



# *Heifer Economics*

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# *Topics*

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- **What is heifer worth?**
- **Heifer raising strategies**
  - **Cost of raising heifers**
  - **Time matters**
- **Issues in contract raising heifers**

# *1. What is a Heifer Worth?*

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## **3 Situations:**

- **Add a heifer when your facility can handle more cows than you have now**
- **Replacing a low producer**
- **Expanding the herd and dairy facility**

## *3 Situations*

- 1. Net\$ = Milk income + calf & cull value  
- out-of-pocket cost only**
- 2. Net\$ = Difference in milk income –  
difference in out-of-pocket cost -  
heifer “depreciation”**
- 3. Net\$ = Milk income + calf & cull value  
- out-of-pocket cost - cow  
depreciation - annual charge for  
capital investment cost**

***Farmer in situation 1 can afford to pay the most for a heifer, other things equal***

# *1. Have Space, Need Cows*

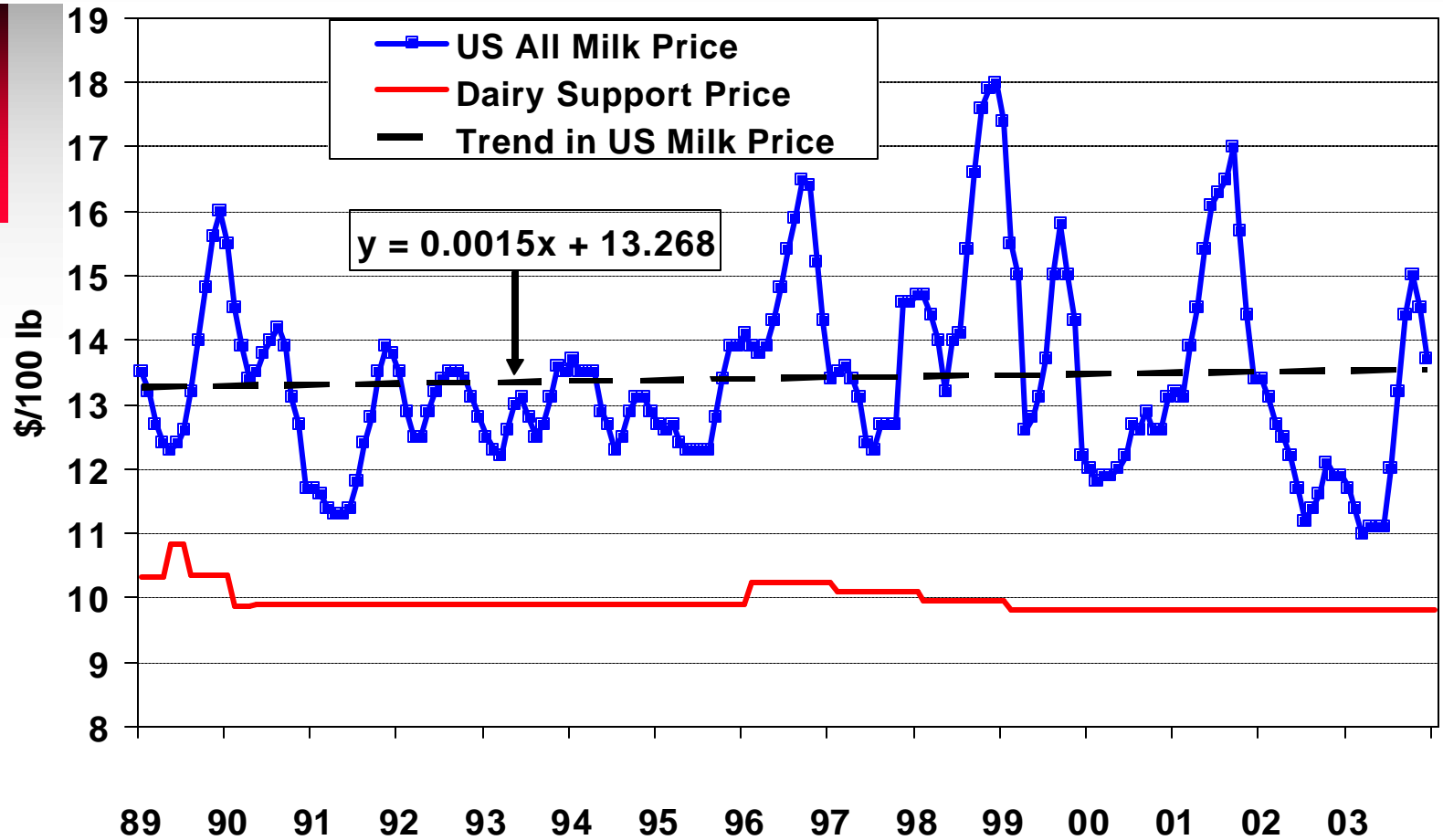
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- **Need to figure out the most we can afford to pay**
- **If we can find them for less, great**
- **If the going price is more, walk away**

