

## Paying for Storage in the Current Dairy Economy



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## What can you afford?

This.....?



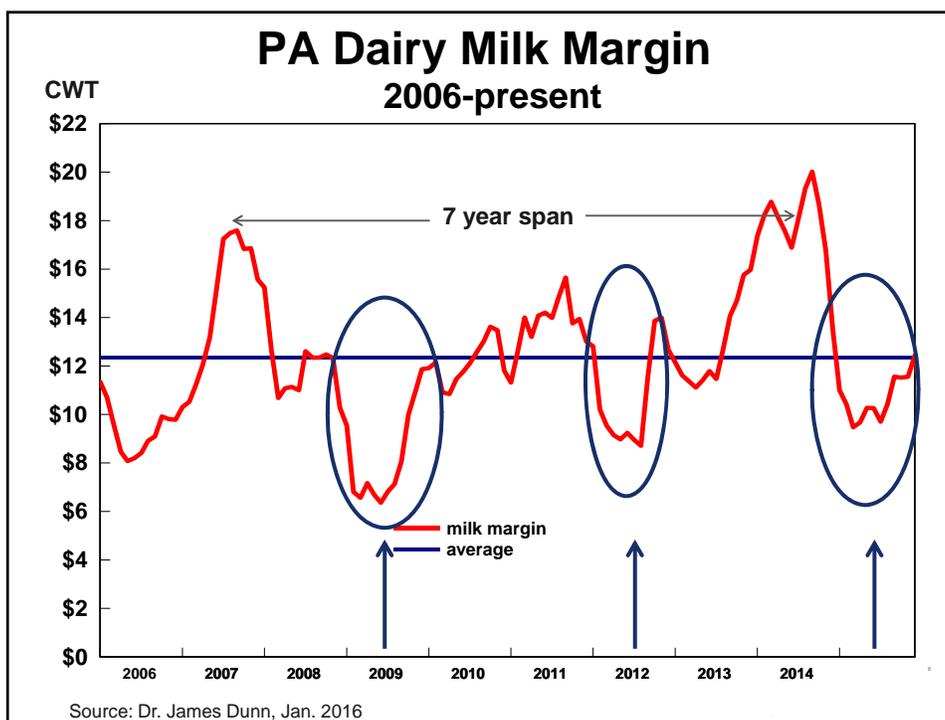
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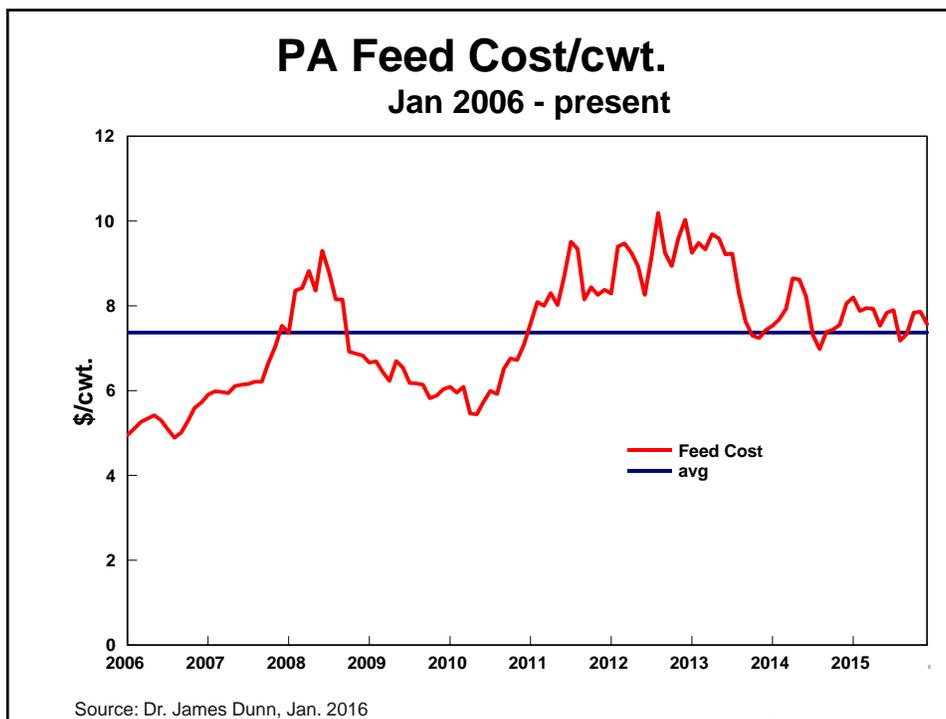
This.....?



