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**DIVISION OF AGRICULTURE**  
**RESEARCH & EXTENSION**

*University of Arkansas System*

# **Whole Farm Analysis with Crop Enterprise Budgets**

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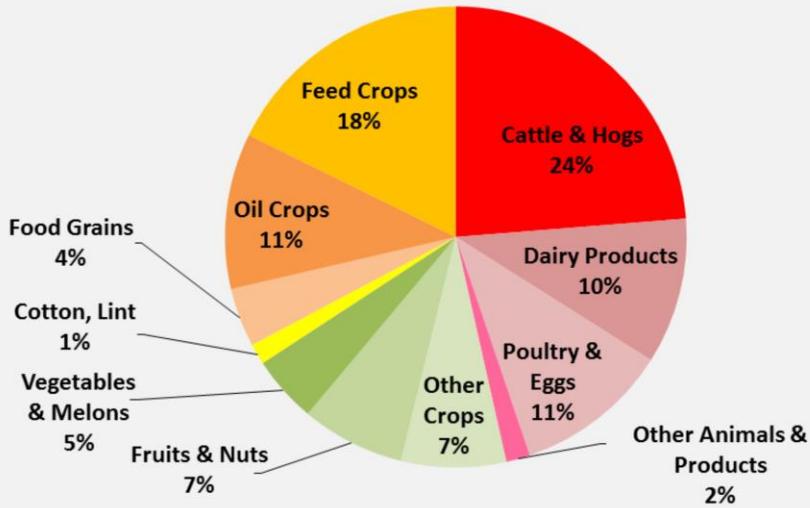
# Content

- I. U.S. Agriculture
- II. Crop Enterprise Budgets
- III. Whole Farm Budgets
- IV. Implications and Summary

All data are from NASS unless otherwise specified.

# I. U.S. Agriculture

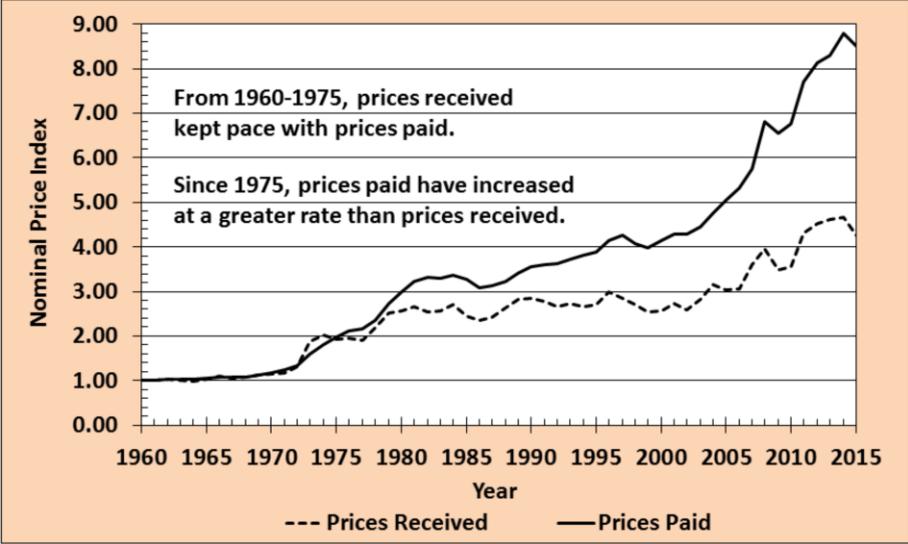
# Cash Receipts, U.S. Agriculture, by Commodity Category, Average Annual, 2011-2015 (ERS)



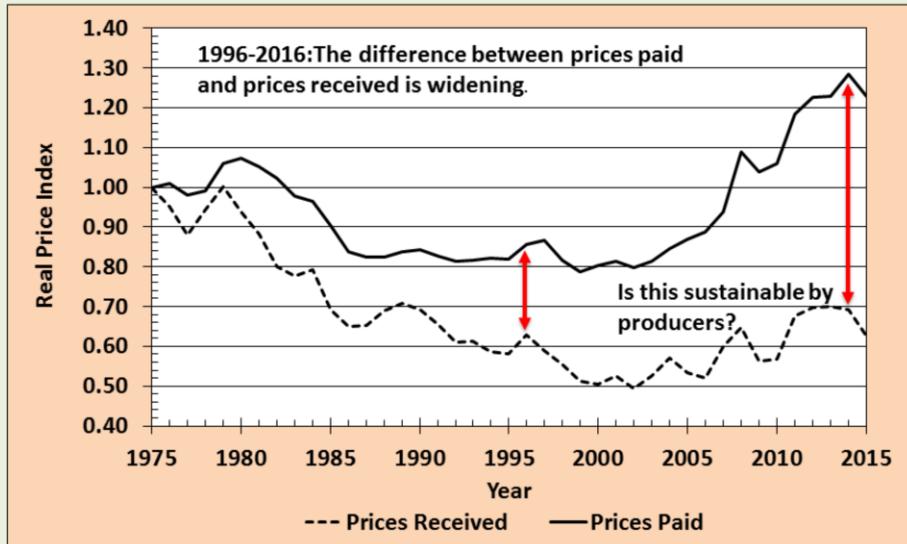
## Farm Cash Receipts, Average Annual, 2011-2015 (ERS)

| Category   | Percent |
|--|---------|
| Field Crops (Consumption & Feed)<br>+ Animal Products            | 79.2%   |
| Cotton, Lint   | 1.5%    |
| Vegetables, Melons, Fruits, Nuts,<br>Horticulture, & Other Crops | 19.3%   |

