

**Barriers and Opportunities for Use of Technical Assistance Programming by
Vermont Dairy Farms.**

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Executive Summary

At the request of the Farm to Plate Dairy Working Group and the Technical Assistance Task Force an assessment was conducted of the current status of dairy farm technical assistance programming in Vermont. The purpose of the project was to identify barriers and opportunities within currently available technical assistance programming and to propose methods to increase access to and utilization of technical assistance across the entire continuum of the dairy farm community.

Surveys were collected at farmer meetings and by Agrimark fieldmen. Farmers could also request surveys electronically. Electronic surveys were distributed to 200 Vermont based service providers. Interviews were conducted with eight Vermont based service providers.

Farmer responses to the survey appear to be from farms that were slightly smaller than the state average and represent a bias towards farms selling raw milk products in regions other than the dense dairy counties of Addison, Franklin and Orleans. Respondents appear to rely more heavily on grazing than is common across all Vermont producers. It is also likely responses are skewed towards farms that attend conferences, although significant outreach occurred to the entire dairy farming community.

Based on farmer survey responses, with the exception of veterinary services, equipment repair and legal services, most technical assistance services appear to be available on a statewide basis. Lack of relevance was the most common reason farmers chose not to use services, followed by availability. Expense of services does not appear to be a limiting factor, although it was listed for all services except business and financial.

Farmers view other farmers as the most frequent source of information and while they have access to and knowledge of the Internet, they still frequently use magazines as a source of information. They do not use time to research information on the Internet or in print.

Technical service providers feel that farmers' lack of awareness of the importance of services is the greatest barrier to service use. They also listed programmatic limits and mileage as limiting their ability to provide services to farmers.

Marketing of existing services to underserved farmer audiences will increase utilization by increasing awareness of relevance. Hiring college students to travel from farm to farm between May and August for short visits to disseminate information on service provider programs could be a low cost way to increase awareness. If this effort was coupled with information left behind at farms by milk inspectors and also included in milk checks it would create the required frequency of information to motivate farmers to action for utilizing technical assistance.

Increasing farmers' awareness of existing technical assistance programming through frequent publication in magazines and on web based sources is a suggested method to increase use of services. Because farmers recognize other farmers as a trusted and frequent source of information, articles should showcase farms utilizing services and perhaps even provide direct contact information to the highlighted farms so they can serve as an information resource about existing technical assistance programs.

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Introduction

At the request of the Farm to Plate Dairy Working Group and Technical Assistance Task Force an assessment was conducted of the current status of dairy farm technical assistance programming in Vermont. The purpose of the project was to identify barriers and opportunities within currently available technical assistance programming and to propose methods to increase access to and utilization of technical assistance across the entire continuum of the dairy farm community. Research conducted in support of the project focused on identifying technical assistance content and delivery methods that provide dairy farmers with the knowledge, skills, practices, and dispositions they need to be successful in the business of farming.

Dairy producers face challenges as they enter, expand or exit the dairy industry. Those entering the dairy industry often find attracting financing difficult and may find that accumulating an acceptable level of equity to get started will take several years. Expanding dairy producers are often so highly leveraged they have little margin for error, making their businesses susceptible to failure due to production or price swings. Older dairy producers face the challenges of increasing age and the desire to accumulate cash for retirement rather than reinvest in their

dairies. Without a plan for succession, farms may not generate enough revenue to pay attractive wages or attract experienced, productive farm employees. The net result of the challenges faced by dairy producers is a lack of reinvestment in an entire regional dairy industry. Technical service providers play an essential role in supporting farms through the various phases of business from inception through growth and/or diversification and ideally through transfer of the assets to another producer.

In support of this project information was gathered from the people involved in implementing, using, promoting, and deriving value from technical assistance programming to increase the understanding of current successes and challenges and provide input into what a successful vision of new programming could be. The purpose of the data was to increase the understanding of how improved utilization of TA could be implemented such that the best likelihood for success is achieved. Understanding what has and has not worked in the past and for other regions of the country from reviewing third party data helped establish a background and context for existing projects and proposed new projects.

Methodology

A. In-person interviews and survey distribution with dairy producers was largely conducted at farmer gatherings including the Vermont Farm Show, Vermont Dairy Producers Conference, NOFA Conference and Grass Farmers Conference by Working Group members and, to a lesser extent, the researchers. The survey was made available through Agrimark fieldmen. Notices about the survey were distributed through Agriview and the St. Albans and Agrimark newsletters. Farmers could request electronic copies of the survey but it had to be submitted in paper form to facilitate the \$500 drawing.

