

# Overview of the Agricultural Act of 2014 Dairy Margin Protection Program and Its Implications for Washington Dairy Farmers

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# Table of Contents

Introduction .....	1
Dairy Margin Protection Program (MPP).....	1
Program Requirements .....	2
Production History.....	2
Production Coverage Percent and Income Margin Coverage Level .....	3
Coverage Choices.....	3
Premiums .....	3
Margin Protection Payments.....	5
Program Payment Analysis Using Historical Data .....	6
Seasonality of Production .....	10
Dairy Producer Decisions and Conclusions .....	11
References.....	11

# Overview of the Agricultural Act of 2014 Dairy Margin Protection Program and Its Implications for Washington Dairy Farms

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## Introduction

The Agricultural Act of 2014, commonly referred to as the Farm Bill, passed into law on February 7, 2014. The five-year Farm Bill contains significant changes that will affect farmers and ranchers throughout the country. The main program in the new Farm Bill that affects dairy producers is the Dairy Margin Protection Program (MPP). This is a new risk management program providing dairy producers with margin protection payments during times when their income margin (milk payment minus feed cost) falls below the protected margin coverage level. The purpose of this Washington State University manual is to describe the MPP and how it functions based on current program definitions, as well as its implications for Washington dairy farms.

Since 2008, milk price and feed cost volatility has increased dramatically, resulting in periods of unprofitability for many dairy farms. The purpose of the MPP is to protect dairy farm equity during these periods. The existing United States Department of Agriculture Risk Management Agency (USDA RMA) Livestock Gross Margin (LGM) Dairy program is still available, but producers must decide which program to use. Producers can purchase either the MPP or the LGM-Dairy program, but cannot purchase both.

The Farm Bill requires the establishment of the MPP no later than September 1, 2014. It is important to note that aspects of the MPP will be clarified as the program rules are written. The U.S. Department of Agriculture (USDA) and its agencies are charged with writing the specific program rules. The USDA is also charged with creating the supporting computer software, which will strongly influence how the program operates. For information on the Farm Bill rule-making process, see the March 14, 2014, Ag in Uncertain Times Webinar at <http://www.farmmanagement.org/aginuncertaintimesenglish/2014/03/>.

The USDA Farm Service Agency (FSA) is the agency responsible for the MPP. FSA has previously been involved with dairy support programs, such as the Dairy Economic Loss Assistance Payment Program and the Milk Income Loss Contract Program (MILC). The new Farm Bill eliminates the Dairy Product Price Support

Program, the Dairy Export Incentive Program, and the Federal Milk Marketing Order Review Commission. Once the MPP takes effect, the MILC program will also be eliminated. The 2014 Farm Bill renewed three existing dairy programs: the Dairy Promotion and Research "Check Off" Program, the Dairy Indemnity Program, and the Dairy Forward Pricing Program.

## Dairy Margin Protection Program (MPP)

The Dairy MPP is a voluntary risk management program that enables producers to insure their income over feed costs (IOFC) margin. This income margin is defined as the all-milk price minus the national average feed cost. Average feed cost is determined using a feed-ration formula developed to calculate the costs associated with feeding an entire dairy farm enterprise. The diet accounts for milking cows, dry cows, heifers, and calves. The feed-ration formula calculates feed costs per hundredweight of milk. The dairy production margin (DPM) is calculated using the National Agricultural Statistics Service's (NASS) "all-milk" price minus the national average feed costs. The national average feed cost is the sum of the following:

$$\begin{aligned} & 1.0728 * \text{NASS corn price/bushel} \\ & + 0.00735 * \text{AMS central Illinois soybean meal price/ton} \\ & + 0.0137 * \text{NASS alfalfa hay price/ton} \\ & = \text{National Average Feed Cost} \end{aligned}$$

Figure 1 presents a historical review of the DPM. The top line represents the national milk price. The bottom line represents the national average feed cost. The colored area between them represents the DPM. Figure 2 presents a historical line graph of the DPM.

Figure 2 shows a tremendous increase in DPM volatility starting in 2008. Prior to 2008, the margin was below \$8.00 for 12 months in 2006, but was never below \$6.50. However, since 2008 the margin has only been above \$8.00 sporadically. The DPM was below \$4.00 for 8 months in 2009 and 4 months in 2012. The DPM coefficient of variation was .22 before 2008 and was .34 from 2008 to 2013, an increase of 55%. The increase in margin volatility reflects the increased financial risk facing dairy producers.

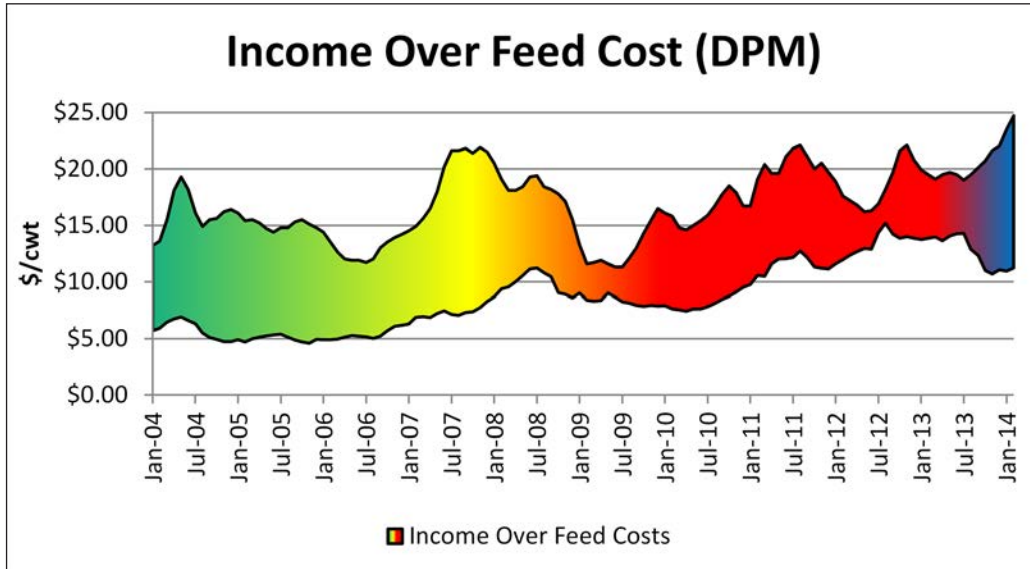


Figure 1. Monthly dairy production margin milk price and feed cost.