# Nominal Prices Received for Agricultural Commodities and Prices Paid for Production Items

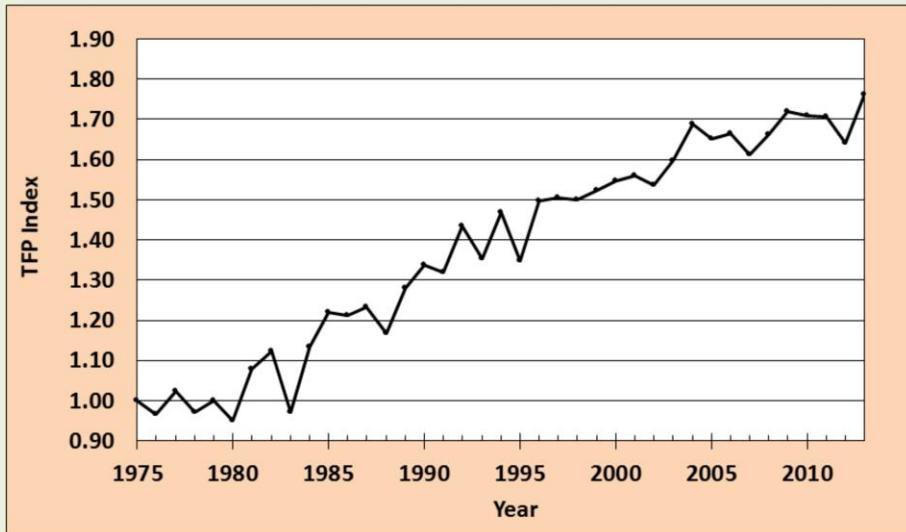


## Real Prices Received for Agricultural Commodities and Prices Paid for Production Items



## What makes decreasing crop prices possible?

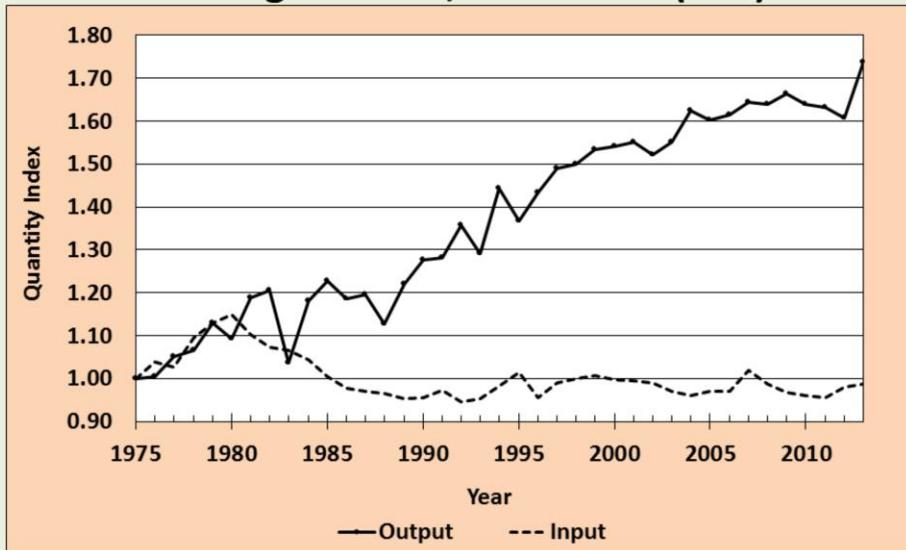
## Index for Total Factor Productivity (Output-Input), U.S. Agriculture, 1975-2013 (ERS)



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Productivity increases for all U.S. agriculture indicate high productivity increases in the field crop sectors. Feed crops and oil crops are inputs for the animal producing sectors.

