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THE IMPACT OF THE DAIRY TERMINATION PROGRAM
ON LAND USE IN NEW YORK

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Milk production is a principal feature of New York agriculture. Today, nearly 14,000 of New York's 42,000 farms produce milk, with sales of dairy products accounting for 57 percent of total cash receipts on New York farms (New York Agricultural Statistics Service). Accordingly, the New York dairy sector exerts a predominant influence on the use of rural land. Dairy farmers own or lease about 5 million acres, or 57 percent of the total farmland base; an even larger amount is used to produce livestock feed (U.S. Department of Commerce).

For these reasons, Federal programs for supply control or income maintenance in the production of milk take on special significance for land use in rural New York. The purpose of this paper is to discuss the preliminary findings of a survey of farmers who submitted bids for the Dairy Termination Program (DTP), or dairy buyout. A principal objective was to determine their future intentions for land use. Farmers whose bids were accepted agreed to stop shipping milk for a five-year period. More than 2,600 New York dairymen submitted a bid and 538 ultimately contracted with the USDA to terminate milk production on their farms. Our discussion of the

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survey results is prefaced by a brief description of the Dairy Termination Program and the survey methods used in the study.

The Dairy Termination Program

Congress faced a lot of difficult problems during deliberations over the dairy title of the 1985 Farm Bill. This legislation shapes federal policy for dairy products through 1990 and follows the 1984-85 Milk Diversion Program which paid producers \$10 per cwt. for up to a 30 percent reduction in production. This program had expired nine months earlier, and milk production was at levels which far exceeded consumption. Indications were that the imbalance between demand and supply would not materially improve in the near term if prices remained near existing levels. For example, one forecast projected milk supply to exceed commercial demand by 16.5 billion pounds on a raw milk equivalent basis, or almost 12 percent of 1985 total milk production (Carmon, Paddock, and Shaw).

After much debate, a compromise bill was passed by Congress and signed into law by the President. The dairy title of the compromise bill (the Food Security Act of 1985) contained several new measures primarily designed to bring milk supply into balance with demand. Included in the Act were: a triggered adjustment mechanism for setting the dairy support price based on the level of government net removals via the dairy price support program; mandatory producer assessments on milk marketings to cover some of the costs of the dairy program; and an unprecedented voluntary supply control program, the DTP, aimed at removing 12 billion pounds of milk from the market.

The DTP gave dairy farmers the opportunity to offer bids on the payment they would accept in return for ceasing milk production for five years. Submission of a bid did not ensure acceptance into the program, as

the USDA had the discretion of either accepting or rejecting each bid. Farmers accepted into the DTP received a payment equal to the bid, on a dollar per cwt. basis, times the farmer's assigned contract base. The contract base was equal to milk marketings in the lower of two 12-month periods (July 1984 to June 1985, or January to December 1985), and was further adjusted downward if the producer had any dairy cattle transactions between January 1, 1986 and the date of the bid. In return for these payments, participants were required to terminate milk production and to export or slaughter all their dairy cattle by the end of their assigned disposal period.

Producer response to the DTP varied significantly among regions of the U.S. as well as throughout New York. About 19 percent of New York dairy farmers submitted bids for the DTP, compared to the national average of 23 percent. Moreover, the percentage of New York producers having their bids accepted was significantly less than the U.S. average. Slightly less than 20 percent of New York producers had their bids accepted; the average acceptance rate for all states was over 35 percent. The remaining producers' bids were rejected because they exceeded the \$22.50 per cwt. ceiling established by the USDA.

Within New York, acceptance rates ranged from 2.4 percent in the centrally located Onieda/Mohawk region to almost 11 percent in the South Hudson region near New York City. Generally, lower bids -- and hence higher acceptance rates -- occurred in the eastern portion of the State. Much of eastern New York is subject to urban influences which increase land values and create nonfarm income alternatives. Therefore, dairy producers in this region, on average, could afford to bid lower than producers in

other regions because of the relatively higher income options from land sales and/or nonfarm employment alternatives (Kaiser and Novakovic).

