

# DEVELOPMENT OF A LEAN HOG FUTURES TRADING GAME TO ENHANCE STUDENT ENGAGEMENT AND LEARNING



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# Challenges

Our typical student has little knowledge or experience in the swine industry, comparable to other animal industries



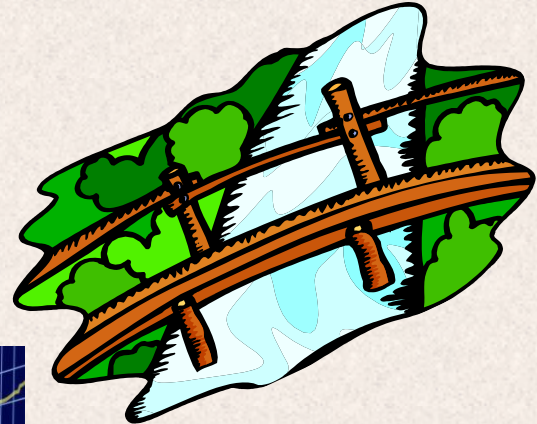
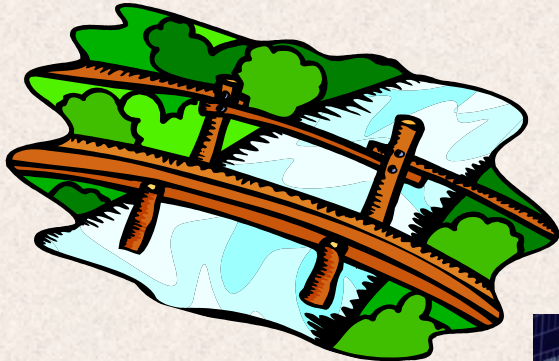
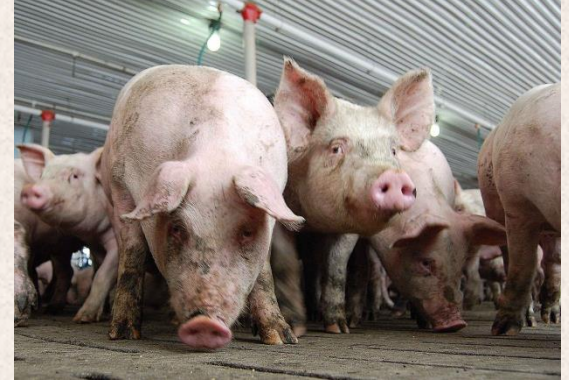
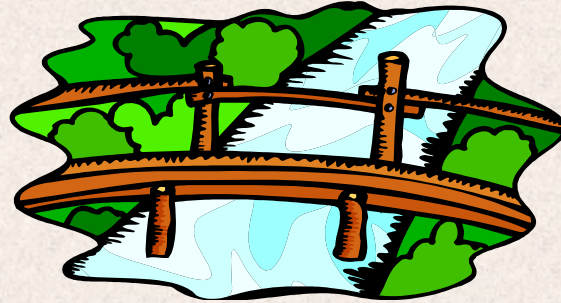
- self-reported ( $3.97 \pm 1.89$ )

The typical student enrolled in swine production has a lack of understanding of markets, futures and commodity trading



- self-reported ( $4.25 \pm 0.92$ )

# Challenges





# Rationale



- **Classroom experiment used to teach futures market**

(Roucan-Kane and Wolfskill, 2012)

- **Attempts to re-create market simulation for animal and agricultural commodities has been met with resounding success:**

- **The Packer-Feeder Game simulates the market competition between multiple cattle feedlots and processing firms**

(Koontz et al., 1994)

- **A trading floor “pit” market game for any commodity introduces students to supply and demand and futures concepts**

(Holt, 1996)

- **Futures markets and spot pricing are better understood when taught as a classroom experiment**

(Hunsader et al., 2011)

# Synopsis



## Swine Production and Management (ANSC 354)

**2 credits, 2 hours (2 one-hour meetings/week)**

**elective that satisfies major degree requirements (4 alternative options)**

**~25 students/semester (data from 2014, 23 students (n=23))**

**covers integration and practical applications of all principles of a swine operation and the swine industry**



# Objectives



**Develop and use a lean hog futures trading game to:**



**introduce students to futures markets and trading**



**allow students to interact, strategize and negotiate markets**



**reinforce/replace traditional lectures**

# Experimental Design

**Directions (1/2 page) handed out the previous class**

## Instructions for Lean Hog Futures Trading Game

In this activity, you will be participating in a “pit market” for futures to trade lean hog (LH) futures. In a pit market, you will have the opportunity to walk around the classroom looking for someone who will trade with you. There will be four rounds and depending on your role, you may buy, sell, or hold in any of the rounds. The starting spot price will be based on the actual future value of LH in \$/cwt. Trading will determine the subsequent futures price. You may buy or sell at any price you like in \$1 increments if you can find a willing trader.