## Output and Input Quantity Indexes, U.S. Agriculture, 1975-2013 (ERS)

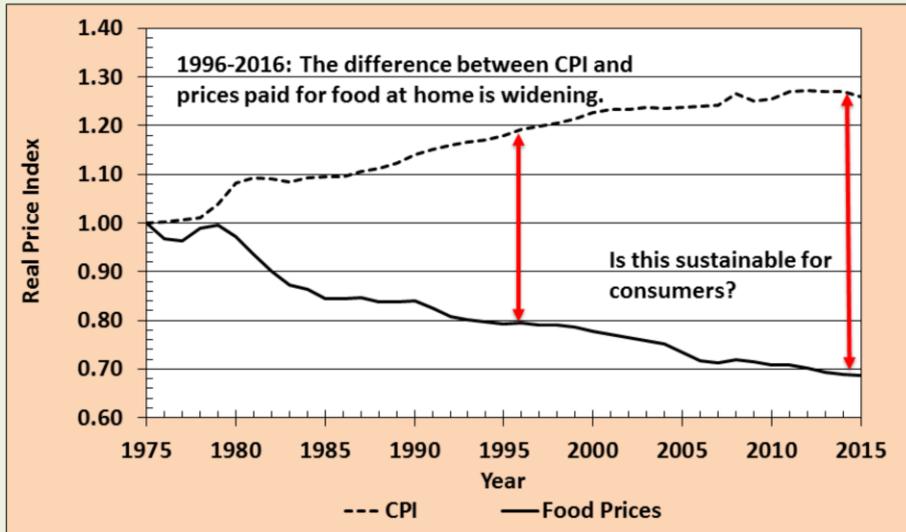


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Productivity: Aggregate output is increasing with stable or slightly decreasing aggregate input.

# What is the impact of declining agricultural prices for consumers?

## Consumer Benefit of U.S. Agricultural Production (BLS) (ERS)



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Consumer Price Index (CPI) is prices for all retail goods purchased by households. Food Prices are food purchased for home consumption.

## II. Crop Enterprise Budgets

## Crop Enterprise Budgets Why?

- 1) Declining commodity prices increase the importance of evaluating costs and returns before planting a crop.
- 2) Budgets organize all the numbers of production.
- 3) Budgets are for planning and evaluating production alternatives.

# <http://www.uaex.edu/crop-budgets>

**Table 14. Arkansas Rice Enterprise Budget, Conventional Seed**

| CROP VALUE                                 | Grower % | Unit    | Yield  | Price/Unit | Revenue         | Your Farm |
|--|----------|---------|--------|------------|-----------------|-----------|
| Crop Value                                 | 100%     | Bu      | 180.00 | 5.70       | 1,026.00        |           |
| <b>OPERATING EXPENSES</b>                  |          |         |        |            |                 |           |
| Seed, Includes All Fees                    | 100%     | Acres   | 1      | 33.94      | 33.94           |           |
| Nitrogen                                   | 100%     | Lbs     | 152    | 0.43       | 65.16           |           |
| Phosphate (P2O5)                           | 100%     | Lbs     | 40     | 0.50       | 20.00           |           |
| Potash (K2O)                               | 100%     | Lbs     | 60     | 0.37       | 22.20           |           |
| Sulfur                                     | 100%     | Lbs     | 0      | 0.29       | 0.00            |           |
| Boron                                      | 100%     | Lbs     | 0.00   | 5.00       | 0.00            |           |
| Agrotain                                   | 100%     | Qtz     | 0.46   | 18.37      | 8.45            |           |
| Herbicide                                  | 100%     | Acres   | 1      | 62.46      | 62.46           |           |
| Insecticide                                | 100%     | Acres   | 1      | 2.88       | 2.88            |           |
| Fungicide                                  | 100%     | Acres   | 1      | 24.80      | 24.80           |           |
| Other Chemical                             | 100%     | Acres   | 1      | 0.00       | 0.00            |           |
| Other Chemical                             | 100%     | Acres   | 1      | 0.00       | 0.00            |           |
| Custom Chemical & Fertilizer Applications  |          |         |        |            |                 |           |
| Ground Application Fertilizer & Chemical   | 100%     | Acres   | 0      | 6.00       | 0.00            |           |
| Air Application Fertilizer & Chemical      | 100%     | Acres   | 3      | 7.00       | 21.00           |           |
| Air Application Lbs.                       | 100%     | Lbs     | 330    | 0.070      | 23.10           |           |
| Other Custom Hire, Air Seeding             | 100%     | Acres   | 0      | 7.00       | 0.00            |           |
| Machinery and Equipment                    |          |         |        |            |                 |           |
| Diesel Fuel, Pre-Post Harvest              | 100%     | Gallons | 4,791  | 2.48       | 11.88           |           |
| Repairs and Maintenance, Pre-Post Harvest  | 100%     | Acres   | 1.00   | 7.37       | 7.37            |           |
| Diesel Fuel, Harvest                       | 100%     | Gallons | 5,289  | 2.48       | 13.12           |           |
| Repairs and Maintenance, Harvest           | 100%     | Acres   | 1      | 22.26      | 22.26           |           |
| Irrigation Energy Cost                     | 100%     | Ac-In   | 30     | 2.93       | 87.88           |           |
| Irrigation System Repair & Maintenance     | 100%     | Ac-In   | 30     | 0.23       | 6.97            |           |
| Supplies (ex. polytape, levee gates)       | 100%     | Acres   | 1      | 0.65       | 0.65            |           |
| Survey Levees                              | 100%     | Acres   | 1      | 4.50       | 4.50            |           |
| Labor, Field Activities                    | 100%     | Hrs     | 1,134  | 12.88      | 14.61           |           |
| Scouting Consultant Fee                    | 100%     | Acres   | 1      | 0.00       | 0.00            |           |
| Other Expenses                             | 100%     | Acres   | 1      | 0.00       | 0.00            |           |
| Crop Insurance                             | 100%     | Acres   | 1      | 0.00       | 0.00            |           |
| Interest, Annual Rate Applied for 6 Months | 100%     | Rate %  | 4.75   | 453.13     | 10.76           |           |
| Custom Harvest                             | 100%     | Acres   | 0.00   | 0.00       | 0.00            |           |
| Post-Harvest Expenses                      |          |         |        |            |                 |           |
| Drying                                     | 100%     | Bu      | 180.00 | 0.40       | 72.00           |           |
| Hauling                                    | 100%     | Bu      | 180.00 | 0.25       | 45.00           |           |
| Check Off Boards                           | 100%     | Bu      | 180.00 | 0.01       | 2.43            |           |
| Cash Land Rent                             |          | Acres   | 1.00   | 0.00       | 0.00            |           |
| <b>Total Operating Expenses</b>            |          |         |        |            | <b>\$583.33</b> |           |
| <b>Return to Operating Expenses</b>        |          |         |        |            | <b>\$442.67</b> |           |
| <b>CAPITAL RECOVERY &amp; FIXED COSTS</b>  |          |         |        |            |                 |           |
| Machinery and Equipment                    |          | Acres   | 1      | 82.34      | 82.34           |           |
| Irrigation Equipment                       |          | Acres   | 1      | 36.85      | 36.85           |           |
| Overhead, See Note 1                       |          | Acres   | 1      | 4.12       | 4.12            |           |
| <b>Total Capital Recovery</b>              |          |         |        |            | <b>\$123.31</b> |           |
| <b>TOTAL SPECIFIED EXPENSES</b>            |          |         |        |            | <b>\$706.63</b> |           |
| <b>NET RETURNS</b>                         |          |         |        |            | <b>\$319.37</b> |           |



