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**Surveys of New Mexico Alfalfa Producers
and Dairy Hay Users:
Will Growth of the State's Dairy Industry
be Limited by Alfalfa Availability?**



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Surveys of New Mexico Alfalfa Producers and Dairy Hay Users: Will Growth of the State's Dairy Industry Be Limited by Alfalfa Availability?

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INTRODUCTION AND BACKGROUND

New Mexico's dairy industry has experienced rapid growth during the last several years. There were 42,000 milk cows in the state in 1965 compared to 195,000 in 1996 (fig. 1) (New Mexico Agricultural Statistics Service). Total annual milk production in New Mexico increased from 292 million pounds to 3,748 million pounds between 1965 and 1996 (fig. 2) (New Mexico Agricultural Statistics Service). Between 1990 and 1997, New Mexico experienced the largest percentage production increase (172.6%) of all states and ranked 11th for milk production in the first half of 1997, compared to 33rd in 1983 and 12th in 1995, according to the Federal Milk Market Administrator. This growth is a result of several factors, including the state's mild climate; comparatively low land, labor and water costs; nearby supplies of high-quality alfalfa hay; and a relatively hospitable regulatory environment.

Large-scale cheese processing also arrived in New Mexico in the 1990's with the establishment of the world's largest mozzarella cheese processing facility in Roswell and other cheese plants throughout the state. Several of the same factors working to increase milk

production in the state also have helped attract the milk processing industry.

Alfalfa hay is New Mexico's most important crop. In 1996, New Mexico farmers produced nearly 1.38 million tons of alfalfa on 255,000 acres. The average alfalfa hay yield for the state in 1996 was 5.40 tons per acre compared to 4.30 tons in 1980 (New Mexico Agricultural Statistics). Using a season average price of \$126.00 per ton, the value of the 1996 New Mexico alfalfa crop was approximately \$173.5 million. By comparison, the value of the 1996 combined production of corn, wheat, dry beans, sorghum, cotton, cottonseed, and peanuts totaled \$151.5 million. Between 1965 and 1996, alfalfa hay production in New Mexico doubled (New Mexico Agricultural Statistics Service). Alfalfa is produced in almost every county in New Mexico by a broad range of producers. The hay is used within the state, shipped to surrounding states, and exported to Mexico.

Several commodities produced in New Mexico, including corn, sorghum, cottonseed, silage, and alfalfa are used in rations for dairy cows. The typical dairy ration in New Mexico uses from 15 to 18 pounds of alfalfa per day for producing cows. Dry cows, which average around 30% of the total dairy cow population,

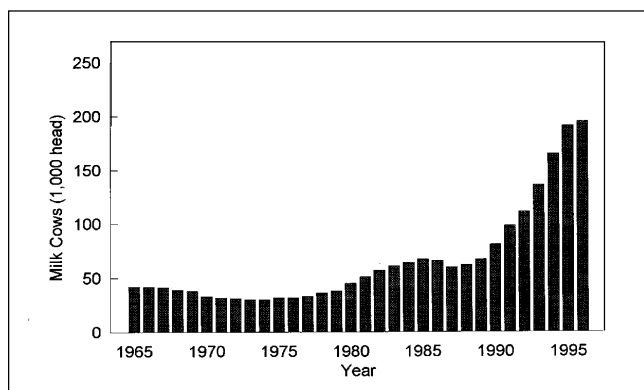


Fig. 1 Milk cows on farms, New Mexico, 1965–1996.
Source: *New Mexico Agricultural Statistics*, annual issues.

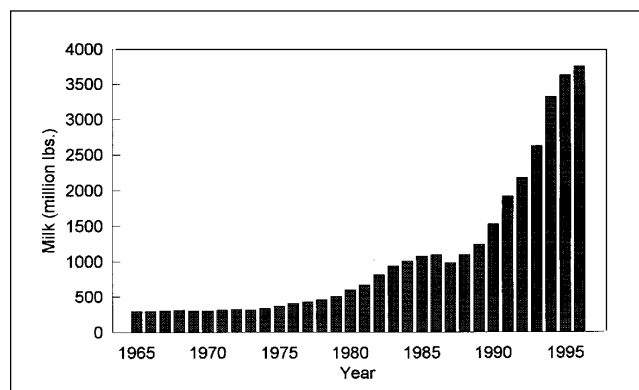


Fig. 2 Total milk production, New Mexico, 1965–1996.
Source: *New Mexico Agricultural Statistics*, annual issues.

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typically consume about 10 to 12 pounds of alfalfa per day. Dry cows are usually fed less expensive, nondairy grade alfalfa (Knoll). A dairy cow will consume approximately 2.5 tons of alfalfa hay during a 12-month period, including both milk-producing and dry months.

As noted earlier, recent growth of the New Mexico dairy industry has been facilitated by abundant nearby supplies of high-quality alfalfa hay. The growth of New Mexico's dairy industry potentially may be limited by the lack of additional nearby hay and the cost of transporting hay from other areas. During the 1980s and early 1990s, the hay industry in the western United States produced about 12 tons of alfalfa per cow per year (Miller). In 1995, 9.5 tons/cow/year of alfalfa hay were produced in the West. It has been predicted that significant dairy industry growth in the future will occur in or rely on alfalfa from the Great Plains (Kansas, Nebraska, Colorado, Wyoming, Montana, North Dakota, and South Dakota) (Miller). This region produced 56 tons/cow/year in 1995.

Besides being a critical input for the dairy industry, alfalfa hay is a primary source of income for many farms in New Mexico. The futures of the two industries in New Mexico are interdependent. Increases in dairies and dairy cow numbers in the state will be partly influenced by access to nearby supplies of alfalfa hay. Growth in hay production depends on the availability of markets. Both industries will be affected by reductions in federal support to production agriculture that are planned for the next several years. Hay production may increase as price-linked subsidies from other crops are eliminated, while the dairy industry faces both removal of price supports and restructuring of the federal marketing order system.