# *1. Have Space, Need Cows*

- **Revenue & costs of buying a heifer or cow:**
  - **Milk income**
  - **Cull value**
  - **Calf value**
  - **Out-of-pocket costs**
  - **No fixed costs or farm overhead**
- **Productive life in the herd**
- **Losses – death & illness**

## US All Milk Price and Trend, 1989-2003



# *Have Space, Need Cows*

- **Use a 5- to 10-year average milk price**
- **Estimate milk production based on past herd performance & allow for discarded milk**
- **Use average of week-old calf values for bulls & heifers**
- **Estimate cull value based on past history for weight & price. Allow for death losses and thin cows.**



# *What Costs Will We Incur?*

- **Purchased feed**
- **Home grown feed -- seed, fertilizer, chemicals, equipment operation, labor**
- **Milking, feeding labor – how do you pay your employees?**
- **Vet, supplies, milk hauling & marketing, repairs, utilities**

# *What About Your Profit?*

- **Set a minimum return for your time, management, & risk**
- **Add something as a contribution to farm fixed costs and overhead**
- **Time value of money-- A purchased heifer generates income over her productive life, but the investment is made today**

# *“Present Value”*

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- **We need to discount future income, especially when interest & inflation rates are high**
- **The longer we must wait, the more we discount the income**

# *Example*

- **Bought heifer lasts 3 years in my herd**
- **5% of bought heifers don't make it into the herd**
- **Average cull value of \$350**
- **My desired return = \$365/year**
- **Discount rate of 9%**

# *Example*

**3-year average:**

- **Milk – 22,300 lb. at \$15 = \$3,345/year**
- **Calf = 0.8 @ \$200/head**
- **Total Income = \$3,505/year**

# *Example*

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**3-year average:**

- **Out-of-pocket costs of \$2,221/year**
- **No added labor cost**
- **Net income of \$1,284/year**

# *Example*

- **Present Value of added income is \$3,633**
- **Breakeven price for heifer, after costs & losses, is \$3,460**
- **Maximum I am willing to bid = \$2,365**

# *NC Farm Data*

- **11 NC dairy farms in 2000:**
  - **One farm generated \$3,341 in livestock income over feed costs per cow**
  - **Another farm made \$1,780**
  - **Difference was \$1,561/cow**



# *Annual Net Income*

		<u>Income</u>		
		- 10%	Base	+ 10%
<u>Cost</u>	- 10%	\$1,156	\$1,506	\$1,857
	Base	\$934	\$1,284	\$1,635
	+ 10%	\$712	\$1,062	\$1,413

# *Maximum Bid*

		<u>Income</u>		
		Base		
		- 10%	+ 10%	
<u>Cost</u>	- 10%	\$2,044	\$2,919	\$3,794
	Base	\$1,490	\$2,365	\$3,240
	+ 10%	\$936	\$1,811	\$2,685

# *Risk*

- **Sensitivity analysis:**
  - 10% change in income, + or -
  - 10% change in cost, + or -
- **Most concerned about downside risk -- less income or higher cost**

# *Example*

- **10% drop in income cuts bid price by \$875/head to \$1,490**
- **10% increase in costs cuts bid price by \$554 to \$1,811**
- **Both changes together cut bid by \$1,429, to \$936!**

# *Conclusion*

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- **What is a heifer worth -- Depends**
- **Each farm has a different maximum bid price, based on farm costs and herd performance**
- **Analyze your costs and returns before you buy**

# *Conclusion*

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- **Figure your maximum bid**
- **Spreadsheet is available:**

