

Consumer Demand for Pecans – Future, Challenges, Opportunities - Some Thoughts from an Economist

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National Pecan Sheller's Association
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Center For Agribusiness and Economic
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We are a unit of the College of Agricultural and Environmental Sciences, combining the missions of research and extension. The Center has three major objectives. Our first objective is to provide feasibility and marketing services. Secondly, we provide agricultural and demographic data for private and public decision makers. Finally, we conduct analysis related to policy issues in Georgia agriculture and provide that information to relevant decision makers.



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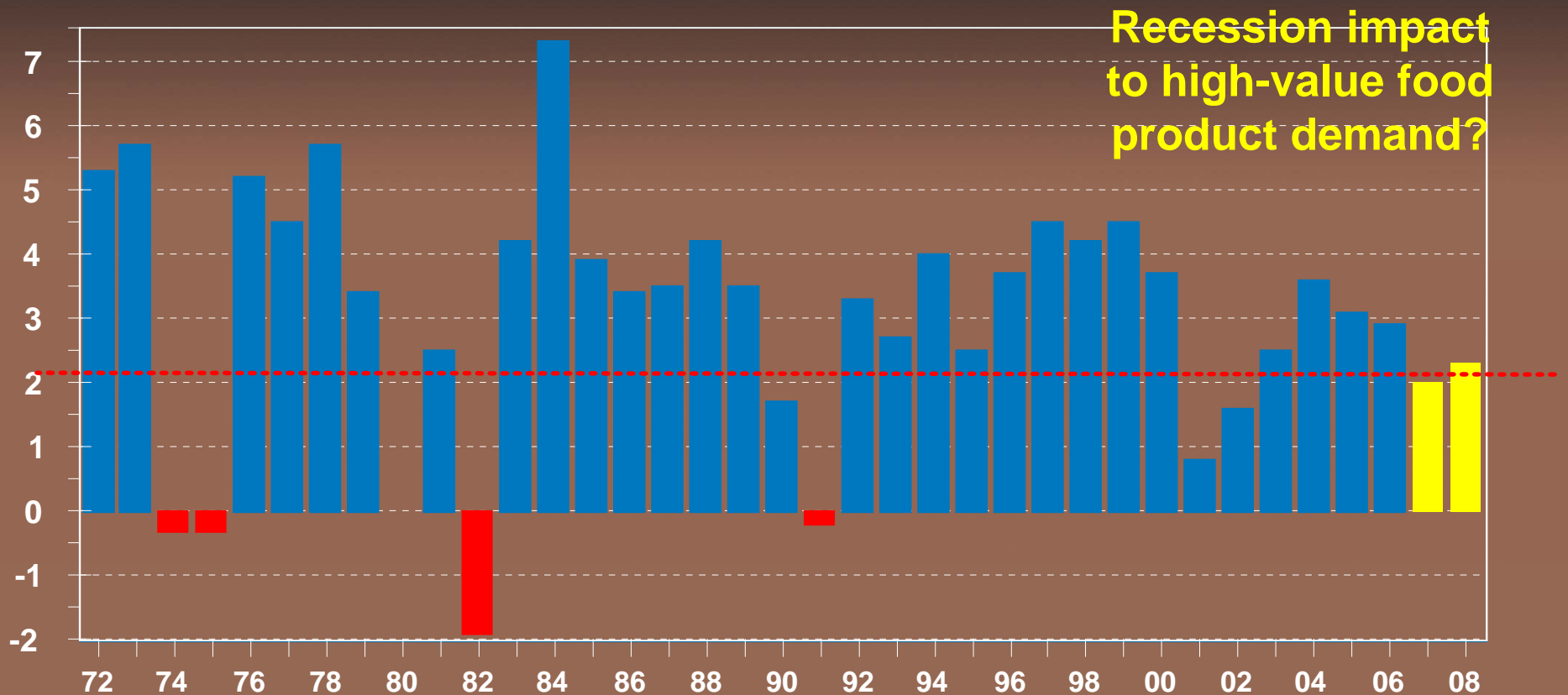
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The Future - It's The Economy Stupid!