Survey Methodology

Since more than 500 New York dairy farmers enrolled in the DTP, a mail survey was used as a cost-effective means of collecting data needed for the study. A questionnaire was designed to collect information on a farmer's reasons for submitting a bid, information sources used in deciding how much to bid, characteristics of the farm and farm operator, and future plans for the farm. Information elicited on the future of the farm included detailed questions about past and planned cropping rotations, soil conservation practices, and sales of farmland for various future uses.

The sampling frame was designed to facilitate assessment of the effects of the buyout program through comparison of farmers in the program with farmers who submitted bids that were too high to be accepted. The omission of dairy farmers who did not submit bids is not an accident -- the sample design is based on the assumption that farmers who submitted bids are different from those who did not. The most important difference is a clear expression of interest in ceasing dairy production, manifested by the submission of a buyout bid. Of the 2,629 farmers who decided to bid, there are 538 who exited dairy farming through the DTP and 2,091 who were not accepted into the program. Producers with rejected bids are not subject to any of the terms of the buyout contract. Their behavior should closely approximate the behavior of all bidders if a buyout program did not exist. Following this reasoning, the effects of the buyout may be examined by comparing the decisions made by the farmers in the DTP with those who expressed a desire to exit dairy farming but are not in the program.

Survey questionnaires were mailed to all of the New York farmers accepted into the dairy buyout and to a 30 percent random sample of those whose bids were rejected. When drawing the random sample of rejected bidders, a random sample of accepted bidders was also drawn to permit unbiased inferences to be made about the overall population of DTP bidders. The first survey mailing was made on July 7, 1987. A reminder postcard was sent one week later to everyone in the sample. Another mailing was sent to those who had not responded by July 28. Survey returns were accepted through September 15, at which time 665 usable surveys had been received (57 percent of the total sample). As expected, response was somewhat better from those farmers who had been accepted (62 percent) than from those who had not been accepted (51 percent). Data from the New York Agricultural Stabilization and Conservation Service (ASCS) were used to check for sampling bias in the rejected bid sample and for nonresponse bias in both samples. Comparisons were made with regard to 1985 milk marketings, herd sizes, and bid levels. The 30 percent sample of rejected bidders was found to be representative of the larger group in terms of these variables. Similarly, statistical tests show that in both groups respondents are no different from nonrespondents with respect to these variables. Based on these tests, it was concluded that there was no nonresponse bias in both samples of returned questionnaires.

Survey Results

Before examining the changes in land use which may be associated with the dairy buyout, it is useful to look at some of the general characteristics of those who submitted bids and those whose bids were accepted (table 1). The average age of accepted bidders was 2.5 years older than that for rejected bidders (and 3.3 years older than the New York average). This

Table 1. Selected averages for farms with DTP bids

Item	Bid accepted	Bid rejected
Operator's age	51.5	49.0
Total land owned:		
Cropland owned	259	306
Cropland rented in	149	173
Cropland rented out	64	78
	9	3
Cows	64	67
1985 Milk marketings (cwt.)	8,812	9,029
Value of land and buildings (dol.)		
Total	\$282,947	\$256,970
Per acre	\$1,225	\$870
Farm debt-to-asset ratio	0.31	0.34
Farmers with other income options (pct.)	32.0%	26.9%
Estimated annual income from alternative (dol.)	\$27,668	\$26,120

statistically significant age difference suggests that older farmers were willing to bid lower, possibly due to lower income expectations on the part of dairy producers nearing retirement age.

The groups are quite similar in terms of land ownership. Rejected bidders own slightly larger amounts of cropland and total land, on average, than those accepted into the DTP. It also appears that the rejected bidders tend to farm more rented land and rent out fewer acres than the farmers who were bought out. There is no significant difference between the two groups in terms of cow numbers or 1985 milk marketings. Average farm real estate values are marginally higher for accepted bidders than for those whose bids were rejected. The difference in total value of farm real estate assets is not statistically significant, but the difference in value per acre is significant at the 5 percent level. This suggests that

escalating land prices may have played a role in encouraging New York dairy farmers to cease production.