## First steps

- Know your numbers
  - Cost of production – breakeven numbers
  
- What is needed (or what can you afford)?
  - Bare minimum
  - Bells and whistles
  
- Compile advisors
  - Smart decisions





## How does market volatility affect your margin?

- **Margin/cwt** – What does this number mean?
- **Milk price/cwt** – **feed cost/cwt** = margin/cwt  
(what is left over to pay all other expenses)

**2014 Penn State Dairy \$ense:**

100 lbs milk	\$25.65	milk price
_____	- \$ 7.96	feed cost
	\$17.69	margin/cwt

## How does market volatility affect your margin?

- Penn State's Dairy \$ense
  - **Margins for 2015:**  
\$18.10/cwt - \$7.86/cwt = **\$10.24 margin/cwt**

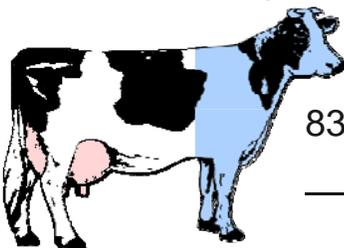
As of May 2016

- **Margins for 2016**  
\$16.39/cwt - \$7.29/cwt = **\$9.10 margin/cwt**



## How does market volatility affect your IOFC?

- IOFC– income over feed cost
- **Milk price/cow – feed cost/cow = IOFC per cow**  
- or the margin on a per cow basis



### 2014 Penn State Averages:

83.4 lbs milk	\$21.39	revenue
	- \$ 6.61	feed cost
	\$ 14.78	IOFC



### Here is the math:

- Penn State's Dairy \$ense
- **2015** – Avg milk production – 82.8 lbs; feed cost per cow \$6.51

$$\$18.10/\text{cwt} * 82.8/100 = \$14.98 \text{ milk income} - \$6.51 = \mathbf{\$8.47 \text{ IOFC/cow}}$$

If my breakeven IOFC is \$8.15 – I'm making **\$0.32/cow/day**

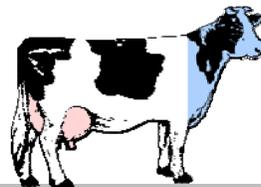


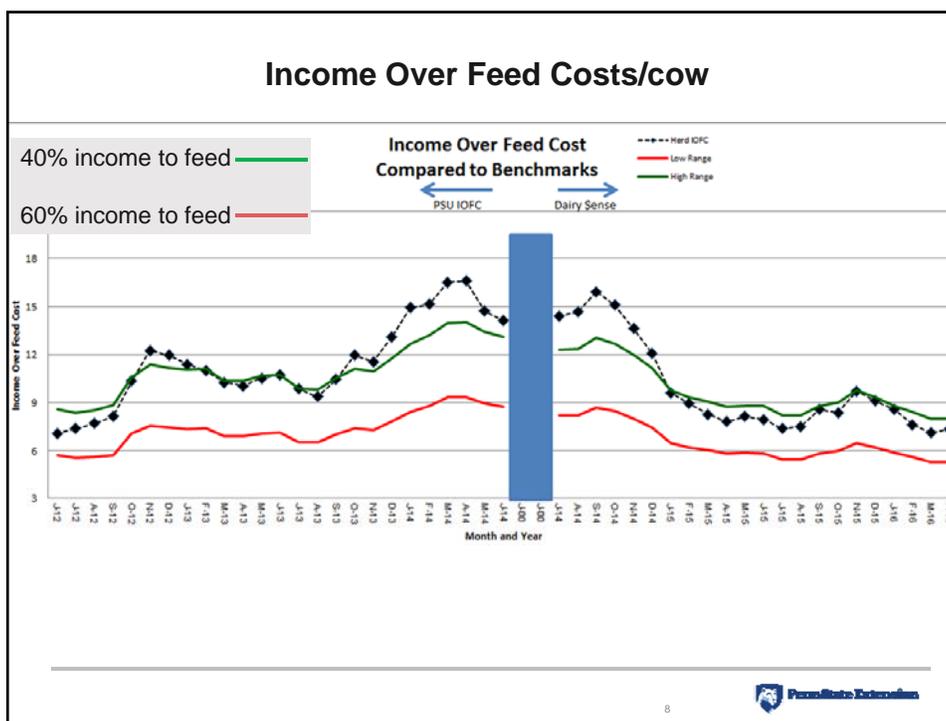
### Income Over Feed Costs/Cow

- Penn State's Dairy \$ense
- **2016** – Avg milk production – 84.4 lbs; feed cost per cow \$6.15

$$\$16.39/\text{cwt} * 84.4/100 = \$13.83 \text{ milk income} - \$6.15 = \mathbf{\$7.68 \text{ IOFC/cow}}$$