Slower Growth Increases Vulnerability

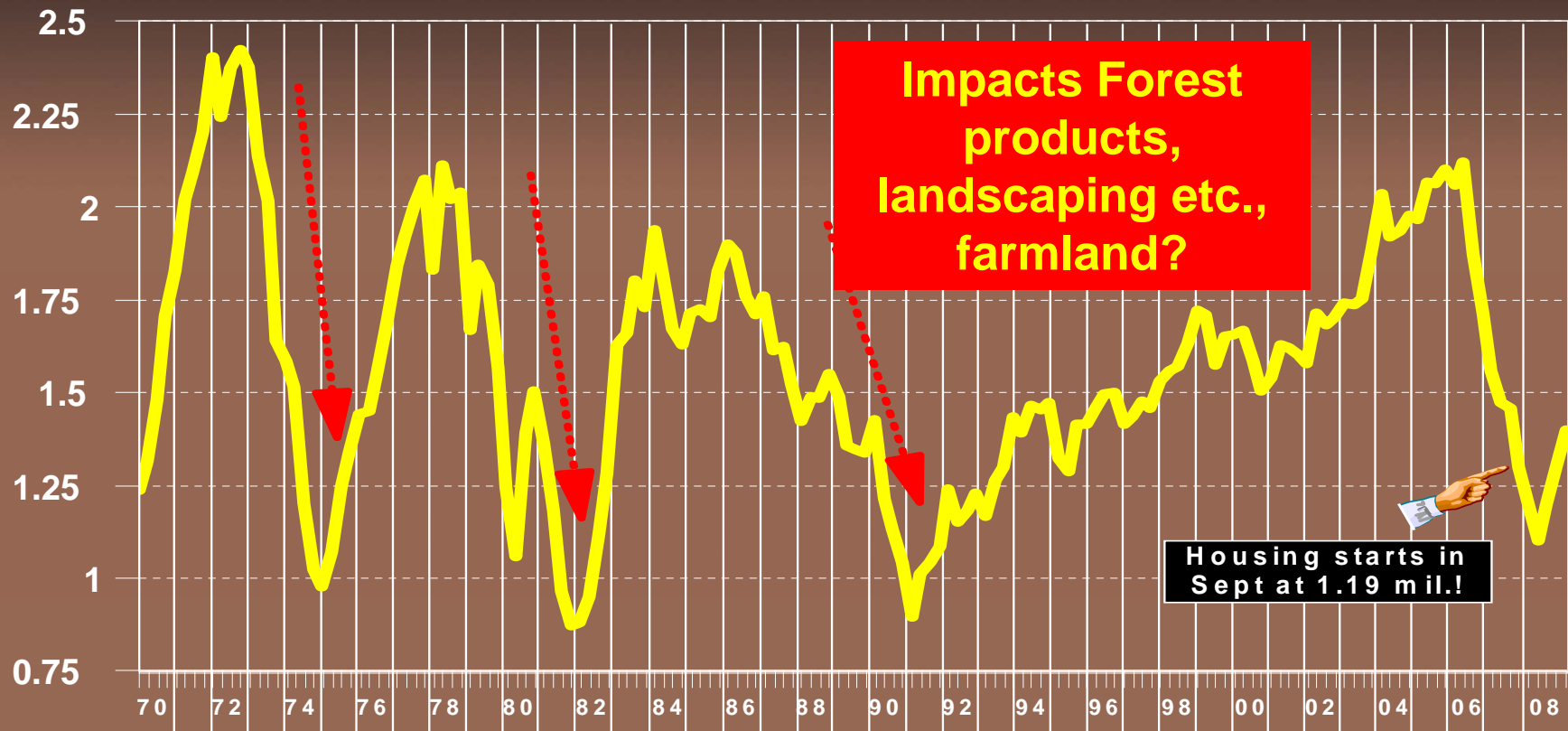
Percent change Gross Domestic Product (Chained 2000\$)



The Culprit

**What does Ga. Farmland values have to do with this?
Housing Sector Major Drag Into 2008**

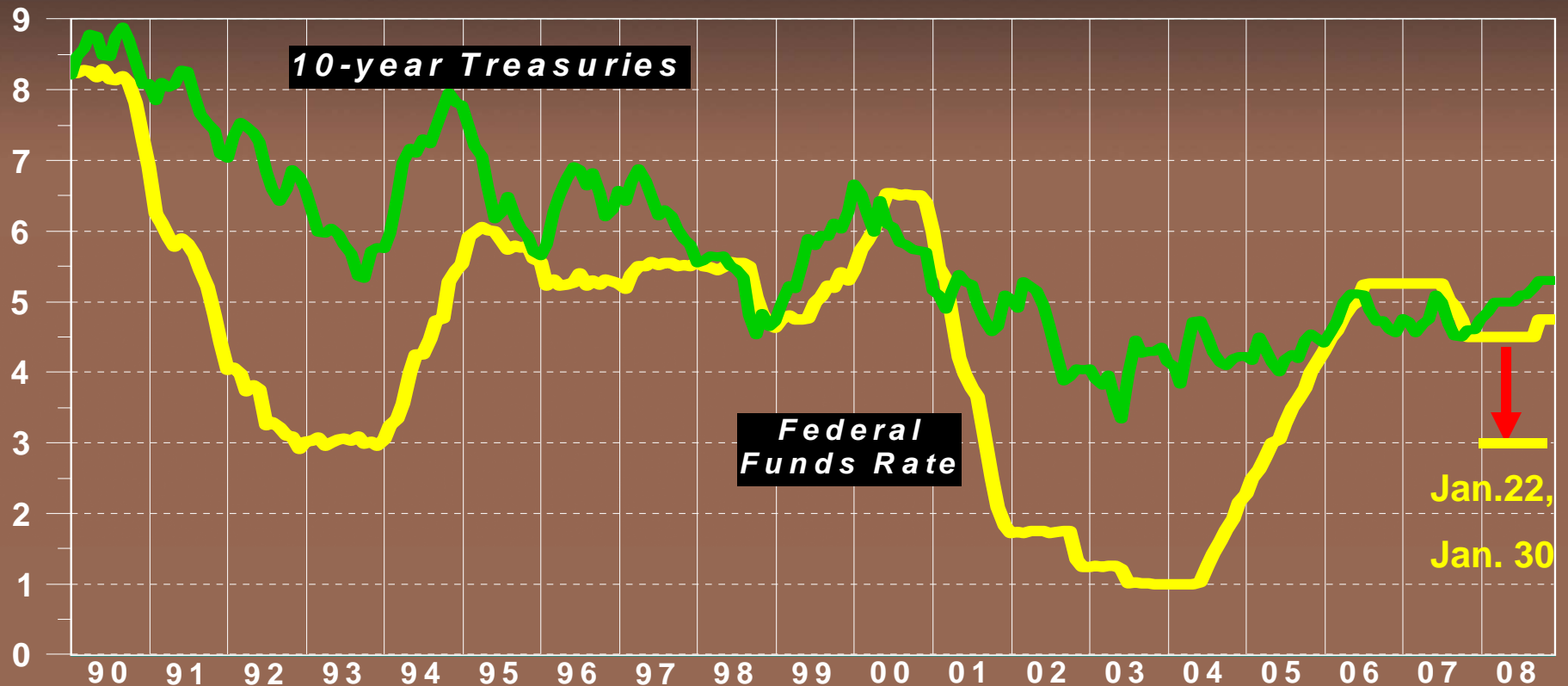
Million starts per quarter, seasonally adjusted



Lower Interest Rates, Less Concern With Deficits!