Farmers who bid at or below the \$22.50 per hundredweight cutoff point had a slightly lower farm debt-to-asset ratio than did those who bid higher.¹ Although this difference between the two groups is not significant, it is interesting to note that there is a significant positive correlation between bid levels and farm debt-to-asset ratios (Pearson correlation coefficient $r = 0.178$). It seems quite logical that once the decision was made to submit a bid, more highly-leveraged farmers had to bid higher in an attempt to pay off farm debts. It is also not surprising that, at the time bids were submitted, a higher proportion of the accepted bidders had some income-earning alternative to dairy, either on the farm or off. However, the mean annual incomes (as estimated by the respondents) were about equal for both groups for those who did have alternatives.

Plans for the Future

The responses concerning farmers' overall plans for the next five years provide a useful background for understanding the changes in land use associated with acceptance into the DTP. Tables 2 and 3 show plans for the next five years for the two groups, focusing on general activities for the DTP participants and plans for the dairy enterprise on farms not in the buyout. Although only 16 percent of the buyout participants indicated that they are planning to retire, a large number of accepted bidders are going into semi-retirement by only undertaking modest farming activities, such as

¹ The available evidence suggests that farmers bidding to participate in the DTP are more highly leveraged than the general population of dairy farms. The 1987 New York Farm Finance Survey reported an overall debt/asset ratio of 19.9 percent for New York dairy producers (New York Agricultural Statistics Service).

Table 2. Accepted bidders' plans for the next five years

Item	Number	Percent
Present farm operation:		
Retire	53	15.7
Continue farming	100	29.7
Farm and nonfarm job	103	30.6
Nonfarm job	70	20.8
Other	11	3.3
Total	337	100.0
Resume dairy operation after five years:		
Definitely	15	4.4
Somewhat likely	37	11.0
Somewhat unlikely	110	32.5
Definitely not	176	52.1
Total	338	100.0

Table 3. Rejected bidders' plans for the next five years

Item	Number	Percent
Present farm operation:		
Expand dairy enterprise	45	14.3
Maintain present size	129	41.1
Reduce dairy enterprise	16	5.1
Quit	67	21.3
Already quit	57	18.2
Total	314	100.0
Bid in a future DTP:		
Very likely	147	46.7
Somewhat likely	55	17.5
Somewhat unlikely	19	6.0
Very unlikely	38	12.0
Already quit	36	17.8
Total	315	100.0

growing hay for sale to other dairy farmers. The majority of farmers who were bought out are remaining in agriculture to some extent, with only 21 percent deciding to work solely in a nonfarm job (table 2). It is interesting to note, however, that even though the majority of DTP participants are still farming, 52 percent of the accepted bidders surveyed indicated that they will definitely not return to dairy farming after the five-year buyout period, and an additional 33 percent consider it somewhat unlikely that they will return to dairying. In other words, about 85 percent of the New York farmers accepted into the program are likely to stay out of dairying permanently.

With respect to the rejected DTP bidders, the most striking finding is that 18 percent of these farmers have already quit dairying, with another 21 percent planning to quit within five years, for a total of about 40 percent exiting over the next five years (table 3). An approximately equal proportion are planning to continue producing milk at about the same level as before submission of the unsuccessful buyout bid. A small proportion are planning to continue producing but at a reduced production level, and 14 percent are planning to expand their dairy operations. The operators expanding dairy production may be looking for greater cash flow, anticipating higher milk prices as a result of the buyout, or attempting to build a base for future government supply control programs. The latter rationale seems to be the most compelling as 80 percent of those planning to expand indicated they would be somewhat to very likely to submit a bid in a future program.