This research provides a profile of commercially oriented alfalfa hay producers and dairy producers in New Mexico. The research was conducted to help predict the future of milk and alfalfa production and marketing statewide. This report summarizes results of 1997 surveys of New Mexico alfalfa hay producers and dairy hay users.

PROCEDURES

The research sought to investigate New Mexico alfalfa production, consumption, and marketing from the producer and dairy user perspectives. To meet this objective, 100 alfalfa producers and 34 dairy producers were randomly surveyed by telephone during spring 1997. Separate questionnaires (Appendix A and Appendix B) were used for alfalfa producers and dairy users, although both survey instruments had similar content.

The sampling frames for alfalfa producers and dairy hay users were obtained from the U.S. Department of Agriculture's National Agricultural Statistics Service

(USDA-NASS) and Dairy Producers of New Mexico (a producer organization), respectively. In order to be included in the sampling frame, alfalfa producers had to have at least 100 acres of alfalfa hay (according to the most recent USDA-NASS information). Dairy producers of all sizes were included in the sampling. The two survey samples were randomly selected. The random dairy sample also was selected to be proportional to the various producing regions of the state (as defined by the Dairy Producers of New Mexico). The 100 completed questionnaires for alfalfa producers represent 18.6% of all New Mexico alfalfa producers with at least 100 acres of alfalfa (as of late 1996). The 34 completed dairy producer questionnaires represent 24% of all New Mexico dairy producers.

Data from the completed questionnaires were evaluated using SASTM software. The following discussion presents an overview of the survey results. Tables summarizing responses to all questions also are presented.

ALFALFA HAY PRODUCER SURVEY RESULTS

General Production Characteristics

The 100 haygrowers interviewed were located in many counties throughout the state (fig. 3, table 1). The counties with the largest numbers of surveyed growers were Doña Ana, Eddy, and Chaves, constituting 41% of the total. Nearly half (48%) of the producers said they had been producing alfalfa hay for 11-30 years (table 2). Another 19% of producers had been growing alfalfa for 10 years or less, while 33% indicated they had produced alfalfa hay for at least 31 years. Overall, the sample of growers represents long-term grower experience and commitment to alfalfa production, with the average grower producing for 26.5 years.

The producers interviewed indicated that they currently farm an average of 1,693 irrigated acres with acreage ranging from 30 to 50,000 (table 3). Three large producers (all more than 15,000 acres) increased the average acreage. Without the three largest producers, the average reported was 695 acres. The producers reported an average of 444 acres of irrigated alfalfa production with acreages ranging from less than 100 to almost 9,000. More than three-fourths of the producers have between 100 and 699 acres of alfalfa. Seventeen percent of the producers surveyed had less than 100 acres of alfalfa at the time of the interview; however, USDA-NASS records indicate that these individuals were producing on at least 100 acres in recent years.

More than half of the growers interviewed produce four or five cuttings of alfalfa hay per year (table 4). A smaller number of producers achieve six or seven cut-

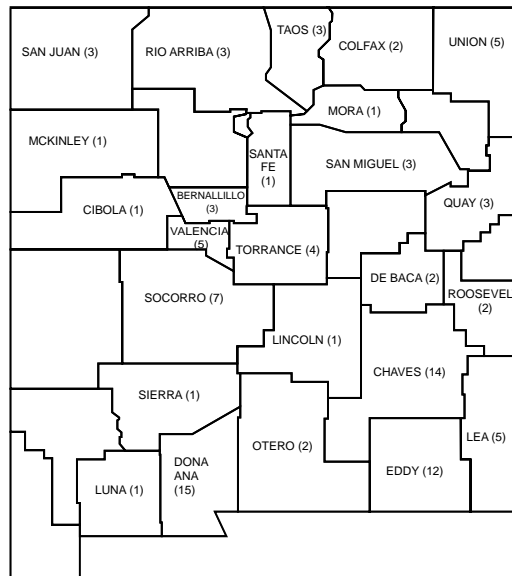


Fig. 3. New Mexico counties where surveyed alfalfa producers are located.

Table 1. New Mexico counties where surveyed alfalfa producers are located.

County	Number of respondents	Percentage of respondents
Bernalillo	3	3.0
Chaves	14	14.0
Cibola	1	1.0
Colfax	2	2.0
De Baca	2	2.0
Doña Ana	15	15.0
Eddy	12	12.0
Lea	5	5.0
Lincoln	1	1.0
Luna	1	1.0
McKinley	1	1.0
Mora	1	1.0
Otero	2	2.0
Quay	3	3.0
Rio Arriba	3	3.0
Roosevelt	2	2.0
San Juan	3	3.0
San Miguel	3	3.0
Santa Fe	1	1.0
Sierra	1	1.0
Socorro	7	7.0
Taos	3	3.0
Torrance	4	4.0
Union	5	5.0
Valencia	5	5.0
Total respondents = 100		

Table 2. Distribution of alfalfa producers by number of years growing alfalfa hay.

Years	Number of respondents	Percentage of respondents
2–10	19	19.0
11–20	21	21.0
21–30	27	27.0
31–40	17	17.0
41–50	12	12.0
> 50	4	4.0
Total respondents = 100		
Mean = 26.5 years		

Table 3. Distribution of alfalfa producers by total irrigated cropland and irrigated alfalfa acreages.