Fed Buys Insurance on Growth

Percent

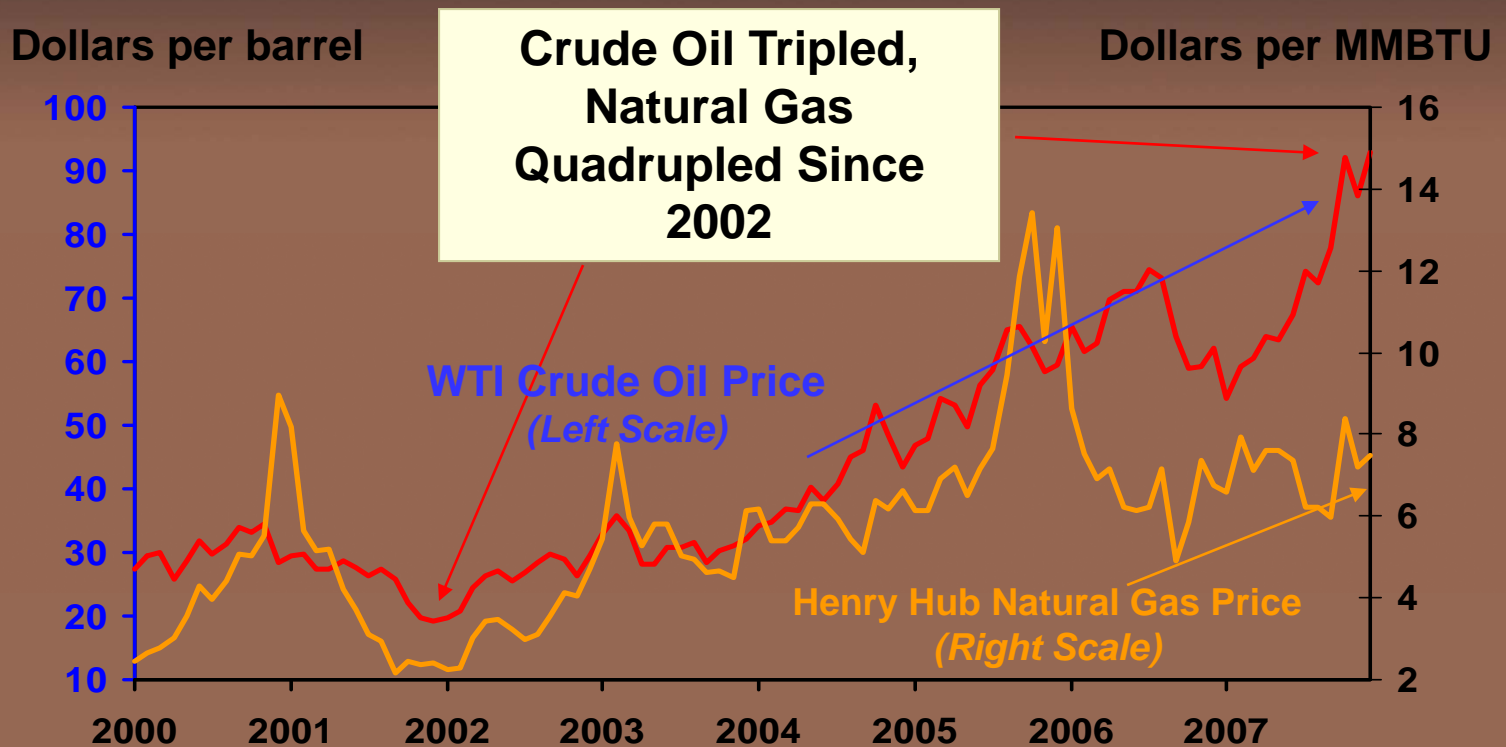


Georgia
ag 2008
forecast

It's Energy Stupid!