This is an example output for a budget.

## Crop Enterprise Budgets - How?

- 1) Field activities of production are from the UAEX Crop Research Verification Programs.  
<http://www.uaex.edu/farm-ranch/crops-commercial-horticulture/verification/>
- 2) Input price data are from suppliers, vendors, and dealers.



Research verification coordinators collaborate with Arkansas Division of Agriculture crop specialists to determine a typical production method for application in the crop enterprise budgets.

## 2016 Crop Enterprise Budgets

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# Production Technology

Table A-14. Rice Field Activities, Conventional Seed

| Field Trip                | Width       | Activity                | Flood   |
|---------------------------|-------------|-------------------------|---|
| Disk                      | 32 ft.      | Fall Tillage            |   |
| Land Plane                | 17 ft.      | Fall Tillage            |   |
| Ditcher                   |             | Fall                    |   |
| Field Cultivator          | 36 ft.      | Tillage                 |   |
| Fertilizer Spreader       | 60 ft.      | Fertilizer              | Mixed N,P,K (0-40-60)                                     |
| Grain Drill               | 30 ft.      | Plant                   | 72 lbs seed per acre                                      |
| Roller                    | 32 ft.      | Compact Soil            |   |
| Self-Propelled Sprayer    | 90 ft.      | Herbicide               | 12.8 oz Command   |
| Make Levees               |             | Three Round-Trips       |   |
| Levee Gates               |             | Total Season Activities |   |
| Custom Aerial Application |             | Herbicide               | 1 gal Rice Shot (Propanil), 0.33 lb Facet, 32 oz crop oil |
| Custom Aerial Application |             | Fertilizer              | 230 lb Urea (46-0-0), 0.46 qt Agrotain treated            |
| Flood Field               |             |                         |   |
| Custom Aerial Application |             | Fertilizer              | 100 lb Urea (46-0-0)                                      |
| Custom Aerial Application |             | Fungicide               | 12.8 oz Quadris   |
| Custom Aerial Application |             | Insecticide             | 1.6 oz Karate   |
| Drain Field               |             |                         |   |
| Combine                   | 320 hp      | Harvest                 |   |
| Head                      | 25 ft Rigid | Harvest                 |   |
| Grain Wag on (875 bu)     |             | Harvest                 |   |
| Remove Levees             |             |                         |   |
| Roller                    | 32 ft.      | Manage Stubble          |   |

All budgets are based on a complete production program for a crop.