Acres	Distribution of respondents by total irrigated cropland acres	Distribution of respondents by irrigated alfalfa acres
	Number / percentage	Number / percentage
< 100	6 / 6.0	17 / 17.0
100–299	31 / 31.0	54 / 54.0
300–699	33 / 33.0	23 / 23.0
700–999	6 / 6.0	2 / 2.0
1,000–1,399	10 / 10.0	0 / 0.0
1,400–1,999	4 / 4.0	0
2,000–10,000	7 / 7.0	4
> 15,000	3 / 3.0	0
Total respondents = 100		Total respondents = 100
Mean = 1,693 acres		Mean = 444 acres

tings per year, and an even smaller number produce one or two cuttings per year. Mean alfalfa production for the survey respondents was six tons/acre/year (table 5). Almost 9% of the respondents reported producing more than nine tons/acre/year. More than half of the producers interviewed reported harvesting alfalfa at 10% bloom (table 6). Almost one-fourth harvest at the bud stage, while the remainder harvest at one-fourth to full bloom. Thirty-four producers also indicated that they base the timing of harvest on the amount of bottom regrowth present in the alfalfa. Another 13 producers said their harvesting also is timed by the number of days since the previous harvest. Regrowth periods between harvests of 22, 26, 28, and 30 days were reported.

Future Alfalfa Production Plans

More than half of the producers had no plans to increase or decrease their planted alfalfa acreage in the next one to 10 years (table 7). Almost 28% of the producers reported plans to increase their alfalfa acreage during the same time period, with a mean expected increase of 130 acres. A smaller number of producers

plan to decrease their alfalfa acreage, with a mean expected decrease of 144 acres.

The most frequently cited reason for producing more alfalfa hay was that the alfalfa market is good and that there is more profit in alfalfa than in other crops. A small number of producers reported they will be increasing their acreages of other crops as well. Ten percent of the producers indicated some concern regarding irrigation water availability. These individuals said they plan to decrease alfalfa production due to reductions in water supplies, or that water availability will determine whether they increase or decrease production in the next one to 10 years. Four producers reported that their planted alfalfa acreage changes over time because of crop rotations.

Almost 56% of the producers interviewed have irrigated base acreages for crops produced under federal commodity programs (table 8). Cotton was the most frequently reported program crop produced under irrigation, with an average of 201 acres reported (table 9). Wheat and corn were the second and third most fre-

Table 4. Alfalfa hay production: Cuttings/year for survey respondents.

Hay cuttings/year	Number of respondents	Percentage of respondents
1	2	2.0
2	7	7.0
3	12	12.0
4	29	29.0
5	28	28.0
6	19	19.0
7	3	3.0
Total respondents = 100		
Mean response = 4.4 cuttings		

Table 6. Stage when producers harvest alfalfa hay.

Stage of harvest	Number of respondents	Percentage of respondents
Bud stage	23	23.7
10% bloom	52	53.6
1/4 bloom	14	14.4
1/2 bloom	5	5.2
Full bloom	3	3.1
Total respondents = 97		

Table 5. Alfalfa hay production: Tons/acre/year for survey respondents.

Tons/acre/year	Number of respondents	Percentage of respondents
1-2	9	9.9
3-4	9	9.9
5-6	38	41.8
7-8	27	29.7
9-10	5	5.5
11-12	3	3.3
Total respondents = 91		
Mean response = 6 tons/acre/year		

Table 7. Alfalfa producers' future hay production plans.

Production plans	Number of respondents	Percentage of respondents	Mean acres
No changes in alfalfa acreage	51	54.3	-
Increase alfalfa acreage	26	27.6	130
Decrease alfalfa acreage	17	18.1	144
Total respondents = 94			

quently reported program crops, followed by sorghum, miscellaneous small grains, and barley.

Removal of price-linked subsidies for program crops may result in producers shifting their irrigated lands to alfalfa production. Producers were asked if—given recent changes in federal commodity programs—they will continue producing (formerly) program crops, or if they intend to switch to another crop. In response, 70% of the producers said they intended to continue with the same grain or cotton crops they produced under the commodity programs (table 10). Sixteen percent indicated an intention to switch to another crop, while the remaining 14% did not know what they would produce in the future.

Almost 83% of the producers said they were unlikely to switch their grain or cotton acreages to alfalfa production during the next one to 10 years (table 11). Seven percent reported a high probability of increasing their alfalfa acreage as a result of changes in federal policies for grains or cotton.

Table 8. Alfalfa producers with federal commodity program base acreages.

Producers...	Number of respondents	Percentage of respondents
With base acreages	55	55.6
Without base acreages	44	44.4
Total respondents = 99		

Table 10. Producers' plans as a result of changes in federal commodity policy.

Plans	Number of respondents	Percentage of respondents
Produce the same crops	70	70.0
Switch to other crops	16	16.0
Don't know	14	14.0
Total respondents = 100		

Table 12. Alfalfa producers' livestock ownership.

Producers...	Number of respondents	Percentage of respondents
With livestock	73	73.0
Without livestock	27	27.0
Total respondents = 100		

Alfalfa Producers' Livestock Feeding

Seventy-three percent of the alfalfa producers reported feeding some of their alfalfa hay to their own livestock (table 12)—most frequently to beef cattle (table 13). Horses were reported by a third of the producers, while sheep, dairy cattle and goats were reported by a few producers.

Two dairy producers were interviewed through the alfalfa producer survey. Both use all the hay they produce and indicated they do not purchase alfalfa hay from outside sources. The dairy producers reported analyzing their hay for the following: moisture, crude protein, acid detergent fiber, neutral detergent fiber, relative feed value, total digestible nutrients, leafiness and color.

When questioned about whether or not hay from their third and fourth alfalfa cuttings is fed to their own dairy cattle, the two dairy/alfalfa producers were divided. One feeds the cuttings to his/her own animals, and one

Table 9. Federal commodity program base acreages held by alfalfa producers.

Commodity	Number of respondents	Mean acres
Wheat	15	196
Corn	13	418
Sorghum	5	154
Barley	1	40
Cotton	18	201
Other small grain	3	50

Table 11. Producers' likelihood of switching to alfalfa production.