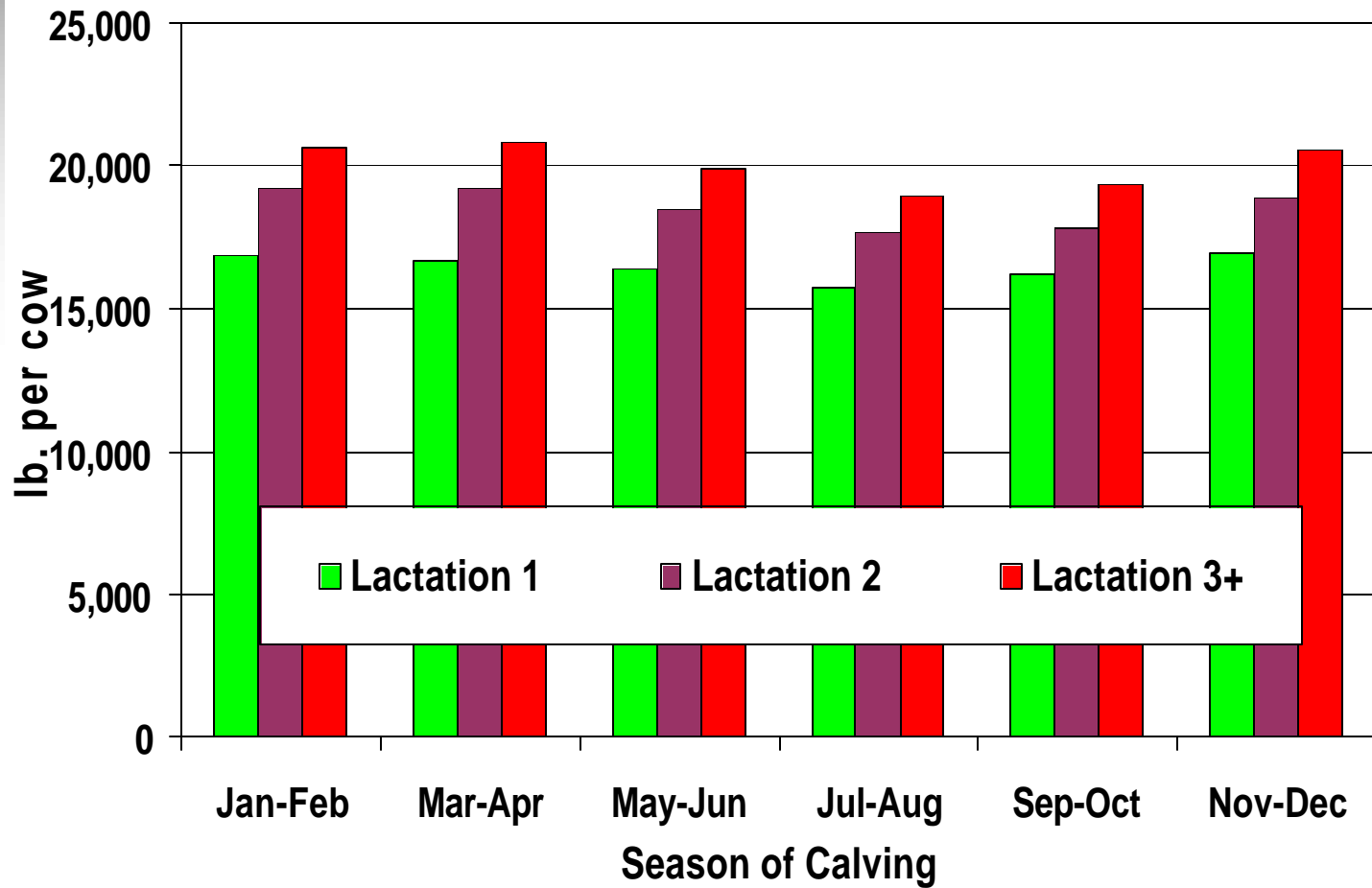
<http://www.ag-econ.ncsu.edu/faculty/benson/benson.html>

