

# Comparing Winter Wheat/Fallow and Winter Wheat/Proso Millet/Fallow Rotations in Cheyenne County Nebraska

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# Purpose

- The purpose of this research was to determine whether a wheat/fallow rotation or a wheat/millet/fallow rotation achieves the greatest returns.
- This research provides a potential decision making tool for producers who are looking to re-evaluate their cropping procedures in the future.

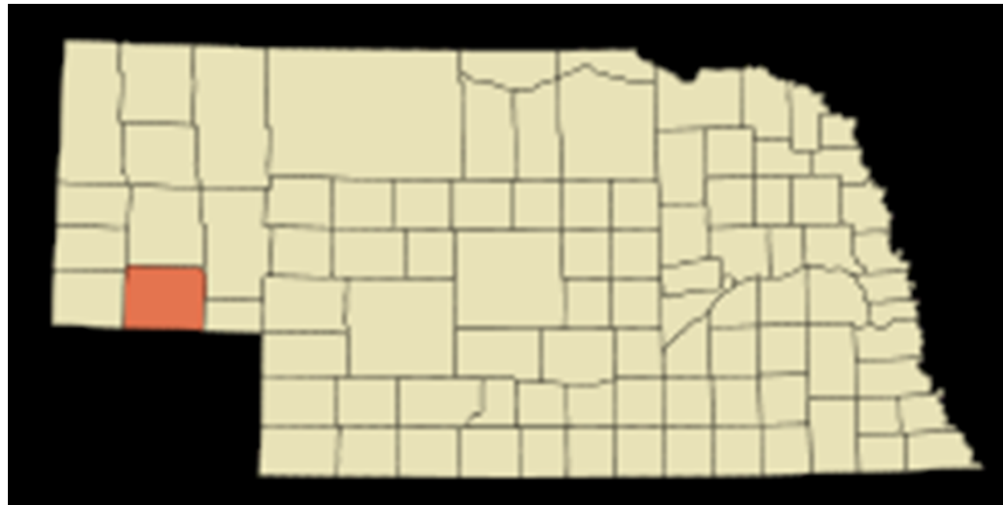


# Overview

- We will discuss:
  - Background information of the two systems
  - The how the study was conducted
  - The results of the study
  - Conclusions and recommendations based on the results of the study

# Location of Study

- The study is located in Cheyenne County Nebraska.
- Semi-arid climate with 14-17 inches of annual precipitation
- Growing Season of 133 to 135 days



# Winter Wheat

- Planted in the fall and harvested in summer
- Can grow with as little as 7.5 inches of moisture
- Must be fertilized to produce a profitable production level
- Rule of 50 pounds of anhydrous ammonia/acre



# Proso Millet

- Planted in the spring
- Can produce grain within 60 to 90 days of planting
- Shallow rooting
- Very efficient topsoil water use
- Does not effect wheat yield in a rotation
- Catch crop to replace winter wheat that has been destroyed
- Rule of 40 pounds of anhydrous ammonia per acre





# Wheat/Fallow Cropping System

- Each year, half of the acreage is planted to wheat the other half is fallow
- Each plot of land produces one crop every two years



# Wheat/Millet/Fallow

- Each year, one third of the total acreage is planted to wheat, one third is planted to millet, and the remaining third is fallow
- Each plot of land produces two crops every three years
- Introducing millet into the rotation reduces the level of disease, weeds, and insects in the following wheat crop





# Marketing Differences

- Wheat
- Traded on established futures trading institutions
- Provides price discovery for the cash market
- Millet
- Not traded on any futures trading institution
- Majority of crop purchased by few buyers who control the price

# Economic Feasibility Study

- Based on a 6000 acre farm in Cheyenne County
- Utilizes historical price data from 1999-2008
- Based on the historical prices and yields, which system provided the greatest return for the time period
- Calculated on a per acre basis
- Returns for each year were then recalculated into 2008 dollars in order to compare the total return and average return for each system

# Costs

- Field Operations
  - Regional western Nebraska data obtained from the biennial Nebraska Custom Farm Rates publication by the University of Nebraska
- Anhydrous Ammonia
  - Annual data from NASS stating the cost per ton for the Northern Plains Region
- Chemicals
  - National average data for the respective years.
- Seed
  - The average price per bushel plus three dollar per bushel handling fee
- Land Tax
  - Obtained from a landowner in Cheyenne County, land was currently in one of the two rotations
- Total Costs were obtained by adding up all these costs on a per acre basis

