

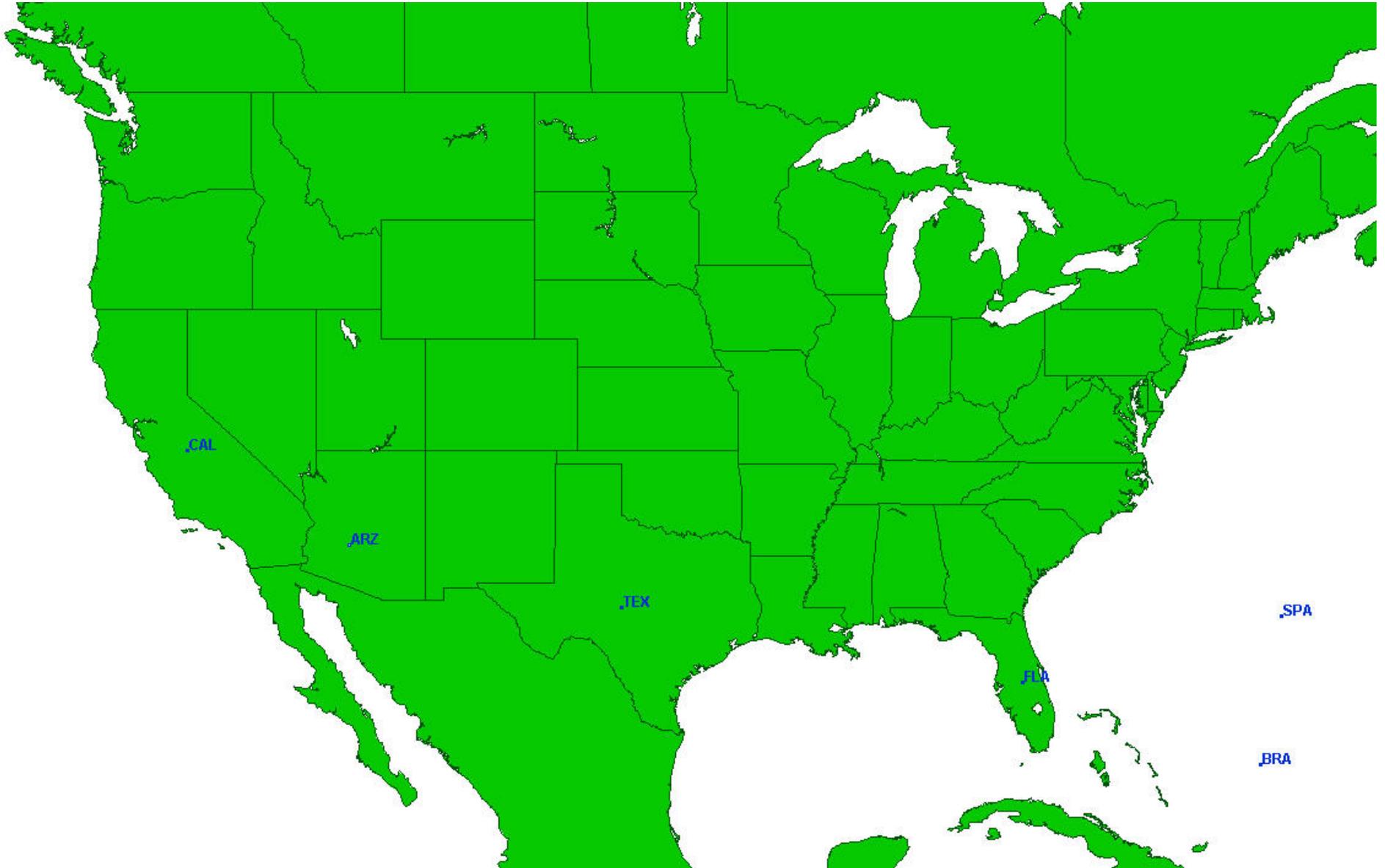
Lecture outline



- The orange juice game

The OJ Game

■ Producing regions:



The OJ Game

Orange Juice Rises to Highest Close Since 1990 on Storm Threat 2006-08-28 16:27 (New York)

By Millie Munshi

Aug. 28 (Bloomberg) -- Orange-juice futures rose to the highest closing price since 1990 in New York on speculation that Tropical Storm Ernesto will damage crops in Florida, the world's second-largest producer of oranges.