The purpose of the data collected from farmers was to determine:

- How do they prefer to receive information?
- Who currently visits their farm and for what reasons?
 - Do the farmers view them as information providers?
- What are the limitations and benefits to use of various forms of technical assistance?
 - Geographical access, expense, time commitment, perceived value
- Would a single location portal to technical assistance be of value?

B. A baseline of technical assistance content currently available to farmers was gathered from various locations including the Vermont Food Atlas and information requests to a small number of service providers. A thorough data base of 200 technical assistance providers was created by merging contact lists from the Food Atlas, Louise Calderwood, Willie Gibson and NRCS. Service providers represented all areas of the state and private, public and corporate (employed by businesses) service providers.

The purpose of the data collected from TA providers was to determine:

- What is the availability of various services and information forms across all regions of Vermont?
- How do farmers access TA services?
- What are the limitations to the delivery of technical assistance?

C. In-person and telephone interviews were conducted with veterinarians, lending organizations, other individuals and organizations that support the dairy industry to discuss gaps in content, delivery method or geography. Six service Vermont based service providers were interviewed in support of this project and a seventh provider based in New York who does substantial work in Vermont was also interviewed. Individuals were chosen for geographic, programmatic and funding source diversity. One of the Vermont based providers does significant work throughout the United States.

D. The researchers conducted a limited literature review of current research in successes and barriers in adult rural education models.

Results

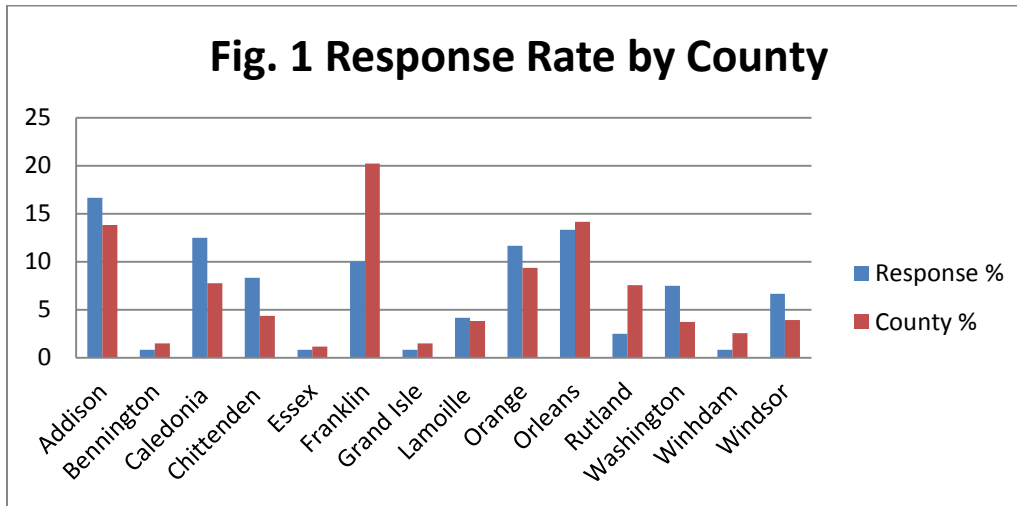
Producer Demographics

A total of 127 surveys were collected from every county in Vermont with 120 of the respondents currently milking cows, goats or sheep. With an estimated 940 cow dairy farms in production at the time the survey was distributed, this is approximately a 12.7% response rate which is quite good.

Based on the authors' knowledge of the Vermont dairy industry, it appears the 52% of respondents relying on pasture-based production is higher than the state population of grazing dairies. The Vermont Agency of Agriculture does not track producers based on organic versus conventional production methods; however, it is estimated that in early 2014 there were 205 organic cow dairies in the state, representing 24% of the cow dairy farms. This aligns precisely with the survey response rate of 24% organic producers. The Agency of Agriculture has record of 68 farms selling raw milk directly to consumers, or 7% of Vermont dairy farms. The 11% response rate of producers engaged in direct sales of fluid milk to consumers is higher than the state population of farms selling raw milk. The response rate of only 73% of the respondents selling their milk to cooperatives or independent handlers is smaller than would be expected.

A disproportionate number of respondents were from Caledonia, Chittenden and Washington counties while Franklin County and Rutland County were underrepresented in response rate.

Response rates from the heavy dairy counties of Orleans and Addison accurately reflected the number of farms in these locations.



The size profiles in the survey were purposely chosen to not align with herd sizes tracked for regulatory purposes to remove any response bias due to regulatory concerns. However, the profile of herd size for respondents' herds appears to be similar to, perhaps slightly smaller than, the state profile for herd size.

11%	less than 30 cows
52%	30 to 100 cows
28%	100 to 500 head
8%	more than 500 head

In summary, the response rate for a simple survey, conducted with minimal resources is a fair representation of the full breadth of dairy production in Vermont.