Ag as Energy Users and Suppliers

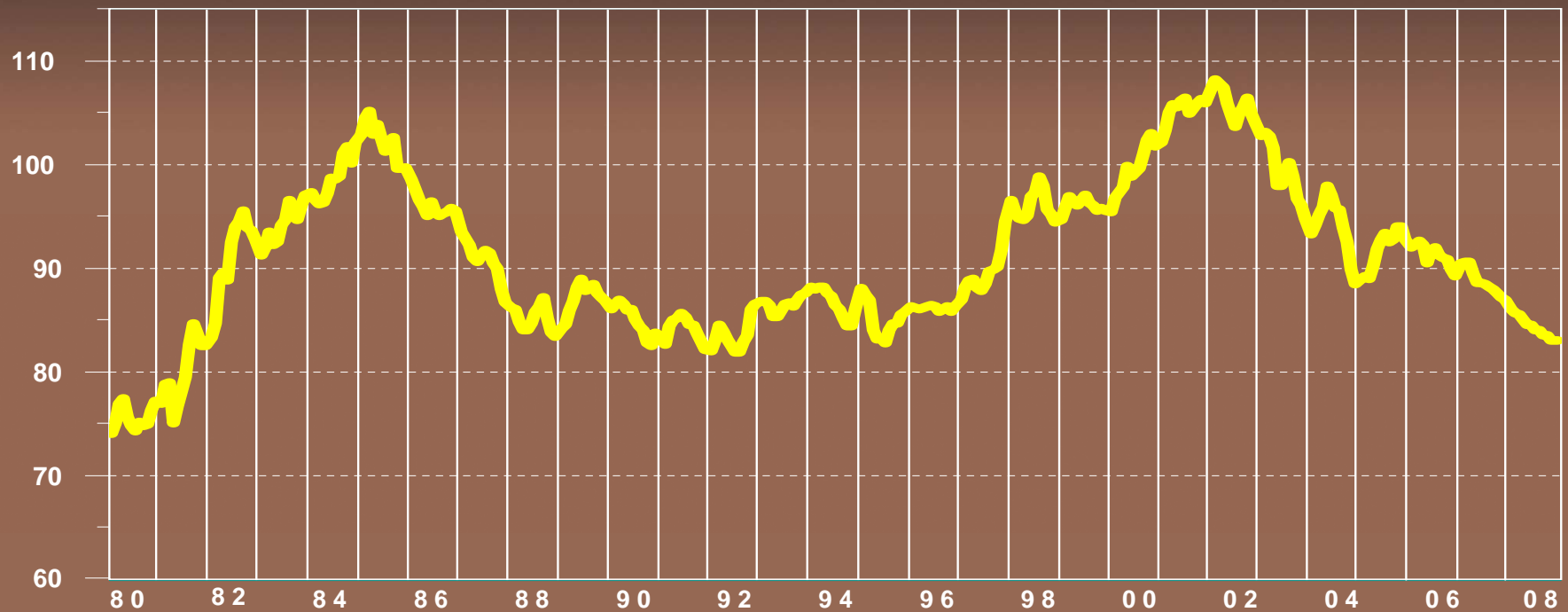
Crude Oil and Natural Gas Price



The Dollar – How Low Can You Go?

Dollar Correction Continuing in 2007-08

Indexes of major currencies/US\$ adjusted for relative prices (Aug 2003=100)



* Currencies weighted by relative market importance to total U.S. trade.