Respondents were asked if they would bid again if an identical dairy buyout program were offered within the next five years. Nearly half of the rejected bidders said they would be very likely to bid again (table 3).

Another 17 percent indicated that they are somewhat likely to bid again, with only 18 percent of the total sample answering that they would be somewhat unlikely or very unlikely to bid in a similar program in the future. These responses show that a large proportion of dairy farmers whose bids were not accepted are still looking for a way to exit the dairy industry.

Sales of Farm Real Estate

Data on farmland that has been sold or is intended to be sold are presented in table 4. Dairy buyout participants are remarkably similar to rejected bidders in terms of proportion of farmers selling some farmland (36.3 percent to 35.8 percent, respectively). In acreage terms the nonparticipants are selling only a slightly higher proportion of their total farmland holdings. It is important to note, however, that the nonparticipant sample represents the much larger population of 2,091 farmers whose bids were rejected. Thus, the acreage sold by this group is about four times as great in absolute terms as the acreage sold by accepted bidders.

Table 4. Land sales on farms with DTP bids

Land sales	Bid accepted		Bid rejected	
	Number	Percent	Number	Percent
	- - - Farms - - -			
Sold or selling	121	36.3	113	35.8
Not selling	212	63.7	203	64.8
Total	333	100.0	316	100.0
	- - - Acreage - - -			
Sold or selling	16,694	28.0	17,836	30.2
Not selling	42,941	72.0	41,152	69.8
Total	59,635	100.0	58,988	100.0

Examination of the expected future uses of the land sold reveals some major differences between DTP participants and those who were not accepted into the buyout (figure 1). Buyout participants are selling a much higher proportion of their land for commercial development purposes than are their non-DTP counterparts. The nonparticipants' proportion of land going into commercial development is only about one-half that of the buyout farmers, while at least 60 percent of the nonparticipants' land is remaining in agricultural use.

Expected Use of Retained Land

Farmers accepted into the dairy buyout are holding on to a higher proportion of their land than are those whose bids were rejected. The future uses of the retained land are quite similar for the two groups, as may be seen in table 5. The only important difference lies in the breakdown of agricultural land between owner-operated and land rented out. Farmers in the buyout are renting out a much greater proportion of their farmland -- over four times more than farmers not in the program. This is probably due to the terms of the DTP contract, whereby the participant is permitted to sell the farm but not for use as a dairy operation during the five-year contract period. There is no evidence that the farmers renting out farmland are more likely to return to dairy farming after the buyout period is over. Their responses regarding a possible return to dairy farming were not statistically different from those of all accepted bidders.

Since most of the DTP bidders' farmland is remaining in agricultural production, it is useful to compare previous and planned cropping rotations for the two groups. Data collected on actual crop rotations from 1982 to 1986 and farmers' intentions for 1987-1991 are presented in tables 6 and 7. These data consider land that is owned and operated or rented by the