Producer Access to Services

By far the most widely used source of information amongst the population of dairy producers surveyed for this study was UVM Extension with 88 respondents, or 79% utilization stating they use extension technical assistance. The two service providers focusing specifically on organic production, Northeast Organic Dairy Producers Association and NOFA-VT were utilized by 17% and 27% of the respondents which is in line with the 24% of respondents that were organic producers. A combination of out-of-state service providers including Pro-Dairy, Northeast Dairy Producers Association, and the Center for Dairy Excellence were utilized by 24% of the respondents.

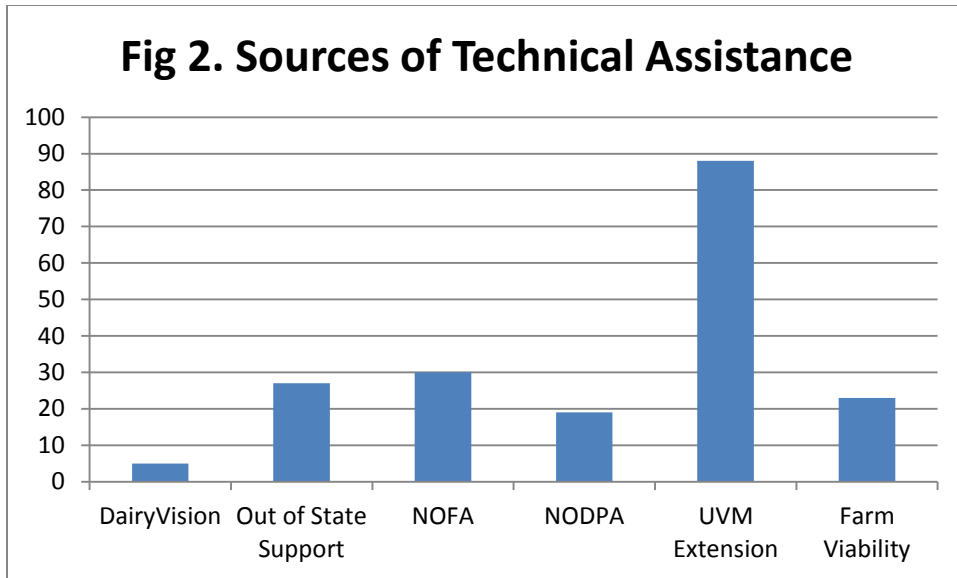
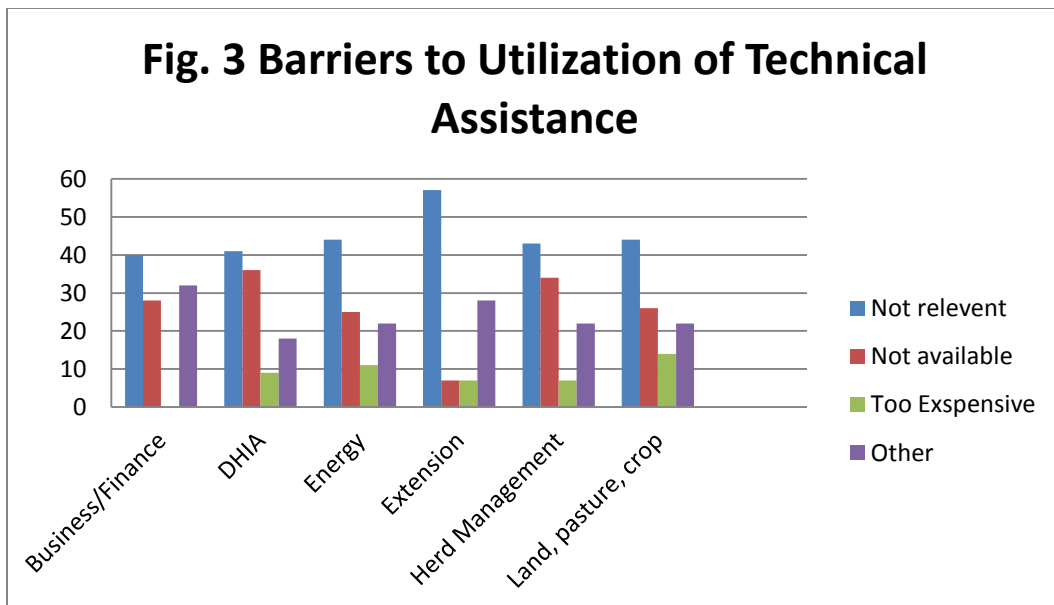


Figure 2. Number of respondents utilizing various sources of technical assistance.

