Management Practices on Virginia Dairy Farms

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INTRODUCTION

Dairy producers in Virginia and nationwide are exploring intensive management of pasture resources as a potentially inexpensive source of high quality forages for the production of milk. To understand some of the characteristics of grazing-based dairy production versus confinement feeding dairy production, a survey of Virginia dairy producers was conducted in 1997.[1]

The objectives of this sturdy were to

- Document production characteristics of dairy farms;
- Investigate use of selected technologies;
- Investigate adoption rates of management intensive grazing;
- Determine future plans of dairy farmers; and
- Investigate satisfaction regarding financial, production, and quality-of-life issues.

The survey, containing 18 questions addressing these issues (Appendix A), was conducted using the mailing list of all dairy producers with a Virginia Department of Agriculture and Consumer Services (VDACS) Grade-A permit, as of January 1997 (Office of Dairy Services, VDACS). The initial mailing list contained 1,065 farms (after eliminating duplicate names and 3 institutional producers). Following the survey method prescribed by Dillman (1978), an initial mailing of a cover letter and the survey form was sent to all permit holders. A follow-up postcard was mailed one week later, and a second letter with a survey form was mailed two weeks after the postcard. Seven weeks after the initial mailing, a third and final letter with a survey form was mailed. The final list of producers surveyed totaled 1,044 after eliminating individuals with incorrect addresses (returned by the US Postal Service) and retired or deceased individuals. A total of 704 completed and usable surveys yielded a response rate of 67 percent (Table 1).

Table 1: Response rates from mailings.

	Completed surveys returned	Percent (%)
First mailing	459	44
Second mailing	176	17
Third mailing	69	6
Total	704	67

FARM CHARACTERISTICS

Respondents reported milking 79,930 cows on 704 farms (Table 2). This response rate represents 63 percent of the 126,000 milk cows reported in 1996 by the Virginia Agricultural Statistics Service (VASS). Farms in the survey averaged 115 cows and ranged from 12 to 825 cows per farm. The mean herd size is 27 cows larger than the 88 cows reported in the 1992 Census of Agriculture. The disappearance of the smaller herds in intervening years may be responsible: 1,469 herds were reported in 1992 compared to 1,068 farms with Grade-A permits in 1996. Average milk production on respondents' farms was approximately 18,212 pounds per cow in 1996 with a range from 6,825 to 28,635 pounds.

[1] The survey instrument was designed to provide results comparable to surveys conducted in Pennsylvania and Vermont in early 1997. Funding for this study was provided in part by the Virginia Water Resources Research Center, Virginia Tech.

Farms size averaged approximately 382 acres of crop and pasture land and varied from 99 to 5,280 acres. Total farmland per cow averaged 3.32 acres, similar to the 3.4 acres reported in the 1992 Census of Agriculture. Acreage devoted to corn production was the largest single land use reported by respondents. The average farm produced 130 acres of corn in 1996, or a little more than 1 acre per cow. Permanent pasture makes up the next largest category of land use (106 acres), or slightly less than 1 acre per cow. Land devoted to hay production makes up 69 acres on the typical farm and provided about two-thirds of an acre of hay per cow. "Other crops" land use covers a wide range of crops, such as soybeans, tobacco, vegetables, and Christmas trees, making up 44 acres on the typical farm.

Table 2: Production characteristics and land use.

	Mean	Range	Per cow
Cows per farm	115	12-825	NA
Pounds of milk per cow	18,212	6,825-28,635	NA
Acres of corn	130	0-1300	1.05
Acres of hay	69	0-800	0.67
Acres of pasture and hay	36	0-550	0.35
Permanent pasture	106	0-3000	0.98
Other crops	44	0-2500	0.30
Total crop and pasture land	382	99-5,280	3.32

Farms were sorted into three groups based on response to the question, "Did you graze milking cows in 1996" so that differences between those using pasture grazing to supply nutrients to the milking herd and those using only stored forages could be investigated. Farmers who did not report grazing milk cows were defined as **Confinement**. Farmers who reported grazing milk cows during some part of the year were split into two groups based on the intensity of grazing or frequency of moving cows to fresh pasture. The least intensive group, **Moderate Grazer**, had a grazing rotation length of four days or more. The group moving cows to fresh pasture every three days or less was defined as **Intensive Grazer**.

Table 3: Criteria for sorting farms by management type and grazing intensity.

