Grain and Oilseed Markets

A Primer for Grain and Oilseed Price Analysis

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Highlights

- Biological processes of corn, soybeans, and wheat from planting, to growing, to harvesting, to storage
- How weather interacts with the biological processes to determine production
- Recent trends in production, exports, and prices
- Varieties of wheat and determinants of their differential prices

Check Your Understanding

- When are corn and soybeans planted?
- When are corn and soybeans harvested?
- When are the different varieties of wheat planted and harvested?
- What is the main driver of differential prices in wheat varieties?

Why Biology Matters for Prices

Commodities are natural things subject to biological processes.

You must understand the basic biological processes involved in a commodity's production in order to understand and anticipate what happens to its price.

Corn

Corn: Production Timeline

- **Planted:** March to May
- **Pollination:** July
- **Harvested:** September to October

Since pollination is key to production and yield, new crop futures prices tend to be highly variable in June and July as weather patterns mean the difference between a high yielding year and low yielding year.

Corn: Weather Matters

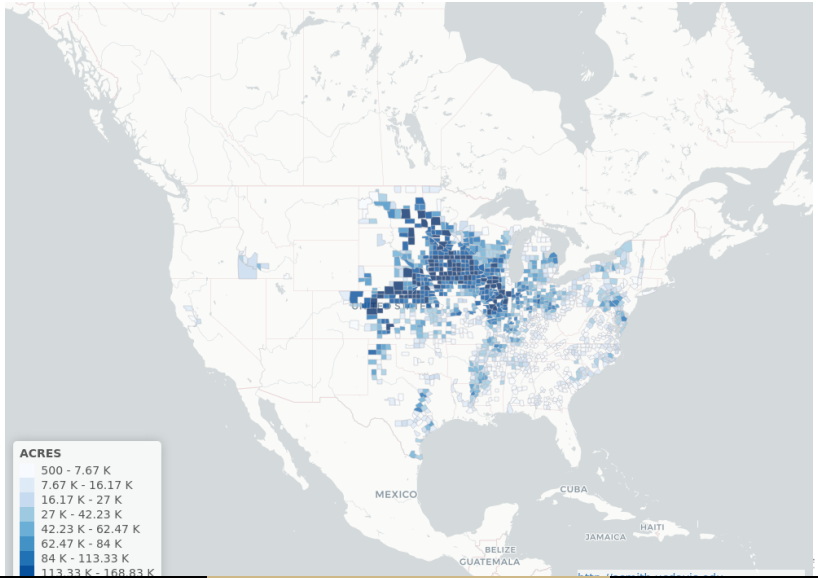
Planting Weather

- Too wet $\rightarrow$ difficult to get acreage planted in a timely manner
- Corn planted too late may suffer a yield penalty

Harvest Weather

- Very wet conditions $\rightarrow$ difficult to get the crop out and dry before it is damaged

