



# DAIRY FARM OPTIONS WHEN COMBATING URBAN SPRAWL

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# INTRODUCTION

- Location: Weld County, Colorado
  - Majority of Colorado dairy farms are in this county
  - Increased number of dairy cows
  - Decreased number of dairy farms
- Population
  - Colorado Population –grown 10.5% since 2000
  - Weld County Population – grown 31% since 2000
  - Urban Sprawl is becoming a major problem for local farmers





## BACKGROUND

- Dairies now have neighbors all around them
- Complaints about:
  - Noise
  - Odors
  - Flies
  - Traffic
  - Other farm activities
- More Restriction and Regulations that affect the farmers



## GUIDING QUESTIONS IN THE RESEARCH

- What costs are being increased by urban sprawl?
- What are dairy farmer's options when dealing with these costs?
- Of these options, what is the most profitable?
- What is the best option for the farm?



## BUDGET ANALYSIS

- For this study:
  - A base budget was constructed
  - It was altered to reflect the problem
  - It was altered again to reflect the alternatives
- The data for this study is from 2007
- When all the budgets were constructed they were compared using a budget analysis



## BASE BUDGET

- Constructed to duplicate a dairy existing in Weld County, Colorado
- Colorado Data
  - Milk Prices
  - Cull Cow Prices
  - Cull Cow Rates/ Death Loss Rates
- The cost data was given on a per hundred weight basis of milk produced
  - Data could not be found for Colorado
  - Closest available data was for Idaho



# BASE BUDGET

## Colorado

- Hay
  - \$132 per ton
- Corn
  - \$3.25 per bushel
- Production Per Cow
  - 22,577 pounds
- Average Milk Price
  - \$14.90 cwt

## Idaho

- Hay
  - \$118 per ton
- Corn
  - \$3.75 per bushel
- Production Per Cow
  - 22,332 pounds
- Average Milk Price
  - \$14.00 cwt



## BASE BUDGET

- All costs based off Idaho costs and calculated on a per hundred weight of milk produced
  
- The costs included were:
  - Operating Costs
    - Feed – purchased, homegrown, grazed
    - Veterinary and Medicine
    - Bedding
    - Marketing
    - Custom services
    - Fuel, lube, and electricity
    - Repairs
    - Other operating costs
    - Interest on operating capital



## BASE BUDGET

- The costs included were (cont.):
  - Allocated overhead
    - Hired Labor
    - Opportunity costs of unpaid labor
    - Capital recovery of machinery and equipment
    - Taxes and insurance
    - General farm overhead
  - These costs were not increased with expansion to account for economies of size



# BASE BUDGET

- Cull Cow
  - Estimated as 30% of the herd
  - Price - \$48.75 cwt (per hundred weight)
  - Average cow weighs 1,400 lbs
  - From Extension Agent in Weld County
- Death Loss
  - Estimated as 10% of the herd
  - Calculated the same as the cull rate
  - From CSU Master Student researching dairy cow mortality
- Milk Prices
  - Monthly basis
  - From Livestock Marketing Information Center