If my breakeven IOFC is \$8.15 – I'm **losing \$0.47/cow/day**

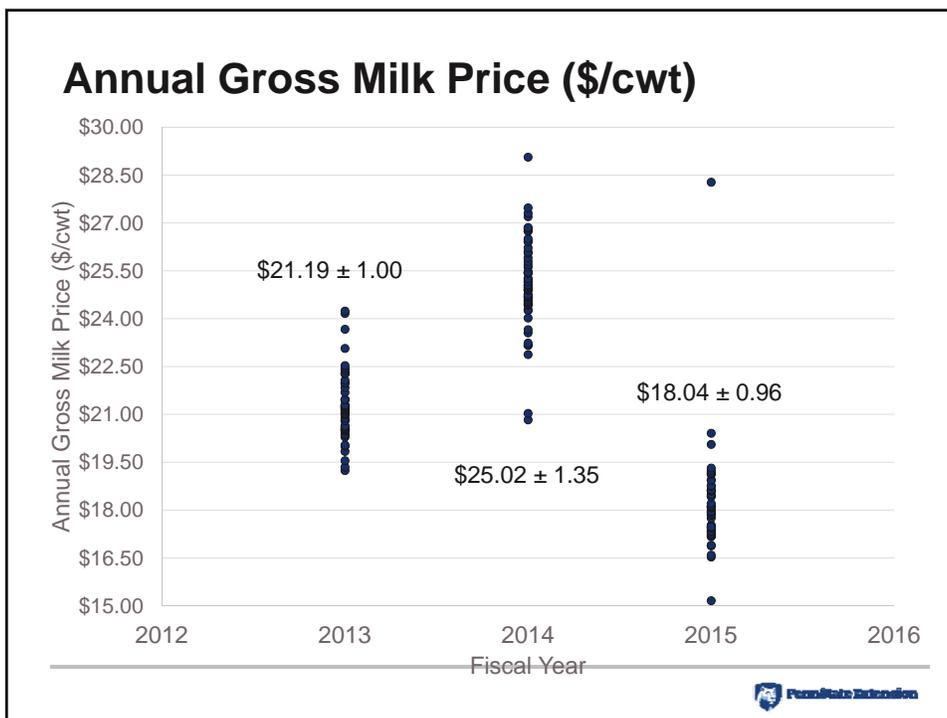
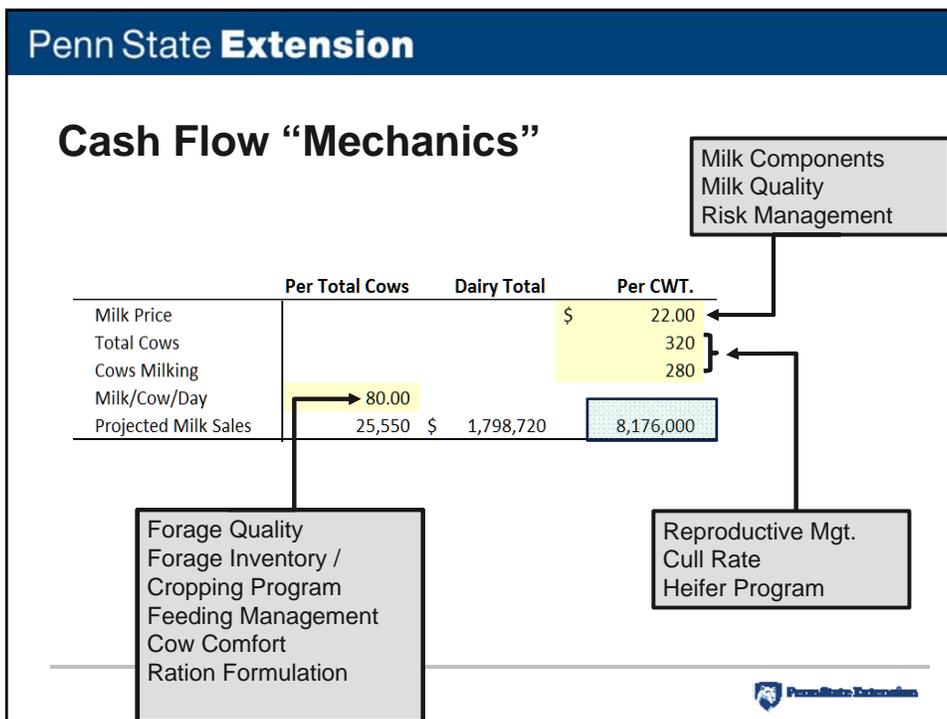