Corn Acres Planted 2019



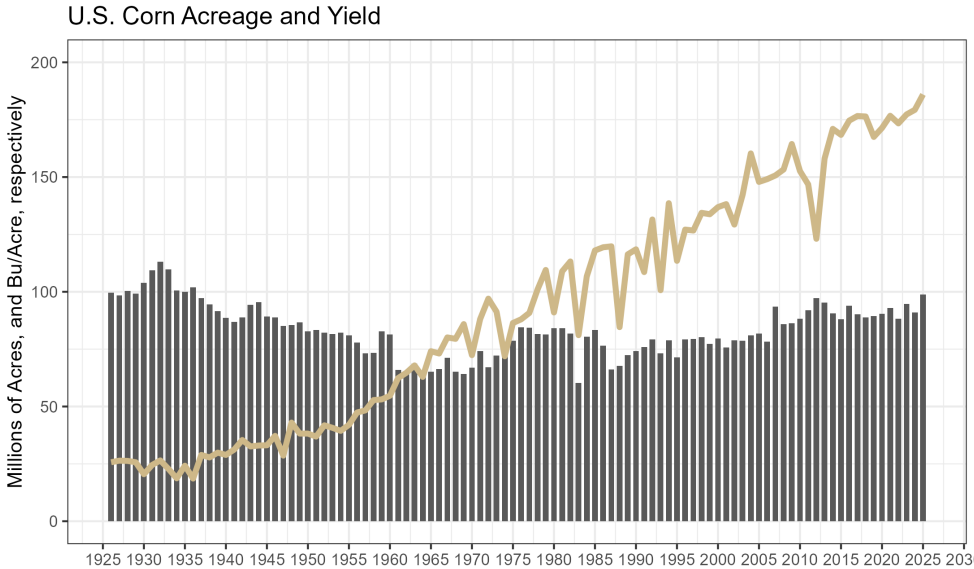
Corn: Acreage Dynamics

- U.S. corn planted acres: just under to just over 90 million acres in recent years
- Corn and soybeans "compete for acres" in the Corn Belt
- Farmers shift acres based on relative new crop futures prices
- High corn acres $\rightarrow$ lower soybean acres (and vice versa)

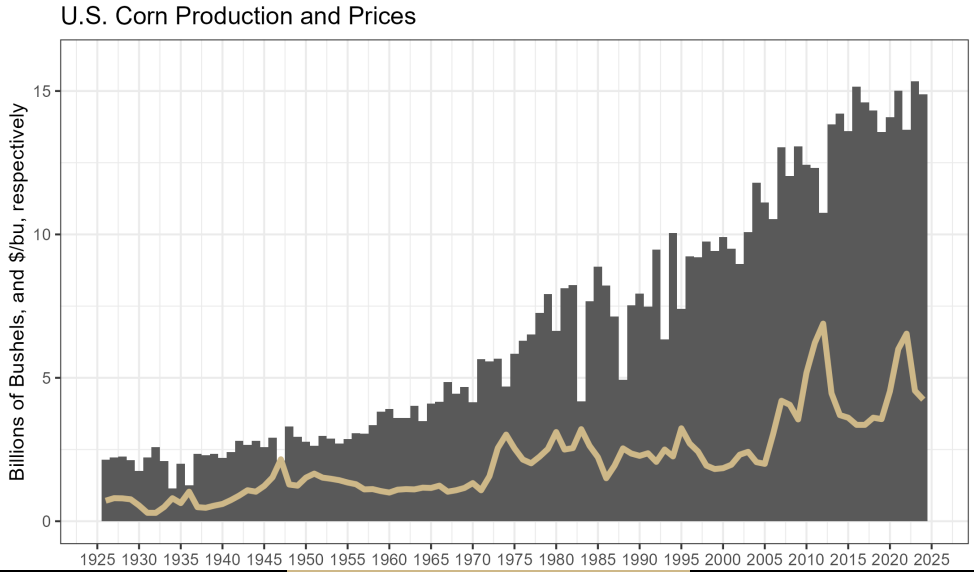
Corn: Yield Improvements

- Seed hybrids and genetic modification have led to dramatic yield increases over the last 100 years
- Corn planted acres have been relatively flat for a very long time
- But production has skyrocketed