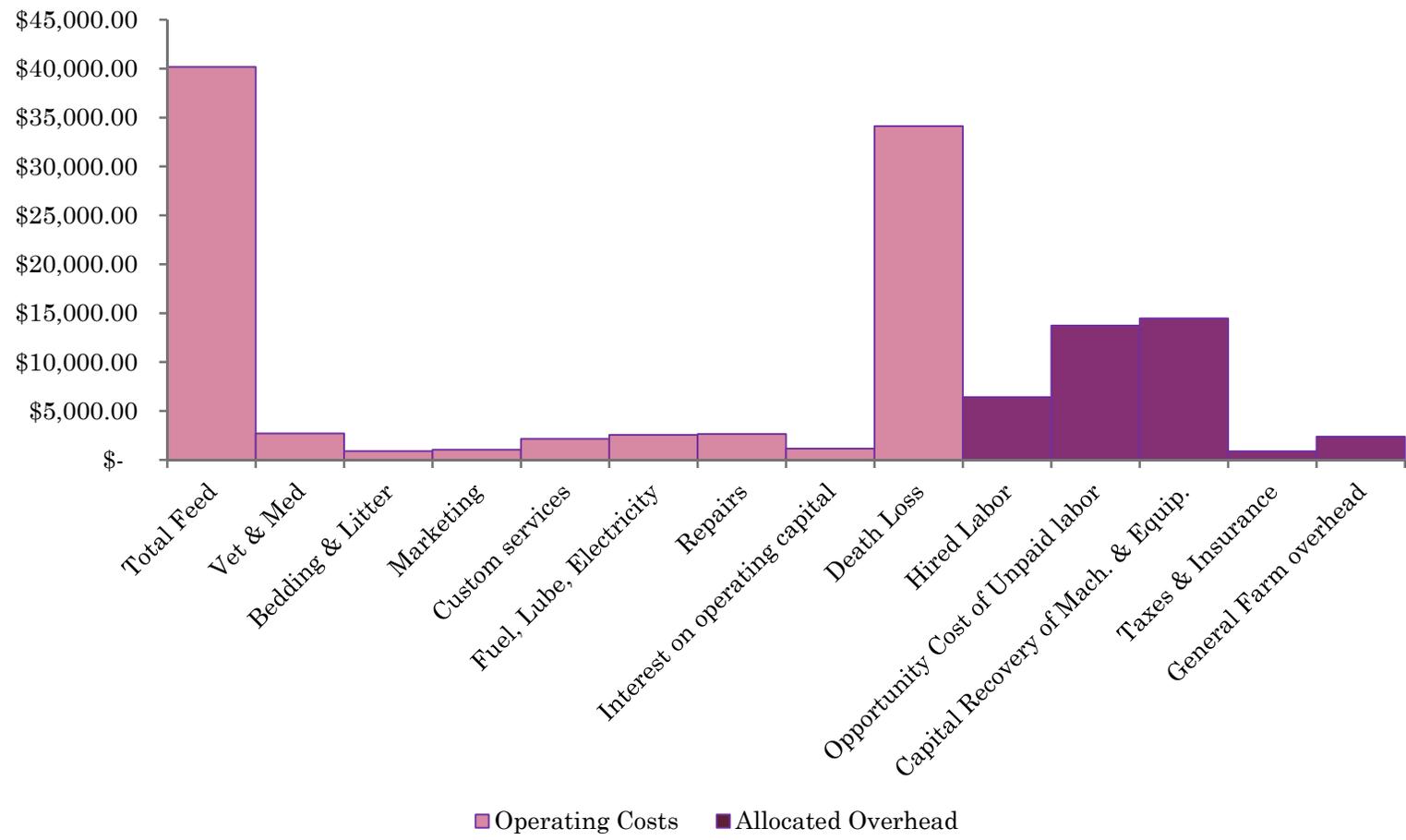
# BASE BUDGET

- Simplifying Assumption
  - Omission of all calves in budget
  - Bull calves
    - Dairies are actually losing money
    - High feed costs and low market price
  - Heifer calves
    - Raised either on or off site
    - Added back into herd to replace cull and death loss cows



# BASE BUDGET

## Total Annual Costs



# INCREASED COSTS

## ○ Manure Removal Costs

- Includes increased costs due to new rules and regulations regarding waste management
- Cost was found in study of the changing structure of dairy farms
- \$0.30 per hundred weight of milk produced



# INCREASED COSTS

## ○ Death Loss Costs

- Includes increased costs associated with disposing of the carcasses, minimizing odor, and other obligations to avoid complaints
- Calculated with the assistance of an expert in the field
- This is a very difficult issue to put a dollar value too
- To account for this a simplifying assumption was made
  - 200 pounds was added to the weight in the calculation
  - $200 \times \$48.75 \text{ cwt} = \$97.50$



## EXPANSION

- The first option is to expand the dairy
  - From 500 to 800 head of cattle
  - Purchase 300 head of heifers
  - Take out a loan and pay only interest for first year

Price Per Head	\$1,895.00
Number of Head	300
Total Cost	\$568,500.00
Interest Rate	8%
Number of Years	7

- Price of Heifers – from Extension Agent in Weld County
- Loan information – from a banker in Weld County who handles similar loans



## SELL OUT OPTION

- The second alternative would be to shut down the dairy
  - Sell the land the land at market price
  - Sell the cattle to another dairy

Sell out (Land)	\$	800,000.00
Sell out (Cattle)	\$	950,000.00
Sell out total	\$	1,750,000.00