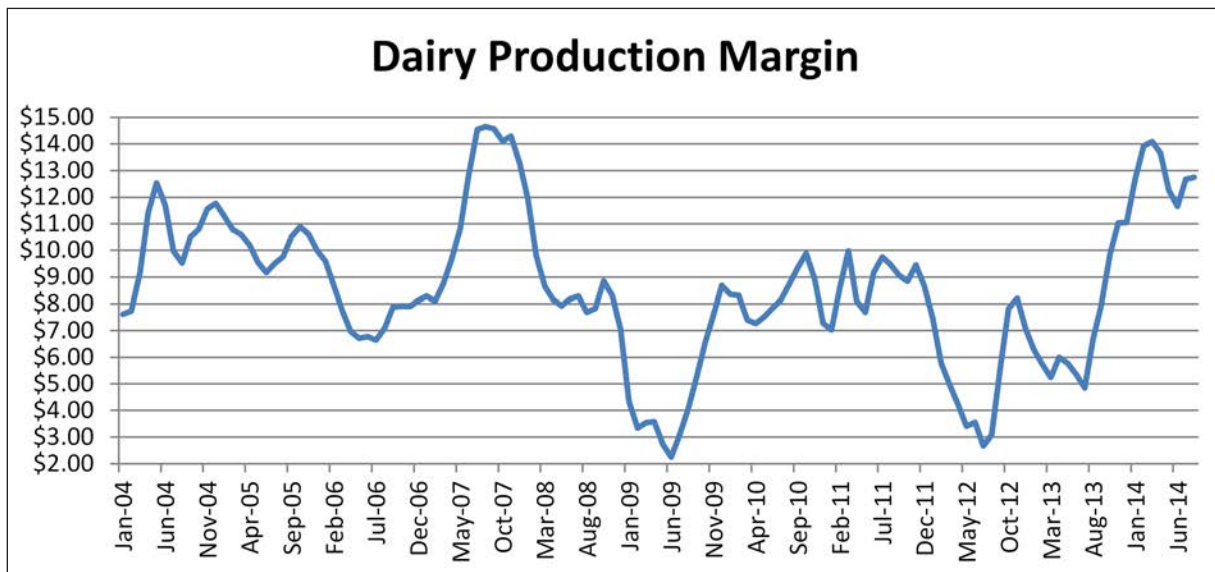


Figure 2. Monthly dairy production margin (DPM).

## Program Requirements

Dairy producers that choose to participate in the MPP must meet the following requirements:

- Establish individual production history, which is the highest annual production in 2011, 2012, or 2013.
- Choose a coverage percentage from 25% to 90%, in 5% intervals.
- Choose a margin coverage level from \$4.00/cwt to \$8.00/cwt, in \$0.50/cwt intervals.
- Pay premiums based on the chosen percentage and level of coverage.

- Pay the required administrative fee of \$100/year.

## Production History

The first year of coverage is limited to the volume of milk that is equivalent to the producer's highest level of annual milk production during 2011, 2012, or 2013. Annual adjustments to the producer's production history will be based on the national average growth in overall U.S. milk production as estimated by the USDA. New milk producers can use either extrapolated actual production based on the first few months of production, or the national average production per cow multiplied by herd size.

## Production Coverage Percent and Income Margin Coverage Level

Each milk producer must decide what percentage of the dairy's production history to cover. Coverage percentages range from 25% to 90%, in 5% increments. Producers should choose the amount of coverage they want based on their risk tolerance. While the amount of coverage chosen does not change the frequency of premium payments, it does alter the amount of the premium payment and the amount of the MPP payment. The income margin coverage level is the amount of income margin the dairy producer chooses to insure. The margin coverage levels range from \$4.00/cwt to \$8.00/cwt, in \$0.50/cwt increments. Premiums are based on the farm's production, as well as the coverage level and percentage chosen. One way to maintain the same likelihood of receiving an MPP payment while reducing the premium is to reduce the coverage percentage.

### Coverage Choices

Producers should select a coverage percentage and margin coverage level based on their risk tolerance, their financial capacity to absorb low margins, and their future expectations in terms of the DPM. Choosing a higher coverage level increases the likelihood of an MPP payout, but this is offset by a higher premium payment. Risk-averse producers are more likely to choose a higher coverage level and coverage percent, while risk-tolerant producers are more likely to choose lower levels.

### Premiums

The premiums listed in Table 1 are statutory and will not change over the life of the 2014 Farm Bill (2014–2018). Timing and procedures for premium payment are yet to be determined and will be decided during the program's rule-making process. The Farm Bill instructs

the USDA to provide more than one premium payment method and to use methods that “maximize dairy operation payment flexibility and program integrity.”

The premiums are set relative to the margin coverage levels and the volume of milk produced. Margin coverage levels start at \$4.00 and increase in \$0.50 increments up to \$8.00. There is a premium price increase for production above 4 million pounds of production. Based on the national average of 55 pounds of milk production per cow, 4 million pounds of production corresponds to a herd size of approximately 200 milk cows.

Figure 3 shows the premium cost increase, or in economic terms, the marginal cost of increasing the margin coverage level. The marginal cost increase is below \$0.10 for each \$0.50 increase in coverage, up to \$6.50 for the first 4 million pounds of production and up to \$6.00 for production above 4 million pounds. The marginal cost increase is \$0.54 for the \$0.50 increase in margin coverage from \$6.50 to \$7.00 for production above 4 million pounds (as shown in Figure 3). This increase indicates that producers insuring above 4 million pounds of production should not choose the \$7.00 coverage level because the marginal cost increase from \$6.50 to \$7.00 is more than the marginal return at this level. Producers with more than 4 million pounds of production that would like to insure a margin above \$6.50 should choose the \$7.50 or \$8.00 margin coverage level.

Figures 4–6 are examples of an evaluation of the MPP premium relative to a producer's production history. Figure 4 represents a farm with a 3-million-pound production history that chooses a \$4.50 margin coverage level and a 50% coverage percent. The producer should purchase MPP insurance on 1.5 million pounds. The premium without the subsidy would be \$250 and with the 2014–2015 subsidy would be \$212.50.

Table 1. Schedule of premiums.

