

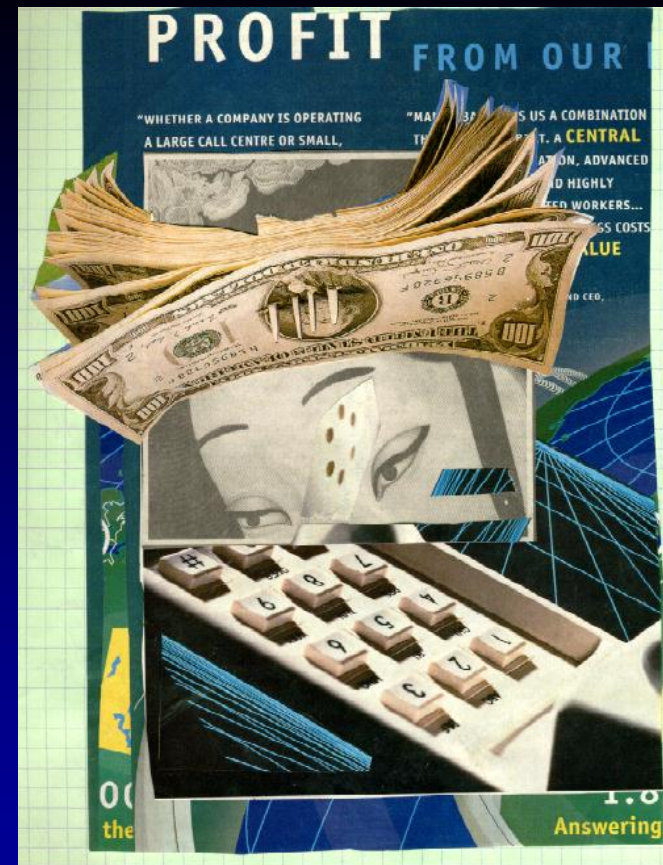


# The Fundamentals of High Profit Wheat

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# Profit = (Yield X Price) – Costs

- High Profits
  - Obtain the highest possible yield
  - With the lowest possible costs
  - Market at the best possible price



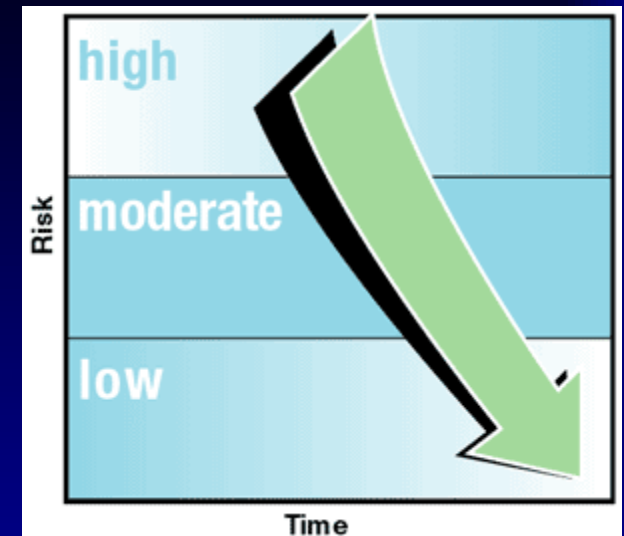
# Yield = Genotype X Environment X Management

- Genotype
  - Yield potential, disease resistance, lodging, etc.
- Environment
  - Rainfall, sunlight, temperature, day length, etc.
- Management
  - Fertility, planting, pest control, etc.

