As fuel prices have increased
- Corn and grain prices have increased
- Opening the way for alternative bioenergy sources such as lignocellulosic biomass (LCB) conversion to biofuels, for example switchgrass for conversion
- Examine entry level possibilities for Arkansas producers to be able to enter the biofuel market

Objectives
1. Comparing and contrasting two alternative modes of harvest that seem feasible in Arkansas
2. Using cost of production information to determine breakeven prices for producers and/or biorefineries
3. Discussing advantages and disadvantages related to the two modes of transport

Procedure
1. Develop enterprise budgets for each alternative
2. Simulate 12 years of production
3. Analyze data

Assumptions
- Producer fertilizes not for maximum yield but shoots stand with intermediate level of fertilizer 75 lb N plus P and K by soil test
- One late season harvest per year
- Year of establishment with zero yield
  - Year 2 – 3 tons per acre
  - Year 3 – 5 tons per acre
- 12 Year stand life
**Assumptions—Round Baling**
- Harvest with 12’ disc mower into windrows
- Large round baler with bale wrap for 20 bales per hour at DM weight of 1000 lb (16% m.c.) (5’ x 5.5’)
- Stacking at side of field on pads with tarp
- All operations can be performed by one individual
- Some storage required at the plant

**Assumptions—Module Building**
- Harvest with forage harvester into cotton boll buggies
- Harvesting rate—15 dry tons per hour (12% m.c.)
- Boll buggies load into cotton module builder at side of field and tarp (7’9”W, 9’H, and 32’L)
- Haul to plant with cotton module trucks
- Operations require 5 operators in the field at once

**Hauling**
- **Round Bales**
  - $3.60/mile for distance less than 50 miles (Petrolia), $1.15 per bale load/unload charge and 26 bales per load (50% handled twice, 50% handled four times)
- **Modules**
  - Texas—$17.43 per module and $1.22 per mile hauled
  - Arkansas—$50.00 per module and $2.00 per mile hauled

**Total Specified Cost—Round Bales**
- Year of Establishment: $201.37 per acre to establish on well drained marginal crop land
- Year 2: $115.88 (bales stacked at side of field)
- Year 3: $142.69
- Average yield:
  - Year 2—3 dry tons per acre
  - Years 3 to 12—5 dry tons per acre
- Prorated cost:
  \[
  P = \sum_{n=1}^{t} \frac{y}{(1+i)^n} \text{ dry ton field side}
  \]
  \[
  P = \sum_{n=1}^{t} \frac{y}{(1+i)^n} \text{ dry ton at plant}
  \]

**Total Specified Cost—Modules**
- Year of Establishment: $201.37 per acre to establish on well drained marginal crop land
- Year 2: $143.89 (modules tarped at side of field)
- Year 3: $189.60
- Average yield:
  - Year 2—3 dry tons per acre
  - Years 3 to 12—5 dry tons per acre
- Prorated cost:
  \[
  P = \sum_{n=1}^{t} \frac{y}{(1+i)^n} \text{ dry ton field side}
  \]
  \[
  P = \sum_{n=1}^{t} \frac{y}{(1+i)^n} \text{ dry ton at plant}
  \]

**Comparison of Two Systems**
- **Round Bales**
  - Product must be chopped at biofuel plant
  - Able to use 1 operator for all functions
  - Cutting, baling, stacking, and tarping
- **Modules**
  - Requires 5 operators
  - 1-harvester, 2-boll buggies, and 2-module builder and tarping
  - Product is already chopped before delivery
Questions?