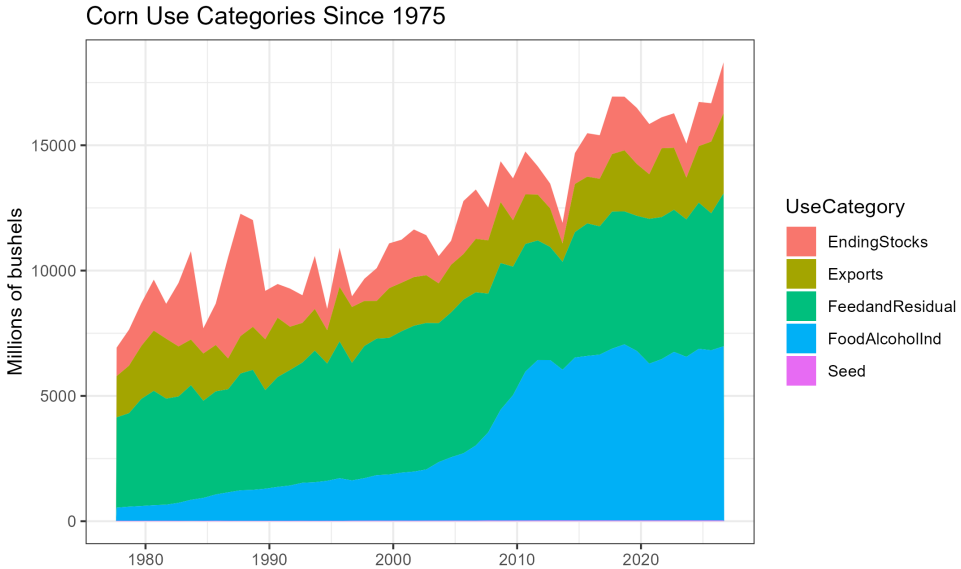
Corn: Acreage and Yields



Corn: Production and Prices



Corn: Uses

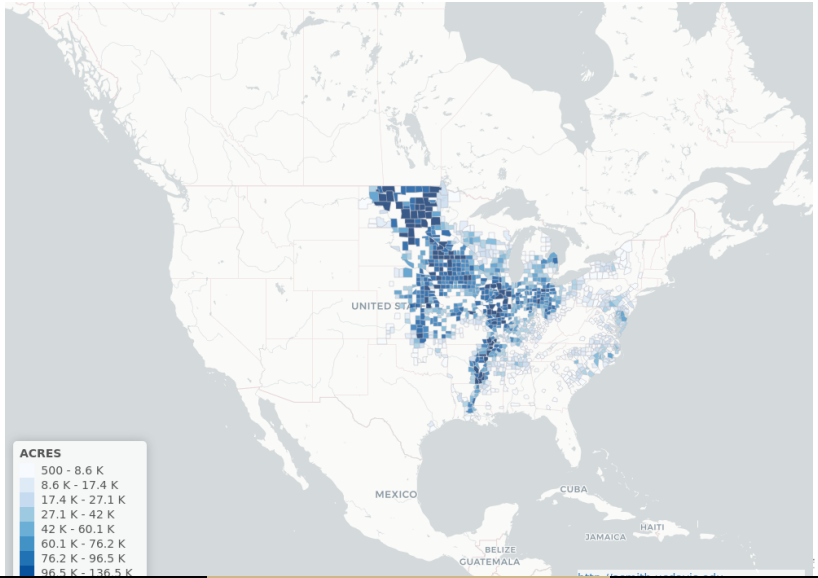

Corn Use Categories Since 1975
Millions of bushels
15000
10000
5000
0
1980
1990
2000
2010
2020
UseCategory
EndingStocks
Exports
FeedandResidual
FoodAlcoholInd
Seed

Soybeans

Soybeans: Production Timeline

- **Planted:** April to June (later than corn)
- **Weather effects:** Similar to corn
- Soybean prices are highly dependent on what happens during summer months