Figure 1. Proportion of acreage sold by expected future use

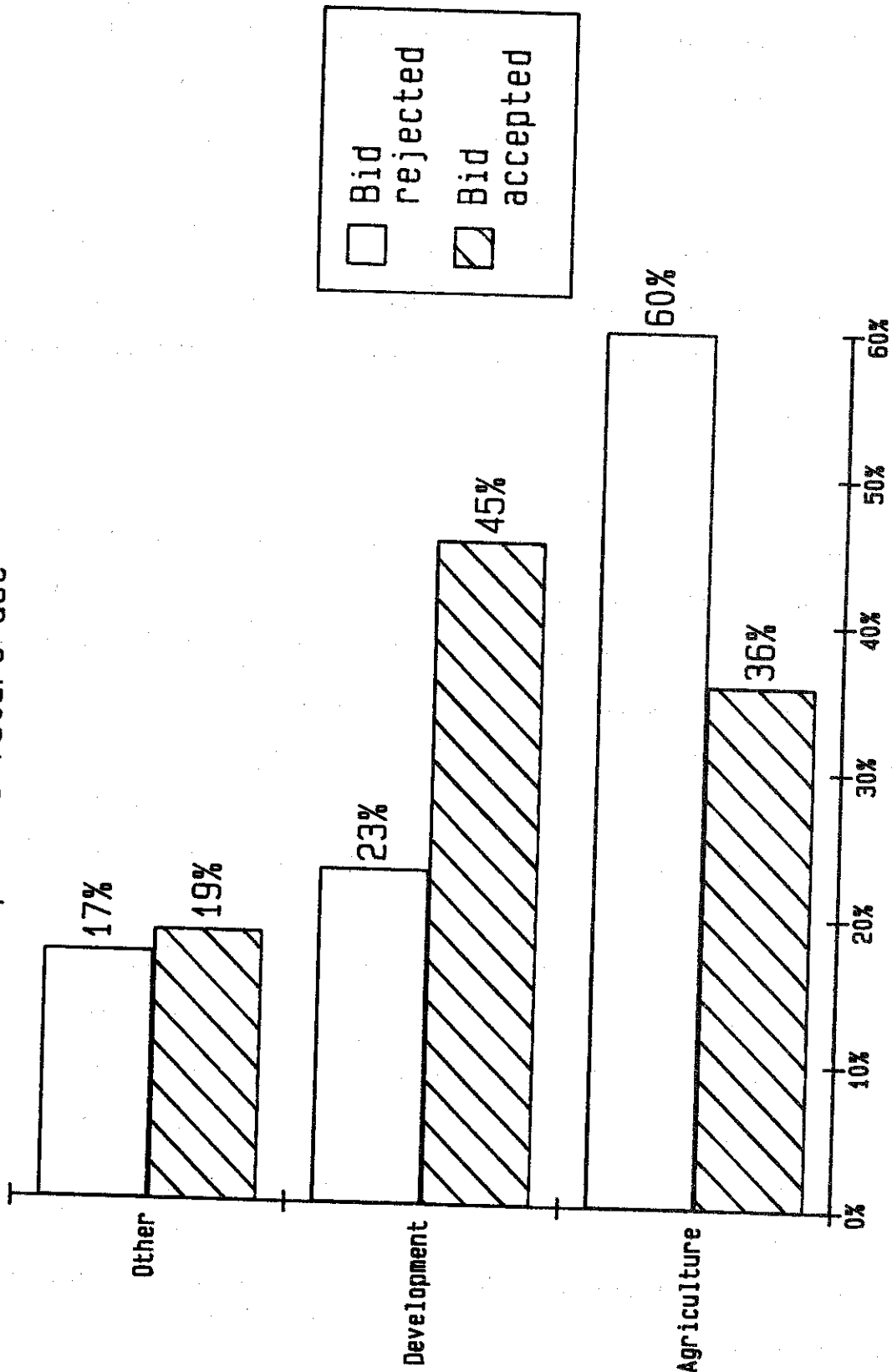


Table 5. Acreage retained and expected uses on farms with DTP bids

	<u>Bid accepted</u>		<u>Bid rejected</u>	
	Acres	Percent	Acres	Percent
Rent out (agriculture)	8,187	19.1	1,855	4.5
Farm by owner	32,592	75.9	36,997	89.9
CRP	933	2.2	993	1.7
Other	1,229	2.9	1,307	3.2
Total	42,941	100.0	41,152	100.0

farmers surveyed. In the five years leading up to the buyout, there is virtually no difference in the cropping patterns of the two groups. The data also show little expected change in cropping patterns between the two periods for rejected bidders, but more significant changes appear for farmers in the buyout program. The proportion of land planted in a corn/hay rotation is expected to decrease on farms in the program. Land monocropped in corn silage will also decrease, but this crop represents only a small percentage of total cropland. It appears that the farmers who are moving away from the corn/hay rotation or continuous corn will be including small grains (such as wheat or oats) in the rotation with corn and hay or will seed the land in a continuous hay crop.