**Click on  
“Publications/Presentations”**

## *2. Heifer Raising Strategies*

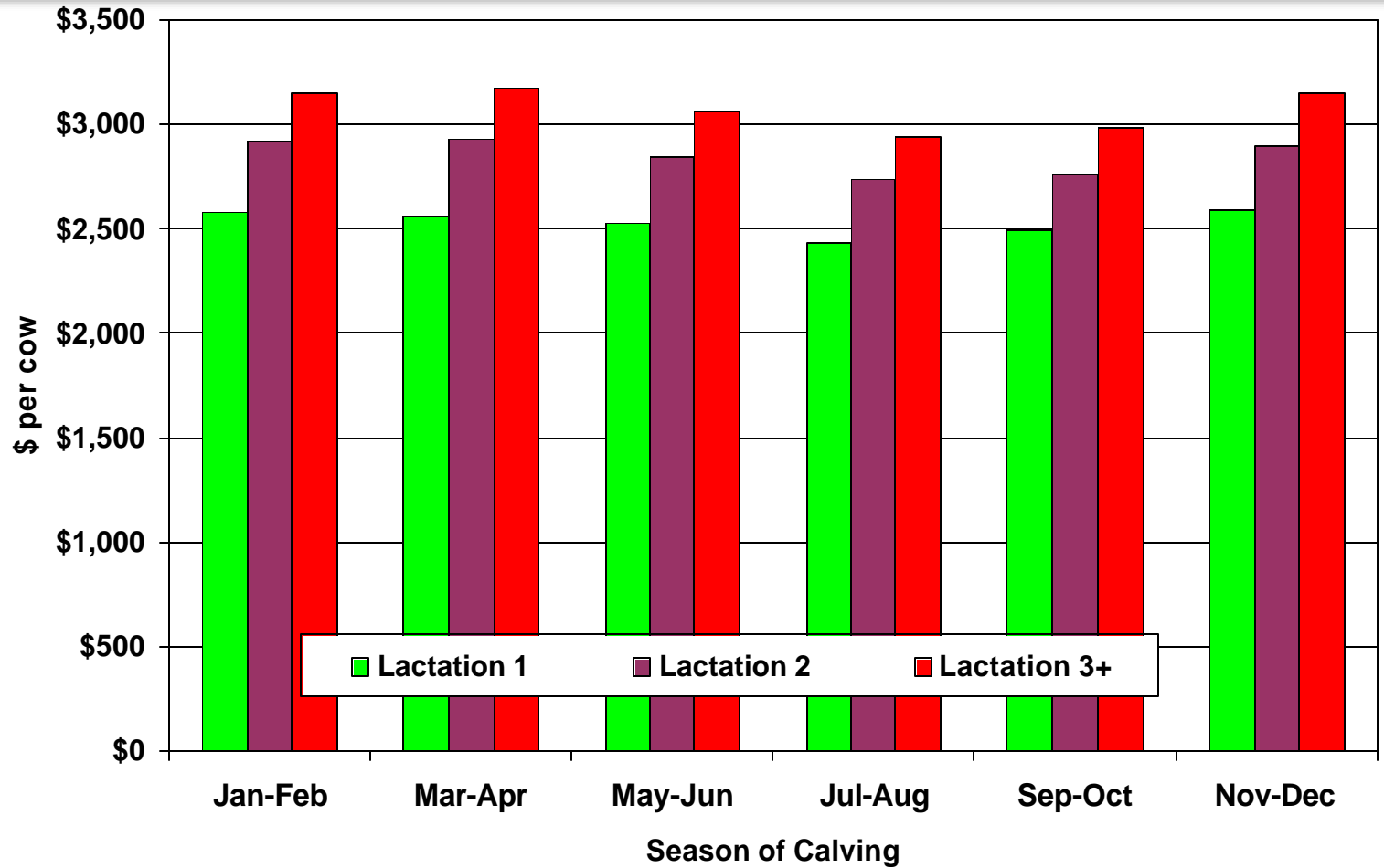
- **The goal is NOT to raise heifers at 24-months or at minimum cost – it is maximum lifetime profit**
- **Calves are born year round but month heifer calves affects income Impact on rearing costs**
- **Age at calving affects rearing costs**