.	Graze milk cows	Rotation length	Number of farms in groups	Percent of farms in group
Confinement	no	NA	351	50
Moderate Grazer	yes	4 or more days	278	39
Intensive Grazer	yes	3 days or less	75	11

Number of Cows and Milk Production per Cow

Respondents were asked to report the number of cows (dry and lactating) and average yearly milk production per cow. In most cases, average yearly milk production per head was reported. However, production reported in pounds per cow per day was converted to annual production by multiplying reported daily production by the standard 325-day lactation period.

Number of cows per farm

Confinement farms have the largest herd size of the 3 groups (Table 4), averaging 135 cows and having a very wide range: 12 to 825 cows per farm. Confinement farms are statistically larger than the two grazing groups. However, Intensive Grazer (100 cows) and Moderate Grazer (93 cows) farms are not

statistically different and can be viewed as farms having the same herd size. The 2 grazing farm groups show similar ranges of herd size as well: 4 to more than 360 cows per farm.

Milk per cow

Production systems that rely on pasture grazing as a major source of forage inputs produce less milk than feeding systems based on stored forages, according to respondents' estimates. The average pounds of milk produced per cow for all groups is significantly different. However, no information was requested about dairy cow breeds. Some differences among the three groups could be attributed to breed make-up. Milk production per head for Intensive Grazer is lowest at 16,313 pounds per cow per year, 2,664 pounds less than the mean (18,977 pounds) for the Confinement herds. The mean milk production for the Moderate Grazer (17,729 pounds) herds falls almost halfway between the other 2 groups.

One major issue debated in the dairy industry concerns economic returns of confinement feeding with its higher feed and capital costs and greater milk production per cow versus pasture-based systems. This survey data only highlights the differences based on milk production and provides no information on cost per pound of milk produced. Farmers adopting intensive grazing must be aware that milk output per cow is likely to decline and that usually a dramatic reduction in costs must occur to make intensive grazing profitable.

Table 4: Production characteristics.

	Cows per farm		Milk per cow	
	head		lbs.	
	Mean[1]	Range	Mean[1]	Range
All farms	115	12-825	18,212	6,825-28,635
Confinement	135 a	12-825	18,977 a	9,750-28,635
Moderate Grazer	93 b	15-360	17,729 b	6,825-27,500
Intensive Grazer	100 b	14-300	16,313 c	8,125-24,018

[1] Means with different letters within columns are significantly different at P = 0.05.

Land Use

Confinement and Intensive Grazer farms have almost equal acreage per cow. Moderate Grazer farms have a significantly larger land area for crops and pasture than the other groups. Major differences in land use are seen when the groups are compared. The largest single use of land for Confinement farms is corn production, whereas for Moderate Grazer and Intensive Grazer farms, permanent pasture is the most common use of land resources.

Acres of corn per cow

Proponents of dairy cattle grazing suggest that the need for high-energy, capital-intensive forages like corn silage, should decline as grazing intensity increases. Survey results support this conclusion. Mean corn acreage per cow is significantly different among the three groups and decreases with grazing intensity. Confinement farmers grow an additional 0.27 acres of corn per cow compared to Moderate Grazer farmers and 0.46 acres more than Intensive Grazer farmers.

Acres of hay per cow

Confinement farms produce 0.60 acres of hay per cow, significantly less than hay acres per cow grown on Moderate Grazer farms. The acreage of hay grown on Intensive Grazer farms is not significantly different from either Confinement or Moderate Grazer.

Acres of hay/pasture per cow

Respondents were asked how much hay land was also pastured during some part of 1996. Confinement farmers used 0.25 acres of hay/pasture—significantly less than either Moderate Grazer (0.41 acres) and Intensive Grazer (0.56 acres) farmers. No significant differences were found between hay/pasture acreage on Moderate Grazer and Intensive Grazer farms.

Acres of permanent pasture per cow

Intensive Grazer (1.06 acres) and Moderate Grazer (1.18 acres) farms have significantly larger acreage of permanent pasture than Confinement (0.80 acres) farms. Again, no significant difference in permanent pasture acreage between Moderate Grazer or Intensive Grazer farms was found.

Table 5: Land use characteristics per cow.

	All farms	Confinement	Moderate Grazer	Intensive Grazer
Acres	3.32	3.20 a[1]	3.61 b	3.21 a, b
Acres of corn	1.05	1.20 a	0.93 b	0.74 c
Acres of hay	0.67	0.60 a	0.77 b	0.65 a, b
Acres of hay/pasture	0.35	0.25 a	0.41 b	0.56 b
Perm pasture	0.98	0.80 a	1.18 b	1.06 b
Other crops	0.30	0.36 a	0.30 a, b	0.19 b

[1] Means with different letters within rows are significantly different at P = 0.05.