### **Play of Game**

Each student will be a trader, and we will allow anyone to trade before any news occurs at the beginning. Then we will flip a coin to let you know if the latest news is positive or negative for the price of the LH future. Heads is positive news and tails is negative. You may now trade again. Then we will roll a die and if it lands on 2 through 6, the futures value direction will follow the coin and expected news. If it lands on 1, the futures value will move in the opposite direction. Finally, we will roll four six sided dice, and the sum of the dice divided by 2 and rounded to the nearest dollar, will determine the amount of the price swing (e.g. if we have positive news, and the sum of the dice is 24, the total would be \$12 higher and rounded, the new spot price will be \$12 higher than the current price). You may trade again. To conduct a trade, you must bring your trading sheets to the recorder so we may enter them into the spreadsheet. Trading will take place in each round as shown below with about 5 minutes per trading session. Once the timer ends, only those in the recording line will be allowed to trade.

### Round Play

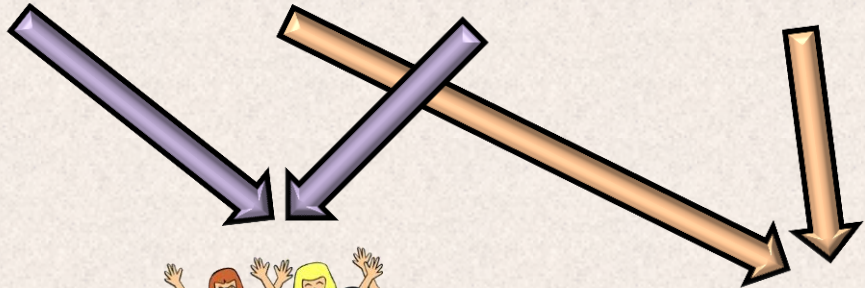
Start timer – trading occurs.

Coin flip for expectations (@ 1 minute elapsed) – trading occurs

Roll die for verification of expectations (@ 2 minutes elapsed) & Roll 4 dice for spot price change (@ 3 minutes elapsed) – trading occurs until 5 minutes elapse



# Experimental Design



Students form small groups  
(2 – 4 students each)



Groups are randomly assigned  
their “role”

**Sellers**

**Buyers**



# Experimental Design

## Sellers

- each has specific “worth”
- more worth = more contracts
- must sell all contacts  
(or lose money)

## Buyers

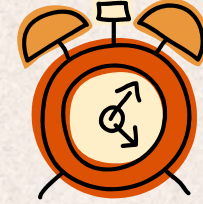
- create a farm name
- each has specific size operation
- buys contracts to fill the farm
- must keep farm full  
(or lose money)

**Smithfield**



# Experimental Design

## Round Play



## Elapsed Time

Market value of lean hog is written on board (\$/cwt)

1. Free trading occurs (\$1 increments)
2. Market expectation is determined by coin-flip (heads=positive; tails=negative)
3. Market expectation verification by die roll (1: opposite dir.; 2-6: expected dir.)
4. Spot price change by dice roll ( $\frac{1}{2}$  the sum of the value of 4 dice rolled)
5. End of round
6. Record all transactions on spreadsheet for public viewing
7. 2 min "weekend"
8. Begin next round (4 total rounds)