## Interactive Budgets

- Budgets are Excel files for each crop.
- Users apply default values or selectively enter alternative inputs and input prices.
- Users investigate alternative rental arrangements for profitability.
- Users apply alternative machinery and equipment.
- ❖ Users have capability to represent all alternative production methods.

| <b>Receipts</b>                            | Cotton         | Corn          | Sorghum       | Soybean       | Hybrid Rice   | Peanut        |
|--|----------------|---------------|---------------|---------------|---------------|---------------|
| Yield (cotton-lb, peanut-ton, other-bu)    | 1200           | 210           | 115           | 55            | 180           | 2.25          |
| Price (\$/yield unit)                      | 0.65           | 4.00          | 4.20          | 9.50          | 5.50          | 375.00        |
| Grower Share, %                            | 75%            | 75%           | 75%           | 75%           | 75%           | 75%           |
| <b>Crop Revenue</b>                        | <b>585.00</b>  | <b>630.00</b> | <b>362.25</b> | <b>391.88</b> | <b>742.50</b> | <b>632.81</b> |
| <sup>1</sup> Gin Rebate/Bale               | 65             |               |               |               |               |               |
| <b>Operating Expenses</b>                  |                |               |               |               |               |               |
| Input Costs                                | 473.10         | 374.88        | 206.94        | 276.60        | 396.43        | 309.61        |
| Other Operating Expenses                   | 88.62          | 53.12         | 44.62         | 39.95         | 49.44         | 70.43         |
| Total Operating Expenses                   | 561.72         | 428.00        | 251.56        | 316.55        | 445.87        | 380.04        |
| Post-harvest Expenses                      | 156.78         | 94.50         | 29.90         | 16.36         | 119.43        | 90.11         |
| <sup>2</sup> Net Operating Expenses        | <b>600.92</b>  | <b>522.50</b> | <b>281.46</b> | <b>332.91</b> | <b>565.30</b> | <b>470.15</b> |
| <sup>3</sup> Returns to Operating Expenses | <b>-15.92</b>  | <b>107.50</b> | <b>80.79</b>  | <b>58.97</b>  | <b>177.20</b> | <b>162.66</b> |
| Fixed Costs                                | 163.11         | 85.54         | 76.75         | 77.81         | 93.90         | 168.33        |
| <sup>4</sup> Total Specified Expenses      | <b>764.03</b>  | <b>608.04</b> | <b>358.21</b> | <b>410.72</b> | <b>659.20</b> | <b>638.48</b> |
| <sup>3</sup> Returns to Specified Expenses | <b>-179.03</b> | <b>21.96</b>  | <b>4.04</b>   | <b>-18.85</b> | <b>83.30</b>  | <b>-5.67</b>  |
| Operating Expenses/yield unit              | 0.50           | 2.49          | 2.45          | 6.05          | 3.14          | 208.96        |
| Total Expenses <sup>4</sup> /yield unit    | 0.64           | 2.90          | 3.11          | 7.47          | 3.66          | 283.77        |
| Land Expense/acre                          | 195.00         | 210.00        | 120.75        | 130.63        | 247.50        | 210.94        |
| Land Expense/yield unit                    | 0.16           | 1.00          | 1.05          | 2.38          | 1.38          | 93.75         |
| Operating & Land Expenses/yield unit       | 0.66           | 3.49          | 3.50          | 8.43          | 4.52          | 302.71        |
| Total Cost/yield unit, including land      | 0.80           | 3.90          | 4.16          | 9.84          | 5.04          | 377.52        |

Side-by-side comparisons with interactive capability to change prices and yields assist producers in decision making. As an example, soybeans have total costs of \$7.47/bu. on land owned by the producer. On land at 25% share rent, total costs, including land, are \$9.84/bu.

# III. Whole Farm Budgets

## Whole Farm Budgets

- Crop enterprise budgets are on a per acre basis
- Requirement is cost and returns for crops in simultaneous production
- The solution is to multiply enterprise budgets by acreage and calculate the total
- The solution can incorporate management costs, real estate taxes, and government payments received on base acreage