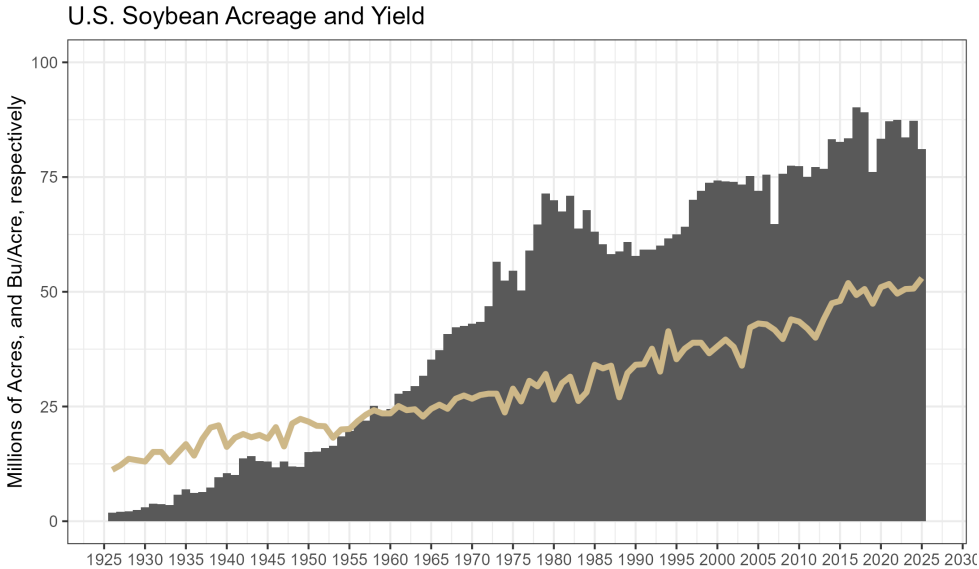
Soybean Acres Planted 2019



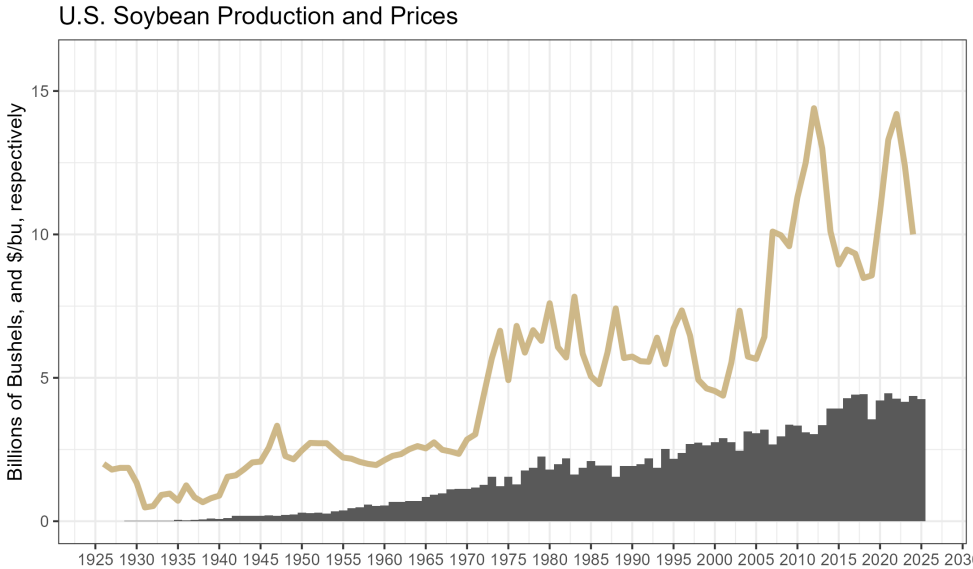
Soybeans: Acreage and Yields

- Soybeans were not commonly planted in the U.S. until the mid 20th century
- Once introduced, acreage expanded rapidly
- Soybeans have also benefited from improved yields due to biotechnology

Soybeans: Acreage and Yields



Soybeans: Production and Prices



Soybeans: Uses

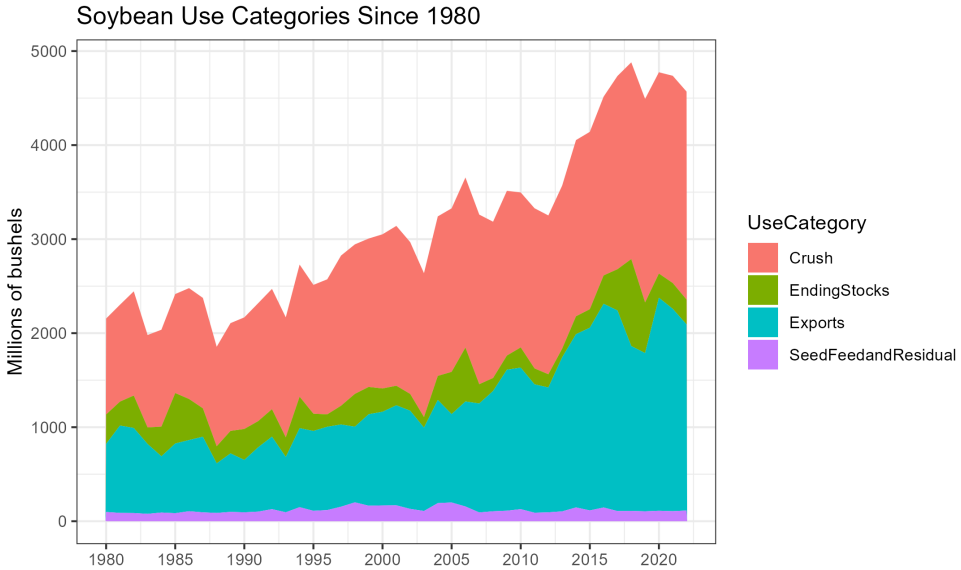
Domestic Consumption

- Almost exclusively processed into soybean meal and soybean oil ("crushing")
- Soybean meal: high protein, used in livestock feed
- Soybean oil: bulk consumed as edible oil

Exports

- About half of U.S. soybeans are exported
- More than half of exports go to China