Technology and Management Practices

An array of questions was asked regarding current and future use (within three years) of selected technologies and practices (Table 6). Overall, farmers responding to the survey have used innovations to improve efficiencies in milking cows. Adoption of computer technology for all groups has lagged most other technology. However, more than half the farmers plan to use a computer in their farm business within the next three years.

Milking parlor and automatic takeoffs use

The larger sized Confinement farmers lead the adoption of both these technologies with 96 percent reporting use of milking parlors and 84 percent using automatic takeoffs. Moderate Grazer and Intensive Grazer farmers reported using milking parlors on more than 90 percent of their farms, but automatic takeoffs are used by only 59 percent of the Moderate Grazer farmers and 51 percent of Intensive Grazer farmers. Intensive Grazer and Moderate Grazer farmers plan to slightly increase their use of automatic takeoffs within the next three years.

Use of total mixed rations (TMR)

TMRs are a mainstay of confinement feeding systems for dairy cattle. As expected, Confinement farmers reported the greatest use of TMR's (67 percent). Whereas less than half the Intensive Grazer and Moderate Grazer farmers (49 and 43 percent, respectively) use TMRs in daily feeding of the milking herd. However, all three groups plan to increase their use of TMR's within the next three years.

DHIA records

Dairy Herd Improvement Association (DHIA) records are used by more than one-half of all farms. Three-fourths of the Confinement herds and around 60 percent of the Moderate Grazer and Intensive Grazer farmers use DHIA records. None of the respondents plan to dramatically increase use of DHIA records. The increase in on-farm computer use and the availability of dairy management software may provide a partial explanation for lack of interest in future use of DHIA records.

Bovine Somatotropin (BsT) use

Twenty percent of the respondents reported adoption of Bovine Somatotropin (BsT). The use of BsT in Confinement herds (26 percent) is almost twice that in Intensive Grazer and Moderate Grazer herds. Each of the groups plans to increase its use of BsT within the next three years.

Written farm plans/goals

Respondents were asked to indicate if they use systematic planning for the future of their businesses, that is, if they had a written farm plan and/or goals. More than one-third (36 percent) of the Intensive Grazer farms reported having a written plan or goals. Around one-quarter of the other two groups reported having a written farm business plan or goals. Respondents' indicated that they plan, over the next three years, to increase the development of written business plans and/or goals for their farm businesses.

Computer use

Computers are used on 40 percent of all dairy farms in this survey, four times the rate of computer usage by the average Virginia farmer (NASS, 1997). Of the three groups, Intensive Grazer farmers employ computers most frequently (48 percent) followed closely by Confinement farmers with a 40 percent rate of adoption. Moderate Grazer farmers show a slightly lower adoption rate (37 percent).

Nutrient management plans

Nutrient management planning is critical for the profitable and environmentally safe use of commercial and animal nutrients. About 60 percent of the Confinement and Intensive Grazer farmers reported having nutrient management plans. However, 46 percent of the Moderate Grazer farmers reported having a plan. Farmers in all groups expect to upgrade their nutrient management plans within the next three years.

Table 6: Farmers' current and future (within three years) use of technology.

	All farms		Confinement		Moderate Grazer		Intensive Grazer	
	Current	Future	Current	Future	Current	Future	Current	Future
	----------%----------							
Milking parlor	94	92	96	95	92	88	90	93
Auto takeoffs	71	71	84	83	59	62	51	54
TMR	56	63	67	73	43	52	49	53
DHIA	68	64	76	71	61	58	58	58
BsT	20	24	26	29	14	18	13	20
Written farm plan and/or goals	26	42	26	42	24	36	36	57
Use computer	40	53	40	52	37	51	48	62
Written nutrient management plan	55	64	60	69	46	56	63	71

FARM OWNERSHIP AND PERSONAL CHARACTERISTICS

Respondents were asked to provide information on farm ownership, personal characteristics, off-farm income, and debt. This information was used to provide information on group differences in addition to production characteristics (Table 7).