Likelihood of switching to alfalfa	Number of respondents	Percentage of respondents
Very likely	7	7.1
Somewhat likely	10	10.1
Not likely	39	39.4
Definitely won't switch	43	43.4
Total respondents = 99		

Table 13. Livestock species fed by alfalfa producers.

Animal numbers	Beef		Dairy		
	cattle	Horses	Sheep	cattle	Goats
1-49	17	33	2	—	—
50-99	13	—	—	—	—
100-349	22	—	—	—	2
350-749	6	—	—	1	—
750-1000	4	—	—	—	—
> 1000	3	—	1	1	—
Mean response	402	5	510	1,100	200
Total respondents	65	33	3	2	2

chose not to because of low protein content and low leaf-to-stem ratio of the middle cutting hay. Both of the dairy/alfalfa producers reported they fed their lower quality hay to their dry cows and young heifers. The two dairy/alfalfa producers said dairy producers do not tend to feed the middle cutting hay to milk cows because of low protein, low total digestible nutrients, generally poor appearance of the hay, and the observation that the middle cuttings do not lead to as much milk production.

Alfalfa Producers and the Dairy-Quality Hay Market

Alfalfa producers who were not also dairy operators (98) were asked a series of questions regarding the sale of alfalfa hay to dairies. Many producers believed all or much of their hay was being consumed on dairy farms. However, they sell their hay to brokers, so they have no direct contact with the hay users. Fifty-two of the 98 producers interviewed reported selling their alfalfa hay directly to dairies. All these producers sell their first hay cutting to dairies, while the second and fifth cuttings are often sold to dairies as well (table 14). The third and fourth cuttings are purchased by dairies less frequently.

The alfalfa producers indicated that the dairy producers buying alfalfa directly from them typically look for high hay protein levels and desirable hay characteristics that can be observed visually (leafiness, color and ratio of leaves to stems). Other measures of hay quality (acid detergent fiber, neutral detergent fiber, relative feed value, and total digestible nutrients) were cited by a small number of producers as criteria of interest to dairy producers.

Almost one-half of the alfalfa hay producers who sell directly to dairies indicated that their middle cuttings of hay (third, fourth, or fifth) were usually considered dairy quality (table 15). One-fourth of the producers said their middle harvests were “sometimes” of dairy quality, while almost another fourth reported their middle harvests were generally not dairy quality.

Weather-related problems, primarily rain damage, were the most frequently cited reasons for lower quality middle cutting hay (table 16). Other reasons given included lower protein levels, reduced palatability, and coarse stems. A small number of producers indicated that the dairies will take the middle cutting hay if it is green-chopped, irrigated and fertilized properly, or harvested at the right time.

When producers were questioned about their current market for middle cutting hay not considered “dairy quality,” almost two-thirds responded that it also is sold to dairies (table 17). Some of this hay is sold for use by horses and beef cattle, while a few producers reported using the hay to feed their own livestock.

More than half of the alfalfa hay producers reported that dairy producers tend to avoid feeding middle cutting hay to milking cows, because the dairy producers believe the hay is of lower quality and doesn’t lead to as much milk production as early or late cutting hay (table 18). Problems with stemminess or low palatability were reasons also cited by the hay producers. Almost one-fourth of the alfalfa growers stated that dairy producers will feed the middle cutting hay if it is “good enough,” although this hay is often fed only to dry cows.

Table 14. Alfalfa hay cuttings sold directly to dairies.

	Total respondents	Cutting					
		1st	2nd	3rd	4th	5th	6th
		Number /percentage of respondents					
Producers selling directly to dairies	52	52 / 100.0	40 / 76.9	21 / 40.4	23 / 44.2	33 / 63.5	19 / 36.5

Table 15. Quality of middle alfalfa hay cuttings.

“Are middle cuttings dairy quality?”	Number of respondents	Percentage of respondents
Yes	25	48.1
No	14	26.9
Sometimes	13	25.0

Total respondents = 52

DAIRY PRODUCER SURVEY RESULTS

General Production Characteristics

The 34 New Mexico dairy producers interviewed were concentrated in the eastern and central portions of the state (fig. 4). The counties with the largest numbers of surveyed producers were Chaves, Roosevelt, and Doña Ana (table 19). Almost two-thirds of the producers surveyed had been in the dairy business for 11 to 20 years (table 20). Another 21.2% had been in dairy production for 21 to 30 years. The most frequently reported response was 20 years of dairy production, which also was the average length of time a respondent had been in dairy production.

The mean size of milking herd for the surveyed dairy producers was 1,683 cows (table 21). Almost one-third of the producers reported milking between 1,501 and 2,000 cows. Almost 12% of the dairy producers reported milking more than 2,000 cows, while another 11.8% milk less than 500 cows.

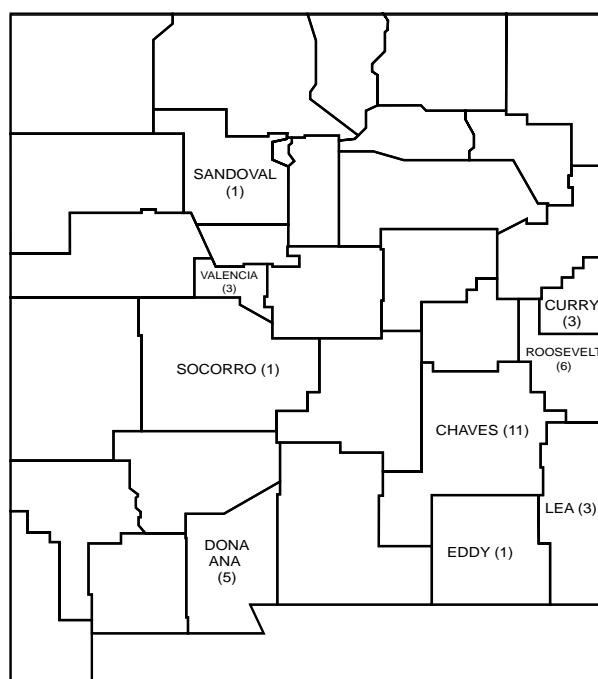


Fig. 4. New Mexico counties where surveyed dairy producers are located.