The small proportion of land planted to continuous corn grain is projected to increase slightly, largely due to farmers who decided to raise beef cattle after selling off their dairy herds. The increase in the "other" category is largely attributable to two major producers, one of whom is incorporating vegetables into a rotation of corn and small grains, the other switching to potatoes and green vegetables. The balance of the increase in this category is due to additional acres planted to beans, apples, vegetables, and sweet corn. Among rejected bidders there are only minor changes projected in the proportions of land under the various

Table 6. Crop rotations on farms with accepted DTP bids

Rotation	1982-86		1987-91	
	Acres	Percent	Acres	Percent
Hay	24,413	33.1	16,020	36.5
Corn silage/hay	18,907	25.7	5,066	11.6
Corn grain/hay	6,514	8.8	3,812	8.7
Corn silage	4,706	6.4	1,033	2.4
Corn grain	2,254	3.1	2,827	6.4
Small grain/corn	903	1.2	592	1.4
Small grain/hay	1,988	2.7	1,366	3.1
Small grain/corn/hay	12,434	16.9	8,769	20.0
Other	1,549	2.1	4,365	9.9
Total	73,668	100.0	43,850	100.0

Table 7. Crop rotations on farms with rejected DTP bids

Rotation	1982-86		1987-91	
	Acres	Percent	Acres	Percent
Hay	23,071	31.2	15,943	29.2
Corn silage/hay	20,151	27.2	15,779	28.9
Corn grain/hay	7,260	9.8	4,464	8.2
Corn silage	4,215	5.7	2,663	4.9
Corn grain	1,271	1.7	1,124	2.1
Small grain/corn	1,069	1.4	760	1.4
Small grain/hay	1,738	2.3	1,023	1.9
Small grain/corn/hay	13,890	18.8	12,074	22.1
Other	1,366	1.8	728	1.3
Total	74,031	100.0	54,558	100.0

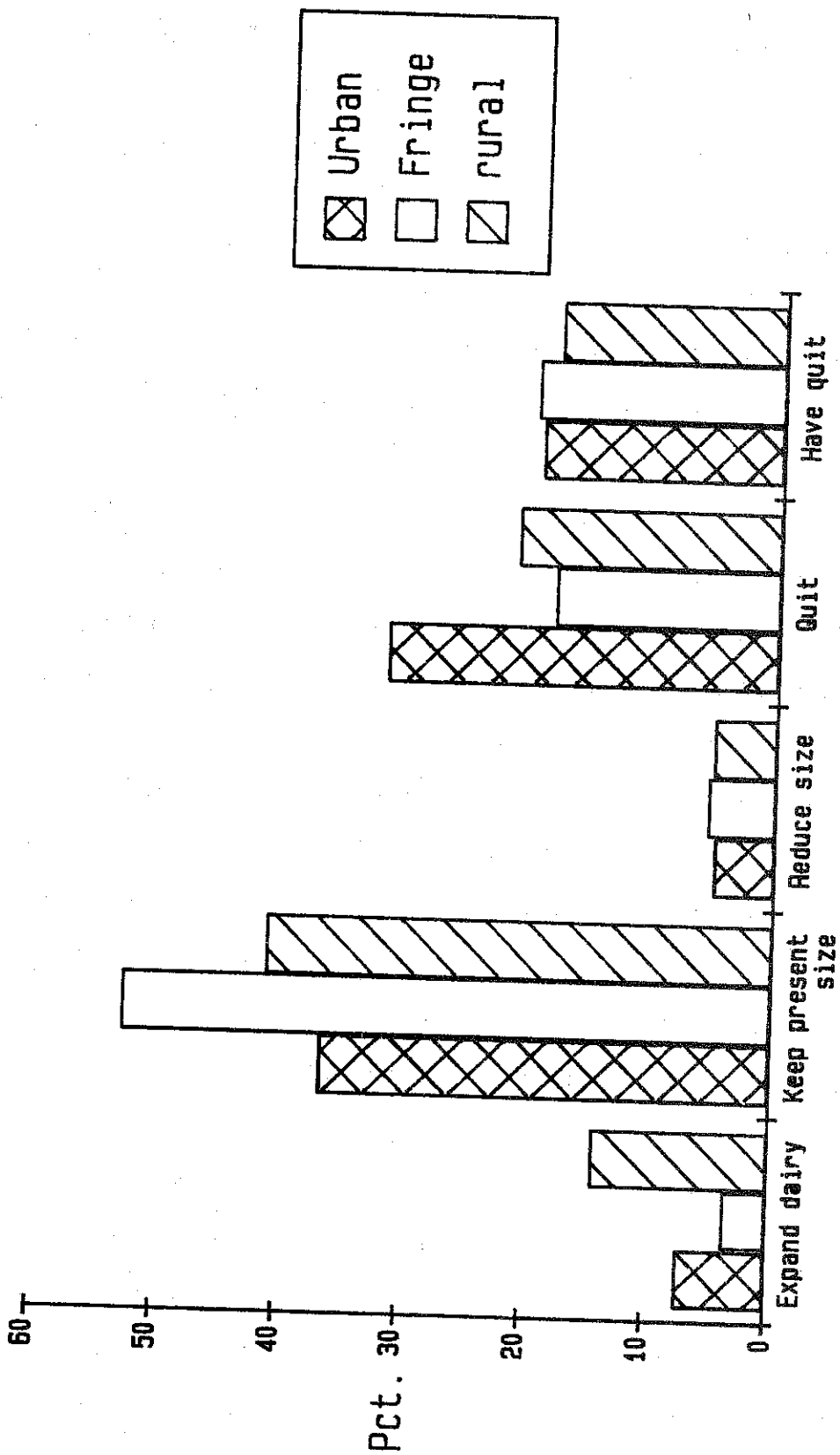
cropping rotations. The data show an insignificant decrease in the proportion of land in continuous hay and marginal increases in the proportions in corn silage/hay and small grains/corn/hay rotations.