The most common reason given for not using a specific type of service was lack of relevancy to the farm. The next most common reason stated was that a particular service was not available in the farm's geographic area. Geographic location of services was the most frequently listed barrier to time sensitive services such as veterinary care and equipment repair.

Cost was listed as a barrier to use of all services with the exception of business and finance assistance, but at a much lower frequency than relevancy or availability. Land, pasture and crop management services as well as veterinary services are the only forms of technical assistance that appear to be limited by cost to a significant portion of the farm population surveyed.



Use of Internet by Producers

Eighty-nine producers responded to the survey questions about Internet use. E-mail and websites are frequent sources of technical assistance to the Vermont dairy farmers responding to the survey but only 38% state they use e-newsletters and 7% use podcasts as sources of information.

Although 86% of farmers indicated they know how to search for information using the internet, and 83% find the information useful, only 64% have the time to search for information.

Table 2. Use of Internet Resources

E-mail	76%
E-newsletters	38%
Websites	71%
Podcasts	7%

Use of Print Media by Producers

A total of 114 producers responded to the questions pertaining to use of print media. Both Agriview and newsletters are used by 61% of the respondents. Reports are used by 32% of the farmers responded. The 87% utilization of magazines is by far the leading single source of technical assistance indicated in the survey.

Although 89% of farmers have access to print media and 82% know how to search for information, only 54% spend time searching for information in printed form.

Table 3. Use of Print Media

Agriview	61%
Newsletters	61%
Magazines	87%
Reports	32%

Service Providers

As there is no existing formal database of service providers the results of this survey cannot be evaluated as a formal representation of services available in Vermont; however, there is useful information to be gleaned from the responses.

A total of 86 technical service providers responded to the 200 e-mailed requests to participate in the survey; this is

an outstanding response rate of 43%. Of the total services available, the majority were listed as being provided state wide, followed by the NE region of Essex, Caledonia and Orleans counties and the NW Region of Lamoille and Franklin counties. Understandably, the SE and SW regions of the state have the smallest number of TA providers for the dairy industry due to the few dairy farms located in these regions.

As shown in Table 5, most of the service provider respondents were government or non-profit employees, and based on the types of

services offered it appears many of them worked for NRCS or conservation districts.

Table 4. Services Available by Region

Statewide	111
Northeast	84
Northwest	72
Central	67
Chittenden	62
Addison	55
Southeast	23
Southwest	22

Table 5. Types of Service Providers Responding

- 36 government employees
- 17 non-profit employees
- 12 privately employed
- 11 UVM employees
- 5 NGO employees

A review of the services provided by the survey respondents indicates a large number of technical service providers focusing on issues related to water quality or related subject areas such as composting, conservation education, grazing management and nutrient management. This was followed closely by services addressing business and financial issues such as business plan development, budgeting and loans. It appears that only one veterinarian and one dairy nutritionist responded to the survey. The survey was not circulated to feed or equipment businesses so their services are not captured in the responses.

Barriers to Service

Service providers were asked to list, but not rank, barriers to farmer utilization of their offerings. Respondents could check all of the barriers included as choices in the survey as well as other not included.

Of the 85 service provider respondents, 45 listed farmers interest in, or acceptance of, the services offered as the primary issue limiting their ability to provide services. Twenty-four respondents listed farmers' ability to pay for services as the primary limiting factor. For 12 of the "ability to pay" responses it appears the technical service is accessible, but the implementation cost of projects, such as conservation measures, is a barrier to use. For the other 12 of the "ability to pay" responses it appears the actual cost of the service is a barrier to use. Of the twelve private consultants responding to the survey, ten of them listed "ability to pay" as a barrier.

Services focused on business planning, transfer planning and financial assessments appeared to be limited by farmer interest or acceptance of the programming or programmatic constraints imposed by the funder. "Ability to pay" was only cited in three of sixteen responses related to business planning, financial assessment, farm transfers or loan assistance. "Farmer acceptance" was limiting for 11 respondents in this category and programmatic constraints was limiting for 10 respondents.

Of the 85 respondents, 29 listed budgetary restraints such as mileage and time spent per farm as constraints to their ability to offer services and 35 listed programmatic constraints such as type of farm as a limiting factor.

Outreach to farmers

Service providers were asked to list the methods they use to reach farmers and make them aware of service offered. As with the "barriers to service" question, respondents listed all types of outreach they utilize, but were not asked to rank methods in order of preference or effectiveness.

Table 6. Types of outreach used to increase farmer awareness of services offered

- 77 used word of mouth
- 54 used internet services
- 36 used print services
- 2 used farm visits

As shown in Table 6 by far the most common form of outreach was “word of mouth” with 77 of the 85 respondents identifying that as a method to create awareness of services offered.

