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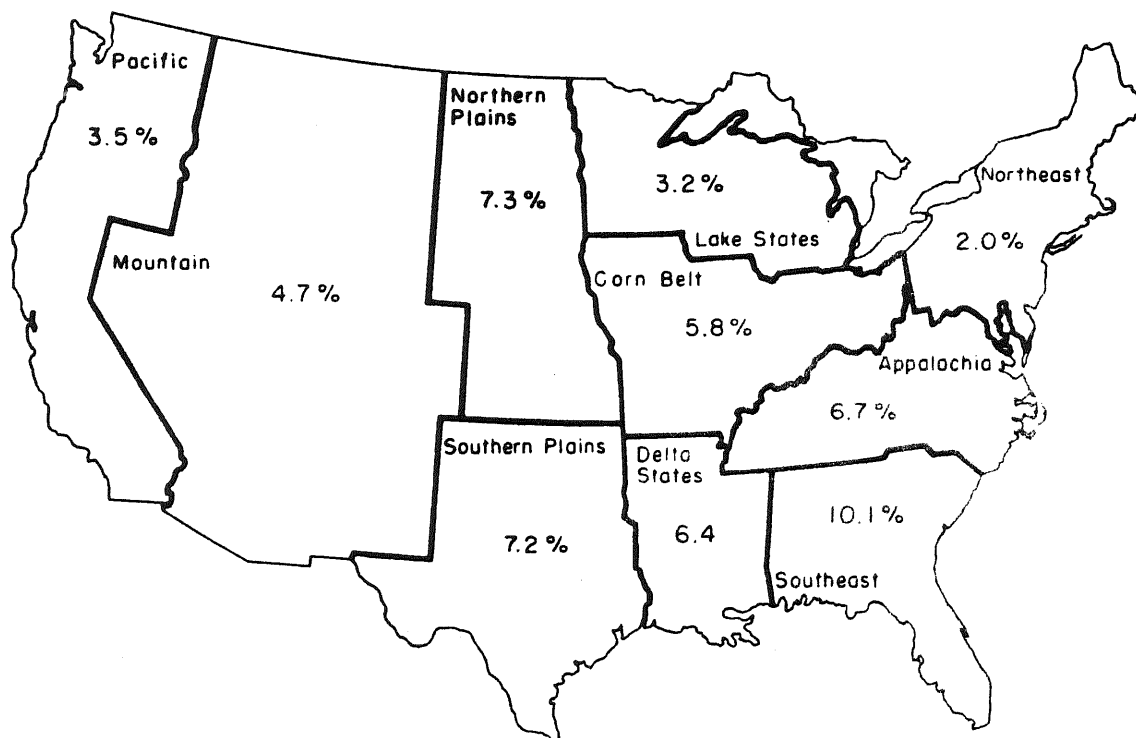
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THE IMPACT OF THE MILK DIVERSION PROGRAM ON U.S. MILK PRODUCTION



ADJUSTED DIVERSION AS A SHARE OF 1983 PRODUCTION BY REGION

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Preface

Robert D. Boynton and Andrew M. Novakovic are Associate and Assistant Professors, respectively, in the Department of Agricultural Economics at Cornell University. This bulletin was prepared for publication by Wendy Barrett.

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The data used in this publication are the latest sign-up numbers released by ASCS. It is possible, however, that revised milk diversion program sign-up numbers could be subsequently issued.

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Summary

There were 37,888 farms, representing about 21% of all commercial dairy farms in the U.S., which entered MDP contracts. This participation rate is well above the 12% reported earlier based on all U.S. farms with milk cows. Although some still consider the sign-up disappointing, a larger sign-up could have been especially disruptive in milk markets across the country.

The participating farms averaged a contracted reduction level (compared to base marketings) of 22.9%. About 83% of the participants indicated they planned to reduce their marketings by additional culling, and about 45% indicated they would adjust their feed rations. Nationally, the additional culling due to the MDP is reported to represent about 61% of the normal culling rate and would remove an additional 9 cows out of the average participant's 55 cow herd.

Taking into account the changes in the marketings of participating farmers that occurred in 1983 relative to the base period, it is possible to estimate how much of the reported diversion actually took place in 1983. The remainder of the contracted reduction will occur during the MDP program; it is called the "adjusted diversion" and is 78.5% of the reported diversion for 1984. In other words, of the 7.5 billion pound 12-month contracted diversion, about 1.6 billion pounds was already cut in 1983, leaving a net or adjusted diversion of about 5.9 billion pounds. If one further takes into account that there will be some farmers who retire entirely in 1984 and that the farmers who did not participate in the program are likely to increase their marketings, then it appears that milk production in 1984 will be about 136.5 billion pounds--a net reduction of 3.5 billion pounds. Assuming a one percent increase in commercial sales, this would imply government net removals under the price support program of about 12 billion pounds in 1984 at a net program cost of just over \$2 billion.

There were significant differences in participation levels across regions. Whether measured by the relative number of farmers participating or by the relative change in milk production, the lowest participation rate was in the Northeast and the highest rate was in the Southeast. The major dairy producing regions--the Northeast, Lake States, and Pacific--were consistently below U.S. average participation rates.

Introduction

The purpose of this paper is two-fold: first, to summarize the results of the recent sign-up under the new Milk Diversion Program for the United States, by states and regions and second, to interpret these results and analyze their implications. The Milk Diversion Program (MDP) is one of four components of the Dairy Production Stabilization Act of 1983 (DPSA), which also included an initial 50¢/hundredweight cut in the support price (with authorization for other adjustments in 1985), a 50¢/hundredweight nonrefundable assessment on milk marketed, and a national dairy promotion program funded by dairy farmers. For further details on the DPSA, see Novakovic [1983].

The basic feature of the MDP is cash payments to farmers who signed a contract agreeing to market less milk between January 1, 1984 and March 31, 1985 than they did during a specified base period. Participating farmers can receive a payment of \$10 per hundredweight on the difference between actual marketings and base marketings; however, an individual farmer's actual marketings for this period must be at least 5% less than his/her base marketings to qualify for the program and no payment will be made for reductions of more than 30% below base marketings. Beyond this, there are a host of specific provisions and restrictions in the MDP, which establish eligibility and compliance criteria. The interested reader is referred to Boynton and Novakovic [1984a] for further details.

Given their understanding of the MDP and their best estimates of the relative benefits of participating versus not participating, farmers across the country had from November 29, 1983 (when the DPSA became law) until January 31, 1984 to decide whether or not they wished to participate in the MDP. If they chose to participate they also had to decide on the size of their marketing reduction below their base (this will be referred to as the "diversion level") and how they would achieve this level of marketings. Each farmer was confronted with a unique set of circumstances and economic factors which affected these decisions. The kinds of decisions farmers had to make and the factors affecting their choices are discussed elsewhere by Boynton and Novakovic [1984b]. The next section of this paper summarizes the participation decisions that farmers made across the United States.

A Summary of the Sign-Up

The Number of Participants

As shown in Table 1, 37,888 production units enrolled in the MDP in the U.S.^{1/} This represents about 21% of the commercial dairy farms in the county.^{2/}

^{1/} Although an MDP production unit may not correspond exactly to one's concept of a dairy farm or a dairy farmer, the two terms will be used interchangeably in this paper. Unless otherwise indicated, all U.S. data reported in this paper exclude Alaska and Hawaii.

^{2/} As used in this paper, commercial dairy farms are farms having 10 or more milk cows. This number was calculated using 1983 data on farms with milk cows and 1978 Census of Agriculture data.

