

# Biotechnology and Contracts

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# The Consumer Matters

- ◆ 1996, Genetically-modified (GM) crops introduced
- ◆ Farmers embraced biotech crops
- ◆ Some food companies required GM grain
  - Higher quality
    - ◆ Less foreign matter
    - ◆ Fewer broken kernels

But...

- ◆ European and Japanese consumers raised concerns



# The Consumer Matters

- ◆ 1999, Food companies concerned about consumer sentiment re GM
  - Gerber and Heinz: no GM in baby food
  - Frito Lay: no GM in snack food
- ◆ Then, StarLink (not approved for humans) found in taco shells
  - Increased consumer awareness
  - Confirmed industry fear: The bulk grain handling system unable to guarantee segregation



# The Consumer Matters

- ◆ Post-StarLink, retailers want guarantees from the supply chain
  - Increased vertical control
  - Increased information flow
- ◆ The Challenge:
  - Commodity grains now differentiated product
    - ◆ GM vs. non-GM
  - Bulk handling system vs. demand for identity preservation



# The Supply Chain

Final Consumer

Food Retailer/  
Distributor

Food Processor

Grain Handler

Farmer

Seed Company



# Contracts Before Biotechnology

- ◆ Contracts common in food supply chain
    - Popcorn, White corn, Tofu soybeans
  - ◆ Niche markets
    - Supply assurance
    - Quality specifications above No. 2
  - ◆ Marketing contracts
    - Most production decisions made by producer
    - Specific hybrids or varieties required
    - Often direct delivery to processor
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# Contracts After Biotechnology (StarLink)

- ◆ Food grade contracts
  - No StarLink
- ◆ New market for non-GM grain
  - Greater demand for identity preservation
  - Tokyo Grain Exchange trades Non-GMO soybean futures contract
    - ◆ Identity preserved non-GMO No. 2 yellow soybeans of the growths of Indiana, Ohio and Michigan in the U.S.A. (Non-screened, stored in silo).



# Contracts After Biotechnology (StarLink)

## ◆ Marketing contracts

- Require increased farmer effort

- ◆ Clean planter, combine, grain buggy, grain bins, and truck

- ◆ Buffer zones (pollen drift)