Service Provider Interviews

The purpose of service provider interviews was to determine if any themes existed that were not captured in the limited electronic survey. Each provider was asked if they felt there were gaps in access to services based on geography, and then were asked what they saw as limiting factors for farmers’ access to, or utilization of services.

Several themes were evident based on these open ended conversations:

1. Most technical services are available statewide with the exception of veterinary, legal, and equipment repair services.
2. There are statewide gaps in some services specifically:
 - production assistance for organic producers who ship to Horizon
 - large herds seeking production assistance
 - sophisticated business advice for business savvy producers
 - organic specific business advice (especially in years leading up to transition)
 - experienced assistance with farm asset transfer and organizational structure issues.
3. It is difficult to garner interest from private and public sources to provide technical support for conventional dairies. It is much easier to access support for emerging forms of dairy production based on scale, production method or value added processing.
4. For farms engaging in technical assistance, the diversity of programs offered through many different organizations is very confusing. Even for farms working through a single entry point such as Farm Viability, that can make the connections and provide guidance, the process can be daunting.
5. Many farms are not aware of services available through their bank, NRCS or Extension.
6. There are competent advisers available for hire through the private sector but many farms are price sensitive to hiring them. Both of the private consultants interviewed who work outside of Vermont thought this was more of a Vermont based issue, perhaps due to the long history of free or low cost services in the state.
7. The focus of funding to support management of soils, crops and grazing is starting to have a positive impact.

8. The focused effort on asset transfer planning is timely. It is too soon to tell if it will be effective.
9. There is a lack of support for efforts that only require two or three visits rather than long term on-going efforts.

Literature Review

A limited literature review was drawn from Journal of Extension online. Although some of the works cited are up to 16 years old, they still provide valuable insight into methods for disseminating information to farmers.

The problem of connecting producers to services seems largely about marketing and aptitude: farmers need to be susceptible to new learning, need to desire the information, and need to be in a position of having enough time and/or money to make use of the information and services available; and service providers need to present their knowledge and services in a manner that is accessible and appealing. Many studies make note of factors associated with farmer characteristics as well as content and delivery method of technical assistance.

A 2004 New Zealand dairy study inquired whether and how farmers used available services. Their findings suggest that the speed with which farmers engage in technological learning (TL) is influenced by the efficiency of the innovation system, the maturity of the farm system, and the individual characteristics of the farmer. The article presents a model demonstrating how these three sets of factors may affect TL that can be used by Extension agents to help them develop a strategy for engaging farmers in TL. (Massey, Claire et al.)

The researchers' third factor, "individual characteristics of the farmer," seems particularly relevant to Vermont's question of how to increase farmers' utilization of available technical assistance. Massey et al. also reviewed pertinent studies to identify characteristics of effective delivery of services, and characteristics of farms likely to utilize services. These are summarized in Table 7.

Table 7. Technology Adoption Happens Quickly		
The individual is	In a position in the farm system to access economic resources and make decisions.	Buttle & Newby (1980)
	Highly or 'better' educated.	Bultena & Hoiberg (1983); Lambur et al. (1985); McGregor et al. (1996)
	Receptive to new ideas (i.e. is innovative) and is a risk-taker.	Bultena & Hoiberg (1983)

	Able to unlearn non-innovative behaviors and break with traditional paradigms.	Nooteboom (1999)
	Younger and less experienced.	Ervin & Ervin (1982)
	Self-confident.	Bagozzi, Davis & Warshaw (1992)
The farm system is	Large.	Lambur et al.(1985)
	Linked to knowledge networks.	OECD (1997)
	Endowed with absorptive capacity.	Cohen & Levinthal (1990)
	Able to transfer information.	Nooteboom (1999)
	Profitable.	Byerlee & de Polanco (1986)
	Linked to other firms and networks.	Bala & Goyal (1998)
	Successful in terms of previous technology adoption.	O'Neill, Poudier & Buchholtz (1998)
The innovation system is	Linked or in contact with farmers (e.g. through Extension services, field days etc.)	Steffey (1995); Harper et al. cited in Herbert (1995)
	Significantly involved in management-intensive technology, but not as significantly involved for capital intensive technology.	Zepeda (1990)
The Extension process is	Supported by activities that inform the farmer of the incentives of adopting the technology.	Wearing (1988); McNamara, (1991)
	Designed to promote effective communication, problem identification and problem solving.	Contant (1990)
	Based on personal interactions of a formal or informal nature.	OECD (1997)
	Not free (farmers are willing to pay for information if they believe the innovation will bring them an economic return).	Feder & Slade (1984)
	Not just fact based (e.g. computer based decision support systems are useful).	Hamilton et al.(1991)
	Stimulating, provides contacts and facilitates collaboration.	Feather & Gregory (1994)
	Timely and available.	Wall et al.(1985); Korsching & Hoban (1990); Premkumar & Roberts (1999)
	Delivered by individuals who are perceived as credible.	Rogers (1983); Korsching & Hoban (1990)

(Massey, Claire et al.)