Table 1. Production Units (Farms) Participating in the Milk Diversion Program

Area	No. Units Participating	Participating Units as a % of Total Farms ^{a/}	Area	No. Units Participating	Participating Units as a % of Total Farms ^{a/}
UNITED STATES (48)	37,888	21.0	Virginia	423	16.6
Maine	110	10.5	West Virginia	120	17.8
New Hampshire	60	14.0	North Carolina	225	13.3
Vermont	458	14.7	Kentucky	1,783	38.6
Massachusetts	144	21.3	Tennessee	897	28.6
Rhode Island	5	7.5	APPALACHIAN	3,448	27.2
Connecticut	116	18.0	South Carolina	85	17.7
New York	1,490	10.3	Georgia	363	39.7
New Jersey	63	10.8	Florida	185	44.6
Pennsylvania	1,227	7.8	Alabama	172	32.5
Delaware	21	13.5	SOUTHEAST	805	34.4
Maryland	199	12.4	Mississippi	354	42.7
NORTHEAST	3,893	10.1	Arkansas	459	34.8
Michigan	1,282	20.6	Louisiana	307	24.2
Wisconsin	6,597	16.2	DELTA STATES	1,120	32.8
Minnesota	5,421	25.3	Oklahoma	523	28.4
LAKE STATES	13,300	19.5	Texas	854	30.0
Ohio	1,353	17.4	SOUTHERN PLAINS	1,377	29.3
Indiana	862	18.1	Montana	50	12.6
Illinois	1,171	30.9	Idaho	579	28.0
Iowa	2,649	30.6	Wyoming	58	38.4
Missouri	1,813	39.5	Colorado	207	23.6
CORN BELT	7,848	26.5	New Mexico	36	22.5
North Dakota	594	27.1	Arizona	43	28.1
South Dakota	1,196	30.3	Utah	288	24.5
Nebraska	1,031	42.3	Nevada	7	10.1
Kansas	942	42.8	MOUNTAIN	1,268	25.1
NORTHERN PLAINS	3,763	34.9	Washington	237	15.8
			Oregon	178	15.3
			California	651	22.9
			PACIFIC	1,066	19.4

^{a/} This percentage is calculated by dividing the number of participating units by the number of commercial farms in each area. Some similar USDA numbers have been reported which are based on the number of farms with milk cows rather than the number of commercial farms. The number of commercial farms is herein defined as the number of farms with 10 or more milk cows. This number was estimated by the authors from 1983 data on the number of farms with milk cows and Census of Agriculture data on the relative number of farms with 10 or more cows in 1978.

At the state level, the relative number of farmers participating in the MDP ranged from lows of 7.5% in Rhode Island and 7.8% in Pennsylvania to a high of 44.6% in Florida.

Using the farm production regions defined by USDA, regional statistics were calculated. The Northeast had far and away the lowest farmer participation rate at 10.1% of all commercial dairy farms. Although participation in the Lake States and Pacific regions was considerably higher at 19.5% and 19.4%, the three major milk producing regions were the only regions having farmer participation rates below the national average (see Table 1 and Appendix Figures 1 and 2). The highest regional farmer participation rates occurred in the Northern Plains (34.9%), followed closely by the Southeast (34.4%) and the Delta States (32.8%).

Although participation in the Milk Diversion Program has been called "disappointing" by some, when the number of participants is compared to the number of commercial dairy farms the sign-up is considerably higher than originally reported (21% versus 12%). Moreover, an especially large sign-up could have been extremely disrupting to the dairy industry. A more gradual reduction from the record production levels of the past few years is the most viable way to achieve supply-demand balance.

Contracted Diversion Levels

Participating farmers agreed to sell 9,370 million pounds less milk during the 15 months of the program than they did during their base period, representing an average 23% reduction below their base, as shown in Table 2. The highest contracted diversion level among the states--27.3%--occurred in Arkansas. Connecticut farmers signed up for the lowest level on average--19%, and New Jersey, Maryland, and California farmers also contracted for less than a 20% reduction, on average. The three major milk producing regions had the lowest contracted percentage reductions. All other regions were above the U.S. average, with the largest contracted percentage reductions in the Delta States (26.3%) and the Southern Plains (26.2%).

Reduction Methods

Farmers who enrolled in the MDP were asked to indicate one or more methods by which they would achieve their reduced marketings; these included reducing the size of the dairy herd, changing the feed ration, reducing the number of milkings per day, and other methods (e.g., feeding milk to calves instead of marketing it). The relative number of farmers indicating they would use each method is shown in Table 3; because farmers could select more than one method the rows sum to more than 100%.

For all participants, 83% said they would increase culling, 45% plan to change their feed rations, 3% intend to revert to 2 times/day milking from 3 times/day, and 40% indicated they would use other methods. Culling was the most popular method in all states. In two-thirds of the states feeding changes ranked second. Changes in milking frequency were the least often checked and is probably not an option for many farmers outside the West, Florida and Georgia.

Table 2. Base and Diverted Marketings for Participating Units, 15 months

Area	Base Marketings ----- (million lbs.)-----	Diverted Marketings ----- (million lbs.)-----	Average % Contracted Diversion Below Base (%)
UNITED STATES (48)	40,983.2	9,370.0	22.9
Maine	112.6	27.1	24.1
New Hampshire	76.1	17.7	23.3
Vermont	532.5	112.2	21.1
Massachusetts	175.2	38.5	22.0
Rhode Island	5.0	1.3	25.9
Connecticut	194.4	36.9	19.0
New York	1,672.1	367.3	22.0
New Jersey	102.5	20.4	19.9
Pennsylvania	1,214.2	254.0	20.9
Delaware	24.5	5.2	21.4
Maryland	271.2	53.1	19.6
NORTHEAST	4,380.4	933.8	21.3
Michigan	1,283.3	280.1	21.8
Wisconsin	5,164.6	1,063.9	20.6
Minnesota	3,458.0	786.2	22.7
LAKE STATES	9,905.8	2,130.3	21.5
Ohio	1,226.1	266.5	21.7
Indiana	709.3	160.6	22.7
Illinois	1,058.4	224.3	21.2
Iowa	1,698.4	398.8	23.5
Missouri	1,523.4	387.6	25.4
CORN BELT	6,215.6	1,437.7	23.1
North Dakota	344.5	87.9	25.5
South Dakota	743.7	188.8	25.4
Nebraska	706.1	173.3	24.6
Kansas	831.3	197.5	23.8
NORTHERN PLAINS	2,625.7	647.5	24.7
Virginia	597.7	126.8	21.2
West Virginia	117.0	25.5	21.8
North Carolina	384.1	84.8	22.1
Kentucky	1,172.1	309.6	26.4
Tennessee	940.8	246.5	26.2
APPALACHIAN	3,211.8	793.1	24.7
South Carolina	189.5	41.8	22.1
Georgia	744.3	191.0	25.7
Florida	1,618.2	405.9	25.1
Alabama	305.3	79.9	26.2
SOUTHEAST	2,857.3	718.7	25.2

-continued-

Table 2. (continued)

Area	Base Marketings -----(million lbs.)-----	Diverted Marketings	Average % Contracted Diversion Below Base (%)
Mississippi	414.0	111.2	26.9
Arkansas	445.1	121.7	27.3
Louisiana	444.5	110.2	24.8
DELTA STATES	1,303.6	343.2	26.3
Oklahoma	586.4	150.7	25.7
Texas	1,822.3	479.1	26.3
SOUTHERN PLAINS	2,408.7	629.9	26.2
Montana	79.3	17.0	21.4
Idaho	775.6	202.1	26.1
Wyoming	59.7	14.5	24.3
Colorado	410.5	103.9	25.3
New Mexico	159.6	42.8	26.8
Arizona	445.5	107.4	24.1
Utah	477.5	106.9	22.4
Nevada	80.2	18.1	22.6
MOUNTAIN	2,487.9	612.7	24.6
Washington	671.3	158.9	23.7
Oregon	358.2	79.4	22.2
California	4,556.8	884.9	19.4
PACIFIC	5,586.3	1,123.1	20.1