0 min

1 min

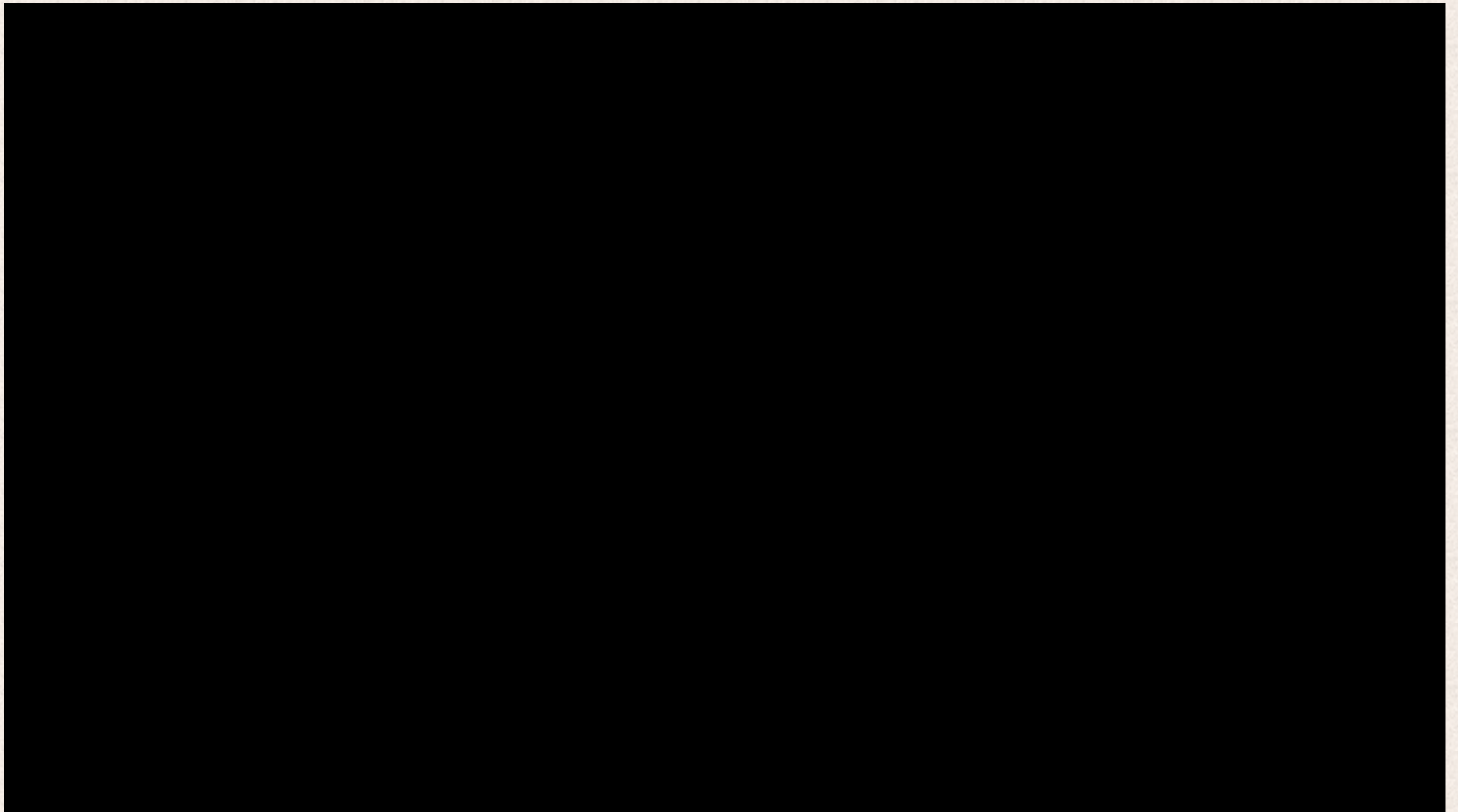
2 min

3 min

5 min

# Experimental Design

Mock Round Play



# Evaluation

- ✓ Increasing knowledge was defined as at least 90% of students receiving a grade of 80% on the marketing section of the exam
- ✓ student self-assessment and perception of the activity was conducted anonymously
- ✓ ten-point Likert-scale from 1 = disagree to 10 = agree
- ✓ Agreement/Success was defined when an experience obtained an average rating  $> 7$





# Results: Student Learning

## Exam Scores - Marketing Section

<u>Class</u>	<u>Mean Score (%)</u>	<u>Standard Deviation</u>	
Traditional Lecture	84.16	3.50	n = 50
Market Game	90.15	4.86	

p < 0.05

## Student Self-Assessment of Personal Knowledge

n = 23

Scale: 1 = disagree, 10 = agree

<u>Statement</u>	<u>Mean Response (standard dev.)</u>	
	<u>Beginning of Semester</u>	<u>End of Semester</u>
I understand market, futures, trading, commodities, and other aspects of livestock marketing	3.63 (0.89)	7.12 (1.01)

p < 0.05

# Results: Student Perception

Scale: 1 = disagree, 10 = agree

<u>Statement</u>	<u>Mean Response</u>	<u>Standard Deviation</u>
I enjoyed this exercise in-class	9.00	1.08
I feel like I learn better this way than with a traditional lecture about hog markets	8.83	1.65
I feel that this exercise helped to meet the course objective: demonstrate comprehension by interpreting and solving problems and scenarios relative to swine production	8.00	1.44

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Scale: 1 = very realistic, 10 = not very realistic

How would you rate the industry and market realism captured by this game?	5.09	1.79
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n = 23

# Conclusions

- 🗣️ **Use of a futures market game increases student engagement**
- 🗣️ **Game improves student learning  
(actual and perceived)**
- 🗣️ **Activity needs to be adjusted to capture more market realism**

**Questions?**

