of the business. Businesses with Return on Assets (ROA) greater than the average cost of capital have the opportunity to use leverage (debt capital) effectively to enhance the opportunity for the business to grow, which is a characteristic challenge for many average-sized dairy businesses across the US.

## Challenges and Opportunities Facing Producer-Handlers

The median size Producer-Handler (P-H) sells approximately 100,000 lbs. of milk per month. This approximates a 50-70 cow herd with average annual milk sold per cow of 17,000 – 20,000 lbs/cow. The table below, depicts some realistic, yet hypothetical size ranges, levels of milk output and projected returns.

**Table 1.** Hypothetical Producer-Handler Examples by Herd Size

Hypothetical Producer-Handler Examples	Typical	Mid-Size	Large
Milk sold per cow/yr (lbs)	20,000	20,000	20,000
Profit per lb milk sold	\$ 0.0100	\$ 0.0125	\$ 0.0145
Profit per cow/yr	\$ 200	\$ 250	\$ 290
<b>Avg. number of cows</b>	<b>90</b>	<b>900</b>	<b>1800</b>
Milk sold per month (lbs)	150,000	1,500,000	3,000,000
Total Annual Profit	\$ 18,000	\$ 225,000	\$ 522,000

Across these hypothetical size ranges (90-1800 cows), the structure and organization of these businesses is typically quite different. The typical 90 cow dairy operation will have a work force of 2-3 full-time equivalents, comprised of the owner and family members, providing all labor and management to the business. In contrast, the typical 1,800 cow dairy operation will have a work force of 15-20 full-time equivalents, comprised of one or two full-time herd managers, a dairy operations manager and/or general manager, outside or feed manager and a parlor manager. The ability of these businesses to specialize in specific areas of responsibility is quite different. The larger business, in addition to being able to capture the economies of size, will typically also achieve greater levels of specialization due in great part to the depth of management. The smaller size dairy businesses will typically be more diversified operations, often raising their own forages, raising their own replacement heifers and in the case of a producer-handler, also processing and distributing finished dairy products, thereby spreading their management thin across the respective cost and profit centers under their control.

More and more of the larger dairy operations are specialized milking operations and are typically having their replacement heifers custom-raised or sell heifer calves and buy springing replacements, as needed. If and when there are seasonal milk production needs that are somewhat predictable, within their annual marketing plans, there is obviously a greater opportunity to adjust herd inventories (and number of cows milked) by managing within-herd milk production levels and herd numbers. A larger specialized dairy operation can more easily decide to milk a portion of their

herd 3-times per day and the balance of the herd 2-times per day, thereby adjusting their level of output and also managing operating expenses, particularly milking labor. This level of management control is also more easily applied to a larger herd managing cows in large groups, when utilizing a technology such as bST (bovine somatotropin) as a tool to manage production efficiency quite effectively.

Due to the fact that the larger producer uses primarily purchased feeds versus home-raised feeds (or pasture in many cases), the seasonality of milk production is usually less on a management challenge as there is a greater ability to target the feed purchase decisions to the herd and milk market needs from a planning standpoint.

Similarly, the ability of a larger herd, where cows are managed in groups (typically with groups of larger size than the median producer-handler represents), has a labor and production efficiency advantage over the smaller herd sizes. The ability to implement feeding and management strategies designed to directly impact the milk composition of the overall herd or a group, is certainly more feasible in a larger operation. This would of course be a potential advantage for the larger operator to effectively balance their milk components to better meet their particular marketing needs, particularly since the producer-handler producing for a fluid milk market will be less concerned with butterfat depression than a non-producer handler.

The larger dairy operation has the ability to market tanker-load quantities of milk every day, which is a clear competitive advantage from a milk marketing standpoint than the typical sized producer handler that might produce a 10<sup>th</sup> of a tanker load per day.

The larger dairy operation is in a much more favorable position to consider the application of on-farm milk concentration technologies (reverse osmosis and ultra-filtration) as another means of effectively matching their milk production more closely with their local market needs, while having the flexibility to move concentrated milk to more distant markets in a cost-effective manner.

The larger more specialized operations have a much lower risk exposure in most situations to the risks associated with farming/cropping operations and are typically forward contracting both forages and concentrates and byproduct feeds, often a year in advance, thereby having much more control over the variability of input costs than the diversified operations (usually the smaller dairies that are producing their forage and even some of their grain).