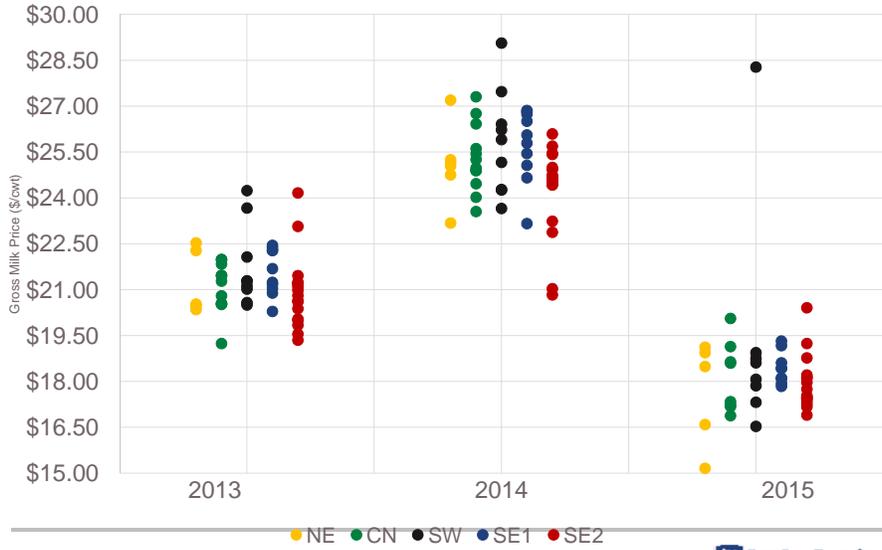
### Where does one start?

- Understand cash flow mechanics
- Budgets for crops
- Budgets for dairy

**Know your BREAKEVEN COST OF PRODUCTION!**



### Annual Gross Milk by Region/Year



### Determining Cost for Home Raised Feeds



## Determining Costs for Home Raised Feeds

### Total Direct Costs for Crop

Seed	\$45,513
Fertilizer	\$25,578
Chemical	\$11,220
Custom Hire	\$72,674
Land Rent	\$12,000
	<b>\$166,985</b>

## Determining Costs for Home Raised Feeds



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Determine Cost Values for Home-Raised Forages and Gr

	1	2	3	4	5
Crop Name	soybeans	corn	corn silage	ryelage	Alf/grass
Double Crop (Click)			✓	✓	
Total Amount Harvested	4,000	119	1,344	147	80
Unit (ton, lbs., bu.)	Bushel ▾	Ton ▾	Ton ▾	Ton ▾	Ton ▾
Unit Weight (bu., ton)	60	2,000	2,000	2,000	2,000
Acres Owned	20	20	60	20	40
Acres Rented	30		30		
Total Acres	50	20	90	20	40
Yield per Acre	80.00	5.95	14.93	7.35	2.00

Crop Name	soybeans	corn	corn silage	ryelage	Alf/grass
Cost/acre					
Seed	\$111.43	\$86.80	\$126.55	\$47.14	\$18.14
Fertilizer		\$72.29	\$100.21	\$37.50	\$8.93
Chemical	\$18.88	\$26.64	\$36.26		\$4.00
Custom Hire	\$37.76	\$52.72	\$263.62	\$20.33	\$67.88
Land Rent (/rented acres)	\$100.00	\$100.00	\$100.00	\$10.00	\$100.00
<b>Total Direct Costs for Crop</b>					
Seed	\$5,572	\$1,736	\$11,390	\$943	\$726
Fertilizer		\$1,446	\$9,019	\$750	\$357
Chemical	\$944	\$533	\$3,263		\$160
Custom Hire	\$1,888	\$1,054	\$23,726	\$407	\$2,715
Land Rent	\$3,000		\$3,000		
<b>Total Direct Costs</b>	\$11,404	\$4,769	\$50,398	\$2,099	\$3,958
<b>Total Direct Costs/Unit</b>	\$2.85	\$40.08	\$37.50	\$14.28	\$49.48
<b>Labor Hours per Acre (p. 2)</b>	2.25	2.30	5.00	4.00	4.00
<b>Labor Hours for the Crop</b>	113	46	450	80	160
<b>Percent of Crop Labor</b>	4.2%	1.7%	16.8%	3.0%	6.0%