Margin Coverage Level	Premium First 4 Million Pounds** \$/cwt	First 4 Million Pounds Premium Cost Marginal Change	Premium Over 4 Million Pounds \$/cwt	Over 4 Million Pounds Premium Cost Marginal Change
\$4.00	Free*		Free*	
\$4.50	\$0.010	\$0.010	\$0.020	\$0.020
\$5.00	\$0.025	\$0.015	\$0.040	\$0.020
\$5.50	\$0.040	\$0.015	\$0.100	\$0.060
\$6.00	\$0.055	\$0.015	\$0.155	\$0.055
\$6.50	\$0.090	\$0.035	\$0.290	\$0.135
\$7.00	\$0.217	\$0.127	\$0.830	\$0.540
\$7.50	\$0.300	\$0.083	\$1.060	\$0.230
\$8.00	\$0.475	\$0.175	\$1.360	\$0.300

\*A fixed administrative fee of \$100 is charged to each MPP policy purchased.

\*\*Premium was reduced by 25% from above levels in 2014 and 2015, except for \$8.00 level for the first 4 million pounds insured. There is no premium reduction for production insured in excess of 4 million pounds.

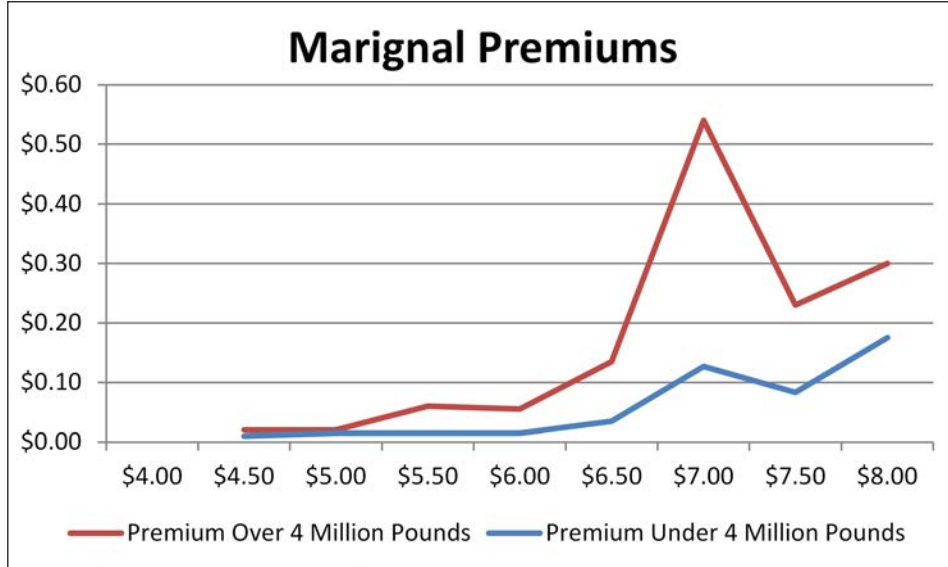


Figure 3. Premium marginal cost increase.

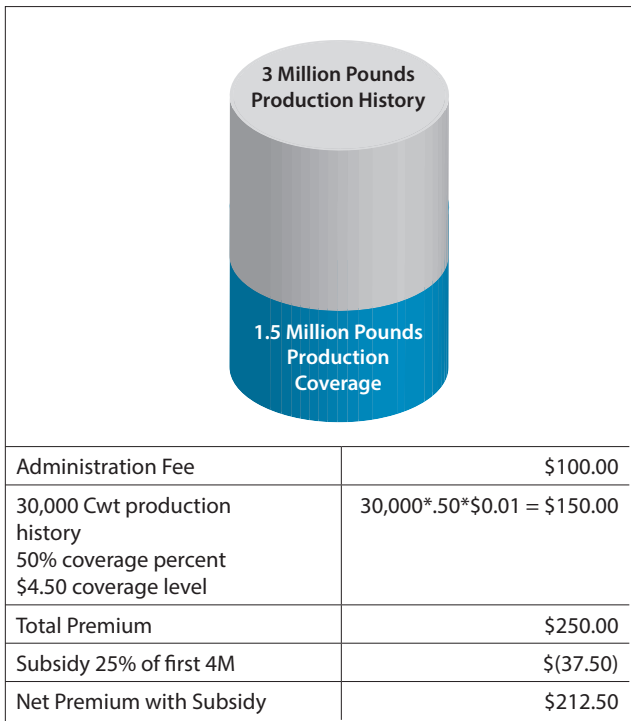


Figure 4. Premium for less than 4 million pounds.

Figure 5 represents a farm with a 6-million-pound production history that chooses a \$4.50 margin coverage level and a 50% coverage percent. The producer should purchase MPP margin insurance on 3 million pounds. The production is allocated relative to 4 million pounds of production, which in this example is 4 million pounds at the lower premium schedule and 2 million pounds at the higher premium schedule. The premium is calculated as 2 million pounds (20,000 cwt)

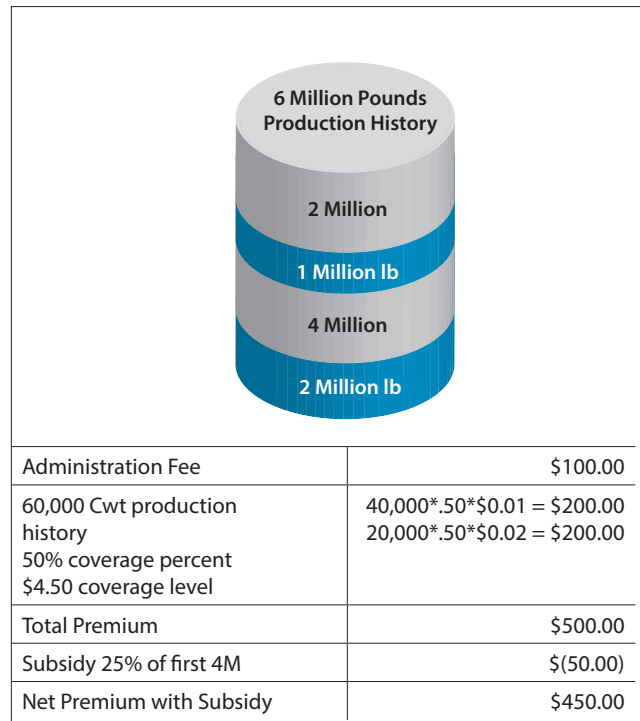


Figure 5. Premium for over 4 million pounds allocated production history.

at the lower rate and 1 million pounds (10,000 cwt) at the higher rate.

Figure 6 represents a farm with a 6-million-pound production history that chooses a \$4.50 margin coverage level and a 50% coverage percent. The producer should purchase MPP margin insurance on 3 million pounds. If there is no production allocation, the premium is calculated as 3 million pounds (30,000 cwt) at the lower rate.