Table 3. Marketing Reduction Methods Chosen

Area	Extra Culling	Ration Changes	Changing From 3x/day to 2x/day Milking (%)	Other Means
UNITED STATES (48)	83.1	44.6	2.7	39.9
Maine	78.2	69.1	2.7	28.2
New Hampshire	86.7	46.7	3.3	18.3
Vermont	76.9	69.9	1.1	27.1
Massachusetts	86.1	59.7	3.5	29.2
Rhode Island	80.0	80.0	0.0	0.0
Connecticut	88.8	72.4	3.4	32.8
New York	72.6	69.1	4.9	42.1
New Jersey	74.6	74.6	1.6	36.5
Pennsylvania	82.1	56.1	3.1	41.2
Delaware	90.5	66.7	4.8	23.8
Maryland	82.9	45.7	0.5	32.7
NORTHEAST	78.1	63.4	3.4	37.8
Michigan	85.8	47.0	2.6	32.0
Wisconsin	85.9	54.0	1.5	42.7
Minnesota	84.8	51.6	1.5	43.1
LAKE STATES	85.5	52.4	1.6	41.8
Ohio	85.1	41.1	2.4	31.7
Indiana	89.6	35.6	2.8	25.2
Illinois	89.8	32.0	1.1	32.0
Iowa	87.4	27.8	1.2	35.1
Missouri	82.2	34.5	2.9	44.4
CORN BELT	86.4	33.1	2.0	35.1
North Dakota	71.7	27.4	1.3	58.6
South Dakota	75.0	22.6	0.7	55.3
Nebraska	85.5	22.6	1.6	37.7
Kansas	89.5	23.1	1.8	37.7
NORTHERN PLAINS	81.0	23.5	1.3	46.6
Virginia	83.5	56.7	4.0	28.1
West Virginia	74.2	53.3	4.2	35.0
North Carolina	80.9	64.9	4.4	26.2
Kentucky	76.3	35.9	3.7	49.5
Tennessee	74.5	55.3	2.6	43.5
APPALACHIAN	76.9	46.0	3.5	43.3
South Carolina	95.3	68.2	4.7	44.7
Georgia	80.7	72.5	7.2	34.7
Florida	88.6	36.8	8.6	26.5
Alabama	84.9	58.7	1.7	35.5
SOUTHEAST	85.0	60.9	6.1	34.0

-continued-

Table 3. (continued)

Area	Extra Culling	Ration Changes	Changing From 3x/day to 2x/day Milking (%)	Other Means
Mississippi	65.0	54.8	2.0	57.9
Arkansas	80.8	35.7	0.4	56.9
Louisiana	72.6	28.3	1.0	42.0
DELTA STATES	73.6	39.7	1.1	53.1
Oklahoma	82.2	31.9	3.3	43.8
Texas	78.8	39.5	4.8	38.6
SOUTHERN PLAINS	80.1	36.6	4.2	40.6
Montana	84.0	14.0	2.0	36.0
Idaho	80.1	26.3	5.7	36.1
Wyoming	67.2	41.4	5.2	44.8
Colorado	90.3	36.7	9.7	23.7
New Mexico	72.2	30.6	8.3	61.1
Arizona	79.1	44.2	34.9	23.3
Utah	89.2	38.5	4.9	28.5
Nevada	71.4	57.1	14.3	71.4
MOUNTAIN	83.1	31.9	7.1	33.2
Washington	85.7	52.7	14.3	33.3
Oregon	88.2	50.0	11.8	24.7
California	85.4	54.5	13.8	17.5
PACIFIC	85.9	53.4	13.6	22.2

The range in the relative number of farmers who selected a particular method is rather large across states. In Mississippi and Wyoming, less than 70% of the participants indicated they would do any extra culling. In South Carolina, Delaware, and Colorado, over 90% of the participants checked the culling method. The range in the relative use of culling across regions is fairly small with a low of 74% in the Delta States and a high of 86% in the Corn Belt. The relative use of ration changes as a reduction method ranged from a low of 14% in Montana to a high of 80% in Connecticut. Regionally, ration changes seemed to be least popular in a broad central area of the U.S., particularly in the Northern Plains, Mountain and Corn Belt regions.

While these numbers may provide some insights into the methods which farmers will use to reduce their marketings, it should be recognized that farmers are in no way bound to use any or all of the methods they checked, nor are these data a good indication of the extent to which any particular farmer will rely on one method versus another. The data which follow, however, provide some information on the intensity of herd reduction by participating farmers.

Planned Additional Culling

Participating farmers were asked to indicate their normal culling rates and the additional number of cattle they planned to cull during the 15 months of the program. This information is summarized in Table 4, which shows average herd size as reported by participating farmers for the fourth quarter of 1983, planned additional culling from January 1984 to March 1985, and planned additional culling as a percent of estimated normal culling.

The average herd size of all participants is 55 cows and ranges from around 32 cows in North Dakota to 474 cows in Nevada. The average herd size was below 40 cows in five states and above 300 cows in four states. Average herd sizes and additional culling by region are illustrated in Appendix Figure 3.

The planned additional culling represents about half of the normal culling estimated by participating farmers, but there is a tremendous range in this figure. Two states report intended additional culling which exceeds normal culling, with a high of over twice normal levels in Rhode Island. Additional culling is reported to be only about one-third of normal culling in three other states, with a low of 31% of normal in New Jersey. Regionally, participants in the Southeast and Pacific report the lowest additional culling compared to normal levels; the highest relative level occurs in the Corn Belt and the Midwest in general.

Implications for U.S. Milk Production

Although it is tempting to directly infer a decrease in 1984 marketings, relative to 1983 levels, from the level of contracted diversions (see Table 2), it is probably inadvisable to do so. The contracted level of diverted marketings is a poor estimate of future changes in total marketings for four reasons. The first three reasons result from the fact that the diversion levels reported represent cutbacks relative to base marketings not marketings in 1983 or expected marketings in 1984. The first of these reasons involves farmers whose marketings were greater in 1983 than they were during the base period. These

Table 4. Average Herd Size and Extra Culling Planned by Participating Units During the 15-Month Program

Area	Average No. of Cows Milked, 4th Qtr. 1983	Intended Extra Cow Culling	Extra Culls as a % of Normal Culling
UNITED STATES (48)	55	9	61.4
Maine	51	9	61.3
New Hampshire	67	13	71.6
Vermont	60	8	48.6
Massachusetts	63	11	60.9
Rhode Island	55	3	212.5
Connecticut	80	14	57.5
New York	57	8	50.6
New Jersey	80	7	31.5
Pennsylvania	52	8	60.5
Delaware	61	12	107.0
Maryland	71	9	48.8
NORTHEAST	58	8	54.1
Michigan	52	9	67.7
Wisconsin	41	7	69.2
Minnesota	34	6	72.1
LAKE STATES	39	7	70.0
Ohio	46	9	74.5
Indiana	44	9	84.3
Illinois	47	9	75.5
Iowa	36	7	75.7
Missouri	46	8	80.3
CORN BELT	43	8	77.4
North Dakota	32	5	72.4
South Dakota	35	6	68.4
Nebraska	40	7	72.4
Kansas	47	9	70.2
NORTHERN PLAINS	39	7	70.5
Virginia	71	11	60.1
West Virginia	50	7	59.7
North Carolina	84	15	77.4
Kentucky	39	6	87.6
Tennessee	55	7	63.6
APPALACHIAN	50	8	72.6
South Carolina	119	16	57.0
Georgia	106	14	58.4
Florida	449	64	34.4
Alabama	93	14	65.0
SOUTHEAST	183	26	42.2

-continued-

Table 4. (continued)

Area	Average No. of Cows Milked, 4th Qtr. 1983	Intended Extra Cow Culling	Extra Culls as a % of Normal Culling
Mississippi	63	8	60.7
Arkansas	51	8	86.4
Louisiana	78	8	53.3
DELTA STATES	62	8	65.8
Oklahoma	57	9	68.2
Texas	101	14	62.8
SOUTHERN PLAINS	84	12	64.3
Montana	79	18	83.3
Idaho	66	11	62.7
Wyoming	52	11	80.1
Colorado	91	18	52.7
New Mexico	188	33	50.2
Arizona	422	91	56.5
Utah	83	13	56.3
Nevada	474	106	54.0
MOUNTAIN	92	17	58.2
Washington	127	23	65.2
Oregon	95	16	53.5
California	304	38	35.5
PACIFIC	230	31	39.6

farmers must first reduce their current sales levels down to their base before they become eligible for payments, but the amount of these reductions is not reported in contracted diversions. This would cause the reported diversion levels to understate the level of new reductions or reductions relative to more recent marketings.