Farm ownership

A clear majority (56 percent) of all respondents reported owning their farm business as a sole proprietor (Table 7). Partnerships comprise 27 percent, followed by farm corporations, 17 percent. Corporate ownership by Confinement farmers is almost double (22 percent) that Moderate Grazer (13 percent) and Intensive Grazer (12 percent) farmers. Partnerships account for one-third of farm business ownership among Intensive Grazer farmers, slightly higher than the other groups.

Age of farmers

The average age of survey respondents is 48 years: 8 years younger than the average farmer in Virginia (1992 Census of Agriculture). On average, one-quarter of the owners are 40 years or younger and 21 percent of the respondents are more than 60 years old. In all groups, more than half the respondents are under 50. The 1992 Census of Agriculture, in sharp contrast, reports only 35 percent of Virginia farmers are under the age of 50. Very little age difference was found between groupings in this survey.

Experience as key decision maker

Respondents were asked to indicate how many years they had been making key management decisions in their farm businesses. Nearly half the respondents reported more than 21 years experience as the key decision maker. Moderate Grazer farmers tended to be key decision makers longer than either Confinement or Intensive Grazer farmers.

Table 7: Farm ownership. And personal characteristics of farmers

	All farms	Confinement	Moderate Grazer	Intensive Grazer
	----------%----------			
Ownership				
Sole proprietor	56	52	60	55
Partnership	27	26	27	32
Corporation	17	22	13	12
Age				
< 30 years	6	4	8	5
31-40 years	20	24	14	23
41-50 years	33	36	31	27
51-60 years	21	18	23	25
> 60 years	21	18	24	20
Key decisions				
0-5 years	11	11	12	10
6-10 years	12	13	11	12
11-20 years	27	31	22	31
21 years or more	50	45	55	47
Education				
Completed grade 8	15	19	13	8
Completed some high school	9	9	10	4
Completed high school or equivalent	36	35	36	38
Some college or vocational training	18	17	19	18
Completed college degree(s)	22	20	22	32
Farm debt				
0-10 low	44	36	52	50
11-40 moderate	36	40	32	34
41-70 high	15	18	12	15
>70 very high	5	6	4	1
Off-farm income				
Off-farm income greater than $12,000	29	28	28	36
Off-farm income less than $12,000	27	26	28	27
No off-farm income	44	46	44	37

Education

More than three-fourths of the respondents have a high school degree or higher; slightly less than one-quarter have at least one college degree. Intensive Grazer farmers have the most formal education, with about one-third completing one or more college degrees.

Farm debt

In general, farm debt (total farm debt/total farm assets) is less than 40 percent. In 1996, 44 percent had farm debt less than 10 percent (low) and 36 percent had farm debt between 10 and 40 percent (moderate). Only 5 percent of farmers reported having very high debt (greater than 70 percent). Confinement farmers represent the largest proportion of the moderate to high debt level (24 percent) and the smallest portion of the low debt category (36 percent). Both Moderate Grazer and Intensive Grazer farmers generally reported lower total farm debt. Intensive Grazer farms have the smallest proportion of very high debt (1 percent). This response belies the common speculation that farmers adopt management-intensive grazing because they have high debts and problems obtaining commercial credit.

Off-farm income

Slightly less than half (44 percent) of the respondents reported no off-farm income in 1996. Twenty-nine percent reported off-farm income of more than $12,000 per year. Intensive Grazer farmers reported the largest percentage (36 percent) of off-farm income in the greater than $12,000 category.

CHARACTERISTICS OF GRAZING-ONLY FARMS

Respondents who grazed cows in 1996 were asked to provide additional management information. Frequency of rotating cows to fresh pasture is a major indicator of pasture utilization intensity by grass-based dairies. Grazing on Virginia's dairy farms is a very diverse practice: from daily rotation to use of pasture as a loafing lot. Almost half (45 percent) the farmers using pasture grazed their cows in one field all season (Table 8). The most intense pasture rotation (1 day or less) was practiced on 14 percent of grazing farms. The remaining 40 percent of farms are equally distributed among the other rotation frequencies.

Table 8: Frequency of rotating cows to fresh pasture.

	%
1 day or less	14
2-3 days	7
4-7 days	10
8-14 days	8
15-30 days	8
More than 30 days	8
Graze milking cows in the same field all season	45

Daily Forage Requirements Provided by Pasture

Respondents were asked to estimate the percentage of daily forage requirements provided by pastures during the 1996 grazing season. The majority of farmers reporting grazing cows stated that their cows received less than 25 percent of daily forage needs, and only 15 percent reported exceeding 75 percent of daily needs (Table 9). More than one-half the Intensive Grazer farmers reported meeting the majority of cows daily forage needs with pasture. However, even with the higher pasture rotation rate of Intensive Grazer farmers, 23 percent reported meeting 25 percent or less of the milking herd's daily forage needs.