A 2009 study in Tennessee also looked at farm and farmer characteristics, this time in terms of how a variety of information systems are used. The purpose of the study was to increase understanding of the types and sources of animal/herd health information that farmers use and how farm and farmer characteristics may influence this. The objectives of the study were to ascertain the use of animal/herd health information sources by livestock producers and the effects of farm and farmer demographic characteristics on use of these information sources. Survey results from 1,737 Tennessee livestock producers are used in the analysis. (Jenson, Kimberly et al.)

This study covered many types of operations, and data was sorted and reported by type. Of possible relevance to the Farm to Plate study are the following findings (highlights added by authors):

Having dairy cattle has no significant effect on using information sources, compared to other livestock types, except that it has a negative effect on use of information from the Internet. Based on results of the Farm to Plate Survey the authors of the Vermont study feel this is possibly due to the time investment associated with Internet research, as noted in the survey results.

The Tennessee work indicates that older farmers are less likely to use most of the information sources examined. This may reflect the expertise the farmer has developed over years of farming. In addition, older farmers are less likely to use multiple sources of information. Interestingly, however, more highly educated farmers are willing to use a variety of information sources. These results together suggest that more highly educated younger farmers are more likely to use a variety of animal/herd health information sources. (Jenson, Kimberly et al.)

A 2011 study in Pennsylvania identified some particular limitations or gaps in dairy farming support services that resonated with our Farm to Plate results. The Pennsylvania study stated that new and beginning dairy producers have challenges in building equity and developing strategies for sound succession plans. Dairy farm businesses are capital intensive, and an aging dairy farm owner population means that transition of these operations will be critical in the future. Focus groups with both senior farm owners and new dairy producers were used to better understand these challenges and to enable Extension professionals to create educational opportunities to meet the needs of new and beginning dairy producers. Keys for success that were identified included sound financial planning and purchasing animals as a strategy to grow equity. (Holden, Lisa et al.)

Of particular interest from the Pennsylvania study are the following findings:

One of the last questions asked was "What are some key state wide resources that are needed to encourage more successful dairy farm business transfers?" Again, answers varied across participants but several themes emerged including:

- Affordable attorney and accounting services
- Help with tax accounting, incentives and legal aspects of transfers
- Good relationships with advisors and use of advisory teams
- Business planning expertise and programming.

Additionally, the Pennsylvania research suggests that the use of legal and accounting experts and peer-to-peer producer knowledge transfer in delivering Extension programs could be useful. These educational partners provide an experienced perspective that can add value to the education that Extension offers. (Holden, Lisa et al.)

A 2002 analysis reviewed efforts in Mississippi to consolidate a wealth of information on a centralized website. "The Dairy Manager" Web site was developed to provide producers access to current, reliable management information. The site was designed for efficient use by the producer or county Extension educator and contained compiled, reviewed, specific, and current dairy management information. The site was purported to be updated frequently and a panel of experts in various fields related to dairy production and management were to review the material prior to posting to the Web site. (Chapa, A. M. et al.) The authors of this study were not able to locate a website remotely akin to "The Dairy Manager" one being analyzed in this article. Either it still exists, but lies buried beneath irrelevant commercial site listings; or it does not exist any longer, and the resources are no longer available to farmers.

Worth noting are these comments regarding general Internet searches for information, which perhaps relate to the reluctant or "I don't have time for internet" responses noted in our survey:

A common complaint regarding search engines is the return of numerous pages containing irrelevant material. The results of a search are influenced by various factors, including database size, update frequency, search capability and design, and speed. Indexing new or modified pages by a search engine can take months. Lawrence and Giles (1999) found that search engines are more likely to list commercial sites than educational sites and sites that have more links.

Another disadvantage of an Internet search is lack of quality control. ...[S]ites can be biased, misrepresent facts, or contain little factual information. Users must not only

consider the relevance of the information to their current situation, location, and resources, but also the credibility of the Web site. (Chapa, A. M. et al.)

A 1998 study conducted in New York dates back to the earlier days of Internet, and reminds us that not so long ago, information came via people, not computer. In dealing with the farm community, there is possibly still value in this ancient vehicle.