## Determining Costs for Home Raised Feeds

Related Operating	
Fuel and oil	\$10,263
Repairs	\$13,112
Hired labor, WH, Ins.	\$60,100
Machinery leases	\$100
Building leases	\$200
Real estate taxes	\$7,649
Farm insurance	\$7,867
Utilities	\$13,113
Risk Management	\$1,000
Dues & prof. fees	\$1,093
Miscellaneous	\$4,917

## Determining Costs for Home Raised Feeds

Crop Name	soybeans	corn	corn silage	ryelage	Alf/grass
<b>Total Overhead Costs</b>	\$1,977	\$808	\$7,909	\$1,406	\$2,812
<b>Total Overhead Costs/Unit</b>	\$0.49	\$6.79	\$5.88	\$9.56	\$35.15
Owner Draw	\$905	\$370	\$3,619	\$643	\$1,287
Loan Payments (P&I)	\$1,273	\$520	\$5,090	\$905	\$1,810
<b>Total Costs [CF Basis]</b>	<b>\$15,558</b>	<b>\$6,468</b>	<b>\$67,015</b>	<b>\$5,054</b>	<b>\$9,866</b>
<b>Total Costs/Unit [CF Basis]</b>	<b>\$3.89</b>	<b>\$54.35</b>	<b>\$49.86</b>	<b>\$34.38</b>	<b>\$123.33</b>
Produced Amount Fed	3,999	119	1,344	147	80
Produced Amount Sold	1				
<b>Farm Cost Per Ton</b>	<b>\$129.65</b>	<b>\$54.35</b>	<b>\$49.86</b>	<b>\$34.38</b>	<b>\$123.33</b>



## Ration Costs for the Whole Herd



## Ration Costs for the Whole Herd

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College of Agricultural Sciences

**Dairy Herd Ration Summary--Case Farm Example**

Feed Price List as of Month #: 12

December 2016

Market: Farm Blend

Ration Weights are Entered as: Per Head Lactating Cow Feeding Style: TMR Fed

Number of Animals	Market	Farm Blend	Milking Cows Only		Total	Dry Cows		Heifers	
			As Fed	As Fed		dry cows	calves on milk	wetted	100
				65		10			
<b>Forages (Home-Raised)</b>									
Forage	Com sil avg analysis	\$ 57.20	\$ 32.95	72.0					
Forage	Leg sil, first cut, bud, 21.0 CP, 44.9 NDF, 62 NEL	\$ 118.00	\$ 27.50	23.0					
Forage	MMIL hay, first cut, bud, 18.3 CP, 47.8 NDF, 64 NEL	\$ 212.00	\$ 134.04	1.0				4.5	2.5
Forage	Non-cut sil avg	\$ 70.57	\$ 47.55			2.0			3.0
Forage	MMIL sil, first cut, bud, 19.9 CP, 48.1 NDF, 61 NEL	\$ 101.29	\$ 55.41			10.0			11.0
Forage	SM gm sil avg anal	\$ 76.08	\$ 37.29			39.2			10.0
Forage		\$ -	\$ -						
Forage		\$ -	\$ -						
Forage		\$ -	\$ -						
Forage		\$ -	\$ -						
<b>Forage Substitutes (Home-Raised)</b>									
Forage Subs		\$ -	\$ -						
Forage Subs		\$ -	\$ -						
<b>Concentrates (Home-Raised)</b>									
Conc Grain	Com, shelled	\$ 144.79	\$ 56.42						
Conc Grain	Soybeans COOKED	\$ 358.00	\$ 169.81						
Conc Grain	Canola meal	\$ 302.36	\$ -						
Conc Grain		\$ -	\$ -						
<b>Purchased Complete Feeds</b>									
<b>Purchased Forages, Forage Substitutes or Concentrates</b>									
Conc Mix	MC complete feed	\$ 278.18	\$ 176.18	20.70					
Conc Mix	DC mix	\$ 472.73	\$ 472.73			6.0			
Conc Mix	Heifer mix	\$ 342.89	\$ 342.89					4.00	4.50
Conc Mix	Milk replacer	\$ 3,217.00	\$ 3,217.00					1.30	
Conc Mix	Calf starter	\$ 463.00	\$ 463.00					2.0	
Conc Mix	Calf grower	\$ 454.00	\$ 454.00						4.50
Forage	Grass Hay	\$ 185.83	\$ 185.83						