Ernesto, moving over Cuba today, is projected to gain strength and have winds of as much as 95 miles per hour when it reaches southeastern Florida on Aug. 30, the National Hurricane Center said. Hurricane damage to citrus groves in 2004 and 2005 has led to a doubling of wholesale orange-juice prices in the past year.

Orange juice for November delivery rose 1.6 cents, or 0.9 percent, to \$1.8645 a pound, the highest closing price for the most-active contract since July 17, 1990. Prices reached \$1.876 on Aug. 17, also the highest since that date 16 years ago.

Inventories of frozen orange juice are a third less than a year ago, Scoville said. Florida crop damage similar to 2005 would "pretty much blow away whatever we have stored," he said.

Orange-juice inventories in Florida for the season are down 35 percent from a year ago at 80.4 million gallons, the state Department of Citrus reported Aug. 19. U.S. inventories were estimated at 1.002 billion pounds at the end of July, down from 1.502 billion a year earlier, the USDA said in a monthly report on Aug. 22.

Hurricane Ernesto – August, 2006



OCT. 14 12:42 P.M. ET Orange juice prices, already at historic highs, are expected to climb further as production in Florida's hurricane-ravaged groves bottoms out.

But it's not just consumers who will be affected: Juice makers like PepsiCo Inc.'s Tropicana Products and The Coca-Cola Co.'s Minute Maid, which get the vast majority of their juice from Florida, are facing a profit squeeze from rising domestic prices and imports from Brazil that come with margin-killing tariffs.

The U.S. Department of Agriculture this week predicted Florida would produce 135 million 90-pound boxes of oranges, down about 40 percent from production levels before the 2004 hurricane season. It would be the third year in a row of subpar production, and the worst orange harvest since freezes crippled crops in 1990.

"I can tell you that we'll monitor this, and decide what course we need to take as we analyze the information," Minute Maid spokesman Ray Crockett said, declining to answer specific questions about possible price hikes.