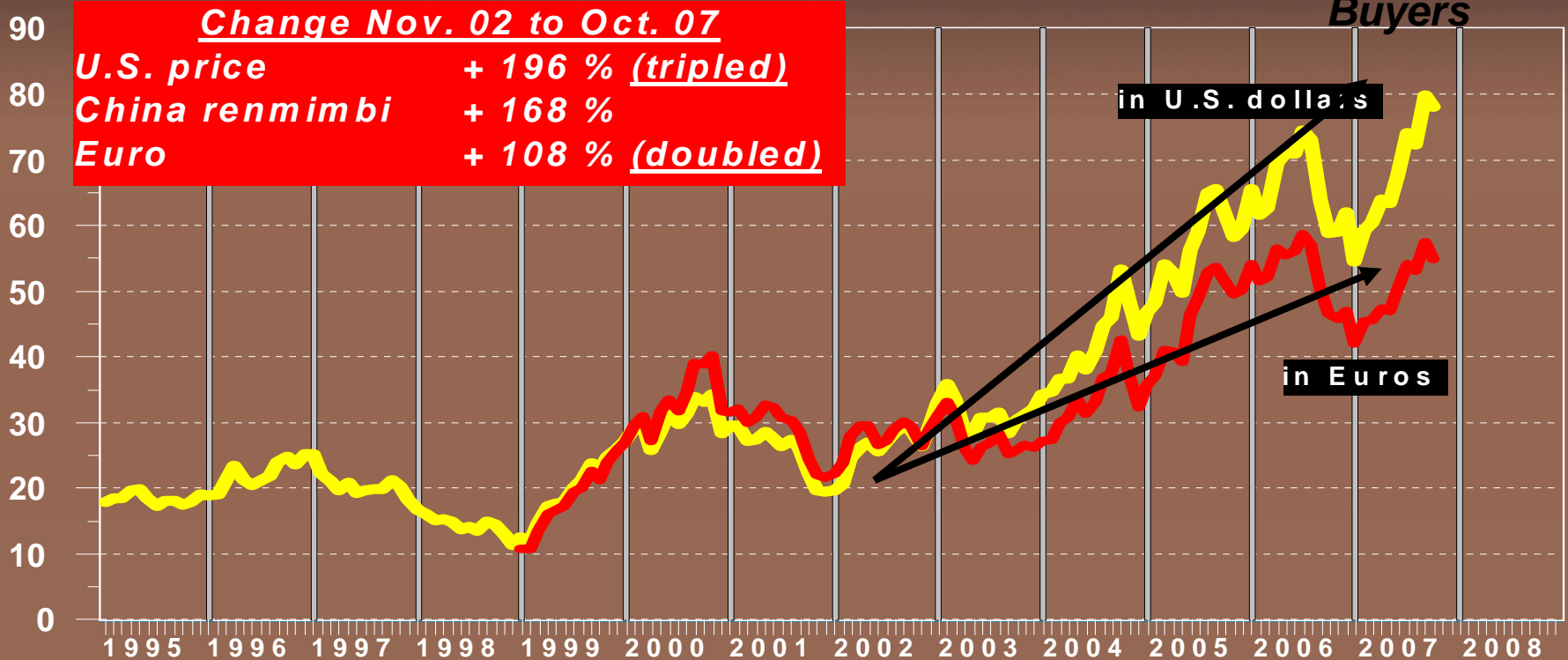
Results - Higher Input Cost

WTI Oil Prices: Various Currencies

**Ga Losers –
Fuel and Fert
Buyers**

Dollars or Euros per barrel

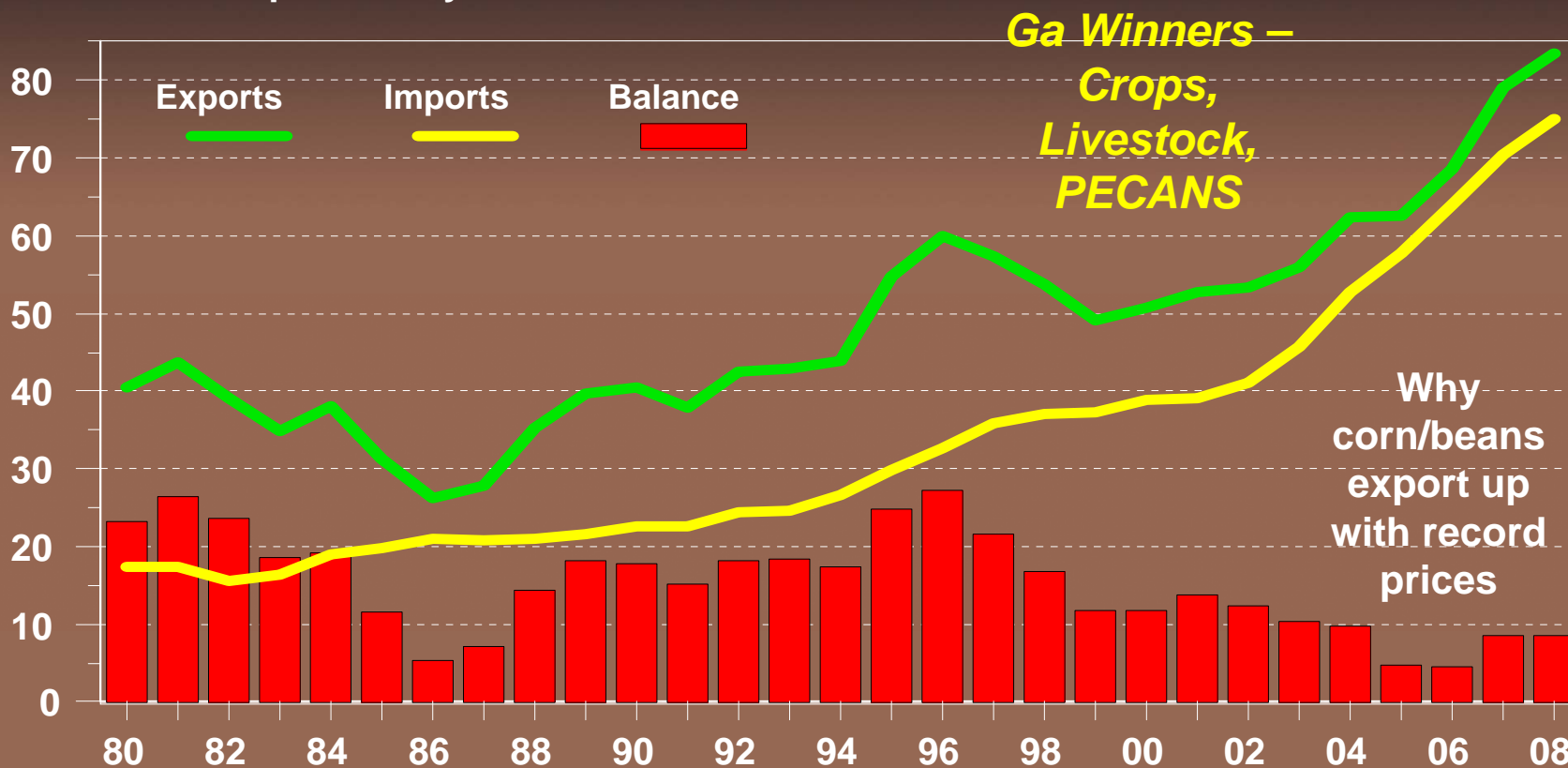
| | |
|-----------------------|---|
| | <u>Change Nov. 02 to Oct. 07</u> |
| U.S. price | + 196 % <u>(tripled)</u> |
| China renmimbi | + 168 % |
| Euro | + 108 % <u>(doubled)</u> |



Results - More Competitive Exports

U.S. Ag Trade: Weaker Dollar Lifts Surplus

Billion dollars per fiscal year



Opportunity ?

- Who are the consumers?
- What do they want?
- What are the obstacles to provide?

Consumption Stagnant -.48 lbs. 30 yrs.!



Pecan Consumer Profile

- Older, median 52 years old (U.S. average is 35)
- Females, 72% of respondents – probably due to fact that females do majority of shopping.
- Affluent households (\$49,999 +) (U.S. average is \$41,000)
- Well educated, 45% are college grads or more (U.S. average is 31%)

Pecan Consumers

- When asked specifically, 62% percent of respondents purchased pecan over past 24 months
- Those that did not gave the following reasons:
 - Don't like taste (58%)
 - Own or friend owns tree (15%)
 - Allergic (13%)
 - Lack of availability (7%)
 - Too Expensive (5%)
 - Other (3%)

Familiarity with Nuts (top-of-mind)

| Nut | Familiar | Favorite (First Response) | Purchased in past 24 Months |
|---------------|-----------------|--------------------------------------|--|
| Almonds | 98% | 11% | 34% |
| <i>Pecans</i> | 98% | 9% | 34% |
| Peanuts | 97% | 21% | 59% |
| Walnuts | 96% | 4% | 30% |
| Cashews | 96% | 37% | 51% |
| Pistachios | 94% | 3% | 15% |
| Macadamia | 93% | 2% | 12% |
| Hazelnuts | 90% | 0% | 7% |
| Brazil nuts | 90% | 2% | 6% |