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## Ration Costs for the Whole Herd

<b>(Rations &amp; Crops):</b>	<b>Purchased Feed Cost:</b>			
(\$860.11)	Milking Cow Concentrates	\$	119,540	\$ 860
(\$43.72)	Milking Cow Forages	\$	5,977	\$ 43
(\$362.62)	Dry Cow & Heifer Concentrates	\$	50,318	\$ 362
(\$69.41)	Dry Cow & Heifer Forages	\$	9,591	\$ 69
	<b>Other Feed Expenses</b>	\$	-	
		\$	<b>185,426</b>	\$ <b>1,334</b>

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## 2015 Actual Dairy Breakeven Summary

Dairy Enterprise per Cow: (Avg. Breakeven)	< \$16 (0)	\$16-\$18 (\$16.96)	\$18-\$19 (\$18.46)	\$19-\$20 (\$19.57)	\$20-\$22 (\$20.91)	>\$22 (26.37)	Average (50)
Milk Inflow/Cow/Year		\$4,800	\$4,762	\$4,469	\$4,561	\$4,462	\$4,606
Total Inflow/Cow/Year		\$5,583	\$5,861	\$5,406	\$5,576	\$5,683	\$5,611
Total Feed (\$/Cow/Year)		\$2,371	\$2,454	\$2,226	\$2,445	\$2,980	\$2,475
Dairy Expenses		\$ 906	\$ 756	\$ 781	\$ 890	\$ 926	\$ 852
Overhead Expenses w/ Owner Draw		\$ 1,162	\$1,481	\$1,403	\$1,459	\$1,432	\$1,156
Loan Payments		\$ 432	\$ 438	\$ 636	\$ 729	\$ 1,067	\$ 659
Expenses Other than Feed		\$2,060	\$2,298	\$2,778	\$3,048	\$3,795	\$2,801
Total Inflow – Total Outflow		\$1,152	\$1,108	\$ 402	\$ 83	\$(1,091)	\$ 336



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### 2015 Dairy Breakeven Summary

Dairy Enterprise per Cow:	\$16-\$18	\$18-\$19	\$19-\$20	\$20-\$22	>\$22	Average
Gross Milk Price Farm Breakeven	\$ 17.14	\$ 18.44	\$ 19.59	\$ 20.95	\$ 27.01	\$ 19.88
IOFC Breakeven/cow	\$ 7.05	\$ 7.53	\$ 8.06	\$ 8.41	\$ 9.63	\$ 7.89



## How do budgets look planning for manure storage?



Budgeting for manure storage  
\$115,000 (150 lactating cow dairy)

### **Small debt load**

**2015** Annual Numbers - \$18.00/cwt gross milk price

	<u>Current</u>	<u>5 yr. loan</u>	<u>10 yr. loan</u>
Principle + Interest	\$15,000	\$40,470	\$28,828
Breakeven IOFC/cow	\$7.16	\$7.64	\$7.43
Average IOFC/cow	\$7.94	\$7.94	\$7.94
Cash + or - / cow	<b>+\$0.78</b>	<b>+\$0.30</b>	<b>+ 0.51</b>

**2016** Annual Numbers - \$16.50/cwt gross milk price

	<u>Current</u>	<u>5 yr. loan</u>	<u>10 yr. loan</u>
Principle + Interest	\$15,000	\$40,470	\$28,828
Breakeven IOFC/cow	\$7.16	\$7.64	\$7.43
Average IOFC/cow	\$6.82	\$6.82	\$6.82
Cash + or - / cow	<b>-\$0.34</b>	<b>-\$0.82</b>	<b>- 0.61</b>



Budgeting for manure storage  
 \$115,000 (150 lactating cow dairy)