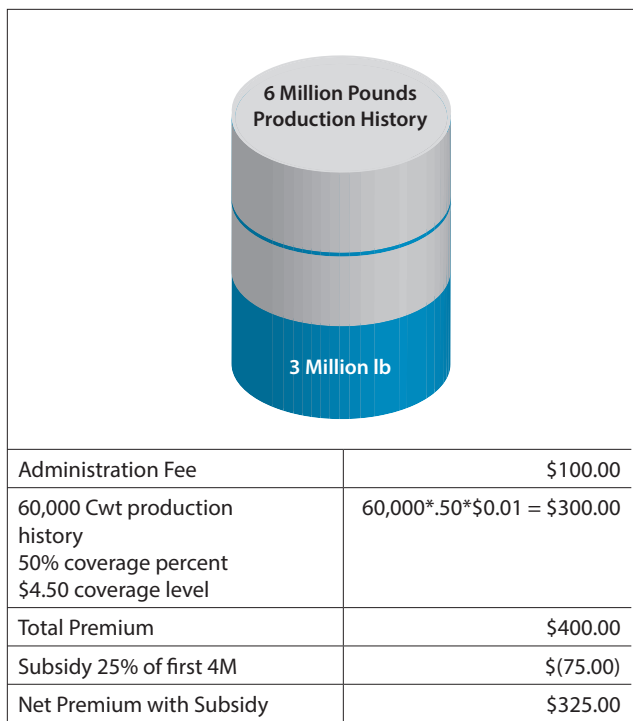


Figure 6. Premium over 4 million pounds non-allocated production history.

The MPP rule-making process will determine if the premium payment for production above 4 million pounds will have the production allocated as shown in Figure 5 or just split below and above 4 million pounds as shown in Figure 6. The premium in Figure 5 is more actuarially sound because the premium payment is higher. However, the MPP has been developed to support producers and the non-allocated production premium payment approach will be easier to understand and implement. How and when the premium payment is to be paid will be defined during the rule-making process. The Farm Bill mandates the

development of more than one method of premium payment for participating dairies. Payment methods must maximize “payment flexibility and program integrity” for participating dairy operators.

## Margin Protection Payments

Margin protection payments are calculated by using the selected margin coverage level, coverage percentage, and the calculated DPM. The DPM is calculated as the average bimonthly DPM based on the following bimonthly groups: Jan–Feb, March–April, May–June, July–Aug, Sept–Oct, Nov–Dec.

When the bimonthly average DPM drops below the coverage level, the difference is multiplied by  $1/6^{\text{th}}$  of the annual production history and by the coverage percentage.

*When margin coverage level > bimonthly average DPM*

MPP Payment = (margin coverage level – bimonthly average DPM) \*  $1/6^{\text{th}}$  of production history \* coverage percentage

*When margin coverage level ≤ bimonthly average DPM*

MPP Payment = 0

In general, the information required to calculate the bimonthly average margin would come a month after the coverage period. After the calculation is made, payments would still need to be processed. If a payment is warranted in the January–February period, the DPM data would not be available until March and payments would likely come in April–May. This timing represents one particular advantage of the MPP over the Livestock Gross Margins (LGM)–Dairy insurance program, where payments come at the end of the insurance period, which could be as much as a year after a loss has occurred.

The bimonthly grouping is a disadvantage to producers because it reduces the likelihood of the DPM being

Table 2. MPP payments for individual months vs. monthly groups.

January 2008–December 2013			
Coverage Level	Individual Months Below Coverage Level	Bimonthly Average Below Coverage Level	Percent Change
\$8.00	42	21	-50%
\$7.50	35	15	-57%
\$7.00	29	14	-52%
\$6.50	25	13	-48%
\$6.00	23	12	-48%
\$5.50	19	8	-58%
\$5.00	15	7	-53%
\$4.50	13	7	-46%
\$4.00	11	6	-45%
Total	212	103	-51%

below the margin coverage level. The DPM may be less in one month, but when the bimonthly average is calculated, the low month may be offset by a high month. Table 2 identifies the number of individual months from January 2008 to December 2013 when MPP payments would have been made if calculated monthly and compares them to the number of bimonthly periods when MPP payments would have been made. Using the bimonthly average to calculate MPP payments, rather than calculating them monthly, reduces the total number of MPP payments by about 51%.

Table 3 presents an example of the DPM for the two bimonthly periods from November 2010 to February 2011. The producer elects a \$7.50 coverage level. The individual months of December 2010 and January 2011 are below the elected coverage level. However, the average bimonthly DPMs are \$8.09 (Nov-Dec) and \$7.83 (Jan-Feb). Therefore, no MPP payments are triggered, despite two consecutive months below the elected coverage level.

### Program Payment Analysis Using Historical Data

Application of historical data provides the best tool for predicting how the MPP program will function in

the future. The following figures and tables present historical data from January 2004 to December 2013 that may be useful in predicting future MPP payment activity.

Figure 7 represents the averaged bimonthly dairy production margins from January 2004 to December 2013. The average bimonthly margin over the ten-year period is \$8.59. The dashed line in Figure 7 depicts the \$8.00 coverage level. Anytime the DPM falls below this line, an MPP payment could have been made, depending on the producer's selected coverage level, had the MPP been in place. The red line in Figure 7 depicts the \$4.00 coverage level. There is an obvious downturn in the DPM starting in January 2008. The years 2009 and 2012 likely represent some of the worst net returns in U.S. dairy history.

Tables 4 and 5 provide a historical review of the likelihood of MPP program payments. Table 4 presents the number of MPP payments that would have been triggered at each coverage level in the bimonthly periods from 2008 to 2013 had the MPP been in effect. The table starts in 2008 because this is the most recent period in which the DPM showed high volatility, and this volatility is expected to be more representative of the future economic conditions facing dairy producers. Table 5 presents the likelihood of an MPP payment

Table 3. Example of individual and bimonthly DPM payments from November 2010 to February 2011.