The New York work indicates that farmers may have difficulty expressing needed management knowledge. Determining the best way to learn this information and then finding the best way to provide it can be challenging. Facilitated discussion groups were asked open-ended questions regarding management. This environment provided an effective method for participants to identify and expand on these needs. Responses pointed out the need for people-oriented management training with stress management a priority. (Young)

The summarized findings of this study emphasize person-to-person methods for conveying information. There are a number of commonsense threads in the New York study that are seemingly relevant to the questions at issue in the Farm to Plate survey, which involve how to connect farmers to knowledge and services.

- ...a strong need for people oriented and/or human resource knowledge for the farm community
- Financial comparisons designed to help farmers recognize the worth of management could find broad usage...
- Follow-up also needs to be done to identify the best ways to bring knowledge to an audience in specific circumstances.
- Facilitated discussion groups can be an effective means...
- The synergy created through informal conversation with peers can expand many ideas beyond the initial thought.
- Letting participants know they are the experts and allowing them to drive the conversation can create candid and animated responses.
- A broader use of facilitated discussion groups for interactions and assessments with farmers could prove to be beneficial to educators and others desiring to identify needs and provide appropriate knowledge. (Young)

Discussion of Results

Responses to the farmer survey portion of this study appear to have been collected from farms that were slightly smaller than the state average and represent a bias towards farms selling raw milk products in regions other than the dense dairy counties of Addison, Franklin and Orleans.

The respondents also appear to rely more heavily of grazing than is common across all Vermont producers.

Despite the development of many new sources of technical assistance since the mid 1990's, UVM Extension is still the most commonly used for farmers responding to this survey. Organic specific organizations such as NODPA and NOFA-VT are utilized as well as out of state service providers, but only at about a third of the rate of utilization of extension.

Based on survey responses it is clear that farmers have access to the Internet and use it as a source of information but do not spend time searching for information. Likewise, they have access to printed material and consider it a valued source of information but do not spend time searching for information in print. Magazines are a frequent source of information used by farmers responding to this survey.

The most common source of technical information is other farmers, followed closely by family members.

With the exception of veterinary services, farmers listed lack of relevancy as the most common reason for not using the types of technical assistance reviewed in the survey. Veterinary care was an anomaly amongst the responses with a third of the farmers indicating the services weren't relevant, a third indicating they weren't available and third stating they were too expensive.

Services that are needed in a time sensitive manner such as equipment repair and veterinary care were listed as not being available statewide as were legal services. As lawyers are not in the habit of traveling to farms, it is likely farms do not feel they have adequate access. Access to technical assistance for crops, land and grazing also appear to be limited by geography.

Based on the 85 technical service provider responses and the follow up interviews it appears that most services, except those already identified by farmers, are available in the areas of the state most heavily populated by dairy farms. The southwest and southeast regions of the state do not have many dairy farms and likewise, do not have as many service providers.

The most frequent barrier to services listed by service providers responding to the survey was acceptance by farmers of the need for the service. Providers cited limited mileage, budgetary constraints and programmatic constraints as limiting their ability to provide services to farmers. Twelve of the surveys and three of the phone surveys were with fee-for-service providers. Although each of the providers indicated that farmers are price-sensitive to fees, they also felt farmers valued services that were associated with a charge.

It is clear from the phone interviews that many farmers are not aware of the broad array of services available for little or no cost to Vermont dairy producers. For farms that are not already well connected into the service provider network, accessing services can be confusing and daunting.

Service providers, like farmers, rely on word of mouth. By far the most common form of contacting new clients was via farmer to farmer connections.

Conclusions

Based on the results of the farmer and service provider surveys, coupled with the phone interviews, it is evident that Vermont is fortunate to have a wide array of services available to dairy producers in almost all of the geographic regions.

Services required in a timely manner such as veterinary care and equipment repair are not available in all regions of the state. Service providers such as attorneys who are not accustomed to traveling to clients are also more limited on a geographic basis. It also appears that service providers focused on crops, land and grazing are not available statewide.

The lack of relevance of services stated by a large number of farmers could be a combination of farms requiring sophisticated services whose needs are not being met, and farmers who are not aware of the value of the services that are available, or not in a situation to utilize services. A combination of improved marketing and refined delivery would increase farmers' awareness of programs and perceived and actual relevance. These assumptions are validated by interviews with service providers. Increasing effective marketing to reach underserved audiences is perhaps the most important step to increased utilization of existing programming.

Providing a low-cost, highly visible gateway to services may be an effective method to market existing programs and increase farmer awareness of technical services available to them. Hiring college students to travel from farm to farm between May and August to disseminate information on service provider programs could be a low cost way to increase awareness. If this effort was coupled with information delivered to farms by milk inspectors and also included in milk checks and magazine advertising, it would create the required frequency of information to motivate farmers to action.