# Crop Input for Whole Farm Budget

| Soybean                           | Owned Land         |          |                  |          |               | Rented Land (Share or Cash) |          |                  |          |               |
|-----------------------------------|--------------------|----------|------------------|----------|---------------|-----------------------------|----------|------------------|----------|---------------|
|                                   | Surface Irrigation |          | Pivot Irrigation |          | Non-irrigated | Surface Irrigation          |          | Pivot Irrigation |          | Non-irrigated |
|                                   | Diesel             | Electric | Diesel           | Electric | N/A           | Diesel                      | Electric | Diesel           | Electric | N/A           |
|                                   | 1                  | 1        | 1                | 1        | 1             | 1                           | 1        | 1                | 1        | 1             |
| Irrigation Type                   |                    |          |                  |          |               |                             |          |                  |          |               |
| Irrigation Power                  |                    |          |                  |          |               |                             |          |                  |          |               |
| Acres                             |                    |          |                  |          |               |                             |          |                  |          |               |
| Yield                             | 60                 | 60       | 60               | 60       | 30            | 60                          | 60       | 60               | 60       | 30            |
| Farm Price                        | 10.00              | 10.00    | 10.00            | 10.00    | 10.00         | 10.00                       | 10.00    | 10.00            | 10.00    | 10.00         |
| Grower Share Revenue, %           | 100%               | 100%     | 100%             | 100%     | 100%          | 75%                         | 75%      | 75%              | 75%      | 75%           |
| Seed                              | 90.00              | 90.00    | 90.00            | 90.00    | 90.00         | 90.00                       | 90.00    | 90.00            | 90.00    | 90.00         |
| Fertilizers & Nutrients           | 42.20              | 42.20    | 42.20            | 42.20    | 42.20         | 42.20                       | 42.20    | 42.20            | 42.20    | 42.20         |
| Chemicals                         | 68.98              | 68.98    | 68.98            | 68.98    | 68.98         | 68.98                       | 68.98    | 68.98            | 68.98    | 68.98         |
| Custom Applications               | 14.00              | 14.00    | 14.00            | 14.00    | 14.00         | 14.00                       | 14.00    | 14.00            | 14.00    | 14.00         |
| Other Inputs                      | 3.45               | 3.45     | 0.00             | 0.00     | 0.00          | 3.45                        | 3.45     | 0.00             | 0.00     | 0.00          |
| Diesel Fuel, Field Activities     | 15.59              | 15.59    | 13.54            | 13.54    | 13.54         | 15.59                       | 15.59    | 13.54            | 13.54    | 13.54         |
| Irrigation Energy                 | 35.15              | 23.18    | 53.39            | 35.22    | 0.00          | 35.15                       | 23.18    | 53.39            | 35.22    | 0.00          |
| Fees                              | 0.00               | 0.00     | 0.00             | 0.00     | 0.00          | 0.00                        | 0.00     | 0.00             | 0.00     | 0.00          |
| Crop Insurance                    | 0.00               | 0.00     | 0.00             | 0.00     | 0.00          | 0.00                        | 0.00     | 0.00             | 0.00     | 0.00          |
| Repairs & Maintenance             | 21.45              | 20.11    | 27.53            | 24.58    | 17.82         | 20.00                       | 18.66    | 25.75            | 22.79    | 17.82         |
| Labor, Field Activities           | 10.30              | 10.30    | 8.59             | 8.59     | 7.35          | 10.30                       | 10.30    | 8.59             | 8.59     | 7.35          |
| Interest                          | 7.15               | 6.84     | 7.56             | 7.06     | 6.03          | 7.12                        | 6.80     | 7.52             | 7.01     | 6.03          |
| Custom Harvest                    | 0.00               | 0.00     | 0.00             | 0.00     | 0.00          | 0.00                        | 0.00     | 0.00             | 0.00     | 0.00          |
| Post-harvest Expenses             | 15.00              | 15.00    | 15.00            | 15.00    | 7.50          | 15.00                       | 15.00    | 15.00            | 15.00    | 7.50          |
| Check-offs, Board Fees            | 3.00               | 3.00     | 3.00             | 3.00     | 1.50          | 3.00                        | 3.00     | 3.00             | 3.00     | 1.50          |
| Cash Land Rent                    | 0.00               | 0.00     | 0.00             | 0.00     | 0.00          | 0.00                        | 0.00     | 0.00             | 0.00     | 0.00          |
| Pre-Harvest and Harvest Machinery | 54.31              | 54.31    | 48.61            | 48.61    | 48.61         | 54.31                       | 54.31    | 48.61            | 48.61    | 48.61         |
| Irrigation Equipment              | 16.98              | 10.29    | 68.40            | 53.62    | 0.00          | 6.69                        | 0.00     | 14.78            | 0.00     | 0.00          |
| Miscellaneous Overhead            | 2.72               | 2.72     | 2.43             | 2.43     | 2.43          | 2.72                        | 2.72     | 2.43             | 2.43     | 2.43          |
| Real Estate Tax Value, per acre   | 810                | 810      | 810              | 810      | 810           |                             |          |                  |          |               |



Users enter expected price and yield in the whole farm budget program.

## Customize with Worksheet in Budget File

Column C is Data for Entry into Whole Farm Budgets  
Copy, then Paste Special-Value, Entire Section Block

|                                   |        |
|-----------------------------------|--------|
| Yield                             | 180.00 |
| Price                             | 5.70   |
| Grower Share, %                   | 100%   |
| Cottonseed Value                  | 0.00   |
| Seed                              | 33.84  |
| Fertilizers & Nutrients           | 115.83 |
| Chemicals                         | 90.13  |
| Custom Applications               | 44.10  |
| Other Inputs                      | 5.15   |
| Diesel Fuel, Field Activities     | 25.00  |
| Irrigation Energy                 | 87.88  |
| Fees                              | 0.00   |
| Crop Insurance                    | 0.00   |
| Repairs & Maintenance             | 36.60  |
| Labor, Field Activities           | 14.61  |
| Interest                          | 10.76  |
| Custom Harvest                    | 0.00   |
| Post-Harvest Expenses             | 117.00 |
| Check-offs, Board Fees            | 2.43   |
| Cash Land Rent                    | 0.00   |
| Pre-Harvest and Harvest Machinery | 82.34  |
| Irrigation Equipment              | 36.85  |
| Miscellaneous Overhead            | 4.12   |

Users have the capability to customize a crop enterprise budget and enter data in the whole farm budget program.