Month	Monthly DPM	Bimonthly DPM Average	MPP Payment
November 2010	\$8.90	\$8.09	No
December 2010	\$7.28		
January 2011	\$7.03	\$7.83	No
February 2011	\$8.64		

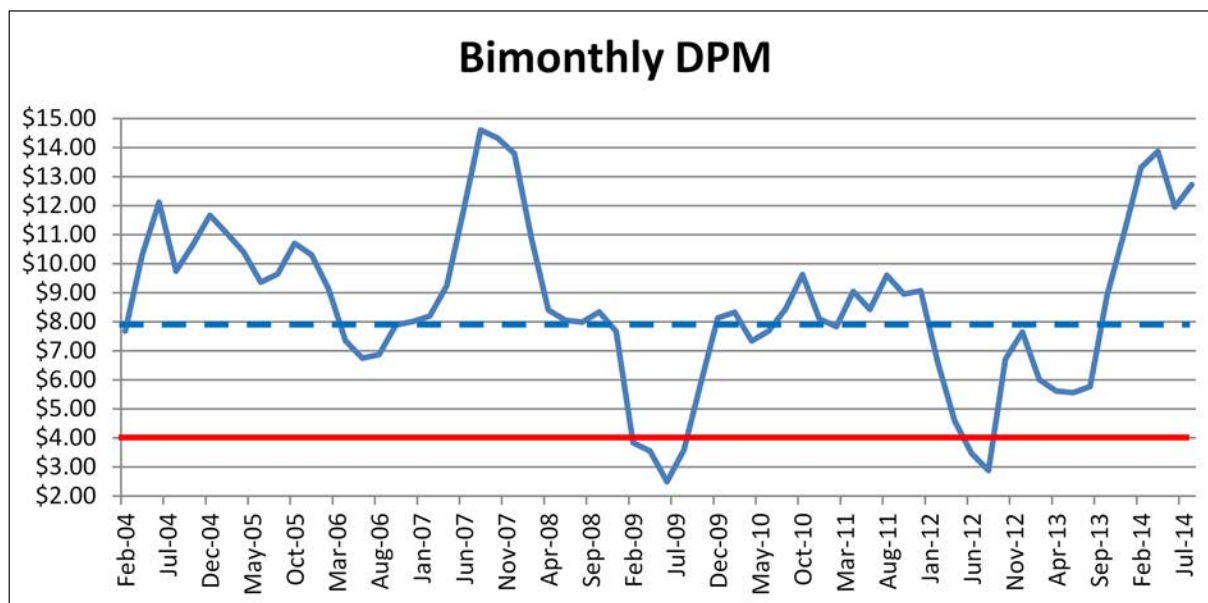


Figure 7. Bimonthly dairy production margin.



for each margin coverage level and bimonthly period. The “likelihood” means the chance of receiving MPP payments at a coverage level and in the bimonthly groupings.

Tables 4 and 5 show that MPP payments are more likely at the highest margin coverage level and decline as margin coverage levels decrease. At the \$8.00 margin coverage level, the bimonthly DPM would have triggered an MPP payment 21 times out of a possible 36 opportunities. This projection corresponds to the 58% likelihood of an MPP payment from 2008–2013. MPP payments are likely to be seasonal. The likelihood of an MPP payment is low in Sep–Oct and lowest in Nov–Dec. The May–Jun and Jul–Aug periods appear to trigger MPP payments slightly more than the Mar–Apr period.

Figure 8 shows the annual bimonthly MPP margin for each year from 2008–2013. Each year had at least one bimonthly period below the \$8.00 margin coverage level. There appears to be a break at the \$6.00 level, with extended periods below this margin level in 2013, 2012, and 2009.

Table 6 presents the net return to a dairy producer from the MPP program for each coverage level using a production history of 4 million pounds and a 90% coverage level. The table examines the years from 2008 to 2013. The premium payment has not been reduced by the premium subsidy amount available for 2014 and 2015. Loss ratios greater than 1.0 indicate that MPP payments exceed premium payments. For all coverage levels, the loss ratios greatly exceed 1.0. Loss ratios are somewhat higher for coverage levels of \$6.50 and below because the premium payment schedule favors lower margin coverage levels (see Table 1). The loss ratio for the \$4.00 level is 54.37 because at this coverage level the only required premium payment is the annual \$100 administration fee.

Table 7 presents loss ratios for the 4 million pounds of production level, as calculated in Table 6, and two higher production levels that represent typical 480-head and 5000-head dairies. All of the loss ratios exceed 1.0, which indicates that over the 2008 to 2013 period, the MPP payments would have exceeded premium payments by a wide margin. The loss ratios generally

Table 4. Number of MPP payments from 2008–2013.

Margin Coverage Level	Jan–Feb (6 possible)	Mar–Apr (6 possible)	May–Jun (6 possible)	Jul–Aug (6 possible)	Sep–Oct (6 possible)	Nov–Dec (6 possible)	Total (36 possible)
\$8.00	4	4	4	4	2	3	21
\$7.50	3	4	3	3	2	0	15
\$7.00	3	3	3	3	2	0	14
\$6.50	3	3	3	3	1	0	13
\$6.00	2	3	3	3	1	0	12
\$5.50	1	2	3	2	0	0	8
\$5.00	1	2	2	2	0	0	7
\$4.50	1	2	2	2	0	0	7
\$4.00	1	1	2	2	0	0	6
Total	19	24	25	24	8	3	103

Table 5. Likelihood of MPP payments 2008–2013.

Margin Coverage Level	Jan–Feb	Mar–Apr	May–Jun	Jul–Aug	Sep–Oct	Nov–Dec	Total
\$8.00	67%	67%	67%	67%	33%	50%	58%
\$7.50	50%	67%	50%	50%	33%	0%	42%
\$7.00	50%	50%	50%	50%	33%	0%	39%
\$6.50	50%	50%	50%	50%	17%	0%	36%
\$6.00	33%	50%	50%	50%	17%	0%	33%
\$5.50	17%	33%	50%	33%	0%	0%	22%
\$5.00	17%	33%	33%	33%	0%	0%	19%
\$4.50	17%	33%	33%	33%	0%	0%	19%
\$4.00	17%	17%	33%	33%	0%	0%	17%

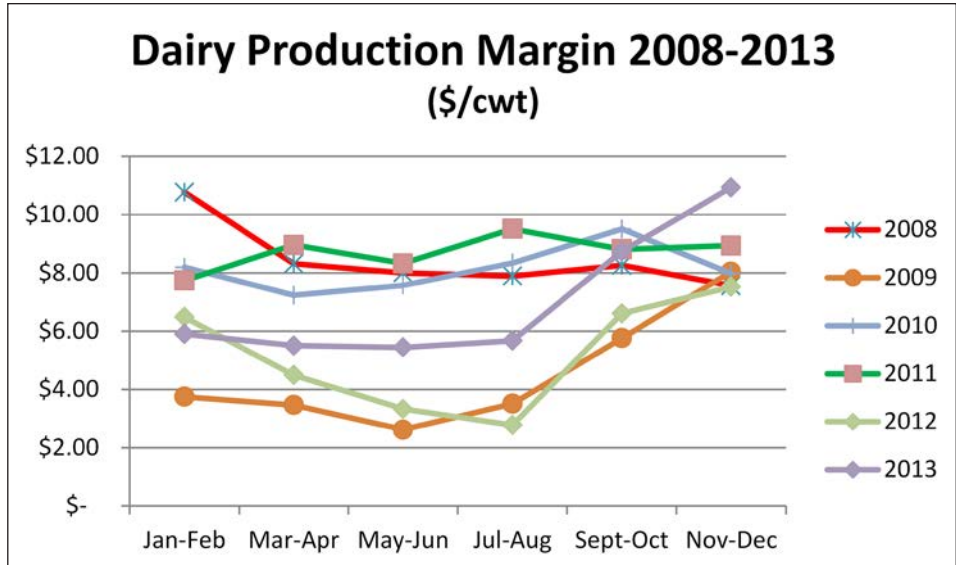


Figure 8. Annual DPM margin 2008-2013.