- Require increased handler/processor effort

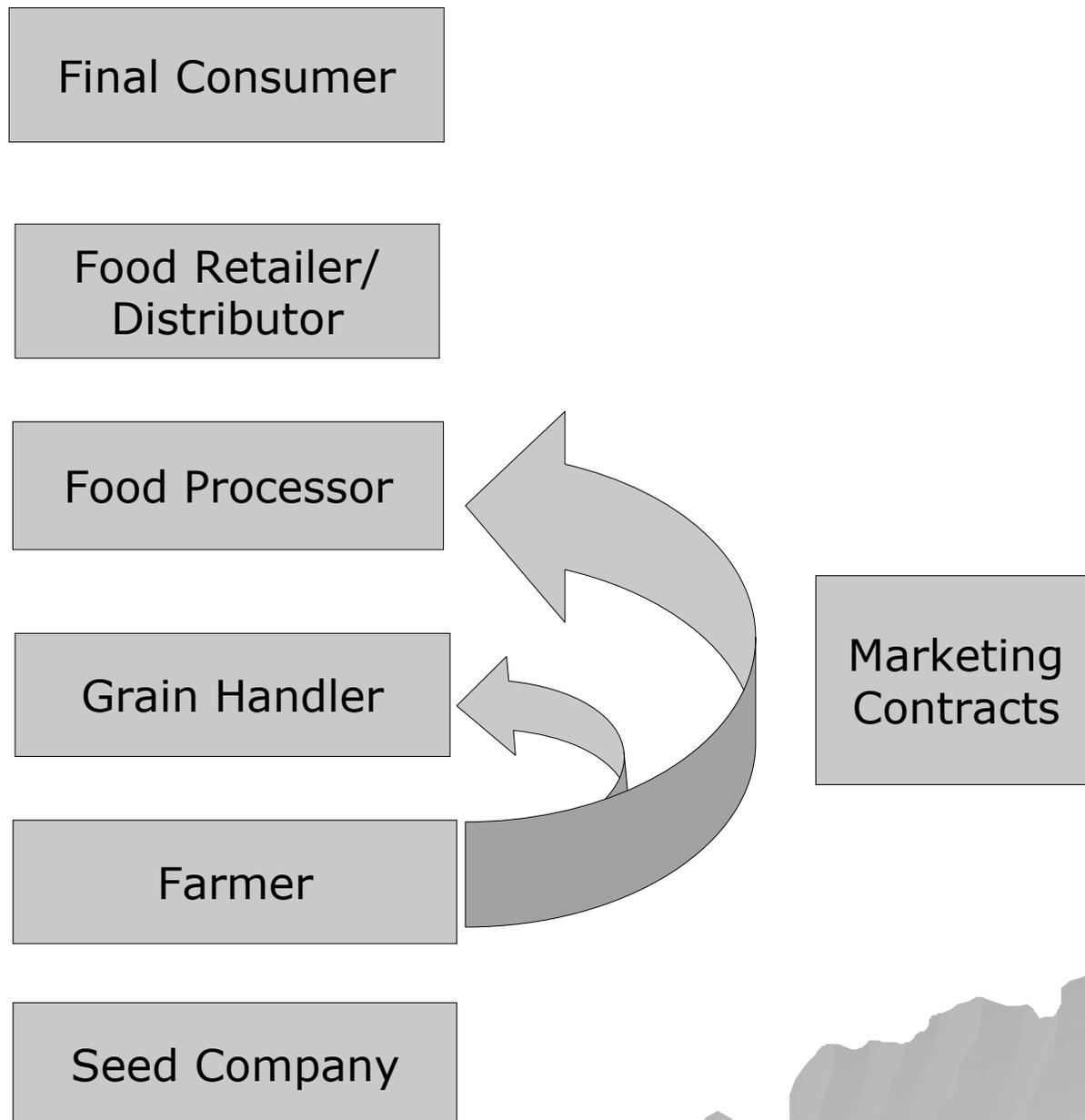
- ◆ Increased testing and auditing

⇒ Increased amount of information and verification

- ◆ Costs and effort depend on tolerance levels



# The Supply Chain



# Example 1: Food-Grade White Corn

- ◆ Food retailer requires guarantee of no StarLink
- ◆ Contract specifies:
  - Approved hybrid list

Now...

- Require seed receipts
- GIS field maps, surrounding fields
- Test in field, in grain bin, and before delivery
- ◆ Contract changes due to end-user demand



# Example 1: Food-Grade White Corn

- ◆ Mill contracts with 100 farmers
    - 6 year relationship
    - Mill and farmers learned together
    - Offer new acreage to current farmers
- ⇒ Qualified-supplier model



# Example 2: Non-GMO Soybeans

- ◆ Export to Japan
  - Japanese importer demands seed receipts, testing before delivery, strict tolerance levels (99.5% purity)
- ◆ Contracts
  - Open to all farmers
  - One year



## Example 2: Non-GMO Soybeans

- ◆ Premiums are steady/increasing

Crop Year	2000	2001	2002	2003
Premiums (Cents/bu)	0.05- 0.10	0.20- 0.25	0.10- 0.30	0.35- 0.50
Volume (Million metric tons)	0.5- 0.6	0.5- 0.8	0.7-1.0	?

Source: Lin, W. and D. Johnson (2003), pers. Comm. Grain handlers

# Grain Contracts

- ◆ Yearly contract
- ◆ Part of portfolio
- ◆ No/little long-term capital investment

⇒ Grain farmers can/do say NO!

⇒ Then premiums increase

Examples: Popcorn, non-GM soybeans



# Survey Summary

- ◆ Crops enterprises send mixed signals
  - 60% of producers believe contracting will increase
  - But...only 34% of corn/beans producers, and 46% of wheat producers plan to increase contracting

⇒ Wait and see approach



# The Supply Chain

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Distributor

Food Processor

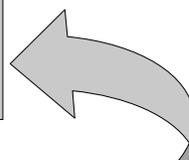
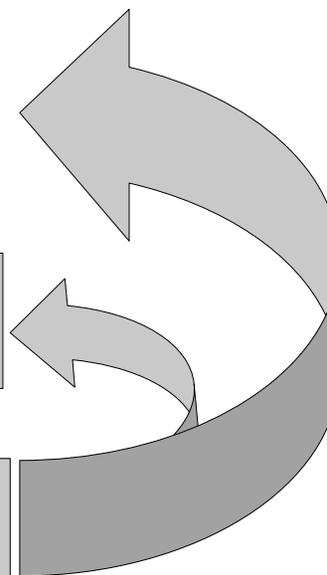
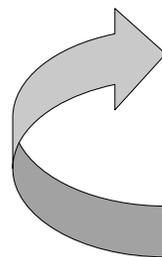
Grain Handler

Farmer

Seed Company

Marketing  
Contracts

Channeling  
Agreement



# A New Piece of Paper

## ◆ Channeling Agreement

- For corn not approved for sale in EU
- Before farmer purchases seed, must sign agreement

- ◆ Identify market outlet before planting

- ◆ Channel production to domestic feed use, or grain handler that's willing to accept

## ◆ What does this agreement mean?

- Educational purpose
- Shifts liability?



# Final Thoughts

- ◆ Consumers/Retailers demanding more information
- ◆ Entire supply chain is ***learning***
  - Identity preservation requires different mindset
- ◆ Contracting outcome (in long run) depends on whether consumers are willing to pay for this information