Overall, Intensive Grazer farmers substantially reduced total harvested and/or purchased forage requirements for 1996.

Ration Adjustments during the Grazing Season

Actively growing pasture provides a excellent source of highly digestible nutrients. Adjusting rations during the grazing season to compensate for nutrients supplied by pastures can substantially reduce total feed costs (Table 9).

Adjustments to energy

Almost two-thirds (65 percent) of all grazing farms made no change to feed ration energy content. Close to three-quarters (72 percent), of the Moderate Grazer farmers and nearly one-half (44 percent) of the Intensive Grazer farmers made no change to energy content of the feed ration. Intensive Grazer farmers were almost evenly split between increasing (26 percent) and decreasing (30 percent) energy content.

Adjustments to protein

Well managed and actively growing pastures are recognized as a very good source of high digestible protein. If farmers made a ration adjustment to the protein content, it was to reduce protein. Only 2 percent of the respondents reported increasing ration protein content. Thirty-eight percent of all grazing farmers and 52 percent of Intensive Grazer farmers recognized pastures as a high quality source of protein and hence reduced ration protein levels.

Adjustments to stored forages

Farmers grazing the milking herd recognize the need to reduce the level of stored forages fed during the grazing season, with 59 percent reporting a reduction. An overwhelming majority, (84 percent) of Intensive Grazer farmers reported reducing the amount of stored forages fed during the grazing season and only 16 percent made no change. Only 1 percent of grazing farmers reported an increase in feeding stored forages.

Experiences with Current Grazing System

Farmers grazing their dairy herd in 1996 were asked to report how many years they had been using their current grazing system. Overall, farmers have either adopted their current grazing system within the last 5 years or have been using their system for more than 15 years. More than twice as many Intensive Grazer (65 percent) farmers have adopted their current grazing system within the last 5 years as compared to Moderate Grazer farmers (31 percent).

Table 9: Characteristics of grazing-only farms.

	All Grazers	Moderate Grazer	Intensive Grazer
	----------%----------		
Percent of cows' daily forage requirements from pasture			
0-25	50	57	23
26-50	22	21	26
51-75	13	12	17
76-100	15	10	34
Adjustments to energy	%		
Decrease	21	18	30
No change	65	72	44
Increase	14	10	26
Adjustments to protein			
Decrease	38	30	52
No change	60	68	47
Increase	2	2	1
Adjustments to stored forages			
Decrease	59	52	84
No change	40	47	16
Increase	1	1	0
Years grazing current system			
0-5 years	39	31	65
6-19 years	11	12	9
11-15 years	8	8	7
Greater than 15	42	50	19

SATISFACTION WITH DAIRY FARMING

Respondents were asked to rank their production success and quality-of-life issues based on a scale of 1 to 5 (1 = very dissatisfied and 5 = very satisfied). Overall, respondents are neither satisfied or dissatisfied (3.09) with their dairy operation in 1996 (Table 10). On average, purchased feed costs received the lowest rank (2.13) of all responses in all groupings. 1996 was a year with increasing feed costs contributing to the higher level of dissatisfaction. Respondents were most satisfied with yields of corn silage (3.95) and hay (3.70).

Satisfaction by group

Surprisingly, few significant differences were observed between respondents' level of satisfaction based on grazing intensity. Some agricultural press reports say that farmers adopting management-intensive grazing have more free time, are less stressed by the daily routine of dairy production, are more satisfied with financial progress or profit, and have fewer herd-health problems. Analysis of the satisfaction index based on reliance on grazing does not re-enforce this conclusion.[2] Only satisfaction with corn silage yields and corn silage costs resulted in means that were significantly different. Intensive Grazer farmers were significantly less satisfied with corn silage yields than were Moderate Grazer and Confinement

[2] In all the satisfaction indexes, confidence intervals (spread of the data) for Intensive Grazer farms were larger than for the other two groups. This spread difference implies that within the Intensive Grazer group, farmers tended to be either very satisfied or very dissatisfied.

farmers. Confinement farmers were significantly more satisfied with corn silage costs than were Intensive Grazer or Moderate Grazer farmers.