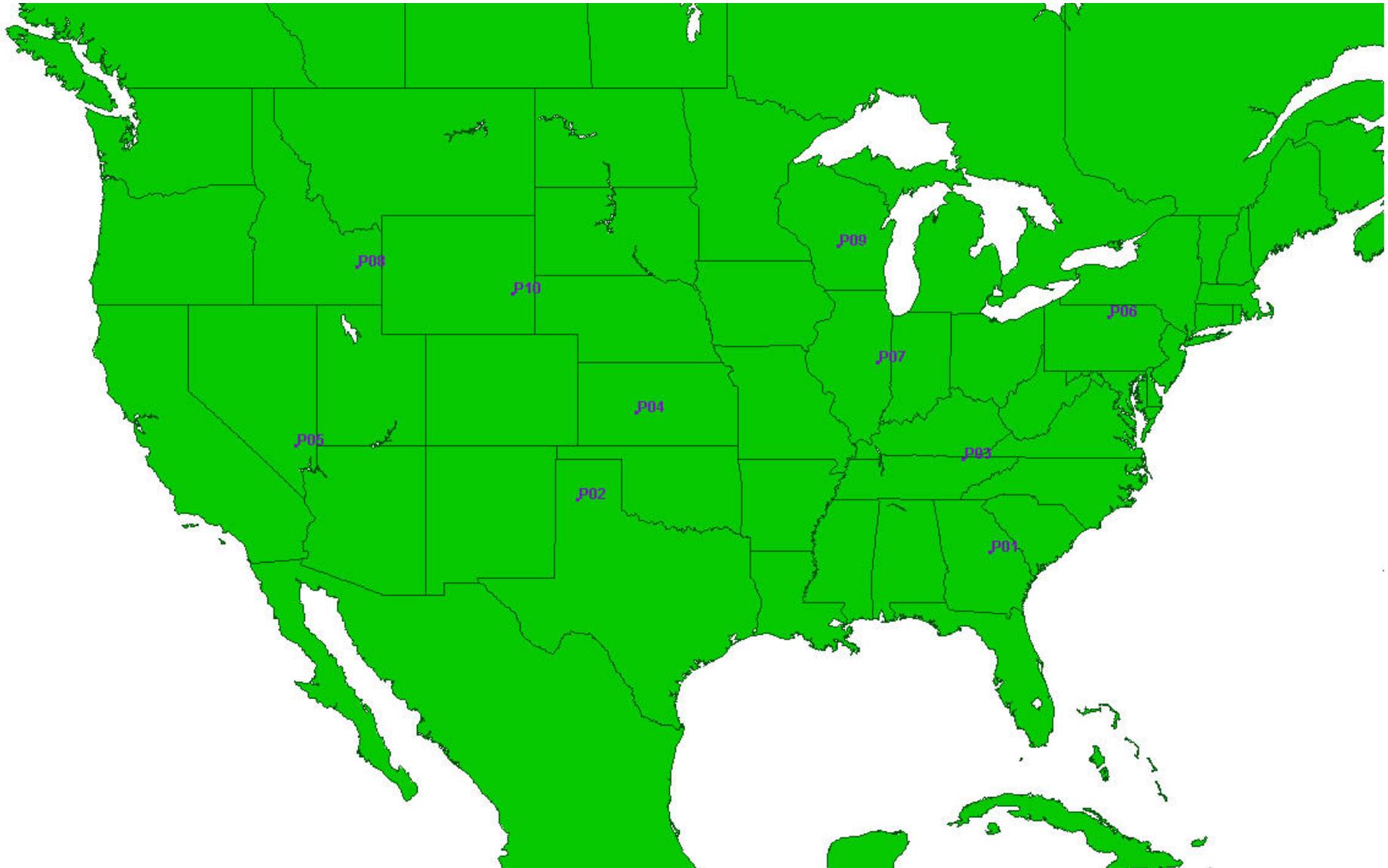
Both Minute Maid and Tropicana had just announced price increases to retailers even before the USDA announcement. Tropicana instituted a 10 percent bump, citing "continued pressures on supply and cost" that are strengthening. The company said it expected prices to continue to rise as the Florida harvest falls.

Coca-Cola last month announced a 3 percent to 6 percent hike in wholesale list prices for Simply Orange and Minute Maid orange juice, effective this month.

However, it remains to be seen what consumers are willing to pay. A 9 percent jump in average retail prices this year to \$4.89 per gallon has met with a 6 percent drop in volume, according to an ACNielsen report for the four weeks ended Sept. 2.