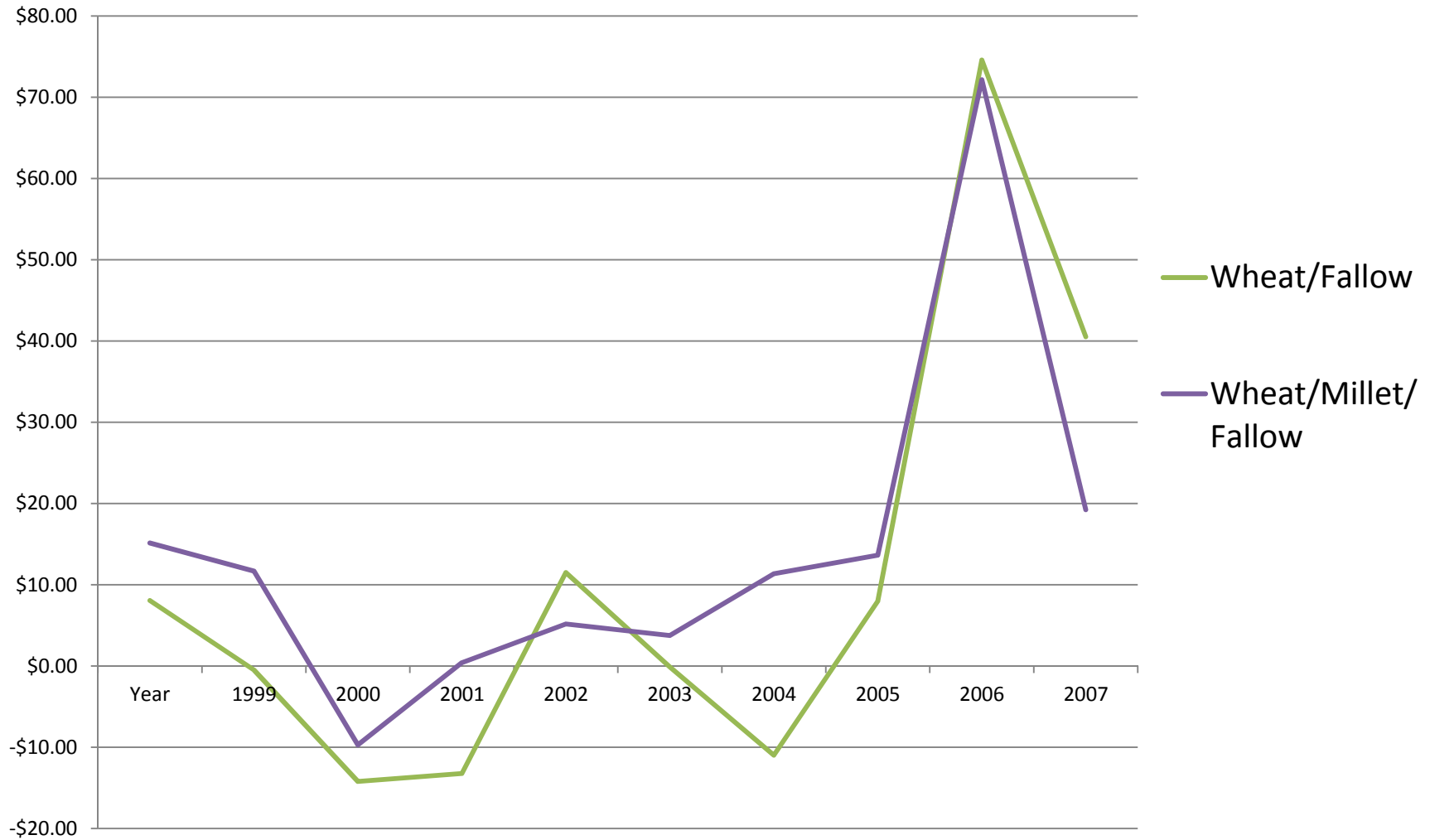
# Revenues

- Yields
  - Nebraska state average yields were obtained through NASS records
- Prices
  - Nebraska state average prices received for the commodities were also obtained through NASS records
- Total per acre revenues were calculated by multiplying the average yield by the average price received
- Two different wheat prices were analyzed in 2008.

# Results

- The wheat/millet/fallow rotation was more profitable in 7 out of 10 years.
- Total profit of wheat/millet/fallow system for 1999-2008 was \$142.75, for the wheat/fallow system, the figure was \$102.42.
- The wheat/millet/fallow rotation yielded the greatest total returns and the greatest average returns, with one exception-when the price of wheat was extraordinarily high in 2008.
- In the last two years, the wheat/fallow system has outperformed the wheat/millet/fallow system, due mostly to high yields and an upward price trend.
- If this upward price trend continues, wheat/fallow system would become consistently more profitable than the wheat/millet/fallow system.

# Yearly Returns



# Price Sensitivity Study

- Seeks to analyze the effect of a volatile of wheat price on subsequent return for each system.
- Can be used to make decisions for the future based on wheat prices.
- The ten year averages were used for wheat and millet yield, as well as millet price. Costs were maintained at the 2008 levels.
- The wheat price in which each system produces the same amount of return to land is \$4.69 per bushel.
  - Above this price, the wheat/fallow system produces greater returns
  - Below this price, the wheat/millet/fallow system produces greater returns



# Conclusions and Recommendations

- Wheat/millet/fallow system provides consistent returns to land and also provides benefits such as disease, weed, and insect control.
- Wheat/fallow system has produced much more variable returns over the ten year period, but an upward price trend in wheat has greatly increased the potential returns.
- Plan to take advantage of the upward price trend by utilizing wheat/fallow system in the near future
- If upward price trend for wheat reverses, and goes below the \$4.69 threshold (or recalculated equivalent), revert back to the long term returns of the wheat/millet/fallow system.

Questions?