The second factor has the opposite effect. For various reasons, many participating farmers actually had lower marketings in 1983 than during their base period. They are eligible to receive payments based on cuts they achieved before the MDP began. While perfectly legal, this implies that some diversion monies will pay for old reductions. In these cases, corresponding declines in 1984 marketings (relative to 1983) will not be achieved.

Using data on marketings by participating farmers in 1983 and their reported diverted marketings (Table 2), a rough estimate was made of the net effect of these two factors. These estimates, reported in Table 5, indicate that the effect of the second factor dominates the first. Nationally, the expected net diversion (adjusted diversion in Table 5) is 78.5% of the reported diverted marketings. In other words, the increases and decreases in marketings during 1983 relative to the base period, which are not captured in the reported diversion volumes, net out to a decrease in 1983 marketings (compared to the base period) of participating farmers equal to 21.5% of their reported diverted marketing. In only three states--New Hampshire, Oregon, and Kentucky--are the adjusted diversions greater than the reported diversion; i.e., only in these states are the reductions relative to 1983 marketings greater than those implied by the reductions relative to base marketings. At the other end of the spectrum, 53.6% of the reported diversions in Louisiana took place in 1983.

The impact of these adjustments is illustrated for regions in Appendix Figure 4. The first number reported is the contracted percentage reduction from base (from Table 2). The second number is the adjusted diversion as a percentage of the 1983 marketings of participating farms (calculated from Table 5). This latter figure further illustrates that the actual, new reductions on participating farms is lower than indicated by the reported diversion levels. It also demonstrates significant regional differences. Using either reported or adjusted diversion levels, the Pacific region has the lowest percentage reduction. However, the Delta States report the highest percentage reduction relative to base marketings, but they are actually below the U.S. average when adjusted diversion levels are compared. The Mountain region also reverses positions from being above average reduction on a contract basis to being below average when taking into account reductions that occurred in 1983.

The adjusted diversion levels listed in Table 5 can also be compared to total 1983 production, as is done in Table 6. This provides a rough estimate of the impact on total 1984 production of the Milk Diversion Program alone.

The adjusted diversion represents 4.2% of the amount of milk produced in the U.S. in 1983. On a state basis, the adjusted diversion as a percentage of 1983 production ranges from a low of 1.3% in Rhode Island to a high of 12.8% in Florida. The region having the lowest expected reduction is the Northeast at 2.0%, and the three major milk producing regions are expected to reduce relatively less than the U.S. average. The Southeast is expected to have the greatest reduction of 10.1%.

Table 5. 1983 Marketings of Participants and an Estimate of the Marketing Reductions to be Realized in 1984 by Participants in the Milk Diversion Program

Area	12-Month Base			Adjusted Share of Reported Diversion (%)
	1983 Marketings ^{a/}	Less 1983 Marketings ^{b/}	Adjusted Diversion ^{c/}	
	----- (million lbs.) -----			
UNITED STATES (48)	31,189.4	1,610.0	5,888.9	78.5
Maine	87.3	3.2	18.6	85.1
New Hampshire	63.1	-2.5	16.5	117.4
Vermont	399.4	27.4	62.6	69.5
Massachusetts	134.5	5.2	25.5	83.2
Rhode Island	3.6	0.4	0.6	59.2
Connecticut	148.8	6.4	23.0	78.2
New York	1,247.4	88.8	204.9	69.8
New Jersey	75.4	6.7	9.6	58.8
Pennsylvania	930.8	40.5	162.7	80.1
Delaware	17.9	1.8	2.5	58.3
Maryland	203.9	12.9	29.6	69.6
NORTHEAST	3,312.0	190.9	556.1	74.4
Michigan	1,022.3	10.9	214.7	95.2
Wisconsin	3,870.4	282.6	573.5	67.0
Minnesota	2,607.9	138.5	486.2	77.8
LAKE STATES	7,500.6	432.0	1,274.5	74.7
Ohio	960.4	23.3	190.5	89.1
Indiana	551.2	18.3	110.8	85.8
Illinois	836.3	10.6	168.9	94.1
Iowa	1,295.6	67.9	252.3	78.8
Missouri	1,195.6	29.7	282.2	90.5
CORN BELT	4,839.1	149.7	1,004.7	87.0
North Dakota	272.2	4.6	66.1	93.5
South Dakota	560.5	38.3	113.8	74.8
Nebraska	534.4	36.1	104.0	74.2
Kansas	637.1	28.3	129.8	82.1
NORTHERN PLAINS	2,004.2	107.3	413.6	79.4
Virginia	458.7	18.0	83.2	82.2
West Virginia	90.8	2.8	17.6	86.1
North Carolina	289.0	15.9	51.4	76.4
Kentucky	965.2	-18.9	269.0	107.5
Tennessee	720.4	30.7	166.2	84.4
APPALACHIAN	2,524.2	48.5	587.4	92.4
South Carolina	142.4	6.9	26.0	78.9
Georgia	558.7	26.1	124.0	82.6
Florida	1,218.3	46.8	270.5	85.2
Alabama	226.7	14.2	48.9	77.5
SOUTHEAST	2,146.0	94.0	469.3	83.3

-continued-

Table 5. (continued)

Area	12-Month Base		Adjusted Diversion ^{c/}	Adjusted Diversion as Share of Reported Diversion (%)
	1983 Marketings ^{a/}	Less 1983 Marketings ^{b/}		
	----- (million lbs.) -----			
Mississippi	291.1	35.0	52.7	60.1
Arkansas	338.3	16.3	80.6	83.2
Louisiana	300.6	46.1	39.9	46.4
DELTA STATES	930.0	97.3	173.2	64.0
Oklahoma	440.6	28.2	92.3	76.6
Texas	1,346.9	98.4	281.7	74.1
SOUTHERN PLAINS	1,787.4	126.6	373.9	74.7
Montana	60.5	3.7	10.1	73.4
Idaho	584.8	45.0	119.2	72.6
Wyoming	42.4	5.5	6.1	52.8
Colorado	301.2	29.1	54.5	65.2
New Mexico	124.4	5.4	29.4	84.5
Arizona	315.8	34.6	49.9	59.0
Utah	367.4	19.7	67.0	77.3
Nevada	61.1	2.8	11.6	80.3
MOUNTAIN	1,857.5	145.8	347.8	70.5
Washington	538.9	4.1	124.4	96.8
Oregon	297.8	-8.4	72.6	113.1
California	3,451.7	222.0	491.4	68.9
PACIFIC	4,288.5	217.7	688.3	76.0

^{a/} Actual reported marketings for the January 1983 through November 1983 period, with December 1983 marketings estimated as the average of October and November 1983.

^{b/} This figure is a measure of the net decrease in the marketings of participating farms between their base period and 1983. A positive (negative) number indicates that 1983 marketings averaged below (above) base period marketings for the total number of participants.

^{c/} This figure is calculated by subtracting the net decrease in marketings (column 2) from the contracted quantity of diverted milk (adjusted to 12 months, see Table 2). This figure does not take into account the possible decrease in 1984 marketings due to participating farms selling even less milk than their contracts indicate (e.g., whole farm retirement or achieving up to 3% more in reductions than the contracted level) or the possible increases in marketings of non-participating farms.