# Example Farm

Size of the whole farm budget model farm is based on field observations.

## Data for Scale

- Scale – 1400 acres soybean, 700 acres corn, 700 acres rice
- Scale – data correspond to one soybean acre for one rice acre and one soybean acre for one corn acre
- Scale – 2,800 total acres correspond to one combine for all crops at 326 annual hours
- Scale – 2,800 total acres correspond to one farmer\operator managing the farm

Size of the whole farm budget model farm is based on field observations.

## Fixed Costs

- Capital Recovery is stated as an estimate, users may select to enter their data
- Capital Recovery is based on Annual Amortized \$ divided by Annual Hours
- \$ / Acre is amount allocated to cover costs of using machinery – it is not identical to depreciation
- Capital Recovery is a lumpy input
- Acres applied to whole farm budget correspond to observed crop acreages so that cost estimates represent whole machinery units, not partial units

**\$9.50/bu. Soybeans; \$3.50/bu. Corn; \$4.73/bu. Rice**

|                       | Corn            | Soybean        | Rice, LG       | Total            |
|-----------------------|-----------------|----------------|----------------|------------------|
| Grower Revenue        | 385,875         | 548,625        | 446,985        | <b>1,381,485</b> |
| - Production Expenses | <b>292,649</b>  | <b>425,418</b> | <b>304,869</b> | <b>1,022,937</b> |
| Operating Expenses    | 365,750         | 458,429        | 395,711        | <b>1,219,890</b> |
| Crop, Returns to OE   | 20,125          | 90,196         | 51,274         | <b>161,595</b>   |
| Farm, Returns to OE   | 161,595         |                |                |                  |
| - Capital Recovery    | <b>234,548</b>  |                |                |                  |
| NFI from Operations   | -72,953         |                |                |                  |
| + PLC, ARC Payments   | 0               |                |                |                  |
| - Management          | <b>63,850</b>   |                |                |                  |
| <b>Net Returns</b>    | <b>-136,803</b> |                |                |                  |

The farm has \$1.023 million in production expenses. This is the amount that would typically be owed as a production loan. Capital recovery is an estimate of the amount for long-term financing of machinery and equipment. Crop prices are USDA forecasts from the July WASDE Supply and Demand Report. The farm has a loss of \$136,803.

## PLC and ARC

- Base acres are equal to planted acres
  - Farm is in the same rotation as 2009-2012
- Soybeans and corn are in ARC-County
  - 2016 county yield is trend line Mississippi County yield
- Rice is in PLC
  - Farm PLC payment yield is determined by Mississippi County 2008-2012 yield

The whole farm budget program available at the University of Arkansas Cooperative Extension Service website (<http://www.uaex.edu/crop-budgets>) includes a separate calculator for estimating PLC, ARC, and LDP.