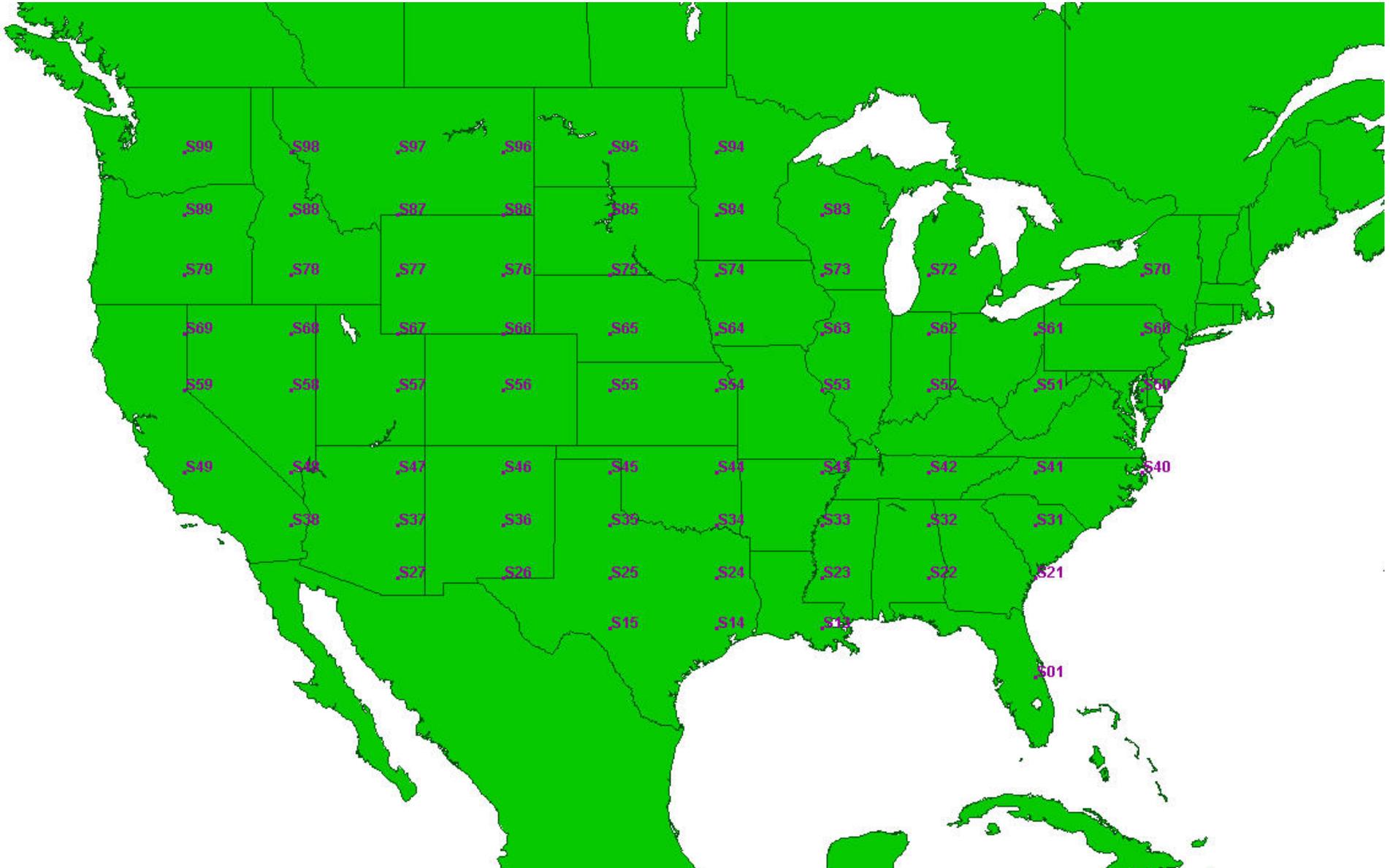
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■ Manufacturing:



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■ Storage facilities



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- The OJ Game users manual:
 - » Summarizes playing the game
 - » Decisions spreadsheet
 - » Analysis of history

Orange Juice Game Overview

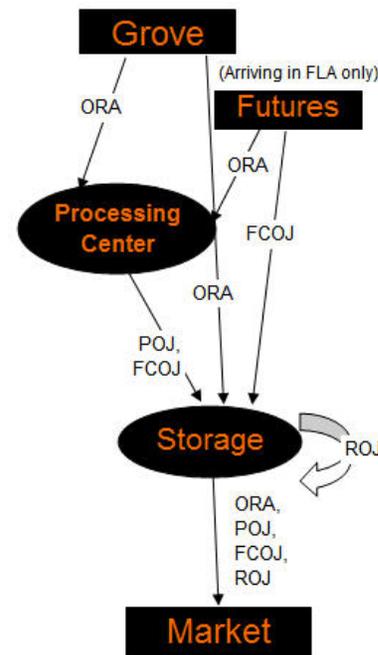
The orange juice game is a test of coordination and planning under uncertainty.