Table 6. MPP premiums, payments, and loss ratios.

40,000 CWT Annual Production History from Jan 2008 to Dec 2013 at 90% Coverage Level							
Coverage Level	Annual Premium*	Total Premium	Marginal Premium	Total MPP Payment	Marginal Payment	Net MPP Payment	Loss Ratio
\$8.00	\$17,100	\$102,600		\$294,796		\$192,196	2.87
\$7.50	\$10,800	\$64,800	-\$37,800	\$239,470	-\$55,326	\$174,670	3.70
\$7.00	\$7,812	\$46,872	-\$17,928	\$195,862	-\$43,608	\$148,990	4.18
\$6.50	\$3,240	\$19,440	-\$27,432	\$154,512	-\$41,350	\$135,072	7.95
\$6.00	\$1,980	\$11,880	-\$7,560	\$118,412	-\$36,100	\$106,532	9.97
\$5.50	\$1,440	\$8,640	-\$3,240	\$87,526	-\$30,886	\$78,886	10.13
\$5.00	\$1,080	\$6,480	-\$2,160	\$66,210	-\$21,316	\$59,730	10.22
\$4.50	\$360	\$2,160	-\$4,320	\$45,210	-\$21,000	\$43,050	20.93
\$4.00	\$100	\$500	-\$1,660	\$27,187	-\$18,024	\$26,687	54.37

\*Premium calculation does not include 2014-2015 subsidy.

Table 7. Loss ratios 2008-2013 for three herd sizes.

Loss Ratios Jan 2008-Dec 2013			
Coverage Level	200 Head	480 Head	5000 Head
	40,000 Cwt	113,880 Cwt	1,186,250 Cwt
\$8.00	2.87	2.14	2.02
\$7.50	3.70	2.30	2.11
\$7.00	4.18	2.43	2.20
\$6.50	7.95	5.37	4.97
\$6.00	9.97	7.54	7.11
\$5.50	10.13	8.46	8.13
\$5.00	10.22	13.85	15.20
\$4.50	20.93	20.93	20.93
\$4.00	54.37	255.23	3170.64

Table 8. Three herd sizes and MPP net cash flow amounts for 2008–2013 (at 90% coverage).

200 Head—40,000 Cwt							
	2008	2009	2010	2011	2012	2013	Net
\$8.00	-\$13,842	\$108,165	-\$9,836	-\$15,552	\$83,585	\$39,677	\$192,196
\$7.50	-\$10,800	\$99,465	-\$9,192	-\$10,800	\$72,020	\$33,977	\$174,670
\$7.00	-\$7,712	\$87,453	-\$7,812	-\$7,812	\$60,008	\$24,965	\$148,990
\$6.50	-\$3,240	\$77,025	-\$3,240	-\$3,240	\$50,230	\$17,537	\$135,072
\$6.00	-\$1,980	\$63,285	-\$1,980	-\$1,980	\$42,390	\$6,797	\$106,532
\$5.50	-\$1,440	\$50,400	-\$1,440	-\$1,440	\$33,930	-\$1,124	\$78,886
\$5.00	-\$1,080	\$38,760	-\$1,080	-\$1,080	\$25,290	-\$1,080	\$59,730
\$4.50	-\$360	\$27,480	-\$360	-\$360	\$17,010	-\$360	\$43,050
\$4.00	-\$100	\$15,740	-\$100	-\$100	\$11,246	-\$100	\$26,587
480 Head—113,880 Cwt							
	2008	2009	2010	2011	2012	2013	Net
\$8.00	-\$92,238	\$480,462	-\$73,432	-\$100,265	\$365,087	\$158,984	\$738,598
\$7.50	-\$81,282	\$436,300	-\$73,734	-\$81,282	\$307,475	\$128,903	\$636,381
\$7.00	-\$63,000	\$384,171	-\$63,000	-\$63,000	\$255,346	\$90,857	\$541,373
\$6.50	-\$22,523	\$354,239	-\$22,523	-\$22,523	\$228,467	\$75,006	\$590,144
\$6.00	-\$12,286	\$294,065	-\$12,286	-\$12,286	\$195,988	\$28,915	\$482,109
\$5.50	-\$8,089	\$235,248	-\$8,089	-\$8,089	\$157,939	-\$6,606	\$362,313
\$5.00	-\$3,740	\$183,270	-\$3,740	-\$3,740	\$120,042	-\$3,740	\$288,354
\$4.50	-\$1,690	\$128,992	-\$1,690	-\$1,690	\$79,846	-\$1,690	\$202,079
\$4.00	-\$100	\$74,254	-\$100	-\$100	\$53,160	-\$100	\$127,014
5000 Head—1,186,205 Cwt							
	2008	2009	2010	2011	2012	2013	Net
\$8.00	-\$1,230,156	\$5,884,377	-\$996,531	-\$1,329,865	\$4,451,087	\$1,890,721	\$8,669,632
\$7.50	-\$1,104,323	\$5,325,477	-\$1,010,563	-\$1,104,323	\$3,725,107	\$1,506,758	\$7,338,134
\$7.00	-\$864,061	\$4,691,051	-\$864,061	-\$864,061	\$3,090,681	\$1,047,270	\$6,236,819
\$6.50	-\$302,411	\$4,378,013	-\$302,411	-\$302,411	\$2,815,572	\$909,169	\$7,195,521
\$6.00	-\$161,882	\$3,643,855	-\$161,882	-\$161,882	\$2,425,459	\$349,949	\$5,933,617
\$5.50	-\$104,603	\$2,918,325	-\$104,603	-\$104,603	\$1,957,926	-\$86,182	\$4,476,262
\$5.00	-\$42,345	\$2,280,833	-\$42,345	-\$42,345	\$1,495,371	-\$42,345	\$3,606,824
\$4.50	-\$20,993	\$1,602,435	-\$20,993	-\$20,993	\$991,911	-\$20,993	\$2,510,377
\$4.00	-\$100	\$923,578	-\$100	-\$100	\$661,541	-\$100	\$1,584,719

decrease as the herd size increases because the premium payment schedule is higher for production above 4 million pounds.