Reason for Purchasing Pecans and Most Popular Form

| | | Form Purchased (Multiple Responses) | | |
|-----------|-----|--|--------|--------|
| Purchased | Yes | In-Shell | Halves | Pieces |
| Cooking | 85% | 11% | 66% | 35% |
| Snack | 40% | 19% | 73% | 19% |
| A Gift | 8% | 24% | 47% | 27% |

Where Pecans are Purchased

| Purchased | Percent (multiple Responses) |
|-----------------|---------------------------------|
| Grocery store | 79% |
| Catalog | 0% |
| Specialty store | 7% |
| Fund raiser | 4% |
| Roadside stand | 4% |
| Other | 16% |

When Consumers Generally Purchase Pecans

| When Purchased | Percent |
|---------------------------|----------------|
| On a Regular Basis | 20% |
| Only During Harvest | 10% |
| Only During Holidays | 39% |
| Only on Special Occasions | 7% |
| Other | 24% |

Most Often Purchased Size

| Pounds | Halves | Pieces | In-Shell |
|------------------------|---------------|---------------|-----------------|
| 1/4 lb. | 10% | 23% | 16% |
| 1/2 lb. | 22% | 30% | 16% |
| One lb. | 40% | 34% | 36% |
| Two lbs. | 14% | 8% | 8% |
| < 2 lbs. | 10% | 1% | 16% |
| Any Size | 4% | 2% | 8% |
| Mean lbs. Purchased | 3.01 | 1.21 | 0.87 |

Likelihood to Purchase Pecan Snack Product

| | Northeast | Midwest | South | West |
|---|-----------|---------|-------|------|
| Raw Pecan | 2.60 | 2.60 | 2.74 | 2.58 |
| Sugar & Spice | 2.25 | 2.19 | 2.33 | 2.22 |
| <i>Roasted</i> | 2.76 | 2.86 | 3.02 | 2.96 |
| Salted | 2.53 | 2.50 | 2.71 | 2.60 |
| Flavored - Chocolate or Honey Must. | 2.13 | 1.90 | 2.10 | 2.12 |

5= very likely, 1= Very Unlikely

Willingness to Pay

- Price points are important when evaluating new products
- Know that competing nut products are in the price range of \$0.80 to \$1.10 for a single serving snack pack
- Prices vary by store and brand
- How much will folks pay for a similar pecan product

Willingness to Pay

- One objective of the study was to determine willingness to pay for a 2.5 ounce snack bag of pecans
- A Tobit model was used to estimate willingness to pay for a 2.5 ounce snack bag of pecans.
- The model estimated that consumers are willing to pay \$0.89 for a 2.5 ounce snack bag.

Variables Impact on Willingness to Pay for 2.5 Snack Bag

Variables that positively impact willingness to pay for snack
(amount more or less willing to pay for snack)

Variables that negatively impact willingness to pay for

- Females (0.1701)
- Expensive (0.2189)
- Favorite Nut (0.2020)
- Likely to Purchase (0.6785)

Variables that negatively impact willingness to pay for snack

- Age (-.0072)
- High Fat Content negative (-.2067)

Market Potential

- Looks like there is a market for snack pecan products.
- They could be retailed for about \$0.89 for a 2.5 ounce snack pack
- However, rancidity and shelf-life will have to be addressed.

Pecan Consumer Study

Results

- The results of a nationwide survey indicate that consumers are willing to purchase pecan snack products in both the raw natural form as well as flavored varieties.
- Currently, it appears 20% of consumers purchase pecans as a snack food.
- On average, consumers purchase pecans only three times per year.
- To increase consumption, it is important to increase purchase frequency and increase the number of consumers who purchase pecans for snacks.

Pecan Sheller Study

Results

- While two of the biggest economic hurdles that pecan shellers face in their industry is dealing with the input price and the short shelf life, eighty-five percent don't feel they have a problem with rancidity.
- Eighty percent of shellers think that shelf life of pecans is a problem in the consumer market,
- Seventy-one percent think that shelf-life is a problem in expanding the market.
- Shellers would be willing to look at new technologies to prevent rancidity and increase shelf life if it is cost competitive.
- Pecan shellers do not store pecans in anticipation of higher prices.

Most effective Pecan Attribute for Advertising and Promoting

| Importance | Eye Appeal | Taste Appeal | Desirability as a Snack Food | Desirability as a Health Food | Convenience | Versatility in Use |
|-------------------|-------------------|---------------------|-------------------------------------|--------------------------------------|--------------------|---------------------------|
| <i>Mean</i> | 2.90 | 1.42 | 4.19 | 3.10 | 4.95 | 4.35 |
| <i>Median</i> | 2.00 | 1.00 | 4.00 | 3.00 | 5.00 | 4.00 |

“what the most effective attributes in adverting and promoting pecans”