Game objective

Each team acts as the management of a company that produces and sells orange juice products. By making optimal decisions regarding shipping, manufacturing, futures, storages, pricing, etc, the company seeks to maximize its annual net profits.

Basic game flow

Flow Chart



ORA: Oranges
POJ: Premium orange juice
FCOJ: Frozen concentrate orange juice
ROJ: Reconstituted orange juice

[Futures: details](#)

Grove: where the company makes spot purchases of fresh oranges. Some oranges are delivered directly to storages for sale, others are delivered to processing plants for further processing... [details](#)

Processing plant: where fresh oranges are made into POJ and FCOJ. Products are delivered to storages for sales... [details](#)

Storage: where some FCOJ is reconstituted into ROJ and all products are stored to be [details](#)

[Market: details](#)

Transportation: there are three types of transportation.
from groves to processing plants or storages
from processing plants to storages
from storages to markets... [details](#)

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■ The decisions

spreadsheet:

- » Teams control the running of the company for a year.
- » Separate tabs for decisions regarding:
 - Futures
 - Shipping to manufacturing
 - Size and location of manufacturing and storage
 - Shipping to storage
 - Pricing at markets

Raw Materials

Purchases at the Spot Market(tons) (each week in a month) (ORA)

Grove:Month	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
FLA								
CAL								
TEX								
ARZ								
BRA								
SPA								

Quantity Multipliers(unit, \$/lb)

Grove:Multiplier	Multiplier	Price 1	Multiplier	Price 2	Multiplier	Price 3
FLA						
CAL						
TEX						
ARZ						
BRA						
SPA						

Purchases at the Futures Market(tons) (ORA and FCOJ)

Type	Year	Price(\$/lb)	Buy	Owned	Cumulated
ORA Contracts	2003		-	0	matured
	2004	0.615999		0	->
	2005	0.604154		0	->
	2006	0.604129		0	->
	2007	0.584896		0	->
	2008	0.590331			->
FCOJ Contracts	2003		-	0	matured
	2004	0.969113		0	->
	2005	0.885421		0	->
	2006	0.809759		0	->
	2007	0.774937		0	->
	2008	0.731006			->

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- The game schedule (see detailed dates provided on web site)
 - » Before fall break –
 - Team formation
 - Analyzing historical data
 - Developing team roles
 - » Practice rounds
 - First week after midterm
 - » First four rounds
 - One per week before Christmas, due Tuesday at 5pm of each week.
 - These rounds count!
 - » The orange bowl
 - Monday, January 13, 2014, 1pm – 5pm.
 - We play 3-4 rounds *per hour*. So, you need software to fill out that spreadsheet.

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■ The two “practice rounds”

- » You will be playing year 2013 twice (same data, and the same as the real beginning of the game).
- » This is an opportunity to learn something about demand elasticities.
- » Warning: if your production and/or storage capacity is less than demand, then all you will see are censored demands.
- » The best way to see real demands is to raise prices, so demand is lower.
- » Watch your units! Prices are in \$\$/ton, and quantities are per week (even if they are listed under “September”).

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■ Some notes

» The key for each team lead:

- Be sure that everyone is well utilized to the degree that they would like to be utilized (which is not the same for everyone).
- Be careful not to over utilize your best programmers.
Someone may say they do not know/are not good at VBA, Matlab, etc. This can be a great time to learn.

» The key for each team member:

- *Be useful!* You will be evaluated at the end on the basis of specific contributions you made to the team.
- Keep track of what you did, and make sure your team lead knows what contributions you made.

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■ Evaluations

- » Each team member evaluates every other team member
 - I will be looking for *specific* examples of how each team member impacted the results of the team.
 - I will be looking for evidence of effective leadership, good organization, and a good level of enthusiasm on the team.

- » Remember: you are competing against the best concentration of talent you are likely to ever face in the real world.

Good luck!