Table 16. Reasons middle alfalfa hay cuttings are not “dairy quality.”

Reasons/comments	Number of respondents	Percentage of respondents
Rain/weather	23	39.7
Stem conditions (coarseness)	11	18.9
Low protein	7	12.1
Reduced palatability	3	5.2
Weeds, grass, bugs	2	3.4
Dairies will take if cut at right time	6	10.3
Dairies will take if green-chopped	3	5.2
Dairies will take if watered and fertilized properly	3	5.0
Total respondents = 58		

Table 18. Reasons dairy producers tend to not use middle cuttings for feeding milking cows.

Reasons/comments	Number of respondents	Percentage of respondents
Think middle cutting hay is lower quality	22	37.3
Doesn't produce as much milk	10	16.9
Too stemmy, low leaf-stem ratio, too fibrous, low palatability	7	11.9
Dairies will use if “good enough”	15	25.4
Dairies will feed only to dry cows	5	8.5
Total respondents = 59		

Table 17. Markets for middle alfalfa hay cuttings.

Markets for middle cuttings	Number of respondents	Percentage of respondents
Dairies	40	63.5
Beef cattle (ranches, feedlots)	9	14.3
Horses/race horses	6	9.5
Own use	4	6.3
Feed stores (including alfalfa pellets)	3	4.8
Sheep	1	1.6
Total respondents = 63		

Table 19. New Mexico counties where surveyed dairy producers are located.

County	Number of respondents	Percentage of respondents
Chaves	11	32.4
Curry	3	8.8
Doña Ana	5	14.7
Eddy	1	2.9
Lea	3	8.8
Roosevelt	6	17.7
Sandoval	1	2.9
Socorro	1	2.9
Valencia	3	8.8
Total respondents = 34		

Alfalfa Hay Production and Purchasing

The majority of dairy producers surveyed do not grow any alfalfa hay (table 22). The four dairy producers who indicated they do grow alfalfa hay reported production ranging from less than 1,000 to almost 6,000 tons per year (table 23). The mean annual alfalfa production across all the dairies was 315 tons. Only one dairy producer reported not purchasing alfalfa hay for use on his/her dairy farm (table 23). The mean annual amount of alfalfa purchased from outside suppliers was 5,245 tons (table 23). Almost one-half of the surveyed producers buy between 4,001 and 6,000 tons per year.

When questioned about their primary source of alfalfa, the dairy producers mentioned New Mexico with greatest frequency, followed by Colorado (table 24). Colorado was the most frequently reported secondary source of alfalfa, followed by Kansas and New Mexico. Texas was reported as another source of alfalfa hay by a few dairy producers. According to the dairy producers surveyed, the alfalfa hay is always delivered to their farms (table 25).

Almost 80% of the surveyed dairy producers said they require information about protein content when buying hay (table 26). More than 60% use relative feed value (RFV) for hay purchasing, while half of the producers rely on the hay's appearance as a measure of quality and feed value.

One hundred percent of the dairy producers buy first and second cutting alfalfa hay (table 27). Third, fourth, and fifth cuttings are purchased by approximately one-third of the producers, while 94.1% indicated they have no problems with purchasing sixth cutting hay. Concern about quality was mentioned by the producers as the reason they purchase alfalfa hay based on cutting number (table 28). More than 32% of the producers reported buying all cuttings of hay, and feeding the lower quality cuttings to dry cows and heifers.

Of the four surveyed dairy producers who were growing alfalfa hay at the time of the survey, half of them said they had no plans to increase or decrease their alfalfa acreage in the future (table 29). One producer plans to increase both his alfalfa acreage and the size of his dairy, while another indicated he will be reducing alfalfa production in the future.

Alfalfa Hay Quality and Supply Issues

More than 50% of the dairy producers reported they had experienced alfalfa hay quality problems during the year preceding the survey (table 30). Rain or weather damage were the most frequently reported quality problems (table 31). A few producers indicated that hay available for purchase during the last year was overly mature.

Table 20. Distribution of dairy producers by number of years in dairy production.

Years	Number of respondents	Percentage of respondents
2–10	2	6.0
11–20	22	66.7
21–30	7	21.2
> 30	2	6.0
Total respondents = 33		
Mean = 20 years		

Table 21. Cows milked by surveyed dairy producers.

Milking cow numbers	Number of respondents	Percentage of respondents
< 500	4	11.8
500–1,000	7	20.6
1,001–1,500	8	23.5
1,501–2,000	11	32.4
2,001–3,000	2	5.9
3,001–4,000	1	2.9
> 5,000	1	2.9
Total respondents = 34		
Mean response = 1,683		

Table 22. Dairy producers' alfalfa hay production.

Produce alfalfa hay?	Number of respondents	Percentage of respondents
Yes	4	11.8
No	30	88.2
Total respondents = 34		

Table 23. Alfalfa hay production and purchases by surveyed dairy producers.

Tons/year	Distribution of dairy producers by amount of hay produced	Distribution of dairy producers by amount of hay purchased
	Number / percentage	Number / percentage
0	30 / 88.2	1 / 3.0
< 1,000	1 / 2.9	1 / 3.0
1,000–2,000	1 / 2.9	3 / 9.0
2,001–4,000	1 / 2.9	9 / 27.3
4,001–6,000	1 / 2.9	16 / 48.5
6,001–10,000	—	2 / 6.0
> 10,000	—	1 / 3.0
Total respondents = 34		Total respondents = 33
Mean response = 315 tons		Mean response = 5,245 tons

Table 24. Location of alfalfa suppliers.