**Heavier debt load**

**2015 Annual Numbers - \$18.00/cwt gross milk price**

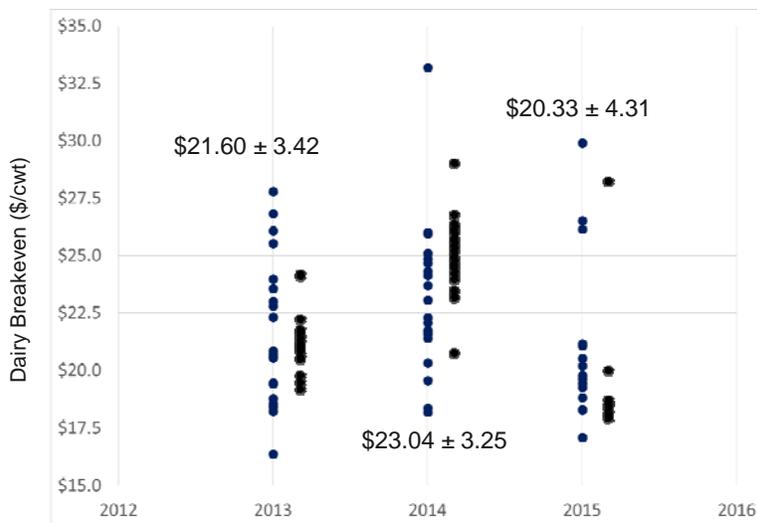
	Current	5 yr. loan	10 yr. loan
Principle + Interest	\$124,060	\$149,530	\$137,888
Breakeven IOFC/cow	\$8.04	\$8.57	\$8.33
Average IOFC/cow	\$8.58	\$8.58	\$8.58
Cash + or - / cow	<b>+\$0.54</b>	<b>+\$0.01</b>	<b>+ 0.25</b>

**2016 Annual Numbers - \$16.50/cwt gross milk price**

	Current	5 yr. loan	10 yr. loan
Principle + Interest	\$124,060	\$149,530	\$137,888
Breakeven IOFC/cow	\$8.04	\$8.57	\$8.33
Average IOFC/cow	\$7.46	\$7.46	\$7.46
Cash + or - / cow	<b>-\$0.58</b>	<b>-\$1.11</b>	<b>- 0.87</b>