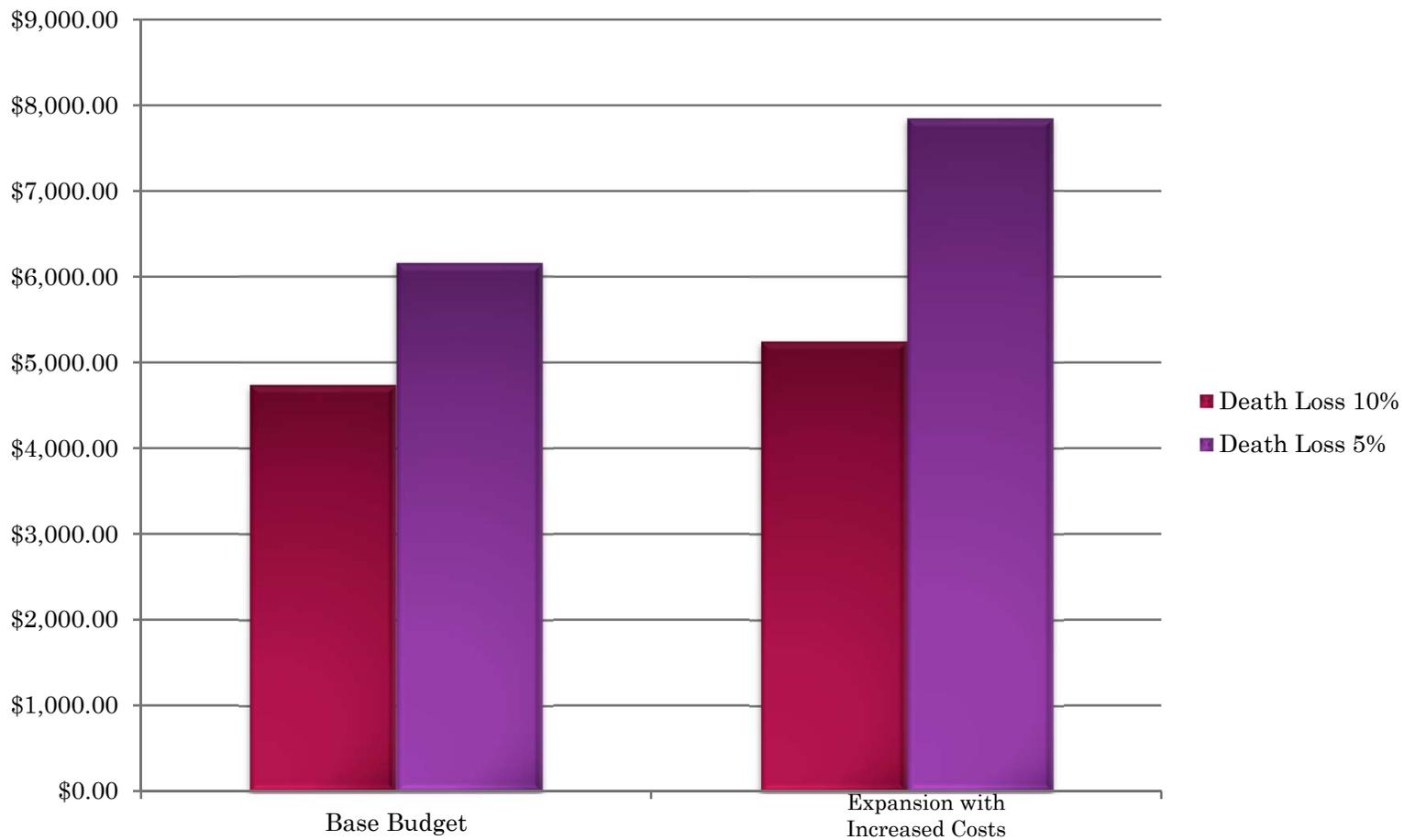
## DEATH LOSS ANALYSIS

- Due to cost a sensitivity analysis was constructed
- Profits are highly sensitive to the death loss
- Death loss is a risk all dairy farmers deal with
  - Cows live on concrete – very hard on their feet
  - High employee turnover
    - Lots of training is required
    - Often there is a language barrier
    - Errors during training cause cows to not be monitored as needed
- These problems can never be eliminated completely; however, improved management practices can help