The high loss ratios indicate that the MPP program could be beneficial to milk producers. However, for risk management purposes, producers should evaluate the net program payment in terms of their risk tolerance, the future DPM outlook, and their farm cash-flow requirements. High loss ratios are financially efficient for producers; however, high loss ratios with lower net MPP payments may not provide enough cash flow to

meet farm financial requirements. Associated cash flow amounts are presented in Table 8.

Table 8 uses a 90% coverage percentage and three herd sizes that represent typical Washington herd sizes—200 head, 480 head, and 5,000 head, along with the state average for milk production. The years when cash flow is negative reflect the net premium payment. Years with a positive cash flow reflect MPP payments. In all cases, the cumulative net cash flow from 2008–2013 was positive. If a producer elects coverage percentages below 90%, the negative or positive yearly cash flow

will be the same, but the magnitude of the cash flow will be less, relative to the elected coverage percentage. Producers should insert their own production history and elected coverage percentage into Table 8, so they can calculate the MPP cash flow and assess it relative to their farm's capacity for financial risk.

### Seasonality of Production

Typical Washington dairy farm milk production reflects a definite seasonal trend, with milk production peaking in May–June. Milk production differs significantly between actual production and fixed production based on the 1/6<sup>th</sup> of annual production. The Farm Bill stipulates that the insurable amount of production must be determined by the highest annual production over the last 3 years (2011–2013). Washington State had its highest level of milk production in 2012, with 23,750 pounds/cow or 3,958 pounds per bimonthly period.

The blue line in Figure 9 represents the actual seasonal bimonthly production for the typical Washington dairy cow, which ranges from 3,830 to 4,075 pounds of bimonthly production. The red line represents insurable production (1/6<sup>th</sup> of the annual production, 3,958 lb). Peak seasonal production is in May–June at 4,075 pounds/head (blue line), which is 117 pounds per cow or 2.96% above the fixed insurable production. If the producer has elected 90% coverage, only 87% of actual production is covered for these two months. Conversely, during the bimonthly periods of Jan–Feb, Sept–Oct, and Nov–Dec, actual seasonal production is below the fixed 1/6<sup>th</sup> of annual production level. The

green bars in Figure 9 indicate when a payment would have been made at the \$4.00 level in 2012 had the MPP been in effect.

The seasonal production trend and the seasonal likelihood of receiving an MPP payment are mismatched. The likelihood of receiving an MPP payment is shown to be lowest in Sep–Oct and Nov–Dec, and highest in May–June and July–Aug (Table 5). The MPP, using a fixed 1/6<sup>th</sup> of annual production standard, will pay on a lower production amount relative to actual seasonal production, when the likelihood of a MPP payment is highest. When the likelihood of a payment is low, as in Sep–Oct and Nov–Dec, the producer would benefit if the fixed 1/6<sup>th</sup> of production amount was greater than the actual seasonal production, but is not likely to receive a payment because of the low payment likelihood.

Table 9 examines the per-cow impact on the MPP payment, comparing actual seasonal production of a typical Washington cow in 2012 to the fixed 1/6<sup>th</sup> of annual production amount at a 90% coverage level. In 2012, the DPM was below the \$8.00 coverage level for the entire year. Table 9 shows the seasonality impact using three coverage levels: \$4.00, \$6.50, and \$8.00. The impact of seasonality varies by coverage level. Higher coverage levels trigger an MPP payment more often. The decrease in MPP payments, by disallowing production seasonality, ranges from a decrease of \$1.38, \$6.86, and \$8.10 per cow for the \$4.00, \$6.50, and \$8.00 coverage levels, respectively. The typical Washington dairy farm has about 1,000 cows, so the typical effect on cash flow ranges from \$1,380 to \$8,100 at the 90% coverage level.

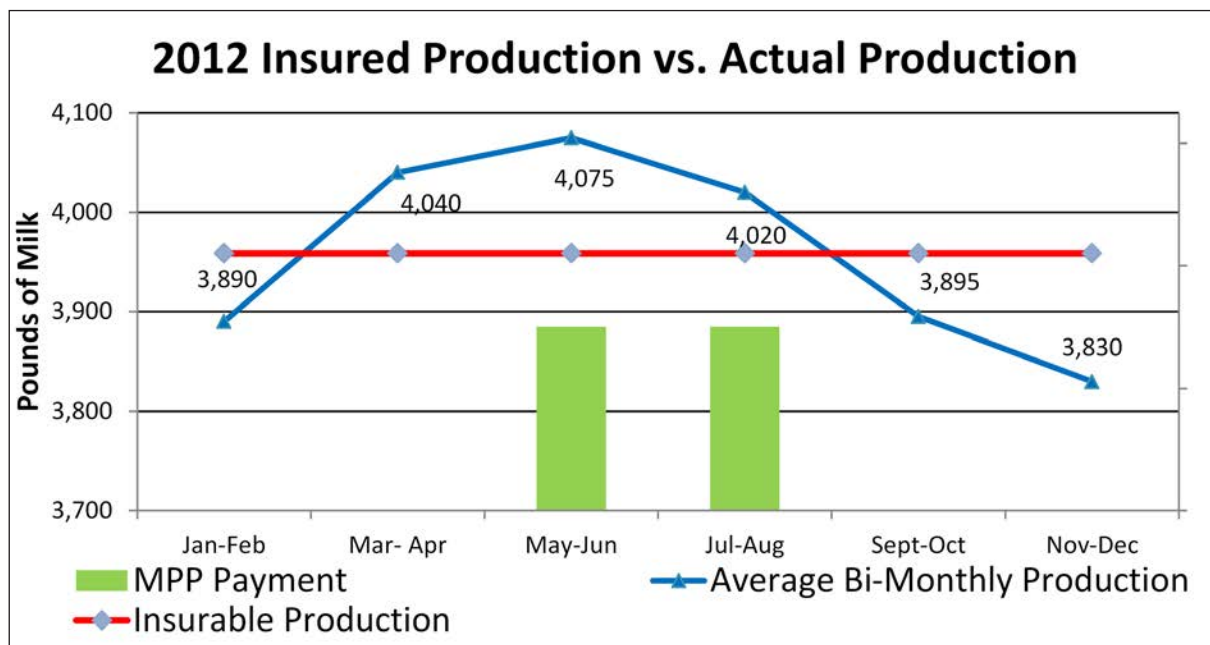


Figure 9. Insured production vs. actual production in 2012.