Table 6. Total 1983 Production and an Estimate of the Marketing Reductions to be Realized in 1984 by Participants in the Milk Diversion Program

Area	1983 Production -----(million lbs.)-----	Adjusted Diversion	Adjusted Diversion as Share of Production (%)
UNITED STATES (48)	139,246	5,888.9	4.2
Maine	741	18.6	2.5
New Hampshire	381	16.5	4.3
Vermont	2,412	62.6	2.6
Massachusetts	611	25.5	4.2
Rhode Island	46	0.6	1.3
Connecticut	654	23.0	3.5
New York	11,691	204.9	1.8
New Jersey	500	9.6	1.9
Pennsylvania	9,510	162.7	1.7
Delaware	137	2.5	1.8
Maryland	1,605	29.6	1.8
NORTHEAST	28,288	556.1	2.0
Michigan	5,528	214.7	3.9
Wisconsin	23,800	573.5	2.4
Minnesota	10,913	486.2	4.5
LAKE STATES	40,241	1,274.5	3.2
Ohio	4,760	190.5	4.0
Indiana	2,364	110.8	4.7
Illinois	2,706	168.9	6.2
Iowa	4,339	252.3	5.8
Missouri	3,100	282.2	9.1
CORN BELT	17,269	1,004.7	5.8
North Dakota	1,067	66.1	6.2
South Dakota	1,829	113.8	6.2
Nebraska	1,415	104.0	7.3
Kansas	1,382	129.8	9.4
NORTHERN PLAINS	5,693	413.6	7.3
Virginia	2,070	83.2	4.0
West Virginia	380	17.6	4.6
North Carolina	1,711	51.4	3.0
Kentucky	2,414	269.0	11.1
Tennessee	2,250	166.2	7.4
APPALACHIAN	8,825	587.4	6.7
South Carolina	573	26.0	4.5
Georgia	1,395	124.0	8.9
Florida	2,112	270.5	12.8
Alabama	573	48.9	8.5
SOUTHEAST	4,653	469.3	10.1

-continued-

Table 6. (continued)

Area	1983 Production -----(million lbs.)-----	Adjusted Diversion	Adjusted Diversion as Share of Production (%)
Mississippi	883	52.7	6.0
Arkansas	873	80.6	9.2
Louisiana	955	39.9	4.2
DELTA STATES	2,711	173.2	6.4
Oklahoma	1,173	92.3	7.9
Texas	3,990	281.7	7.1
SOUTHERN PLAINS	5,163	373.9	7.2
Montana	355	10.1	2.8
Idaho	2,298	119.2	5.2
Wyoming	136	6.1	4.5
Colorado	987	54.5	5.5
New Mexico	938	29.4	3.1
Arizona	1,237	49.9	4.0
Utah	1,172	67.0	5.7
Nevada	237	11.6	4.9
MOUNTAIN	7,360	347.8	4.7
Washington	3,482	124.4	3.6
Oregon	1,363	72.6	5.3
California	14,758	491.4	3.3
PACIFIC	19,603	688.3	3.5

These percentage reductions relative to 1983 production levels by regions are illustrated in Appendix Figure 4, along with two other variables that indicate the extent to which each region is contributing to the overall reduction. The first of these variables is the regional U.S. adjusted diversion as a percentage of the total adjusted diversion; the second is the regional share of total 1983 milk production. In the Northeast, the adjusted diversion represents 9.4% of the total; yet the Northeast produced over 20% of the milk in the U.S. last year. At the other extreme, the Southeast had only 3.3% of the nation's milk production in 1983, but it represents 8% of the total adjusted diversion. The Mountain region is the most evenly balanced with 5.9% of the adjusted diversion and 5.3% of U.S. milk production in 1983. Like the Northeast, the Lake States and Pacific regions have a greater share of the total milk produced in 1983 than they do of the total adjusted diversion. No other region comes close to the Southeast on the high side of this comparison.

At the beginning of this section, it was stated that four factors would affect the level of milk production in 1984. So far only two have been discussed. The third factor works in the same direction as the first. The reported diversion volume does not take into account those participating farmers who will reduce more than the level indicated on their contracts. For example, a number of participants may retire from dairy farming in 1984; even if they sign up for the maximum level--30%--the contract would fail to report the remaining portion of the reduction. This would result in reported diversion levels that underestimate the actual reduction. Over one-fourth of the participating farmers signed up for the maximum percentage reduction. A sizeable share of these farmers may permanently exit the dairy sector, but there is no way to estimate how many will or how much milk it represents.

The fourth and final factor that will affect the estimate of 1984 milk production and marketings involves what the farmers will do who did not sign up for the MDP. Some nonparticipants will increase their production, some will decrease production or retire, and there will be a few new entrants to the dairy business. The net increase or decrease in the marketings of nonparticipants is harder to calculate than what participating farmers will do, but it seems likely that on net the nonparticipants will increase output over their 1983 levels. If a normal improvement in production per cow on the nonparticipating farms is assumed, this would imply an increase in production of two to four billion pounds in 1984.

Based on a consideration of all these factors, it would appear that milk production in 1984 will be less than it was in 1983, but it will not be lowered by 7.5 billion pounds (the reported diversion) nor by 5.9 billion pounds (the adjusted diversion). It is estimated that the reduction in 1984 will be about 3.5 billion pounds, such that milk production in the United States in 1984 seems likely to total about 136.5 billion pounds or slightly more than what it did in 1982.

Implications for the Dairy Price Support Program

With this level of milk production in 1984 and if we assume a reasonable but healthy increase in dairy product consumption of about one percent over 1983, net removals under the price support program would total about 12 billion pounds. Taking into account the cost of USDA purchases, the diversion payments, and the 50¢/cwt. assessment, the net cost of the support program in 1984 should be about \$2.1 billion. For further information on recent trends in dairy markets and the outlook for 1984, see Novakovic [1984].