Table 10: Average satisfaction index.[1]

	All farms	Confinement	Moderate Grazer	Intensive Grazer
Corn Silage Yields	3.95	4.06 a[2]	3.91 a	3.51 c
Corn silage costs	3.19	3.32 a	3.10 b	2.90 b
Hay yields	3.70	3.74	3.66	3.65
Hay costs	3.40	3.45	3.33	3.82
Milk per cow	3.19	3.19	3.22	3.08
Herd health	3.46	3.40	3.50	3.67
Purchased feed costs	2.13	2.09	2.15	2.28
Labor costs	3.33	3.38	3.31	3.19
Owner's labor requirements	3.14	3.23	3.05	3.07
Milking facilities	3.61	3.69	3.55	3.45
Cow housing	3.38	3.45	3.27	3.41
Capital replacement	2.71	2.73	2.63	2.87
Machinery replacement costs	2.60	2.59	2.59	2.70
Time away from farm	2.55	2.60	2.49	2.54
Stress level	2.67	2.69	2.65	2.64
Profit level	2.66	2.66	2.65	2.65
Financial progress	2.85	2.87	2.83	2.84
Average satisfaction index	3.09	3.12	3.05	3.05

[1] Scale = 1 – 5 with 1= very dissatisfied and 5 = very satisfied

[2] Means with different letters within rows are significantly different at P = 0.05.

DAIRY PRODUCERS' PLANS

To obtain information about dairy producers' plans for the next three years, respondents were asked to indicate if they planed to discontinue, decrease, make no change, or increase the number of cows milked, acres farmed, or reliance on grazing. A clear majority of all respondents will continue farming for the next three years (Table 11). Only 4 percent (28 farmers), plan to discontinue dairy production and only 1 percent (4 farmers) plan to discontinue farming. A small proportion (3 percent) plan to decrease the number of cows milked. A majority (53 percent) plan no change in their farm business. Thirty-nine percent of the respondents plan to increase the number of cows milked and 24 percent plan to increase the total acres farmed. Surprisingly, 20 percent of the respondents reported plans to increase reliance on grazing (reliance on grazing may indicate use of pasture for the milking herd, dry cows, and heifers). This increase contrasts sharply with just 2 percent who plan to discontinue grazing and 3 percent that plan to reduce reliance on grazing.

Cows to be milked

Confinement farmers are the least likely to discontinue dairy farming (3 percent) or to decrease (3 percent) the number of cows planned to be milked in the next 3 years. The largest proportion (6 percent) of farmers planning to discontinue dairy farming are in the Moderate Grazer group, but only 2 percent of Moderate Grazer plan to decrease herd size. Intensive Grazer farmers reported the largest total proportion (13 percent) planning to discontinue dairy farming or to decrease the number of cows milked.

Acres to be farmed

Only 2 percent or less of the respondents plan to discontinue farming. However, 5 percent of farmers in each group plan to reduce total acres farmed. Three-fourths of the Moderate Grazer farmers reported no plans to change their current acreage. Respondents in the Intensive Grazer (31 percent) and Confinement (27 percent) groups are planning increases in total acres farmed in sharp contrast to a much smaller proportion of Moderate Grazer who plan to increase acreage (18 percent).

Reliance on grazing pastures

A very small proportion of farmers in each group plan to discontinue or decrease reliance on pastures. Farmers in the Confinement (81 percent) and Moderate Grazer (71 percent) groups are least likely to change their current use of pasture. In contrast, only 54 percent of the Intensive Grazer farmers plan to change. Farmers currently relying on pasture (Intensive Grazer) are almost twice as likely to increase their reliance, whereas only 13 percent of Confinement farmers plan to increase pasture usage.

Table 11: Future plans for farming.

	Plan to discontinue	Plan to decrease	Plan no change	Plan to increase	Not sure
All farms	----------%----------				
Cows milked	4	3	53	39	<1
Acres farmed	1	5	69	24	<1
Reliance on pasture	2	3	74	20	1
Confinement					
Cows milked	3	3	53	41	<1
Acres farmed	2	5	67	27	0
Reliance on pasture	3	3	81	13	<1
Moderate Grazer					
Cows milked	6	2	55	36	<1
Acres farmed	2	5	75	18	0
Reliance on pasture	2	4	71	23	<1
Intensive Grazer					
Cows milked	5	8	43	43	1
Acres farmed	0	5	61	31	3
Reliance on pasture	0	3	54	39	4