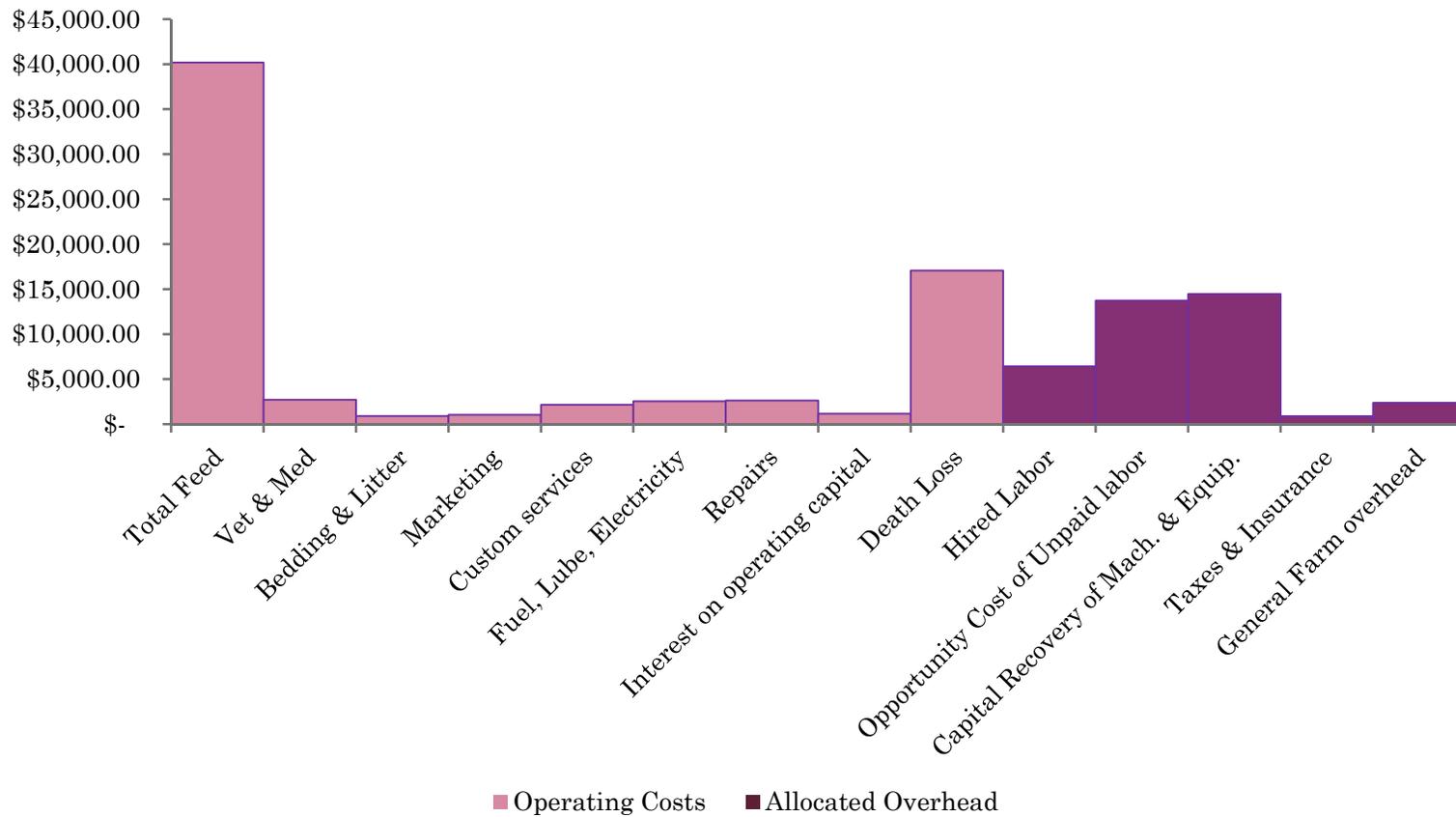
# DEATH LOSS ANALYSIS

## Total Annual Profit for Death Loss Analysis



# DEATH LOSS ANALYSIS

## Total Annual Costs with decreased Death Loss Cost



## RESULTS

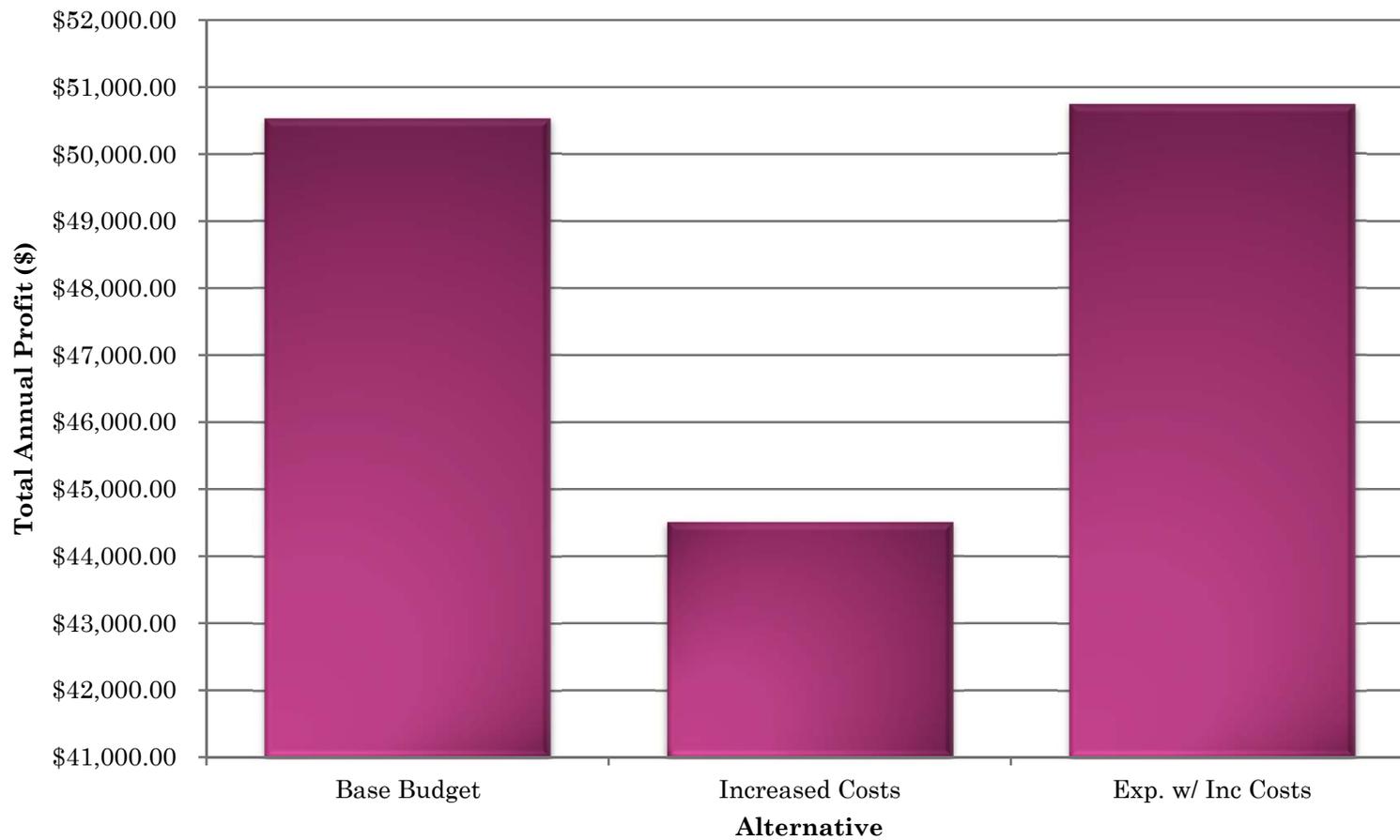
- First glance, the sell out option looks best
- However, many other factors should be taken into account
- Increased costs is a major loss in profit
- Expansion completely makes up for this loss

	Total Annual Profit
Base Scenario	\$ 50,531.51
Increased Costs	\$ 44,508.65
Exp. w/ Inc Costs	\$ 50,744.84
Sell out Value	\$ 1,750,000.00



# RESULTS

## Comparing the Profit from each Alternative



# RESULTS

- Other options to help with the situation
  - Environmental Quality Incentives Program (EQIP)
    - Assists farms in financing, setting up, and managing waste management programs
      - Will pay up to 50% of costs for certain practices
    - Helps farmers update their current systems to meet new rules and regulation
    - Helps decrease complaints
  - Lagoon
    - Line with material to prevent it from seeping into ground water
    - Systems to keep lagoons aerated