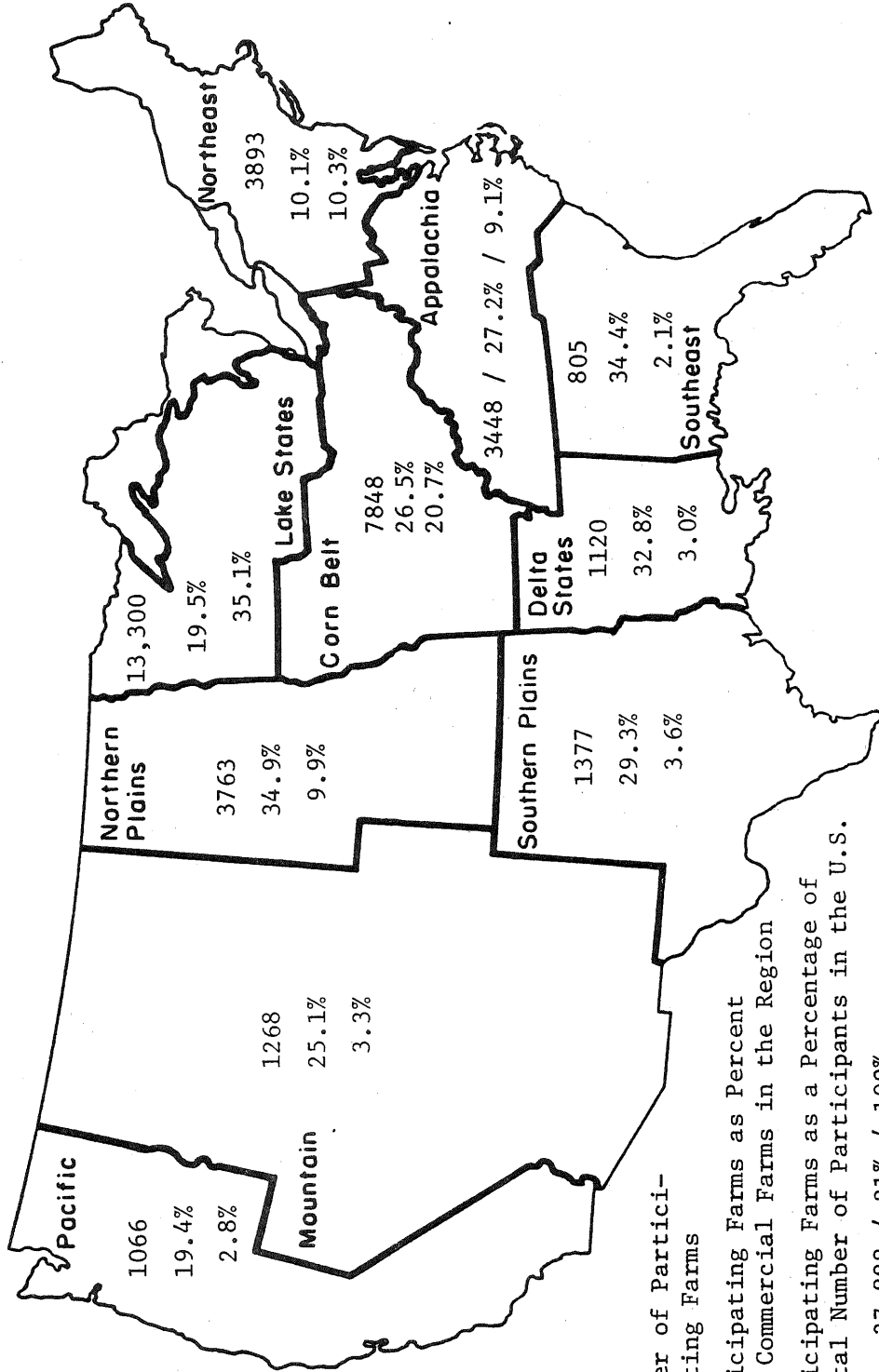
REFERENCES

- Boynton, Robert D. and Andrew M. Novakovic (1984a). A Summary and Interpretation of ASCS Rules and Procedures Governing the Operation of the Milk Diversion Program, Cornell Agr. Economics Staff Paper No. 84-1, January.
- Boynton, Robert D. and Andrew M. Novakovic (1984b). "Dairy Farmers Must Decide," Hoard's Dairyman, Vol. 129, No. 1, January 10, p. 13.
- Novakovic, Andrew M. (1983). A Detailed Summary of the Dairy Production Stabilization Act of 1983 (a.k.a. The Compromise Bill), Cornell Agr. Economics Staff Paper No. 83-26 (Revised), December.
- Novakovic, Andrew M. (1984). The Dairy Industry and Dairy Policy in 1984, Cornell Agr. Economics Extension Bulletin, March 1984.

APPENDIX

FIGURES

USDA FARM PRODUCTION REGIONS



Number of Participating Farms
 Participating Farms as Percent of Commercial Farms in the Region
 Participating Farms as a Percentage of Total Number of Participants in the U.S.
 U.S. = 37,888 / 21% / 100%

Figure 1. Numbers of Farms Participating in the Milk Diversion Program

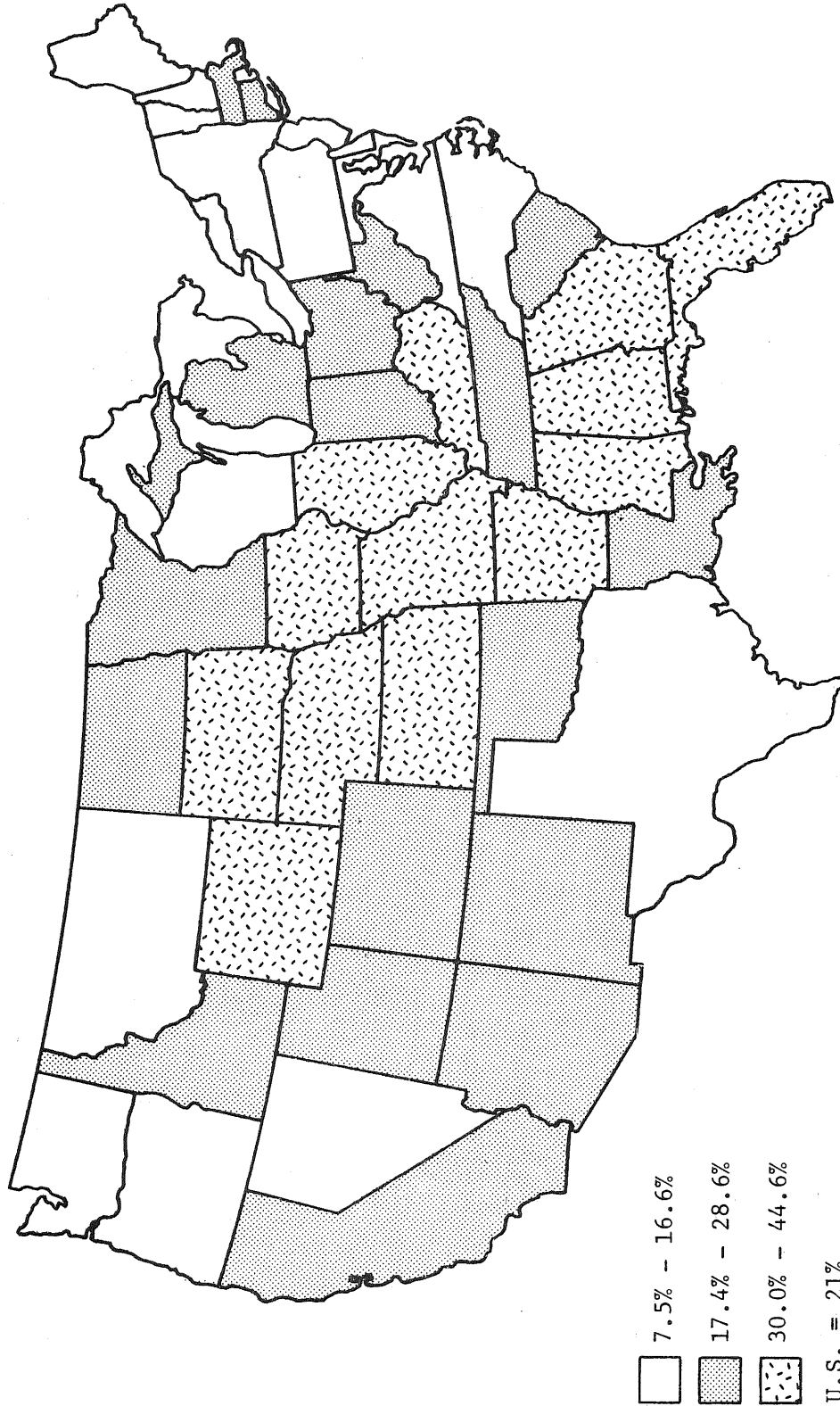
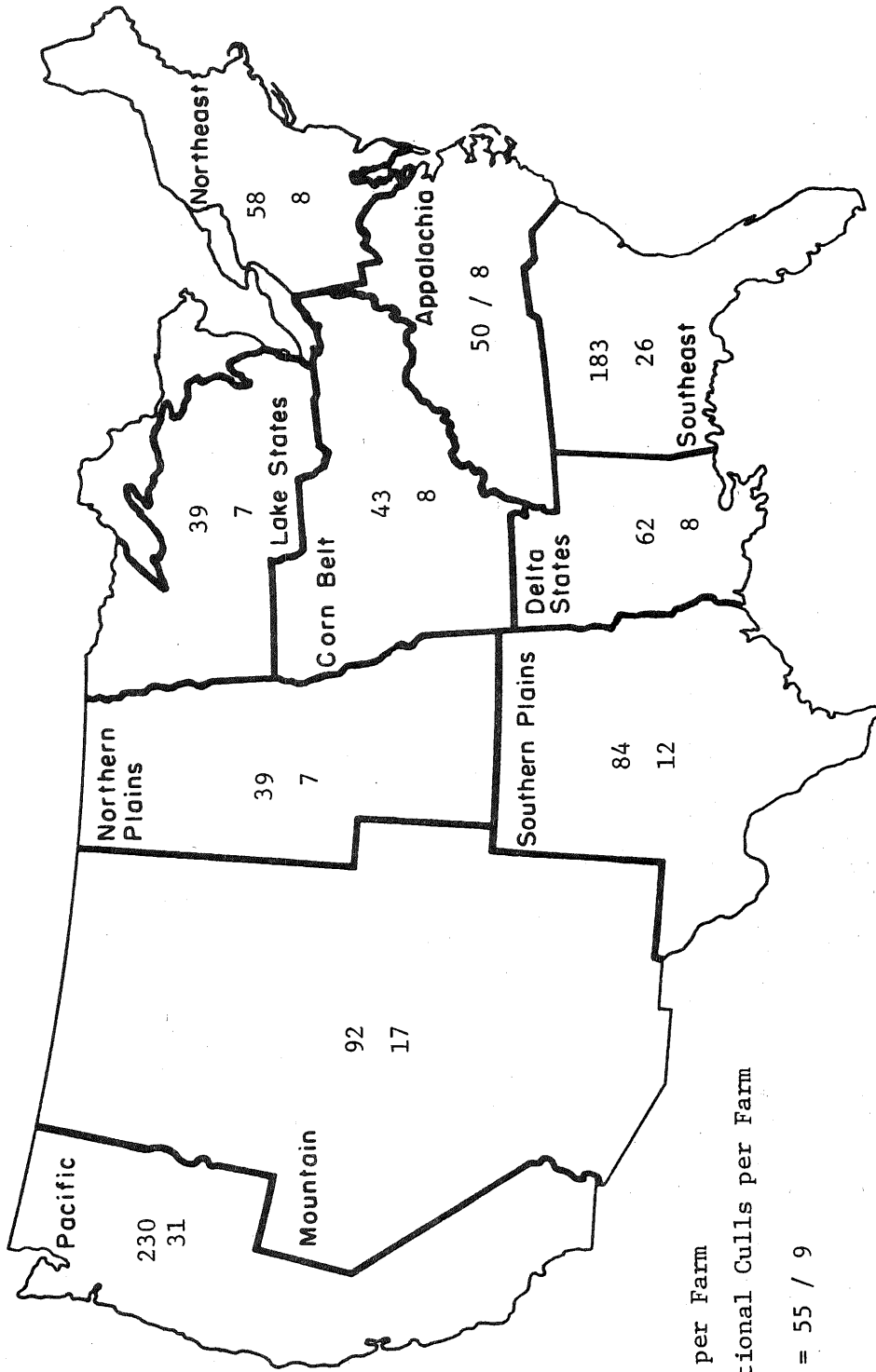