SUMMARY AND CONCLUSIONS

Results of this study provide information and opinions from two-thirds of Virginia's Grade-A dairy producers on technology and grazing adoption, production, land use, and quality-of-life issues. The sample of farmers represented in this survey generally produce milk by feeding stored forages, have confinement systems, and provide access to pastures only as loafing or exercise lots. Most farmers represented in this survey have adopted modern technology: dairy parlors, automatic takeoffs, TMRs, and DHIA records. These farmers are younger than the typical Virginia farmer by 8 years, and more than half have 20 years or more experience as a key business decision maker. Continuing to produce dairy products is the overwhelming choice of almost all respondents and close to 40 percent plan to expand

their farm businesses. Many farmers are in a favorable equity position to finance an expansion, with almost half reporting farm debt-to-asset ratios of 10 percent or less.

Virginia dairy farmers using management-intensive grazing (Intensive Grazer) in 1996 averaged 100 milking cows and were not significantly more satisfied or dissatisfied than other farmers with quality-of-life or production characteristics. The Intensive Grazer group reported the smallest number of farms with debt-to-asset ratio more than 70 percent, and they employ computers in their business at a higher rate than other farmers. However, management intensive grazing is not without its drawbacks. Reliance on grazing leads to fewer pounds of milk produced per cow, which implies substantial reductions in production costs are required to retain the same level of net returns as Moderate Grazers or Confinement operations.

Management-intensive grazing by Virginia's dairy farmers is no longer a novelty. In less than 6 years (1990-96) (Swisher 1998), management-intensive grazing of dairy cattle has increased from very few farms to more than 10 percent of the dairy farms represented in this 1996 survey. Overall, half the respondents to this survey reported grazing the milking herd during some part of the year. In addition, 20 percent of the farmers (140 herds, totaling 13,250 cows) plan to increase their reliance on grazing for the milking herd or other dairy animals. This change can be contrasted to the planned use of BsT in 24 percent (134 herds, totaling 19,029 cows) of the herds. Management intensive grazing has gained acceptance similar to that of BsT by dairy farmers in Virginia.

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APPENDIX: COVER LETTER AND SURVEY INSTRUMENT

VIRGINIA COOPERATIVE EXTENSION

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Name
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City, VA Zip code

We are writing to ask your assistance in cooperating with a survey of dairy management practices. As you know, dairying continues to be one of our state's leading agricultural enterprises with both a strong tradition and efficient producers. At the same time, there are rapid changes occurring in dairy production which will affect future profitability. To help promote the long run success and growth of Virginia's agriculture, Virginia Cooperative Extension specialists in cooperation with others in Pennsylvania and Vermont are conducting this study to identify production and farm characteristics that provide higher profits and personal satisfaction for dairy farmers.

This survey should take about 10 minutes to complete. Please return it in the enclosed self-addressed envelope. While the surveys are numbered for mailing purposes, you can be assured that **your responses will be kept strictly confidential with no disclosure of individual information. Only summaries of this survey will be published.**

Thank you for your time and effort. The information you are providing will be used to improve the management educational services you receive through Virginia Cooperative Extension and to support a larger research project investigating grazing practices of dairy farms. Results of this project will be published in the *Virginia Dairyman.*

If you have any questions about this survey, please call Gordon Groover at (540)-231-5850 or write to Gordon at the above address.

Sincerely,

Gordon E. Groover
Extension Economist
Farm Management

Charlie Stallings
Extension Dairy Scientist
Nutrition

VIRGINIA
DAIRY FARM
PRACTICES SURVEY

A survey conducted by Virginia Cooperative Extension and the Departments of Agricultural and Applied Economics and Dairy Science of VA Tech in collaboration with Pennsylvania State University and University of Vermont Extension System.

This survey is part of a research project to assess current practices on Virginia, Pennsylvania, and Vermont dairy farms. All your answers are strictly confidential. Thank you for assisting in this important research project.

Please direct any questions to: Gordon Groover (540)231-5850.

Please answer the following questions in reference to your dairy farm operation. Please fill in the appropriate blanks or circle your answer.

1. Of the following how many head of each are in your dairy farm operation?

A. Dry Cows _____ B. Milking Cows _____ C. Rep. Heifers

2. Average pounds of milk produced in 1996: _____ lbs/cow/year. If you do not know lbs/cow/year, enter average_____lbs/cow/day.