### 3 Year Actuals: Dairy Breakeven

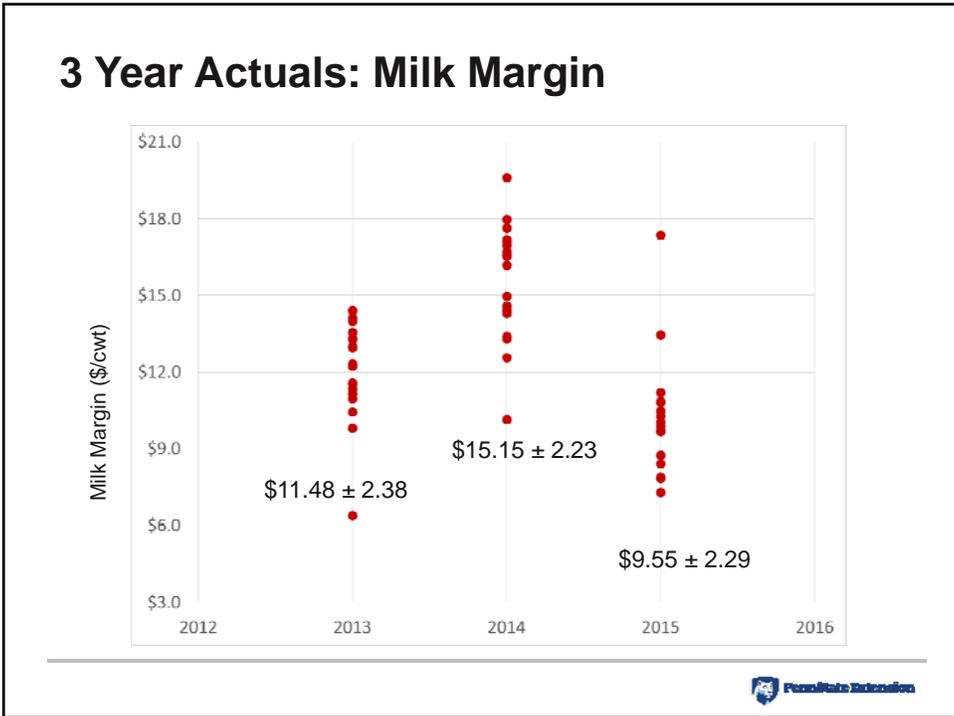
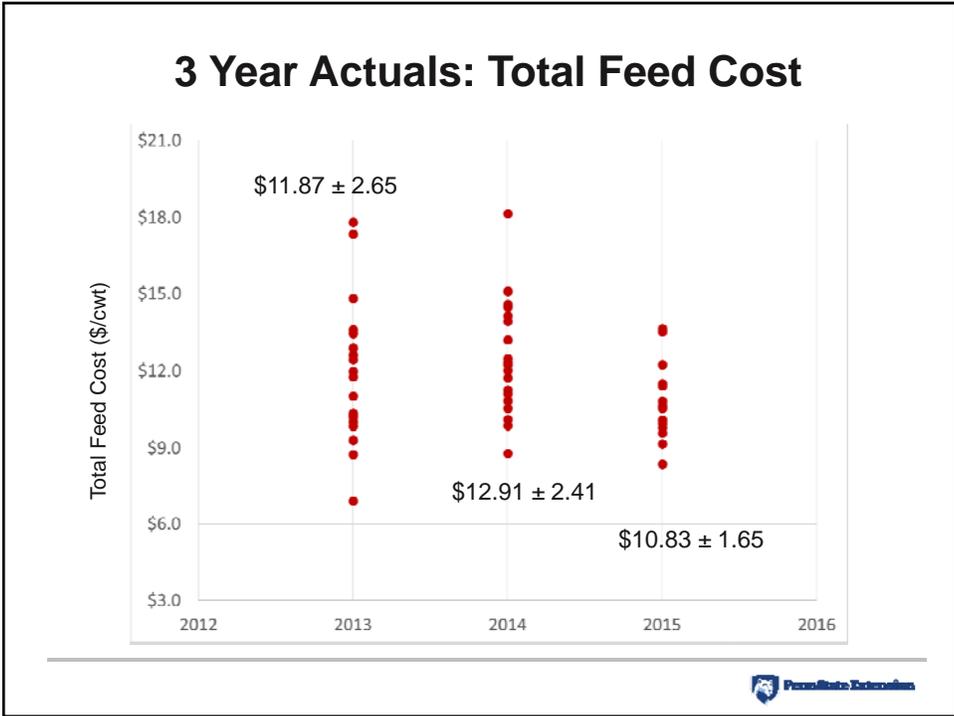


\$21.19

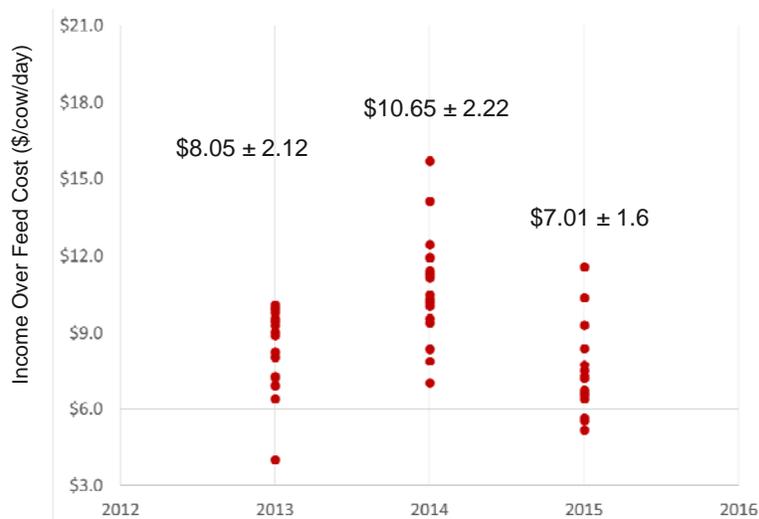
\$25.02

\$18.04





### 3 Year Actuals: Actual Income Over Feed Cost



### More Information and Resources Available at:

<http://extension.psu.edu/animals/dairy/business-management>

#### [Financial Tools](#)

Cash flow planning, income over feed cost, and profitability assessment

#### [Feed Price List](#)

#### [Mobile Apps](#)

Mobile apps allow technology to be accessible at your fingertips. Production, economic, and feed information for dairy and crop producers is available in multiple apps: DairyCents, DairyCents Pro, CropCents, and PSU Herd Metrics.