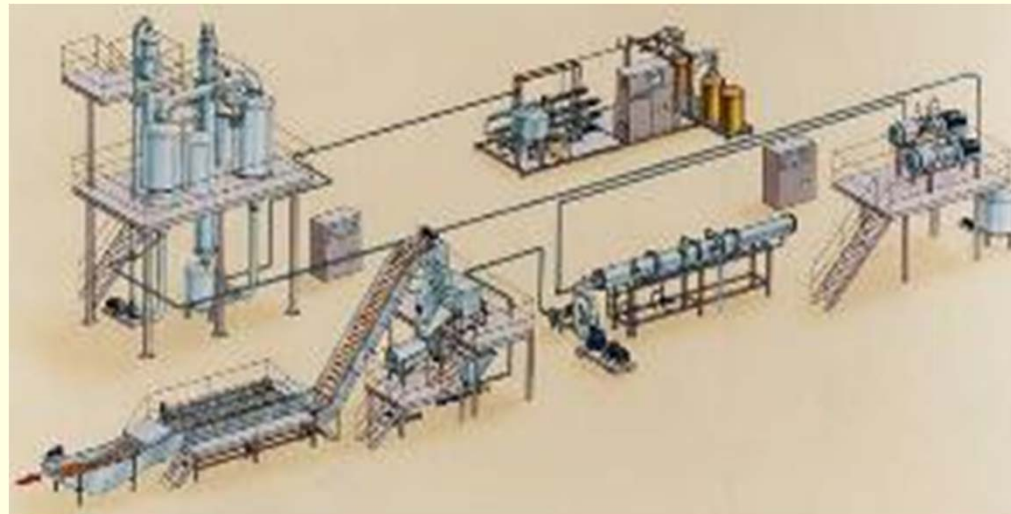
1= most effective, 5= least effective

Rancidity

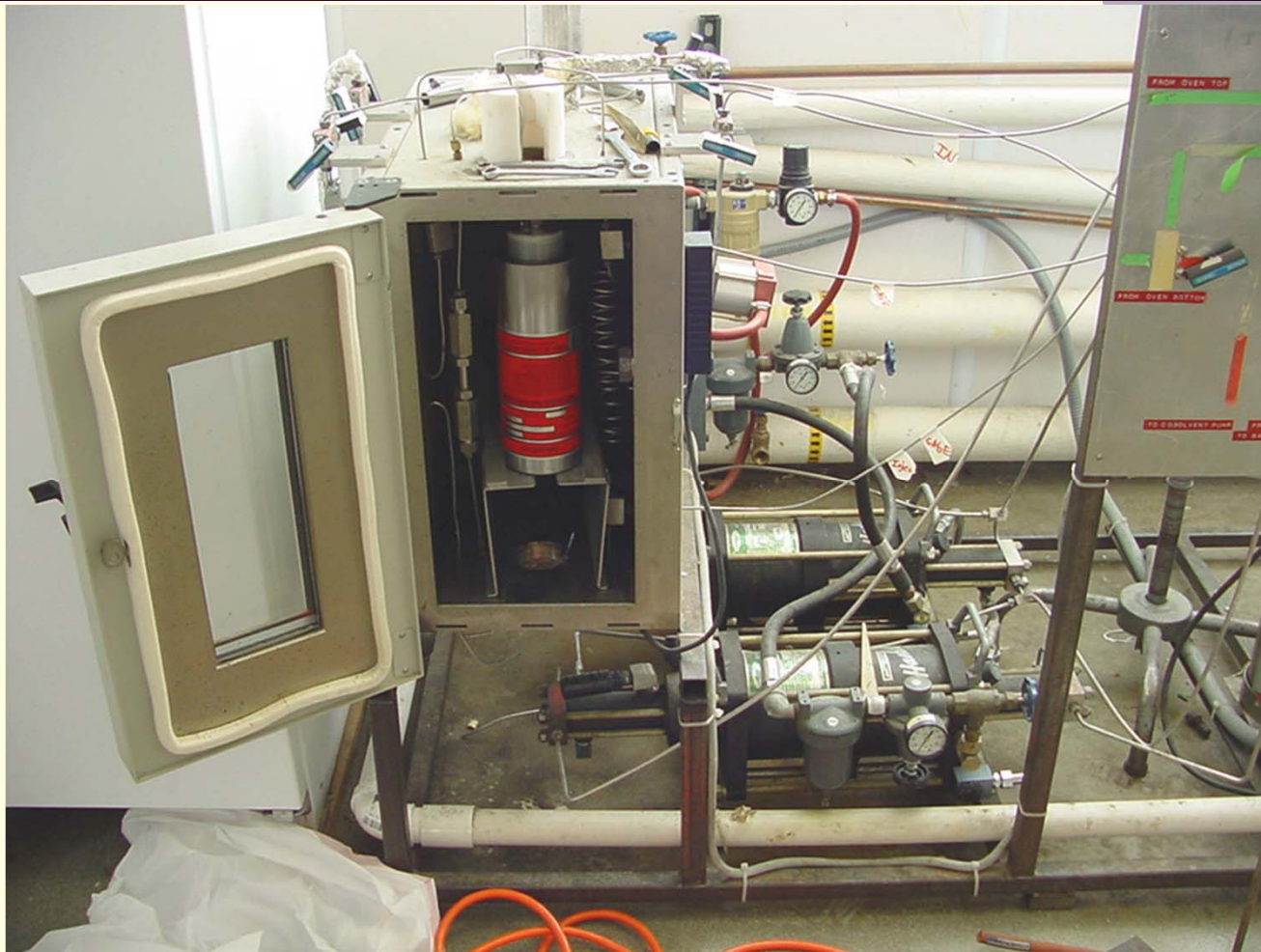
- Testy for Rancidity?
 - Yes- 57%
 - No – 43%
- Is Rancidity a problem?
 - Yes- 18%
 - No – 82%
- Interesting given that 78% of the respondents believe that shelf life issues are holding back increased consumption.
- Also, 86% of respondents are interesting in exploring new technology aimed and retarding rancidity.

Primary Objective

- To investigate the technical and economic potential for using supercritical CO₂ to infuse pecans with antioxidants in order to extend storage life and retard rancidity development.