Location	Primary alfalfa suppliers	Secondary alfalfa suppliers	Other alfalfa suppliers
	Number/percentage of respondents	Number/percentage of respondents	Number/percentage of respondents
Colorado	14 / 42.4	13 / 50.0	—
Kansas	—	7 / 26.9	—
New Mexico	19 / 57.6	6 / 23.1	3 / 50.0
Texas	—	—	3 / 50.0
	Total respondents = 33	Total respondents = 26	Total respondents = 6

Table 25. Delivery of alfalfa hay to surveyed dairies.

Delivery of hay by suppliers?	Number of respondents	Percentage of respondents
Yes	33	100.0
No	0	0.0
	Total respondents = 33	

Table 26. Information used by dairy producers for alfalfa hay purchases.

Alfalfa hay characteristic	Number of respondents	Percentage of respondents
Protein	27	79.4
Acid detergent fiber	8	23.5
Neutral detergent fiber	3	8.8
Relative feed value	21	61.7
Hay appearance	17	50.0
Moisture	8	23.5
Other criteria	2	5.9
	Total respondents = 34	

Table 27. Alfalfa hay cuttings purchased by dairies.

Cuttings purchased by dairies	Number of respondents	Percentage of respondents
First	34	100.0
Second	34	100.0
Third	13	38.2
Fourth	11	32.4
Fifth	11	32.4
Sixth	32	94.1
	Total respondents = 34	

Table 28. Dairy producers' reasons for purchasing selected hay cuttings.

Reason/comment	Number of respondents	Percentage of respondents
Highest quality	19	55.9
Buys all cuttings, feed lower quality to dry cows and heifers	11	32.4
Highest relative feed value	4	11.8
Buys middle cuttings only as needed	3	8.8
	Total respondents = 34	Total responses = 37
	(Producers could cite more than 1 reason.)	

Table 29. Dairy producers' future hay production plans.

Production plans	Number of respondents	Percentage of respondents
No changes in alfalfa acreage	2	50.0
Increase alfalfa acreage	1	25.0
Decrease alfalfa acreage	1	25.0
	Total respondents = 4	

Table 30. Hay quality problems experienced by dairy producers in year preceding the survey.

Quality problems?	Number of respondents	Percentage of respondents
Yes	18	52.9
No	16	47.1
	Total respondents = 34	

More than 76% of the dairy producers reported alfalfa hay supply problems during the year preceding the survey (table 32). Most of the producers interviewed declined to describe what type of supply problems they had dealt with during 1996. However, reduced hay quality due to rain damage and drought-related shortages were cited by a few respondents (table 33). One survey respondent indicated that competition from new dairies resulted in reduced alfalfa hay availability during 1996.

Most of the dairy producers were confident they would not experience alfalfa hay supply difficulties during 1997 and early 1998 (table 34). The small number of producers who believe they will face future hay availability problems said this will happen because of increased competition for hay supplies from other dairies and decreased alfalfa acreage locally. All the surveyed producers reported feeding silage or other supplements to their milking cows (table 35). A few producers indicated never feeding corn silage, preferring to feed haylage.

Perceived Problems for the New Mexico Dairy Industry

The dairy producers had several ideas about what they perceived to be the most important problems the New Mexico dairy industry will face during the next five to 10 years (table 36). Milk pricing and federal milk marketing orders were the most frequently reported problems facing the industry (cited by 47.1% of surveyed producers). Environmental regulations, mentioned by 23.5% of the producers, came in second. Feed (specifically forage) availability was cited as a potential problem in two ways: 26.5% of the producers indicated they believe reduced water supply for irrigated forage production will hurt the dairy industry, and another 17.6% stated that overall feed availability and high feed costs will be problematic. A small number of producers believe that increased competition from new dairies and the eventual larger size of the New Mexico dairy industry will be harmful to them.

Table 31. Hay quality problems experienced by dairy producers in year preceding the survey.

Type of quality problem	Number of respondents	Percentage of respondents
Rain / weather damage	16	76.2
Hay was too mature	3	14.3
Hay was poor quality overall	2	9.5

Total respondents = 21

Table 32. Hay supply problems experienced by dairy producers in year preceding the survey.

Supply problems?	Number of respondents	Percentage of respondents
Yes	26	76.5
No	8	23.5

Total respondents = 34

Table 33. Hay supply problems experienced by dairy producers in year preceding the survey.

Type of supply problem	Number of respondents	Percentage of respondents
Rain caused quality problems	4	44.4
Drought caused shortage	3	33.3
Hay not available in summer	1	11.1
Competition from new dairies	1	11.1

Total respondents = 9

Table 34. Dairy producers' anticipated hay supply problems.

Do you anticipate hay supply problems over the next year?	Number of respondents	Percentage of respondents
Yes	2	5.9
No	32	94.1

Total respondents = 34

Table 35. Dairy producers who feed silage or other supplemental feeds.

Feed silage or other supplements?	Number of respondents	Percentage of respondents
Yes	34	100.0
No	0	0.0

Total respondents = 34

Table 36. Producers' perceptions of problems facing New Mexico's dairy industry.

Problem	Number of respondents	Percentage of respondents
Milk prices and federal marketing orders	16	47.1
Water (reduced irrigated forage production)	9	26.5
Environmental regulations	8	23.5
Feed availability and high costs	6	17.6
Increased competition from other dairies and among dairy producers	2	5.9
Local industry will become too large	1	2.9

Total respondents = 34 Total responses = 42
(Producers could cite more than 1 problem.)

DISCUSSION AND CONCLUSIONS

The purpose of the survey was to gain insight into the possibility that alfalfa hay supplies could be a limiting factor to further growth of New Mexico's dairy industry. The data suggest that this will not be the case in the near future. New Mexico's dairy cow population currently consumes less than one-third, or about 27%, of total annual New Mexico alfalfa production. In addition, New Mexico dairies are not totally dependent upon New Mexico alfalfa supplies, as 42.4% of dairy respondents listed primary alfalfa suppliers outside New Mexico and 76.9% have secondary suppliers outside of New Mexico (table 24).

