Margin Protection Program (MPP-Dairy) ONLINE DECISION TOOL

John Newton
University of Illinois
217-300-1051
jcnewt@illinois.edu

Professional Background

- USDA, Ag. Economist (Federal Milk Marketing Orders) - 2004 to 2014
- Senate Agriculture Committee, Fellow - 2014
- USDA Office of Chief Economist, Policy Advisor - 2014
- The Ohio State University - MS, MA, and Ph.D.
- University of Louisville - BS

Dairy Tool Access

Use the tool at www.fsa.usda.gov/mpptool

Educational material www.dairymarkets.org/MPP

New: ARC & PLC & Dairy Tools

Use the tools at www.fsa.usapas.com
Did Dairy Have a Safety Net?
Milk Income Loss Contract (MI LC)

MILC 2009+ Covered 185 Bil Lbs
and paid $1.6 billion to 47K farmers ($0.86/cwt)

2.985 Million Pound Benefit Cap
42% of US Milk Supply Covered by MILC

U.S. Income Over Feed Costs
Margin = U.S. All-Milk Price \[ \text{NASS Corn Price} \times 1.0728 + \text{AMS SBM} \times 0.00735 + \text{NASS Alfalfa} \times 0.0137 \]

MPP-Dairy: How it Works
- Voluntary program designed to protect dairymen from downturns in the dairy margin
  - Makes payments when US dairy margin falls below the farmer-selected coverage option
  - Price floors available from $4 to $8 hundredweight
  - Can cover 25% to 90% of production
  - Farm operators pay $100 administrative fee and premiums based on farmer-selected coverage
  - Consecutive 2-month average margins determine indemnity: Jan/Feb, ..., Nov/Dec
  - No eligibility constraints (income or production)
Margin Protection Program (MPP) as the Replacement


MPP: A New Way to Think About a Government Safety Net

Key farmers decisions:
1) How much milk to protect (25% to 90%)
2) What margin level to protect ($4 to $8)

Coverage Options*
*126 Possible Coverage Choice Combinations

Greater Protection at a greater cost

Premium Rates May Alter Participation Incentives

$6.50 to $7.00 coverage has $0.54 increase in Tier 2 premium

Tier 1: First 4M #s / Tier 2: After 4M #s

Premium Rates
FREE
$0.00 $0.02 $0.04 $0.10 $0.16 $0.29 $0.63 $1.06 $1.36
$0.00 $4.00 $4.50 $5.00 $5.50 $6.00 $6.50 $7.00 $7.50 $8.00

First 4 M lbs PH After 4 M lbs PH

Illinois
### MPP-Dairy Payment Frequency

<table>
<thead>
<tr>
<th>Year</th>
<th>$4.00</th>
<th>$4.50</th>
<th>$5.00</th>
<th>$5.50</th>
<th>$6.00</th>
<th>$6.50</th>
<th>$7.00</th>
<th>$7.50</th>
<th>$8.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>33%</td>
<td>50%</td>
<td>0%</td>
</tr>
<tr>
<td>2001</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2002</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>17%</td>
<td>50%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2003</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>33%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>67%</td>
<td>0%</td>
</tr>
<tr>
<td>2004</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>17%</td>
</tr>
<tr>
<td>2005</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2006</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>33%</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>2007</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2008</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>2009</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>2010</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
<td>67%</td>
</tr>
<tr>
<td>2011</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>17%</td>
</tr>
<tr>
<td>2012</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>17%</td>
</tr>
<tr>
<td>2013</td>
<td>33%</td>
<td>33%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>83%</td>
<td>83%</td>
<td>100%</td>
</tr>
</tbody>
</table>

*“Catastrophic Coverage”*

### Where Will Margins Go?

- **WASDE Estimates**
  - Avg. $11.88
  - Baseline: $12.22

- **ERS Baseline**
  - Avg. $12.82

- **2013 CBO Baseline**
  - Avg. $9.45

- **Actual IOFC Margin**
  - Avg. $8.26

### How Accurate Were Farmers w/ MILC?*

<table>
<thead>
<tr>
<th>Year</th>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$2.20</td>
<td>$2.20</td>
<td>$2.20</td>
</tr>
<tr>
<td>2010</td>
<td>$0.60</td>
<td>$0.60</td>
<td>$0.60</td>
</tr>
<tr>
<td>2012</td>
<td>$1.37</td>
<td>$1.37</td>
<td>$1.37</td>
</tr>
<tr>
<td>2013</td>
<td>$0.75</td>
<td>$0.75</td>
<td>$0.75</td>
</tr>
</tbody>
</table>

*Farms Marketing More than 3M #’s per month*

### MPP: USDA Funded Producer Decision Education Project

**Margin Protection Program (MPP)**

**ONLINE DECISION TOOL**

Including the LGM-Dairy Analyzer ©

- **8 Extension Economists**
- **7 Land Grant Institutions**
**Easy Cross-Program Comparison**

ONE CLICK
Switch between the MPP-Dairy Tool & the “Award Winning” LGM-Dairy Analyzer ©

**Built With Farmers in Mind**

Only one data point needed
Farm’s Milk Production History

**4 CLICKS TO GET THE INFORMATION YOU NEED FOR MPP ENROLLMENT**

**4 Steps of the Decision Tool**

1. WHAT IS YOUR PRODUCTION HISTORY?
2. EVALUATE MPP_MARGIN FORECAST
3. SELECT A COVERAGE LEVEL & PERCENTAGE
4. PRINT, ENROLLMENT & COOPERATIVE

**Windows PC, iOS, & Android**

WORKS WITH ALL ELECTRONIC DEVICES

All calculations are performed in the cloud to maximize efficiency.
**Advanced Users**