Regional Contrasts

The survey results presented thus far are based on statewide data. It would be expected that there are some differences in land use changes in different parts of New York State, and indeed there are. One distinction that can be made is between farmers in New York's metropolitan and non-metropolitan counties. For our purposes, New York's Standard Metropolitan Statistical Areas (SMSA) are placed in two groups -- urban or fringe -- depending on the location of central cities. Urban counties contain a central city with a population of 50,000 or more; fringe counties are metropolitan counties adjacent to urban counties. All remaining counties are nonmetropolitan and designated rural. This distinction is particularly appropriate for New York because it gives an indication of relative degrees of urban influence, as reflected in commuting distance to large central cities.

Rejected bidders in urban counties are more inclined to quit dairy farming than their counterparts in rural areas; 31.7 percent of farmers near urban centers plan to stop dairy farming in the next five years, and 19.5 percent have already quit (figure 2). The percentages for farmers in rural counties are 20.4 percent and 17.6 percent, respectively, which is about the same as the statewide proportions. This result is not surprising since rejected bidders in urban counties generally have more nonfarm income options than do rejected bidders in rural counties. At the other extreme, rejected bidders situated in urban counties have materially different views on the immediate prospects for expanding their dairy operations. Well

Figure 2. Rejected bidders' plans for next five years in urban, fringe, and rural counties



under 10 percent of all rejected bidders in urban counties are considering an expansion; fewer than 5 percent plan to increase herd size in fringe counties. Nearly one-fifth of all producers in rural counties plan to expand their dairy operations. This result is consistent with the hypothesis that farmers in more isolated locations are more willing to make the investments required to expand their dairy enterprises, compared to producers confronted with greater urban pressure.