# RESULTS

- Other options to help with the situation (cont.)
  - Odor and Fly population
    - Keep corals clean, dry, and stirred up
      - Haul manure out regularly
      - Harrow the pens often
    - When spreading manure on fields
      - Turn the soil immediately
      - Helps decrease odor



## RECOMMENDATION

- Remain open and expand the herd to 800 head
  - Continue to make even more profit than before
  - EQIP and other suggestions will help decrease complaints
  - The farmer keeps his way of life
  - Continually has approximately the same income each year



## RECOMMENDATION

- The sell out option does look good up front
- However,
  - It is only one payment, after that there is no more income
  - The farmer loses his way of life
  - The farmer must find another source of income
  - The land value is continuing to increase, by waiting they may receive more money for the land
  - Meanwhile, the operation can continue to make a profit



## CONCLUSION

- Recommend expanding the dairy to 800 head
  - Farm received approximately the same annual income as in the past
  - If the situation worsens
    - The sell out option can be researched again
    - Land value is continually appreciating
    - The operation can always be sold at a later date



## ADDITIONAL IMPORTANT INFORMATION

- This study was constructed using 2007 data
  - With the changes in the current market this study is already outdated
  - 2008 has many changes that will effect the industry
    - Fuel prices
    - Feed prices
- Colorado is currently under a no growth policy right now
  - Due to the limited market available dairies are limited to a specific quantity of milk
  - Leprino Foods is currently in the process of building a cheese factory near Greeley, Colorado to be completed in 2011



# QUESTIONS?



# REFERENCES

- Cass, Karen: Mastitis Consultant, Weld County, CO. Personal Interview. 15 October 2008.
- Chapman, Forestine. (2007). *Agricultural Statistics*. Retrieved October 1, 2007 from [http://www.nass.usda.gov/Publications/Ag\\_Statistics/2007/2007.pdf](http://www.nass.usda.gov/Publications/Ag_Statistics/2007/2007.pdf).
- Idaho, monthly dairy costs of production per cwt of milk sold, 2007*. (2008). Retrieved October 13, 2008 from <http://www.ers.usda.gov/Data/CostsAndReturns/testpick.htm#milkproduction>.
- Keith Maxey: CSU Extension Weld County-Dairy. Personal Interview. 15 October 2008.
- Loyd, Jeff: VP/ Agricultural Lending New Frontier Bank, Greeley, CO. Personal Interview. 17 October 2008.
- MacDonald, J.M., O'Donoghue, E.J., McBride, W.D., Nehring, R.F., Sandretto, C.L., & Mosheim, R. (2007). Profits, Costs, and the Changing Structure of Dairy Farming. *Economic Research Report, 47*, 27-30. Retrieved October 16, 2008 from <http://www.ers.usda.gov/publications/err47/>.
- McConnel, Craig: CSU Master student researching Dairy Cow Mortality. Personal Interview. 15 October 2008.
- Milk cows and milk production by month, Colorado, 2004-2007: Milk Production per Cow [Electronic Version]. (2008). *Colorado Agricultural Statistics, 99*.
- Monthly Fluid Grade Milk Prices (\$/CWT), by state, 1980-present (2008). Livestock Marketing Information Center. Retrieved October 16, 2008 from [www.lmic.info](http://www.lmic.info).
- Natural resources Conservation Service, USDA (2002). Environmental Quality Incentives Program: Fact Sheet. *Farm Bill 2002*.
- Quarterly Milk Cow Prices: Animals sold for dairy herd replacement only, 1980-present (2008). Livestock Marketing Information Center. Retrieved October 16, 2008 from [www.lmic.info](http://www.lmic.info).
- Sheffield, R.E., Ndegwa, P., Gamroth, M., & Haro Marti, M. (2008). Odor Control Practices for Northwest Dairies. *University of Idaho Extension*. Retrieved October 16, 2008 from <http://info.ag.uidaho.edu/pdf/CIS/CIS1148.pdf>.
- United States Department of Agriculture (2008). Farm Real Estate: Average Value per Acre, by Region and State, January 1, 2004-2008 [Electronic Version]. *Land Values and Cash Rents: 2008 Summary*, 6.
- U.S. Census Bureau. (2008). *State and County Quick facts: Colorado*. Washington DC: U.S. Government Printing office.