Soybeans: Uses



Wheat

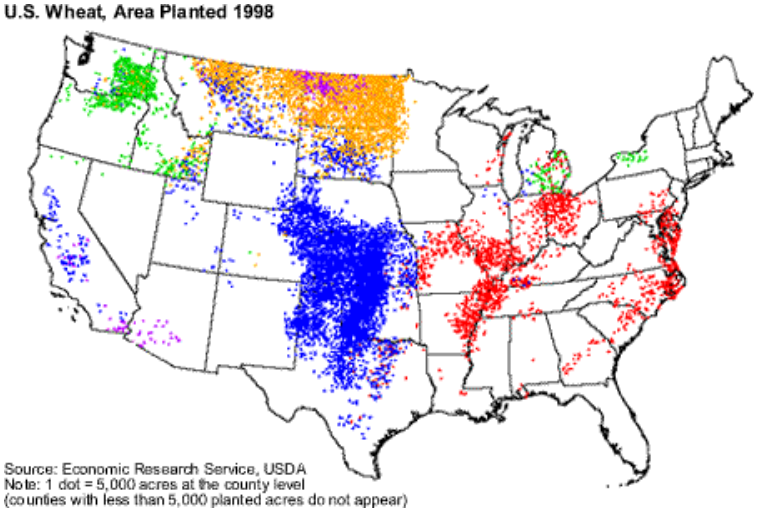
Wheat: Three Main Types in the U.S.

1. **Hard Red Winter Wheat** (HRW / KC Wheat)
2. **Hard Red Spring Wheat** (HRS / Minneapolis Wheat)
3. **Soft Red Winter Wheat** (SRW / Chicago Wheat)

Each type:

- Has its own futures contract
- Grown in distinct regions
- Has different end uses
- Varies in protein content

Wheat Growing Areas



Blue = HRW Gold = HRS Red = SRW

Source: USDA-ERS

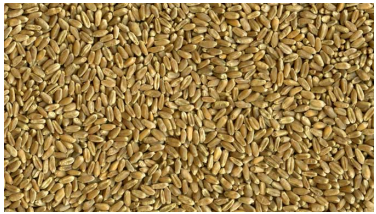
Hard Red Winter Wheat (KC Wheat)

Production

- Planted in fall, dormant/slow growth in winter
- Grows as temperatures rise in spring
- Heads form in April–May
- Harvested when plants die

Use: Primarily bread flour

Called "Kansas City Wheat" because KCBOT had the HRW futures contract (now CME Group)



Source: USDA-GIPSA

Hard Red Spring Wheat (Minneapolis Wheat)

Production

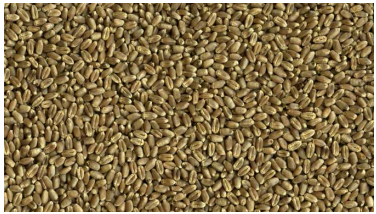
- Planted in spring (April–May)
- Harvested in fall (September)

Characteristics

- Highest protein content (13–16%)
- High gluten content

Use: Bread baking; blending with lower protein wheat

Called "Minneapolis Wheat" because Minneapolis Grain Exchange offers HRS futures



Source: USDA-GIPSA

Soft Red Winter Wheat (Chicago Wheat)

Production

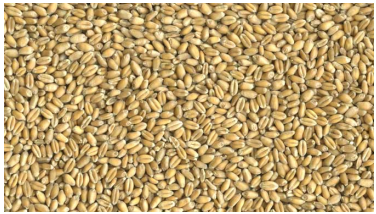
- Planted in fall
- Harvested in late spring (like HRW)

Characteristics

- Lower in protein

Use: Cakes, cookies, crackers (high gluten not required)

Called "Chicago Wheat" because CBOT offers SRW futures



Source: USDA-GIPSA

Protein Premiums and Wheat Spreads

Flour millers rarely use just one kind of wheat—they blend different types to make flours of varying protein and gluten levels.