Figure 2. Number of Farms Participating in the Milk Diversion Program as a Percentage of Total Commercial Dairy Farms

USDA FARM PRODUCTION REGIONS



Cows per Farm
Additional Culls per Farm
U.S. = 55 / 9

Figure 3. Average Herd Size at the End of 1983 and Intended Extra Culling for 15 Months on Participating Farms

USDA FARM PRODUCTION REGIONS

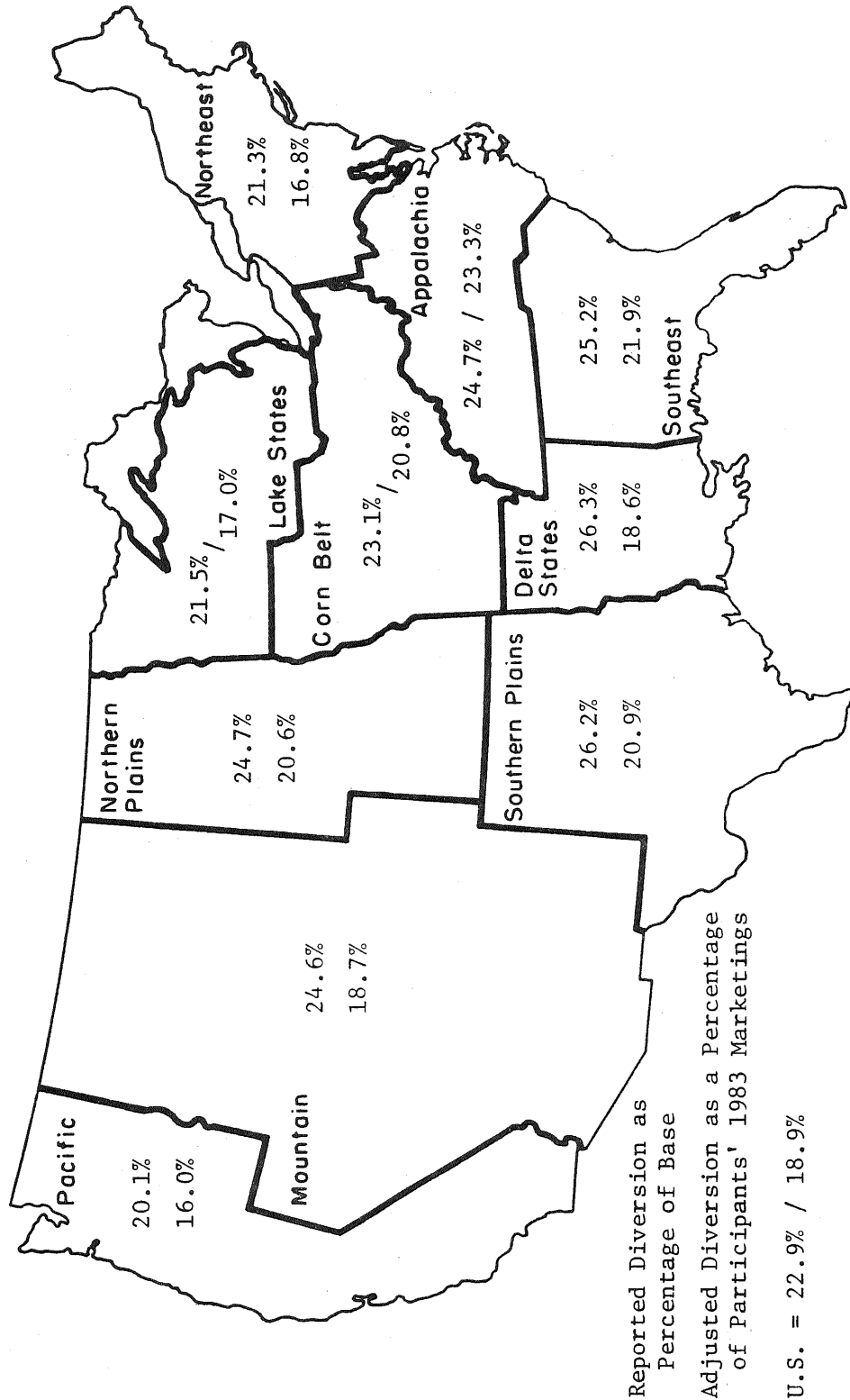
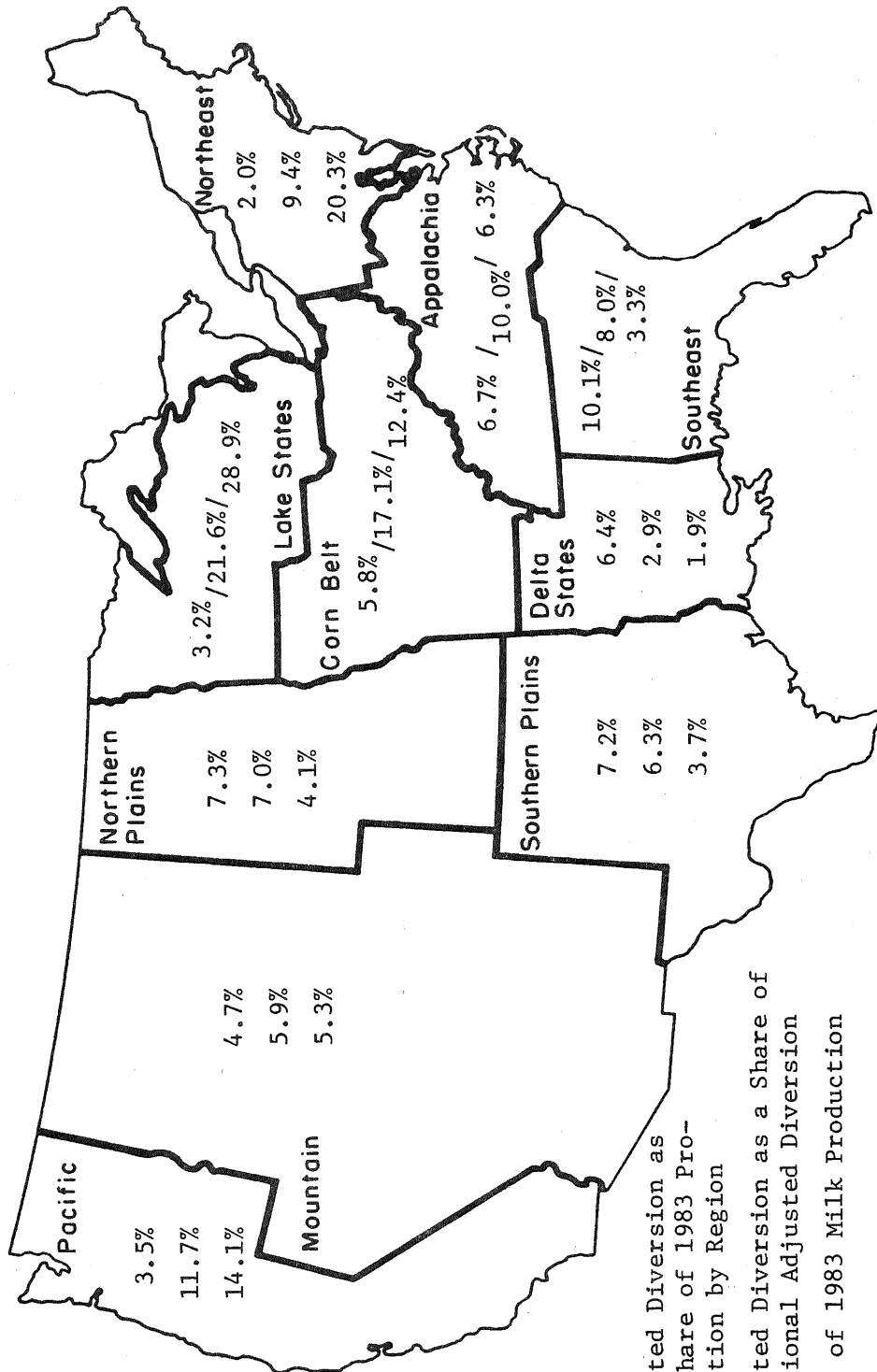