# Effect of Calving Season on Lactation Production

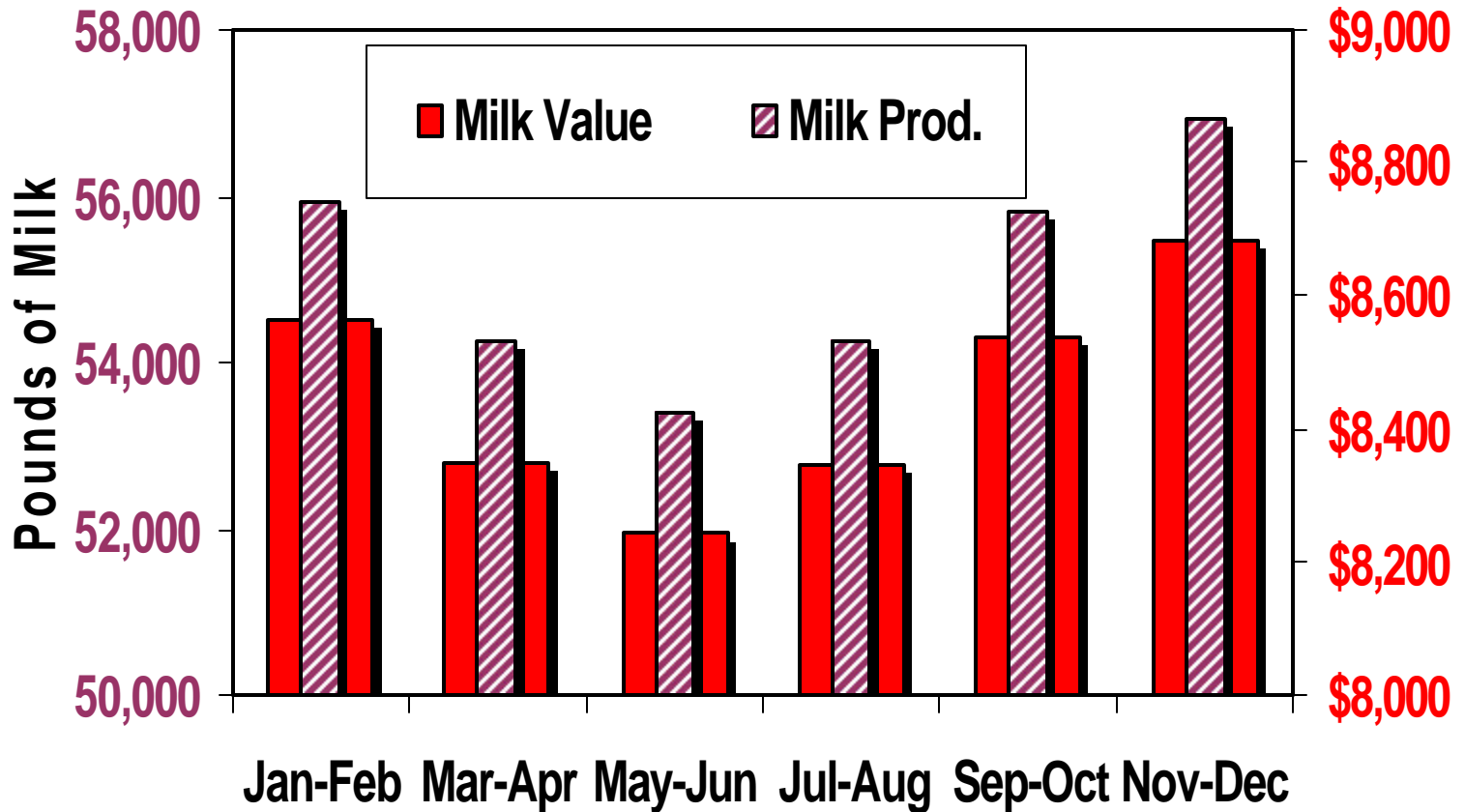




## Effect of Season of Calving on Total Lactation Revenue



# Cumulative Milk Production and Value over 3 Lactations for 6 Heifer Calving Seasons with a 14-month Calving Interval



# *Scheduling*

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## **Rearing stages:**

- **Birth to weaning**
- **Weaning to 6 months**
- **6 mo. to pre-breeding**
- **Breeding to close-up**
- **Target weight of 1,350 lb. pre-calving for Holsteins**

# *Scheduling*

- **Flexibility is in the 6 month to pre-breeding stage:**
  - **Fast – 2.2 lb. average daily gain over 7 mo. to calve at 22 mo.**
  - **Moderate – 1.8 lb. ADG over 9 mo. to calve at 24 mo.**
  - **Slow – 1.25 lb. ADG over 12 mo. to calve at 27 mo.**

# *Rearing Cost - Holstein*

- **24 month calving on a pasture, silage, hay diet**
  - **Feed cost = \$573**
  - **Other operating = \$299**
  - **Labor = \$239**
  - **Fixed cost = \$150**
  - **Total = \$1,261**
  - **Add value of calf to this total**

# *Feed Costs/Head -Holstein*

<b>Age at Calving</b>	<b>Corn Silage</b>	<b>Past + CS</b>	<b>Past + Hay</b>
<b>22 mo.</b>	<b>\$729</b>	<b>\$550</b>	<b>\$554</b>
<b>24 mo.</b>	<b>\$758</b>	<b>\$573</b>	<b>\$577</b>
<b>27 mo.</b>	<b>\$840</b>	<b>\$611</b>	<b>\$615</b>