Key dynamic:

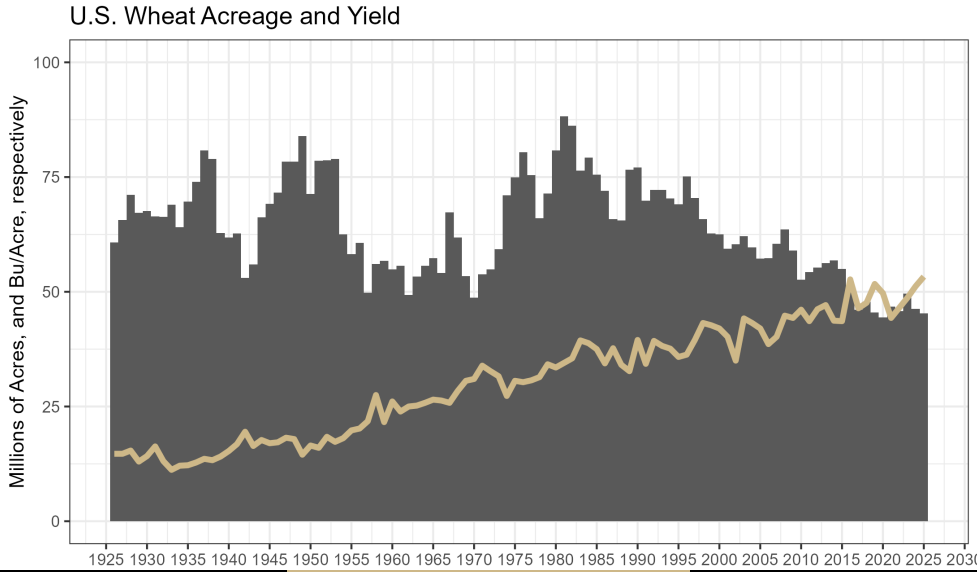
- High yields $\rightarrow$ lower wheat protein
- Good winter wheat yields $\rightarrow$ plenty of wheat but not enough protein
- This causes spring wheat prices to rise against winter wheat prices
- If winter wheat crops are smaller $\rightarrow$ protein content is higher $\rightarrow$ spring wheat may not enjoy a large premium

Protein Premiums and Wheat Spreads

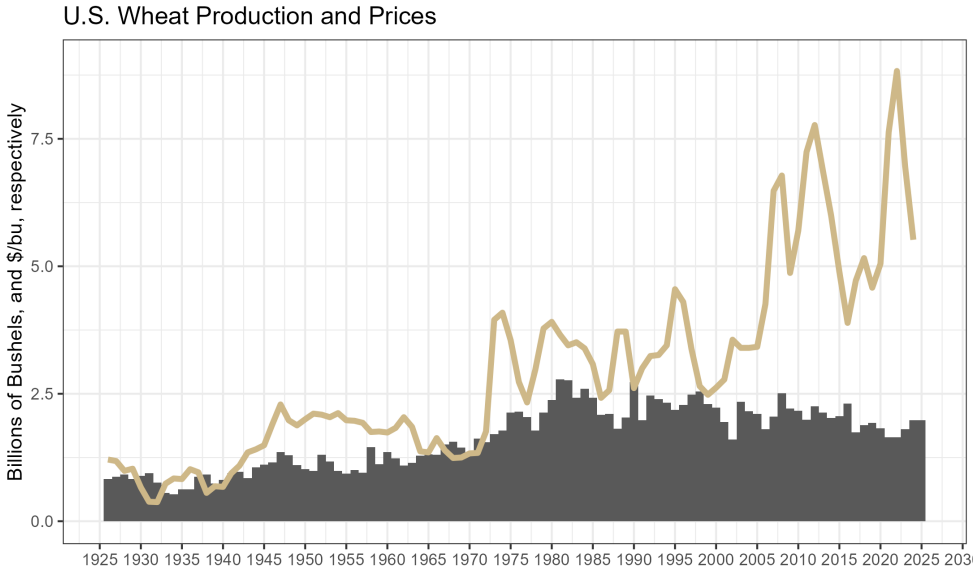
Because of the protein/yield dynamic:

The relative prices of Minneapolis, Kansas City, and Chicago wheat futures are closely followed by stakeholders in any of the wheat markets.

Wheat: Acreage and Yields



Wheat: Production and Prices



Summary

- **Corn:** Planted Mar–May, harvested Sep–Oct. Pollination (July) is critical. Used for feed and ethanol.
- **Soybeans:** Planted Apr–Jun. Crushed into meal and oil. About half exported, mostly to China.
- **Wheat:** Three main types with different protein levels and uses. Protein premiums drive relative prices.

Understanding the biological processes and timing is essential for understanding price movements.