**Name Your Own Prices**

Milk & Feed Price Customization

**Secure and 100% Free**

**DATA SECURITY**

100% Free

24/7 Access

Farmer Data is Not Collected

Always Available & Free to Use

**Online Educational Material**

Find videos, PowerPoints, printed material, and links to other Farm Bill decision tools online.

www.dairymarkets.org/MPP

**Margin Protection Program (MPP)**

ONLINE DECISION TOOL

Demonstration
Margin Protection Program (MPP)
ONLINE DECISION TOOL

Appendix

Mailbox Milk Price Hedge Ratio With Class III Futures

Optimal Hedge Ratio (Hedge 6-Months Out)

- 85%
- 80%
- 75%
- 70%
- 65%
- 60%
- 55%
- 50%
- 45%
- 40%
- 35%
- 30%
- 25%
- 20%
- 15%
- 10%
- 5%
- 0%

35% Decline in Class III Hedge Ratio

Estimated using 2001-2013 data

Protecting With MPP (2001-2013)

Support during price declines

Less Variability
Avg. No MPP $16.07
Avg. W/ MPP $16.41

Protecting Mailbox Milk Price with MPP (4M PH/ $8/90%)

State-Level Basis Approximations, 2007-2013

Volatile Basis Increase Uncertainty in Price Floor
Integrating MPP and LGM-D

Philosophically Different Approaches

**Target Deficiency Payment Program**

**Dairy Margin Protection Program**
1. Provides protection against multi-year losses from $4 to $8 cwt
2. Is not actuarially fair and is not based on milk and feed market prices
3. Indemnity payments only when margin falls below user selected coverage level
4. No payment limitations or AGI caps on eligibility

**Futures & Options Based Risk Management**

**LGM-Dairy**
1. Protects average gross margin at prevailing market prices, price floor moves up or down
2. Is designed to be actuarially fair pre-subsidy
3. Indemnity payments when actual margins are below guarantee at end of coverage period
4. Lacks sufficient underwriting capacity for continuous coverage

Available Price Floors Using LGM-Dairy

Nov PY Purchase Date (10-Month Contract)
### LGM-Dairy Summary Statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Premium ($M)</th>
<th>Indemnity ($M)</th>
<th>Net Benefit ($M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0.29</td>
<td>0.72</td>
<td>0.43</td>
</tr>
<tr>
<td>2010</td>
<td>0.78</td>
<td>0.28</td>
<td>-0.50</td>
</tr>
<tr>
<td>2011</td>
<td>25.01</td>
<td>0.07</td>
<td>-24.94</td>
</tr>
<tr>
<td>2012</td>
<td>19.18</td>
<td>1.39</td>
<td>-17.79</td>
</tr>
<tr>
<td>2013</td>
<td>16.87</td>
<td>2.63</td>
<td>-14.24</td>
</tr>
<tr>
<td>2014</td>
<td>11.64</td>
<td>0*</td>
<td>???</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>73.77</strong></td>
<td><strong>5.09</strong></td>
<td><strong>-57.04</strong></td>
</tr>
</tbody>
</table>

* As of 7/29/2014  
Source: USDA Risk Management Agency

### MPP: “Skin in the Game”

- MPP can provide revenue support during single- or multi-year losses in farm equity
  - Passive strategy may not work for all dairymen
  - Dynamic strategies can be creative (may involve alternating coverage choices annually)
- Can be integrated with futures/options and forward to improve risk management at farm
  - What level of integration is best?
- Goal to shift dairymen into new era (“Skin in the Game”)
  - MPP is uncoupled from market supply and demand fundamentals to increase ease of use (i.e. fixed premiums and coverage levels).

### Tool Margin Ranges are Based on Futures Markets

- Economists think of futures markets as the “best available forecast”
  - Many players have skin in the game
  - Futures are generally considered to be unbiased estimators of future price
    - Not consistently off in one direction or the other
Using CME to Forecast NASS Corn

Using CME to Forecast AMS SBM

Using CME to Forecast AMS All-Milk

Regression Price Inputs and Outputs

US All Milk Price
- Class III Milk, Class IV Milk, Lagged Prices, Seasonal Dummy

US Corn Price
- CME Corn, Lagged Prices

US Alfalfa Hay Price
- NASS Corn, AMS Soybean Meal, US All Milk Price, Lagged Prices

AMS Soybean Meal
- CME Soybean Meal Prices
**Are Corn & SBM Prices Correlated? (Futures - Cash Deviation)**

- Corn Price Decrease
- SBM Price Decrease
- Corn Price Increase
- SBM Price Increase

\[ y = 18.923x - 29.102 \]
\[ R^2 = 0.167 \]

**Are Milk & Corn Prices Correlated? (Futures - Cash Deviation)**

- Milk Price Decrease
- Feed Price Decrease
- Milk Price Increase
- Feed Price Increase

\[ y = 0.1828x - 0.0013 \]
\[ R^2 = 0.215 \]

**Are Milk & SBM Prices Correlated? (Futures - Cash Deviation)**

- Milk Price Decrease
- Feed Price Decrease
- Milk Price Increase
- Feed Price Increase

\[ y = 7.8004x - 25.965 \]
\[ R^2 = 0.1825 \]

**Example Probabilities CME Feed**

CME futures and options prices provide a forecast of the expected price and uncertainty.

*September 15 Corn Price PDF*
Simulate from CME corn and soybean meal price distributions to get NASS and AMS prices.

Simulate from CME class III/IV milk price distributions to get NASS all-milk price.

Generate a probability distribution of MPP-Dairy Margin (for all coverage months).