When examining whether alfalfa hay availability might be a limiting factor to further dairy industry growth in New Mexico, it is appropriate to consider different scenarios. For example, if New Mexico's total dairy herd increased by 100,000 cows (approximately 50%), how would the quantity of New Mexico alfalfa

consumed by dairy cattle change? The results from two scenarios considered are based on three assumptions (applied to both):

- New Mexico alfalfa production is unchanged;
- New Mexico alfalfa consumption by the state's dairy cows is unchanged; and
- 70% of New Mexico's dairy herd is producing milk at any time (i.e., 30% dry cows).

If 20% of alfalfa hay consumed by dairy cows was purchased outside New Mexico, producing cows would consume 31% of New Mexico's alfalfa crop (fig. 5). If 30% was bought outside the state, milk producing cows would consume 27% of the New Mexico alfalfa crop (fig. 6). This is the same amount currently consumed by New Mexico's dairy cattle (both producing and dry cows).

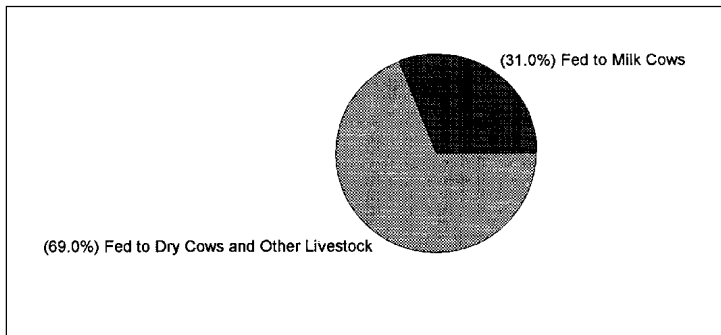


Fig. 5 Distribution of New Mexico's alfalfa with 20% dairy quality alfalfa imported into the state.

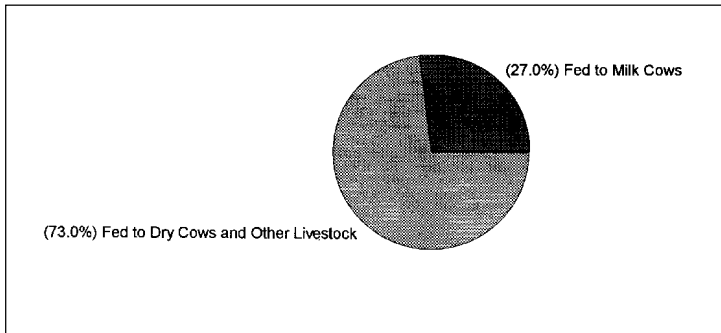


Fig. 6 Distribution of New Mexico's alfalfa with 30% dairy quality alfalfa imported into the state.

According to responses from alfalfa and dairy producers, 50% or more of the alfalfa grown in New Mexico is of dairy quality. If no alfalfa was imported into New Mexico from other states, the high-quality hay consumption needs of milk-producing cows could still be completely met by New Mexico alfalfa production, even with a 50% increase in the number of dairy cattle in the state.

The alfalfa producers surveyed have been growing alfalfa for an average of 26.5 years. More than half had plans to stay at current production levels, and almost 28% reported having plans to increase production in the next one to 10 years. This seems to represent stable or slightly increased New Mexico alfalfa production in the future. Other limiting factors not analyzed in the course of this research may exist and could affect the future of New Mexico's dairy industry. These factors include, but are not limited to, local corn silage production and overall water availability for irrigated alfalfa and corn. However, given current water supplies and allocations to agriculture, alfalfa production is not likely to be a determining factor in whether or not dairy cow numbers and milk output decrease or increase in New Mexico.

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APPENDIX A

Alfalfa Hay Producer Questionnaire

Telephone Survey of New Mexico Alfalfa Hay Producers
Dept. of Agricultural Economics and Agricultural Business
New Mexico State University

- Q1. Name: _____
Address: _____
- Q2. How many years have you been growing alfalfa? _____
- Q3. How many total irrigated cropland acres do you farm? _____
- Q4. How many irrigated acres do you typically have in alfalfa? _____
- Q5. How many cuttings per year do you typically harvest? _____
- Q6. How many tons/acre do you typically produce? _____
- Q7. At what growth (or bloom) stage do you typically cut your alfalfa?
Bud stage _____ 1/2 Bloom _____
1/10 Bloom _____ 3/4 Bloom _____
1/4 Bloom _____ Full Bloom _____
- Q8. Do you have any plans to reduce or increase your alfalfa acreage in the next 1-10 years?
 No plans to change
 Increase.....By how many acres? _____
 Decrease.....By how many acres? _____
- Q9. Why will you be INCREASING/DECREASING your alfalfa acreage in the next few years?

- Q10. Do you currently produce any crops under irrigation for which you have had a base acreage (for the purposes of Federal commodity programs)?
YES NO
- Q11. For what crops have you had base acreages?
Wheat _____ acres Barley _____ acres
Corn _____ acres Cotton _____ acres
Sorghum _____ acres Other (specify) _____ acres
- Q12. Given recent changes in Federal commodity policy, do you plan to continue producing the same grain (or cotton) crops that you currently produce, or will you switch to another crop?
 Produce the same crops
 Switch to another crop
 Don't know
- Q13. How likely are you to switch from irrigated grain or cotton production to irrigated alfalfa production?
 Very likely to switch to alfalfa
 Somewhat likely to switch to alfalfa
 Not very likely to switch to alfalfa
 Definitely not going to switch to alfalfa

Q14. Do you feed some of your alfalfa hay to your own livestock? YES NO

Q15. If you also feed your own alfalfa hay, do you feed to

- Beef cattle _____ (how many animals?)
- Horses _____ (how many animals?)
- Sheep _____ (how many animals?)
- Dairy cattle _____ (how many animals?)
- Other _____ (how many animals?)