Figure 4. A Comparison of Contracted and Adjusted Diversion Levels for Participating Farms

USDA FARM PRODUCTION REGIONS



Adjusted Diversion as a Share of 1983 Production by Region
 Adjusted Diversion as a Share of National Adjusted Diversion
 Share of 1983 Milk Production

U.S. = 4.2% / 100% / 100%

Figure 5. Adjusted Diversion Levels Relative to Regional Milk Production and Regional Contributions to the Total Diversion and Total Production

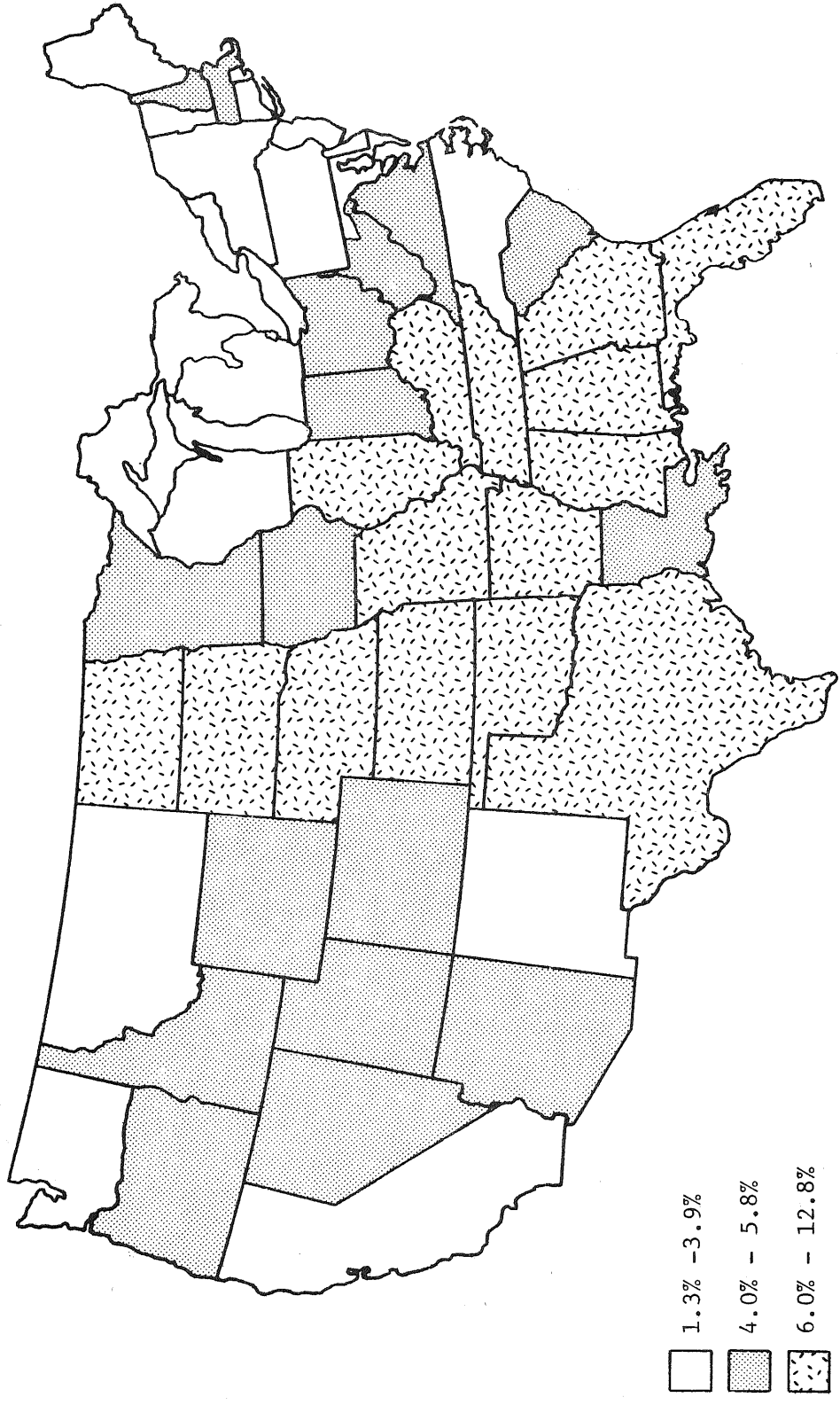


Figure 6. The Adjusted Diversion as a Percentage of Regional Production in 1983