Examples of actual Vermont farmers utilizing the services should be used in the marketing effort to increase the "farmer to farmer" feel of the outreach. Because farmers recognize other farmers as a trusted and frequent source of information, articles should showcase farms utilizing services and perhaps even provide direct contact information to the highlighted farms so they can serve as an information resource about existing technical assistance programs.

Vermont dairy farmers frequently utilize the Internet to access information but they do not spend time searching for information on the Internet. Efforts to develop websites populated with reviewed material are cited in the literature for their value to farmers and service providers. However, these resources must be maintained and updated to remain current.

UVM Extension partners with the DAIReXNET program managed at the national level by several land grant universities. http://www.extension.org/dairy_cattle The material posted on DAIReXNET is current and of outstanding quality. In addition to the narrative material there are webinars hosted by nationally recognized experts in many facets of dairy management. Even with moderate quality internet service available in rural Vermont, the material loads easily and smoothly. Promotion of DAIReXNET for use by Internet savvy farmers of all sizes, production methods and business ability would be of significant benefit for increasing access to relevant technical assistance in all areas of Vermont.

Although the vehicle seems old fashioned, farmers responding to the survey indicated they value magazines as a source of facts but do not spend time searching printed material for information. Newsletters and Agriview are also utilized, but to a lesser extent than magazines. Circulating information to farmers via magazines, coupled with information on how to access technical service providers could serve to increase farmers' awareness of services. Although it may seem redundant, topics should be repeated on a rotating basis as farmers do not spend time searching for information so it needs to be provided regularly using varying formats.

Perhaps the most limiting factor for farmers to access technical services is the sheer enormity of farming. A person who is actively engaged in dairying is physically tired pretty much all the time, is mentally at capacity thinking about the thousand daily details, and is quite possibly emotionally fragile from the constant stress of finances. This is not a picture of a person in good shape to go comparison shopping for services. This is a picture of somebody who could benefit from on-farm and in-person delivery of services (and perhaps pizza too). Dairy farmers do umpteen extraordinary things before breakfast every single day; providing technical assistance along with motivational support could easily broaden the scope of farm types receiving services.

As summarized in Table 7, larger farms with a better educated workforce and strong financial position are poised to take advantage of technical learning. These are most likely the farms that desire highly sophisticated services and do not see the relevancy of available services geared more for entry level support. Other farmers along the dairy continuum that are financially or emotionally brittle due to the rigors of dairy production will be challenged to engage in learning new techniques or changing behaviors and they too may not recognize the value of existing services.

Feedback from the service providers interviewed indicates many of the services available to Vermont dairy farmers currently focus on establishing a long term relationship for the purpose of developing business plans and financial assessments. Farmer survey responses indicate that services available for herd management and DHIA are not relevant or not available. Increased access to highly trained individuals in the area of herd management who could work with a farm intensely for a series of three or four visits to implement and assess specific management techniques may be of value to farmers. Before a program of this type is implemented, market research should be conducted to confirm it will be of value to the intended audience. Services developed should either be of a high enough caliber to be of value to farms already employing advanced management systems, or be sufficiently approachable and supportive for farms that are currently challenged in utilizing technical assistance.

Experience of the authors suggests that technical assistance to dairy farms falls into three broad categories.

1. Transfer of information that can then be largely implemented in less than three visits.
Examples: designing ventilation systems for calf barns, development of a water system for a grazing plan, creation of a farm organization chart.

2. Transfer of information that requires a number of visits over an extended period of time
Examples: developing a farm transfer plan; evaluating the feasibility of a farm expansion.

3. Transfer of information that requires on-going support.
Examples: forage crop management, DHIA records review, diet development and analysis.

For technical assistance that simply relays factual information (such as ventilation system design) print material and Internet sites such as DAIReXNET can largely replace “in person” technical assistance for farms that are prepared to conduct research and utilize the information. However, many farms, and types of information, will require support from a service provider to convey and implement improved farm management techniques.

If new forms of technical assistance are considered for development in Vermont the following criteria should be considered:

- A. Hire service providers of sufficient credibility to be of value to financially stable farms. Recognize some farms are willing to pay for services they consider relevant to their business.

B. Recognize that not all farms are in a financial or emotional position to reach out for assistance. For these farms, services available at the farm, delivered by individuals with a high degree of understanding, will most likely be of the greatest benefit.

C. Align the frequency of service with the type of technical assistance required. Maintaining programs with the flexibility for services provided through programs such as the Vermont Farm Viability Program is essential to meet the needs of a wide range of farms, all the way from a single visit to set up a water system for grazing, to multiple years of support to implement best management practices for forage crop production.

D. Conduct marketing that reaches out to farms that are not prepared to access technical assistance, but might find value in services if offered. Also conduct marketing that uses farmer stories to demonstrate the value of services to farms along the business continuum.

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