A second useful distinction that can be made is between farmers in different Major Land Resource Areas (MLRA). A MLRA is a geographically associated land resource unit within which physical and climatic conditions are relatively homogeneous. Examination of the data by MLRA reveals that development pressure and the quality of the agricultural resource base are both important factors in determining the fate of dairy farmland. Table 8 compares farmland sales and intended uses for the Ontario Lake Plain region (MLRA 101) and the Hudson Valley (MLRA 144). Approximately half of Hudson Valley farmers who submitted bids are selling at least some of their farmland, compared to less than a third of the farmers in the Lake Plain region. This is true for farmers whose bids were rejected as well as those accepted into the DTP. The higher rate of land sales in the Hudson Valley may be attributed to higher land prices associated with the strong development pressure in that region. Land sales in the Lake Plain region are lower, not only because of less development pressure, but also because of greater potential for nondairy agricultural enterprises in that part of the state. Nearly half of the farmers from the Lake Plain region who were accepted into the buyout are planning to continue farming full-time in a nondairy enterprise, whereas only a third of their Hudson Valley counterparts plan to farm on a full-time basis. Data presented in table 8 also

Table 8. Land sales and intended uses in Ontario Lake Plain and Hudson Valley

	Ontario Lake Plain						Hudson Valley					
	Bid accepted			Bid rejected			Bid accepted			Bid rejected		
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Land sales:												
Sold or selling	15	26.3	18	30.0	25	48.1	12	52.2				
Not selling any	42	73.7	42	70.0	27	51.9	11	47.8				
Total	57	100.0	60	100.0	52	100.0	23	100.0				
Intended uses:												
Agriculture	6	853	5	1,971	7	565	4	967				
Development	8	551	9	888	16	1,159	6	950				
Other*	1	100	2	175	3	381	3	234				
Total	15	1,504	16	3,034	26	2,105	13	2,151				

*Includes respondents who were uncertain about future uses of land.

show that the farmland that is being sold in the Hudson Valley is mostly being converted to residential or commercial use, while the majority of the farmland being sold in the Lake Plain region is remaining in agricultural production.

Discussion

The U.S. Congress has recently shown increased interest in direct payments to dairy farmers who are willing to reduce milk production. The implications of such programs for the management of rural land are uncertain but are of considerable importance in the Northeast. The USDA's 1986 Dairy Termination Program attracted a bid from about one-fifth of New York's milk producers. This paper has dealt with the preliminary findings of a survey designed to learn more about the future plans of these producers and their intentions for managing the farmland they own and lease from others.

Our results show that although milk production is terminated under contract with the USDA, 60 percent of all farmers with DTP bids accepted plan to continue their farm business in the near term. This certainly has implications for other (nondairy) agricultural producers who are also plagued by chronic surplus production and depressed market prices. Only 16 percent of all farmers with accepted DTP bids are retiring from farming in the next five years, but more than half of all DTP participants have no current plans to resume milk production at the end of their contract period. In contrast, about 40 percent of all producers whose bids were rejected by the USDA plan to exit the dairy industry in the coming five

years. Those remaining show a keen interest in another round of bidding for a whole-herd buyout should the USDA authorize it in the years to come.²

Exit from the dairy industry often triggers land sales, regardless of the availability of public funds via the DTP. The survey results show that in the New York situation, a substantially higher proportion of land on farms with an accepted DTP bid is expected to be irreversibly converted to a developed use by the new owner. This outcome precludes future use for food and fiber production and reflects regional differences in the structure of effective demand for farm real estate. This result clearly shows that DTP participants have relatively more of the financial benefits attendant to ripe prospects for converting land to a higher use.

Cropping patterns on land retained for farm use by DTP participants require study in greater depth, but our findings show that producers are making material adjustments in cropping patterns in the wake of terminated milk production. A noteworthy adjustment involves marginal reductions in rotations including hay crops, and marginal increases in the amount of row crops in rotation. Adjustments of this sort on erosion-prone cropland can increase the vulnerability of land resources to soil loss from rainfall.

² Under the Food Security Act, the Secretary of Agriculture is authorized to implement additional dairy buyout programs through 1990 at his discretion.

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