If indicated DAIRY CATTLE in Q15, continue with Q16. Otherwise go to Q25.

Q16. How many milking cows do you have at your dairy? _____

Q17. Do you consume all the alfalfa hay that you produce, also buy hay, or do you also sell hay?

- Consume all that we produce
- Also buy hay
- Also sell hay

Q18. Typically, which cuttings do you use to feed your milking cows?

- | | |
|--------------|--------------|
| First _____ | Fourth _____ |
| Second _____ | Fifth _____ |
| Third _____ | Sixth _____ |

Q19. What alfalfa hay specifications do you want in your dairy quality hay?

- Protein % _____
- ADF (Acid Detergent Fiber) % _____
- NDF (Neutral Detergent Fiber) _____
- RFV (Relative Feed Value) _____
- Leafiness (color, clinging to stems, etcetera) _____
- TDN (Total Digestible Nutrients) _____
- Other (Please list) _____

Q20. Are your third and fourth (or middle cuttings) fed to your milking cows?

YES NO

Q21. Why or why not? _____

Q22. If your middle cuttings are not dairy quality, what do you currently do with the middle cuttings? _____

Q23. Why do dairies tend to not use middle cutting hay for feeding to milking cows? _____

Q24. Would you like copy of the report which will summarize the result of this survey? YES NO

This concludes the survey, do you have any additional comments you would like to make here? Thank you for your time and assistance.

If you did not indicate DAIRY CATTLE in Q15:

Q25. Typically, which cuttings do you sell to dairies for their milking cows?

First _____ Fourth _____
Second _____ Fifth _____
Third _____ Sixth _____

Q26. What alfalfa hay specifications are dairies typically looking for?

Protein % _____
ADF (Acid Detergent Fiber) % _____
NDF (Neutral Detergent Fiber) _____
RFV (Relative Feed Value) _____
Leafiness (color, clinging to stems, etcetera) _____
TDN (Total Digestible Nutrients) _____
Other (Please list) _____

Q27. Are your third and fourth (or middle cuttings) fed to your milking cows?

YES NO

Q28. Why or why not? _____

Q29. If your middle cuttings are not dairy quality, what do you currently do with the middle cuttings?

Q30. Why do dairies tend to not use middle cutting hay for feeding to milking cows?

Q31. Would you like copy of the report which will summarize the result of this survey? YES NO

This concludes the survey, do you have any additional comments you would like to make here? Thank you for your time and assistance.

ADDITIONAL COMMENTS:

APPENDIX B

Dairy Producer Questionnaire

Telephone Survey of New Mexico Dairy Producers
Dept. of Agricultural Economics and Agricultural Business
New Mexico State University

Q1. Name: _____

Address: _____

Q2. How many years have you been a dairy producer? _____

Q3. How many milking cows do you have at your dairy? _____

Q4. Do you also produce some or all of your own alfalfa hay? _____

Q5. How many tons/year do you typically produce? _____

Q6. How many tons/year do you typically purchase? _____

Q7. What is the name and location of your primary alfalfa supplier? _____

Q8. What is the name and location of your secondary alfalfa supplier? _____

Q9. What are the names and locations of additional suppliers of the alfalfa you buy? _____

Q10. Do these suppliers deliver to your dairy? _____

Q11. What are your buying specifications? _____

Protein % _____

ADF % (Acid Detergent Fiber) _____

NDF % (Neutral Detergent Fiber) _____

RFV (Relative Feed Value) _____

TDF % _____

Leafiness (color, clinging to stems, etc). _____

Other criteria _____

Q12. Which cuttings do you regularly buy?

First _____ Fourth _____

Second _____ Fifth _____

Third _____ Sixth _____

Q13. Why do you buy these cuttings?

Q14. If you grow alfalfa, do you have any plans to reduce or increase your alfalfa acreage in the next 1-10 years?

- No plans to change
- Increase.....By how many acres?
- Decrease.....By how many acres?

Q15. Why will you be INCREASING/DECREASING your alfalfa acreage in the next few years?

Q16. Do you currently produce any crops under irrigation for which you have had a base acreage (for the purposes of Federal commodity programs)?

YES NO

Q17 For what crops have you had base acreages?

Wheat _____ acres Barley _____ acres
Corm _____ acres Cotton _____ acres
Sorghum _____ acres Other (specify) _____ acres

Q18. Given recent changes in Federal commodity policy, do you plan to continue producing the same grain (or cotton) crops that you currently produce, or will you switch to another crop?

- Produce the same crops
- Switch to another crop
- Don't know

Q19. How likely are you to switch from irrigated grain or cotton production to irrigated alfalfa production?

- Very likely to switch to alfalfa
- Somewhat likely to switch to alfalfa
- Not very likely to switch to alfalfa
- Definitely not going to switch to alfalfa

Q20. Have you experienced any alfalfa hay quality problems within the last year? YES NO

If YES, what type of quality problems have you experienced? _____

Q21. Have you had any difficulty acquiring alfalfa hay supplies currently or within the last year? YES NO

If YES, why? _____

Q22. Do you anticipate any alfalfa availability problems over the next year? YES NO

If YES, what and why? _____

Q23. Do you feed silage or other supplemental feeds? YES NO

Q24. What do you think are the biggest problems the New Mexico dairy industry will face over the next 5-10 years?

Q25. Would you like a copy of the report which will summarize the result of this survey? YES NO

**This concludes the survey, do you have any additional comments you would like to make here?
Thank-you for your time and assistance.**

ADDITIONAL COMMENTS:

To find more resources for your home, family, or business, visit the College of Agriculture and Home Economics on the World Wide Web at <http://www.cahe.nmsu.edu>.

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