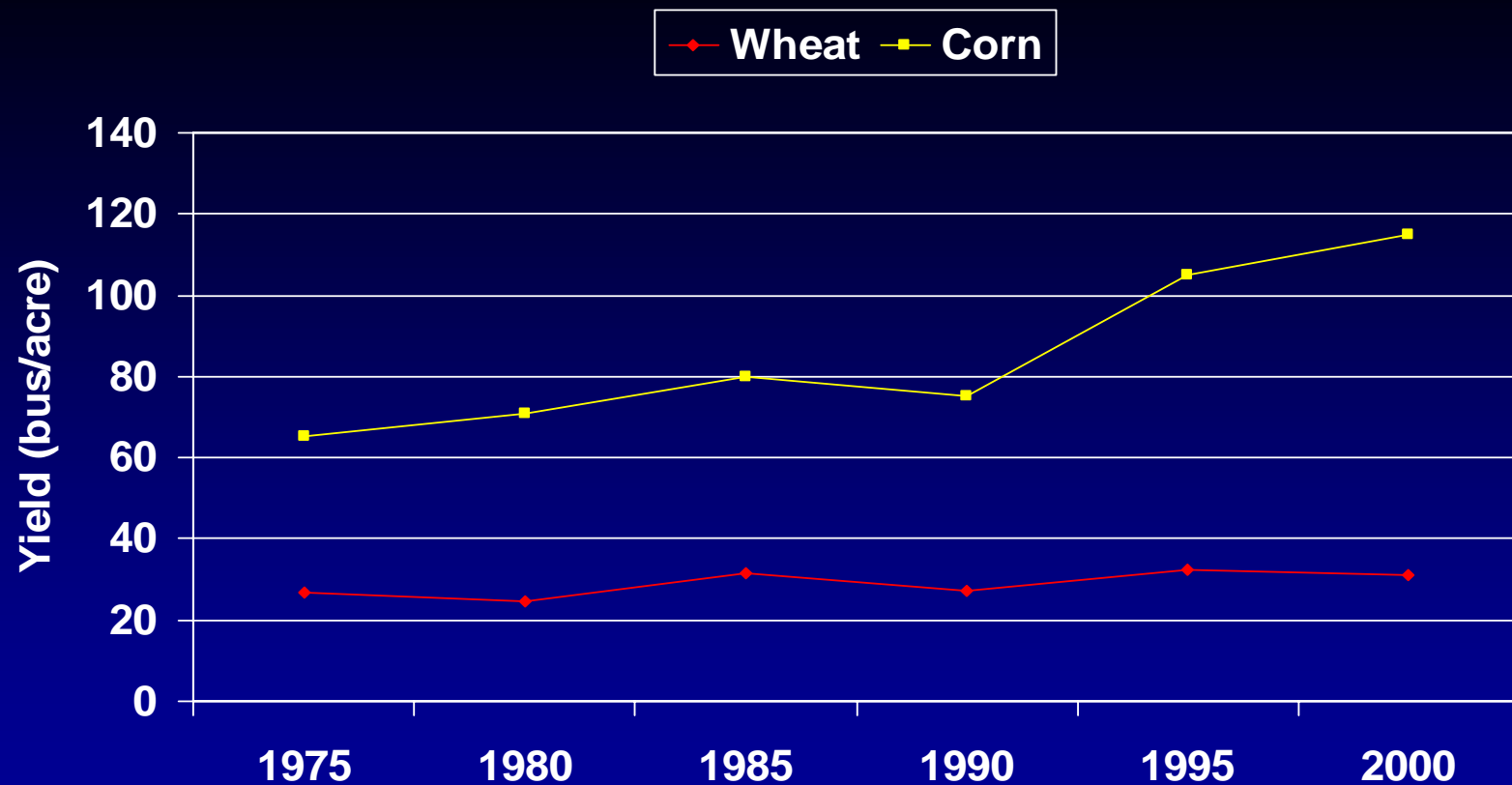


# Management and Risk

- Low cost input, high response, low risk (i.e. early planting)
- Low cost, moderate response, moderate risk (high plant population)
- High cost, potential for high response, moderate risk (i.e. fungicide for scab control)
  - Use of research results, models and climate data to reduce risk
- High cost, low response, high risk (i.e. applying most N after the 6<sup>th</sup> leaf stage)



# Trends in yield of wheat and corn in ND



# How to increase yield: Basic plant physiology

- Vegetative growth (leaves and stems) foundation for grain growth
  - Good stand establishment and early growth
  - Cool temperature favors vegetative growth
    - Plant early
- Highest yields w/ high biomass w/ optimum proportion of grain (Harvest Index ~45%)
  - Balancing source (leaves) and sink (florets)
- Reproductive phase (4 leaf to anthesis) most critical in determining yield (seeds/area)
  - Minimize stress during this stage



# Many technologies/management practices contribute to high yield

- No silver bullet!
- Practices that build a foundation for yield
- Favor yield potential development
- Protect yield
- Facilitate timely management