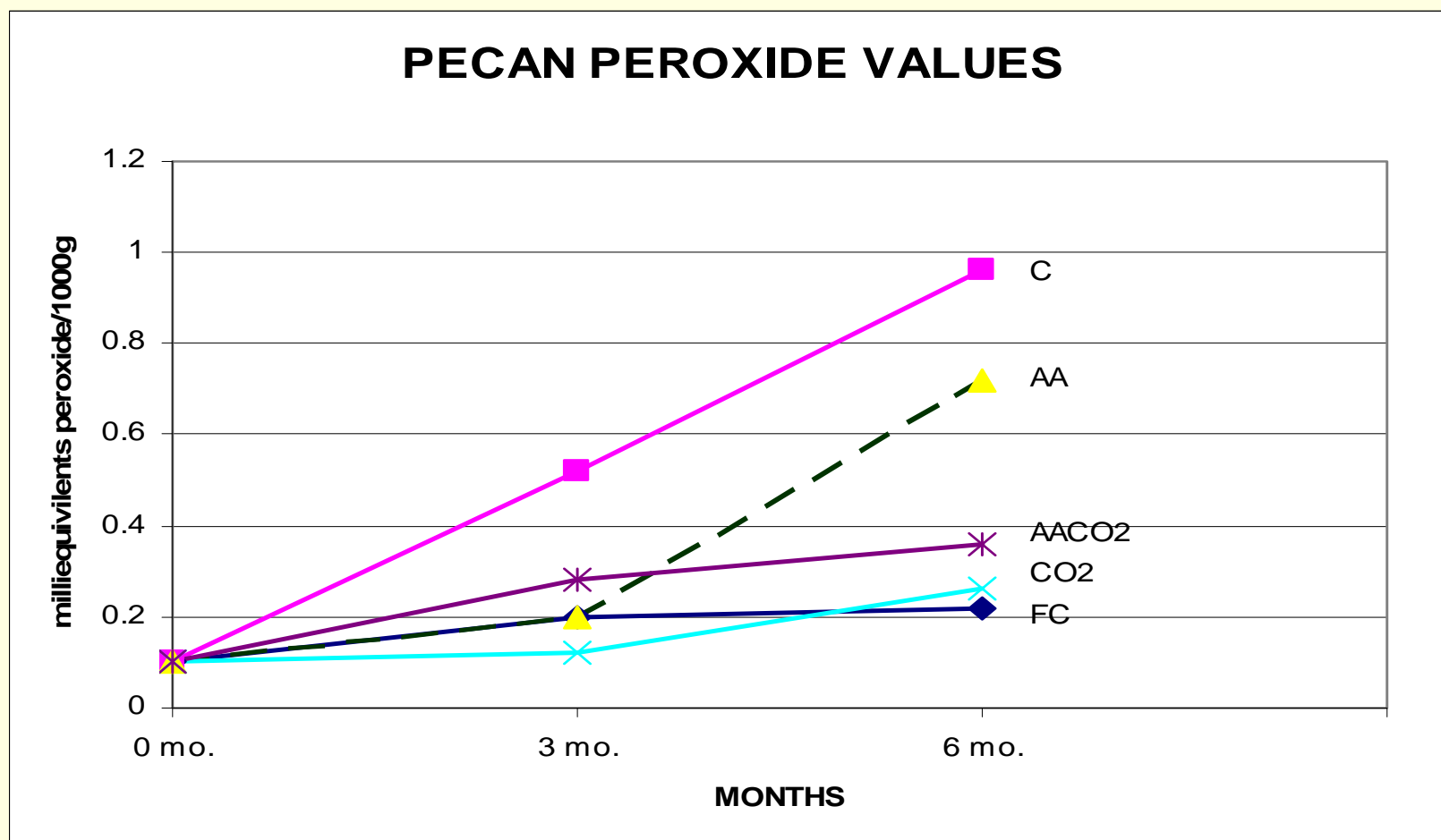
UGA Supercritical System



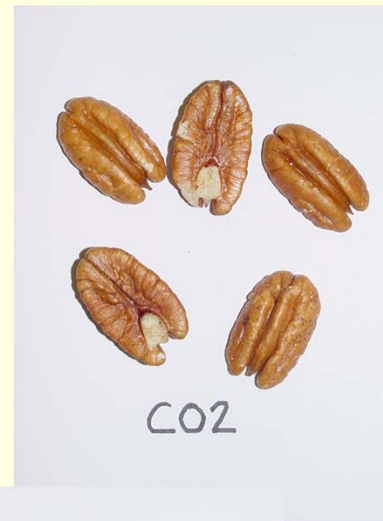
Pecan Shelf-life Study - Super-Critical Carbon Dioxide Infusion

- During Jan '05 the first storage study was initiated using the following treatments on fresh pecan halves:
 - Untreated (Control #1)
 - Frozen and vacuum packed (Control #2)
 - Treated with SC CO₂ only (Control #3)
 - Soaked in antioxidant dip only (Treatment #1)
 - Soaked in antioxidant dip followed by treatment with SC CO₂ (Treatment #2)

Treated Pecans - Rancidity



Treated Pecans - Color



Treated Pecans – Taste Panel

Small sample taste panel could determine a difference between treated pecans and frozen pecans. Indications were that the “difference” was in negative flavor, texture of treated pecans.



Proposed Next Experimental Steps:

- Refine the process to provide optimal shelf-life extension with the most economical treatment. Evaluate storage beyond 6 months. Evaluate all changes in properties (oil levels etc.). Include “edible coatings” in analysis.
- Scale-up the treatment that provides best for possible market testing. Conduct “true” taste and market test.
- Explore using the supercritical process to simultaneously carry out other operations such as de-fatting, roasting, and the addition of color or flavor, along with the addition of antioxidant. Evaluate commercialization potential.

QUESTIONS?

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