# *Rearing Cost – Holstein\**

<b>Age at Calving</b>	<b>Corn Silage</b>	<b>Past + CS</b>	<b>Past + Hay</b>
<b>22 mo.</b>	<b>\$1,471</b>	<b>\$1,204</b>	<b>\$1,161</b>
<b>24 mo.</b>	<b>\$1,546</b>	<b>\$1,261</b>	<b>\$1,212</b>
<b>27 mo.</b>	<b>\$1,715</b>	<b>\$1,361</b>	<b>\$1,304</b>

\*Does not include calf value

# *Scheduling*

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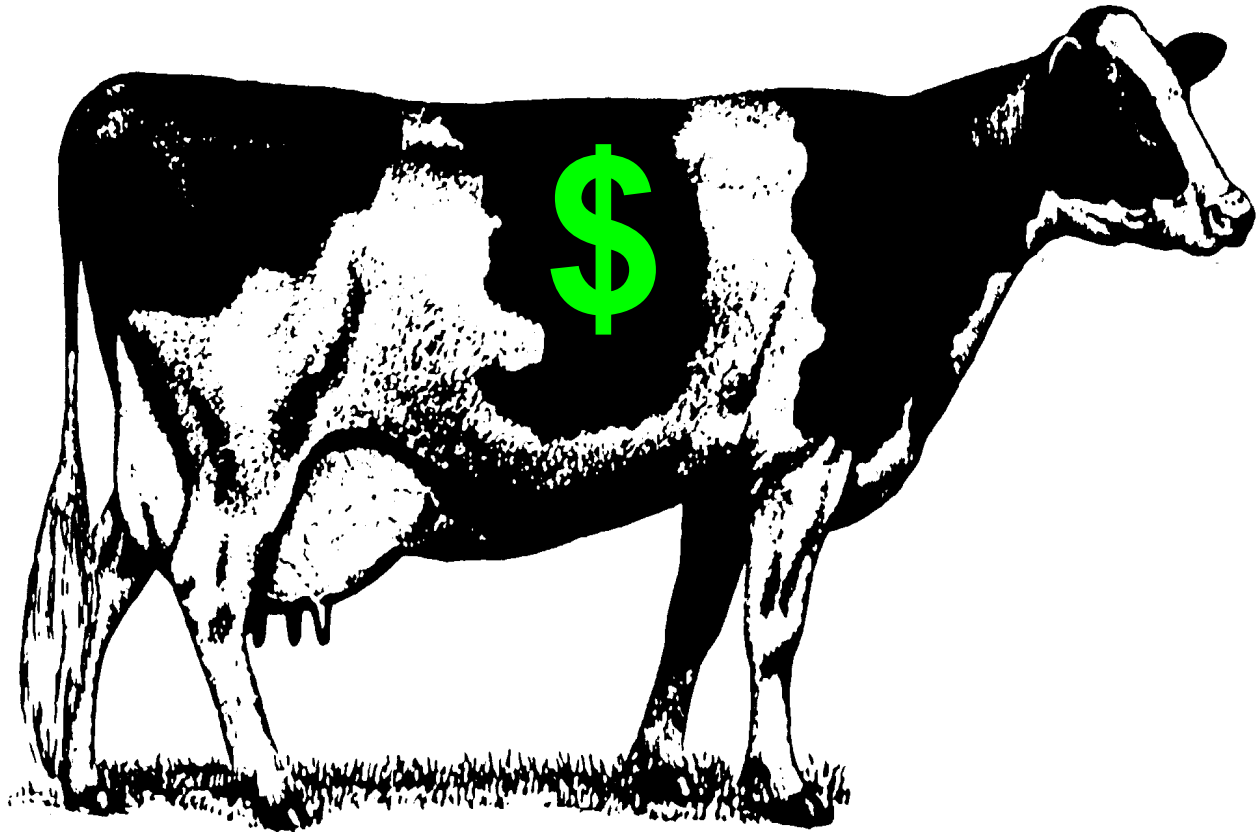
- **Jan-Feb – Fast growth**
- **Mar-Apr – Fast growth**
- **May-Jun – Moderate growth**
- **Jul-Aug – Slow growth**
- **Sep-Oct – Moderate growth**
- **Nov-Dec – Fast growth**



# *Issues in Contract Raising*

- **Advantages to dairy farmer are improved heifers and effective use of freed up resources rather than cost savings**
- **Both parties need to know their individual cost of production and heifer performance**
- **Dairy farmer needs to set targets for animal performance and calving dates when negotiating**
- **There is no single or “fair” price for contract raising – it depends....**

# *Remember the Economics*



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