# Selecting a variety

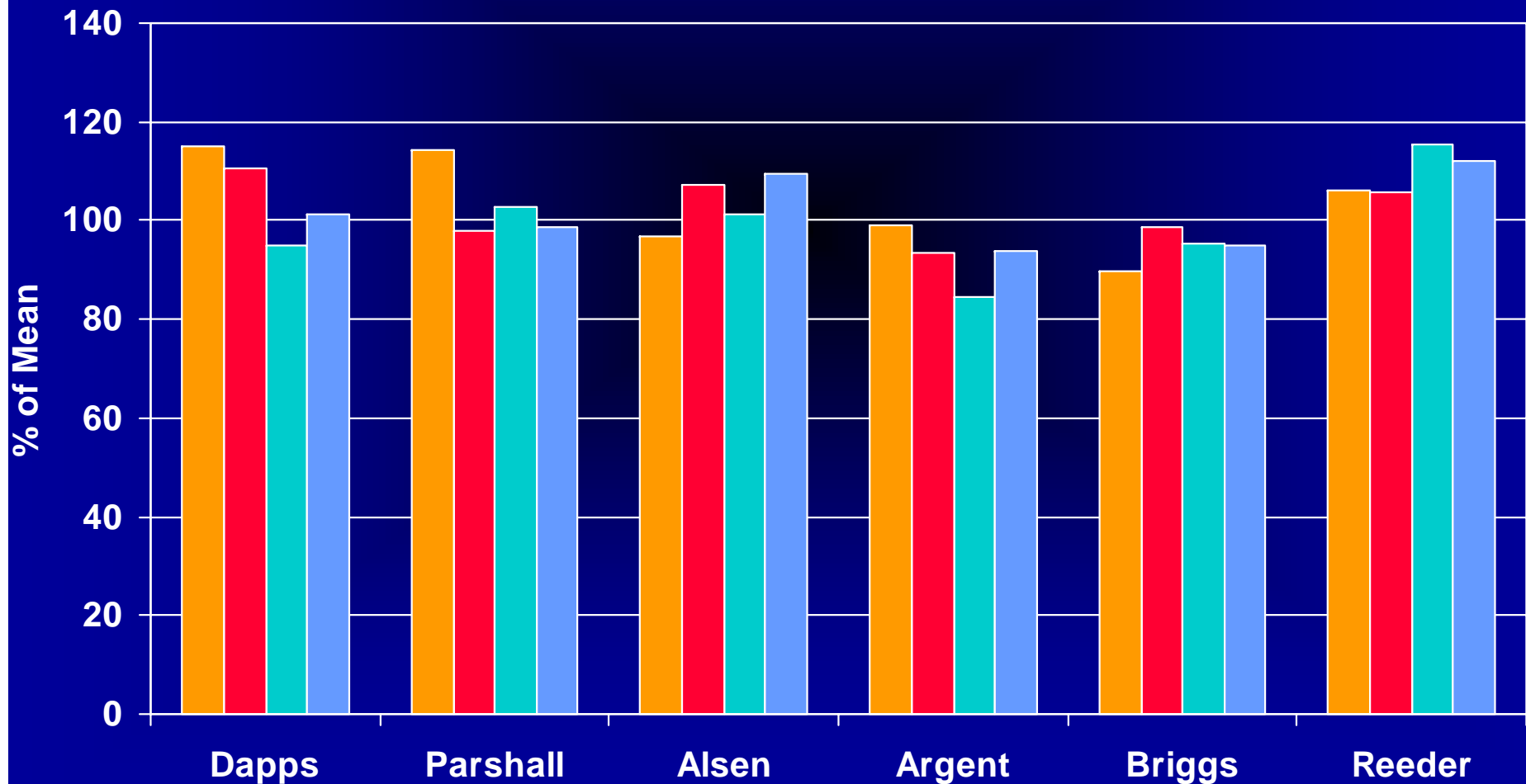
- Genotype by environment interactions can be significant
- Select a variety that has consistently high yields in environments near your farm
  - A high yielding, unstable variety may > risk
- Use multiple years and locations in your analysis
- Don't forget disease resistance and quality

## Varietal testing top performers, 2002-2003

Prosper 02	Ave E. 02	Ave W. 02
Briggs	Briggs	Reeder
HJ98	HJ98	Norpro
Oxen	Russ/Oxen	Keene
2003		
HJ98	HJ98	Reeder
Keystone	Parshall	Oxen
Parshall	Mercury	Parshall
Reeder	Knudson	Keene

# Comparative yield of HRSW varieties in Minot area ND, 2003

■ No Till ReC ■ Conv Rcrop ■ Renville ■ Bottneau



# Conclusion

- Profitable wheat production is a complex interaction of yield, price and costs
- Much can be done to improve yields, many practices contribute but interact with environment with differing levels of risk
- Information and research results can reduce risk
- Start with good genetics – selected based on multiple sites and years

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