3. Please list your farm=s crop acreage (owned and rented) in 1996:

____ Corn/Corn Silage
____ Hay Only
____ Hay/Pasture
____ Permanent Pasture
____ Other Crops

4. Please indicate if any of the following technologies are ***(a) currently used*** on your farm and ***(b) if you expect to use*** them in the next 3 years?

Currently Used			**Expect to Use in 3 Years**	
YES	**NO**		**YES**	**NO**
Y	N	.....Milking Parlor	Y	N
Y	N	.....Automatic Takeoffs	Y	N
Y	N	.....Barn Pipeline	Y	N
Y	N	..... TMR.....	Y	N
Y	N	.....DHIA	Y	N
Y	N	.....bST on Some Cows	Y	N
Y	N	..... Personal Computer.....	Y	N
Y	N	..... Written Farm Plan/Goals.....	Y	N
Y	N	..... Written Nutrient Management Plan.....	Y	N

5. What are the future plans for your dairy farm operation for the next 3 years:

6.

	Increase	**No Change**	**Decrease**	**Discontinue**
Cows Milked	4	3	2	1
Acres Farmed	4	3	2	1
Reliance on Grazing	4	3	2	1

6. Please describe the ownership of the dairy farm operation:

A. Sole Proprietorship B. Partnership C. Corporation or L.L.C.

7. How many years have you been making key management decisions:

A. 0-5 Yrs B. 6-10 Yrs C. 11-20 Yrs D. 21 Yrs or More

8. Did you graze your **MILKING COWS** in 1996?

A. NO --> **Please skip to Question 14.**
B. YES --> **Please answer the following questions (shaded area).**

9. On average how often did you rotate your **MILKING COWS** to *new pasture/fresh grass* during periods of good forage in 1996?

A. 1 Day or Less
B. 2-3 Days
C. 4-7 Days
D. 8-14 Days
E. 15-30 Days
F. More Than 30 Days
G. Graze Milking Cows in the Same Field All Season

10. Approximately what percentage of the **MILKING COWS=** daily forage requirements were provided by pasture during periods of good forage in 1996?

A. 0-25% B. 26-50% C. 51-75% D. 76-100%

11. How do you typically adjust your regular feed rations when your **MILKING COWS** are grazing?

	Decrease	**No Change**	**Increase**
Energy (i.e., corn, small grains)	1	2	3
Protein (i.e., soybean meal)	1	2	3
Forages (i.e., silage, haylage, hay)	1	2	3

12. How long have you been using your current grazing system?

_____Years

13. Would you be willing to participate in a more detailed interview (1-2 hours) concerning your grazing practices?

A. Yes B. No

14. Did the manager(s) and their spouse(s) together earn more than $12,000 from off-farm employment in 1996?

15.

A. YES
B. NO - But Did Earn Some Off-Farm Income in 1996
C. NO - Did Not Earn Any Off-Farm Income in 1996

15. How satisfied were you with the following aspects of your dairy farm operation in 1996 (1=Very dissatisfied to 5=Very satisfied):

For 1996	Very Dissatisfied				Very Satisfied
Corn Silage Yields	1	2	3	4	5
Corn Silage Production Costs	1	2	3	4	5
Hay Yields	1	2	3	4	5
Hay Production Costs	1	2	3	4	5
Milk Production Per Cow	1	2	3	4	5
Herd Health	1	2	3	4	5
Purchased Feed Costs	1	2	3	4	5
Hired Labor Costs	1	2	3	4	5
Operator Labor Requirements	1	2	3	4	5
Milking Facilities	1	2	3	4	5
Dairy Housing Facilities	1	2	3	4	5
Capital Replacement Costs	1	2	3	4	5
Machinery Repair Expense	1	2	3	4	5
Time Away From the Farm	1	2	3	4	5
Anxiety/Stress Level	1	2	3	4	5
Profit Level (1996)	1	2	3	4	5
Financial Progress (1990-96)	1	2	3	4	5

16. Please tell us your age: _____ Years

17. What is the highest education level you have attained?

A. Completed 8th Grade
B. Completed Some High School
C. Completed High School or Equivalent
D. Some College or Vocational Training
E. Completed College Degree

18. Please indicate your farm's business debt level as a percentage of total farm assets (land, buildings, cows, machinery, and feed inventories):

A. Low Debt (0-10%)
B. Moderate Debt (11-40%)
C. High Debt (41-70%)
D. Very High Debt (More than 70%)

Thank you very much for your valuable cooperation. Look for the results of this study in the *Virginia Dairyman*.