Table 9. Production history vs. actual production payments (per head) in 2012.

Coverage Level	\$4.00			\$6.50			\$8.00		
	Payment			Payment			Payment		
Months	Production History*	Actual Production	Difference	Production History*	Actual Production	Difference	Production History*	Actual Production	Difference
Jan-Feb	\$0.00	\$0.00	\$0.00	\$0.59	\$0.58	\$0.01	\$54.03	\$53.10	\$0.93
Mar-Apr	\$0.00	\$0.00	\$0.00	\$71.39	\$72.86	-\$1.47	\$124.83	\$127.40	-\$2.58
May-Jun	\$23.86	\$24.57	-\$0.70	\$112.93	\$116.25	-\$3.33	\$166.36	\$171.27	-\$4.90
Jul-Aug	\$43.51	\$44.18	-\$0.68	\$132.57	\$134.63	-\$2.07	\$186.01	\$188.90	-\$2.90
Sep-Oct	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$49.58	\$48.78	\$0.79
Nov-Dec	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$17.01	\$16.46	\$0.55
Net	\$67.37	\$68.75	-\$1.38	\$317.48	\$324.34	-\$6.86	\$597.82	\$605.92	-\$8.10

\*90% coverage

## Dairy Producer Decisions and Conclusions

The 2014 Farm Bill has moved from direct-support commodity programs towards insurance-based risk management. The dairy component of this bill is no different, as seen with the elimination of the MILC program when the MPP took effect. The MPP provides a new risk management option for dairy producers that allows them to insure against low income margin risk. The historical analysis presented in this manual shows that the MPP would have been widely effective for dairy producers with loss ratios well over 1.0.

Milk producers will have one year (from the time the FSA finishes its rule-making process) to sign up for the MPP. The Farm Bill states that the MPP should be available by September 1, 2014. The program is administered by the FSA and producers can sign up through their local FSA office. Producers will first have to decide if they want to enroll in the MPP. The total number of producers that sign up could impact an individual producer. Consider a scenario where a large number of producers sign up for the MPP. If the DPM declines when there is a large number of enrolled producers, then the market signal to decrease production will be delayed and/or diminished because producers have a protected margin. The typical economic response to a low DPM would be to decrease production. Consequently, a producer who elects not to participate in the MPP would be at greater risk of receiving low margins for an extended period of time without any risk protection.

Prudence would suggest producers enroll in the program at the \$4.00 margin coverage level, at a minimum. Historically, payments would have been triggered at this level in four out of six bimonthly periods in 2009 and twice in 2012. The annual \$100 administrative fee is insignificant relative to total farm production costs.

The enrollment decisions regarding coverage level and coverage percentage should be based on the cash flow needed for risk management and the dairy producer's

expected DPM outlook. If the dairy farm has high leverage, then a higher coverage level and percentage is warranted to offset debt repayment risk. If the DPM is forecasted to be above \$8.00, then a low level of participation in the MPP is warranted. The DPM outlook for 2014 is projected to remain well above the \$8.00 margin level due to high milk prices.

Dairy producers will have to decide how to incorporate the MPP into their risk management strategies. The actual effectiveness of the MPP in protecting dairy farm equity will be dependent on the individual dairy producer's decisions regarding margin coverage levels and coverage percentages, as well as the correlation between the DPM and the individual dairy's actual margin.

This is a type of basis risk, which is a price risk in a hedging strategy. The DPM basis risk will be individually variant due to the quality premium differences between a producer's milk price and the national milk price, as well as the differences between the dairy farm's actual feed cost and the feed cost derived from the feed cost formula. However, the correlation between the individual farm's margin and the MPP margin is likely to be high given that milk price trends are largely set nationally. The greatest source of variance will come from regional differences in hay prices, which can easily be affected by drought conditions. Overall, the DPM basis risk will be relatively small and will not affect the risk management effectiveness of the MPP.

## References

- United States Senate Committee on Agriculture Nutrition & Forestry. 2014. Agricultural Act of 2014 Subtitle "D" Dairy. <http://www.agriculture.senate.gov/>.
- Federation, N.M. 2014. Margin Protection Program (MPP): Program Details. <http://www.futurefordairy.com/program-details>.

USDA Agricultural Marketing Service. Feed Stuff Report. (n.d.). Retrieved February 12, 2014. [http://marketnews.usda.gov/portal/lg?paf\\_dm=full&reportConfig=true&paf\\_gear\\_id=4300017&category=Feedstuff](http://marketnews.usda.gov/portal/lg?paf_dm=full&reportConfig=true&paf_gear_id=4300017&category=Feedstuff).

Gould, B. The 2014 Farm Bill: Dairy Margin & Livestock Disaster Programs. *Ag In Uncertain Times*. Retrieved March 17, 2014. <http://www.farmmanagement.org/aginuncertaintimesenglish/2014/03/18/march-17th-2014-webinar-recordings-the-2014-farm-bill-dairy-margin-livestock-disaster-programs/>.

Patton, P. 2014. Know Your Market. *Agweb Daily*. Retrieved April 7, 2014. [http://www.agweb.com/livestock/dairy/blog/Know\\_Your\\_Market\\_281/base\\_your\\_margin\\_protection\\_program\\_decision\\_on\\_the\\_math/?smartid=&spMailingID=45562598&spUserID=ODQ2ODY0OTg0MzcS1&spJobID=420832111&spReportId=NDIwODMyMTExS0](http://www.agweb.com/livestock/dairy/blog/Know_Your_Market_281/base_your_margin_protection_program_decision_on_the_math/?smartid=&spMailingID=45562598&spUserID=ODQ2ODY0OTg0MzcS1&spJobID=420832111&spReportId=NDIwODMyMTExS0).

United States Senate Committee on Agriculture. 2014. Statement of Managers. <http://www.ag.senate.gov/issues/farm-bill>.

USDA NASS Quick Stats. (n.d.). National All Milk, Alfalfa Hay, Corn Price. Retrieved February 12, 2014. [http://nass.usda.gov/Quick\\_Stats/](http://nass.usda.gov/Quick_Stats/).



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