While any dairy business has the ability, often through their milk marketing organization to take advantage of the price risk management tools available to them, the larger operations, with more depth of management and/or with greater ability and willingness to hire consultants, to assist with the development and implementation of a comprehensive marketing and risk management program, are more likely to have an input and output price risk management program. The milk futures and options markets available on the CME (Chicago Merchantile Exchange), while available to all dairy producers to manage their milk price risk, have contract sizes of 200,000 lbs. which are more compatible with the larger producer than average-sized producers. The minimum contract size coupled with the transactions costs and management time required to manage milk price risk tends to favor the larger dairy operations ability to implement them.

A producer-handler, large or small has made the commitment to market their own milk and therefore has positioned their business for the value-add opportunities and associated risks of producing and marketing a perishable product. The capital intensiveness of the dairy farming business represents a challenge for all dairy producers. However, the corresponding economies of size in milk production are real and certainly favor the larger dairy operations that are in a position to make the level of investment needed to capture these economies while still maintaining a high level of operational efficiency. The management structure of larger dairy operations certainly provides the capacity for these operations to leverage this more specialized management expertise throughout the business from operations (dairy and processing) through to the marketing of a quality finished product. In addition to capturing the economies of size at the milk production level, other testimony will (or has) demonstrated the economies of size associated with the larger processing capacities as well. The ability of producer-handlers producing and marketing milk in excess of the proposed 3 million lbs/mo limit before becoming regulated, should not present a large economic disincentive for those P-H that will be effected.

#### **REFERENCES:**

- McElroy, R., R. Strickland, J. Ryan, C. McGrath. R. Green, K. Erickson and W. McBride. 2003. Agricultural Income and Finance Outlook. USDA-Economic Research Service. AIS-79. Sept. 26, 2002.
- Moore Stephens Wurth Frazer and Torbet, LLP, 2003. Dairy Farm Operating Trends. December 31, 2002.



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**EDUCATION**

Michigan State University

Ph.D. - Dairy Science/Agricultural Economics - 1980

Emphasis: dairy science, production economics, farm management

University of Maine

M.S. - Animal Science - 1977

Emphasis: dairy manure management, animal nutrition, computer science, economics

Cornell University

B.S. - Animal Science and Agricultural Economics - 1975

**EMPLOYMENT BACKGROUND**

- o President and CEO, Dairy Strategies, LLC, - Dairy business and financial management consulting firm (15 staff, 6 int'l associates), working with dairy producers and agribusinesses throughout the US (25 states) and internationally (7 countries). US Offices in: WI, CA, MN and TX. International Offices: Argentina, Australia, Brazil, China and New Zealand - 8/97 - present
- o Visiting Professor, Department of Dairy Science, University of Wisconsin-Madison - 8/97 - present
- o Sabbatical Leave - AgriBank, FCB, St. Paul, MN (Marketplace Strategies and Services)- Farm Credit Services, 7th District, 1/96-7/96
- o Professor, Department of Dairy Science, University of Wisconsin-Madison. Served as Chief Editor of the National Dairy Database (CD-ROM) and Director, Agricultural Databases for Decision Support (ADDS) Laboratory - 1990 - 1997
- o Director, University of Wisconsin Center for Dairy Profitability (first director) - 1988-1995 extension, research and administration
- o Associate Professor, Department of Animal Science - Cornell University, 1984 - 1988 - Extension and Research - Dairy Farm Management, Co-Director, PRO-DAIRY, New York State Dairy Farm Profitability and Productivity Project
- o Assistant Professor and Dairy Extension Specialist, Department of Dairy Science - The Ohio State Univ., 1980 - 1984, Joint appointment - Department of Agricultural Economics, 1982 - 1984, Teaching, research, and extension - Dairy Farm Management
- o Dairy Farm Manager - Michigan State University, Dairy Research and Teaching Center, 1979-1980

**INTERNATIONAL CONSULTING and DAIRY DEVELOPMENT PROJECTS:**

Argentina, Australia, Bolivia, Canada, Costa Rica, Egypt, Japan, Mexico, Netherlands, New Zealand, People's Republic of China, Tunisia

**PROFESSIONAL ORGANIZATIONS and AWARDS**

- o 2002 Governors Export Achievement Award (Dairy Strategies, LLC) - for extraordinary results in international sales and/or contribution to Wisconsin's increased ability to compete in a global market
- o 1999 AgSource Friend of the Cooperative Award
- o Certified Agricultural Consultant (CAC), American Society of Agricultural Consultants
- o Member, Wisconsin Association of Professional Ag Consultants
- o Member, Wisconsin Association of Farm Managers and Rural Appraisers
- o Member, American Dairy Science Association
- o Member, Sigma Xi, Scientific Research Society
- o Member, Alpha Zeta, Agricultural Honorary Society

Terry R. Smith, Ph.D.  
Seattle, WA, November 17, 2003