# Interactive PLC, ARC, & LDP in Excel (Results Entered in Whole Farm Budgets)

| Price and Yield                       | Price Loss Coverage |         |          |          |         |         |       | Agricultural Risk Coverage (County) |         |          |          |         |         |        |
|---------------------------------------|---------------------|---------|----------|----------|---------|---------|-------|-------------------------------------|---------|----------|----------|---------|---------|--------|
|                                       | Corn                | Soybean | Rice, LG | Rice, MG | Sorghum | Peanut  | Wheat | Corn                                | Soybean | Rice, LG | Rice, MG | Sorghum | Peanut  | Wheat  |
| National Price                        | 4.00                | 10.00   | 5.00     | 6.50     | 4.50    | 450.00  | 5.75  | 4.00                                | 10.00   | 5.00     | 6.50     | 4.50    | 450.00  | 5.75   |
| County Yield, Planted, Actual         |                     |         |          |          |         |         |       | 200.0                               | 60.0    | 180.0    | 180.0    | 90.0    | 2,000.0 | 50.0   |
| Olympic Average County Yield, Planted |                     |         |          |          |         |         |       | 174.5                               | 46.9    | 160.9    | 160.9    | 66.9    | 1,721.5 | 48.9   |
| Olympic Average National Price        |                     |         |          |          |         |         |       | 5.29                                | 12.27   | 6.38     | 6.72     | 5.10    | 557.35  | 6.70   |
| Payment Yield                         | 139.6               | 41.4    | 135.9    | 135.9    | 53.4    | 1,549.0 | 40.4  |                                     |         |          |          |         |         |        |
| Payment Acres (Base Acres)            | 0                   | 0       | 200      | 0        | 0       | 0       | 0     | 0                                   | 200     | 0        | 0        | 0       | 0       | 0      |
| Share Percent                         | 100%                | 100%    | 100%     | 100%     | 100%    | 100%    | 100%  | 100%                                | 100%    | 100%     | 100%     | 100%    | 100%    | 100%   |
| Payment (PLC or ARC)                  | 0                   | 0       | 30,035   | 0        | 0       | 0       | 0     | 0                                   | 0       | 0        | 0        | 0       | 0       | 0      |
| Payment Rate                          | 0.00                | 0.00    | 1.30     | 0.00     | 0.00    | 85.00   | 0.00  | 0.00                                | 0.00    | 0.00     | 0.00     | 0.00    | 0.00    | 0.00   |
| Maximum Payment Rate, if Applicable   |                     |         |          |          |         |         |       | 92.27                               | 57.51   | 102.60   | 108.15   | 34.10   | 95.94   | 32.77  |
| Reference Price                       | 3.70                | 8.40    | 6.30     | 6.30     | 3.95    | 535.00  | 5.50  | 3.70                                | 8.40    | 6.30     | 6.30     | 3.95    | 535.00  | 5.50   |
| Effective Price                       | 4.00                | 10.00   | 5.00     | 6.50     | 4.50    | 450.00  | 5.75  |                                     |         |          |          |         |         |        |
| ARC Guarantee                         |                     |         |          |          |         |         |       | 793.52                              | 494.57  | 882.34   | 930.09   | 293.29  | 825.05  | 281.83 |
| Benchmark Revenue                     |                     |         |          |          |         |         |       | 922.69                              | 573.08  | 1,025.98 | 1,081.50 | 341.03  | 959.36  | 327.71 |
| Benchmark Component (ARC Individual)  |                     |         |          |          |         |         |       |                                     |         |          |          |         |         |        |
| Actual Crop Revenue                   |                     |         |          |          |         |         |       | 800.00                              | 600.00  | 900.00   | 1,170.00 | 405.00  | 900.00  | 287.50 |
| Revenue Component (ARC Individual)    |                     |         |          |          |         |         |       |                                     |         |          |          |         |         |        |
| National Loan Rate                    | 1.95                | 5.00    | 2.99     | 2.99     | 1.95    | 355.00  | 2.94  | 1.95                                | 5.00    | 2.99     | 2.99     | 1.95    | 355.00  | 2.94   |

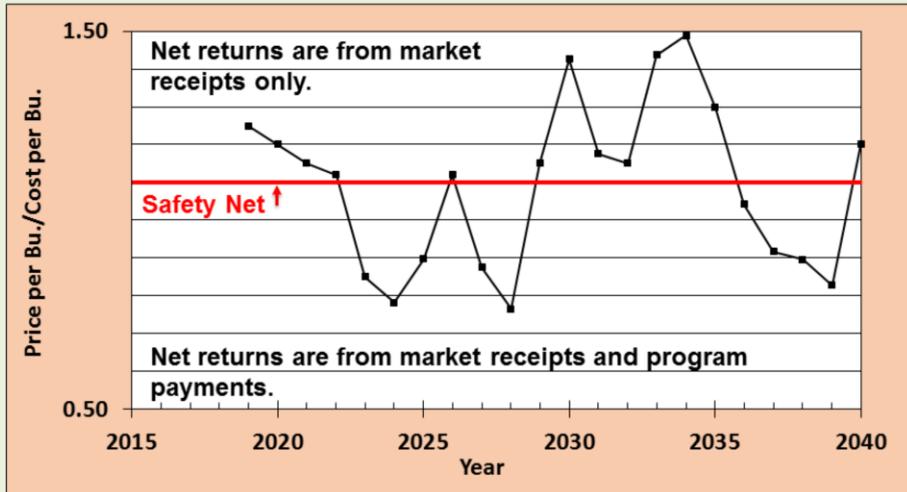
**\$9.50/bu. Soybeans; \$3.50/bu. Corn; \$4.73/bu. Rice**

|                       | Corn          | Soybean | Rice, LG | Total            |
|-----------------------|---------------|---------|----------|------------------|
| Grower Revenue        | 385,875       | 548,625 | 446,985  | <b>1,381,485</b> |
| - Production Expenses | 292,649       | 425,418 | 304,869  | <b>1,022,937</b> |
| Operating Expenses    | 365,750       | 458,429 | 395,711  | <b>1,219,890</b> |
| Crop, Returns to OE   | 20,125        | 90,196  | 51,274   | <b>161,595</b>   |
| Farm, Returns to OE   | 161,595       |         |          |                  |
| - Capital Recovery    | 234,548       |         |          |                  |
| NFI from Operations   | -72,953       |         |          |                  |
| + PLC, ARC Payments   | 161,382       |         |          |                  |
| - Management          | 63,850        |         |          |                  |
| <b>Net Returns</b>    | <b>24,579</b> |         |          |                  |

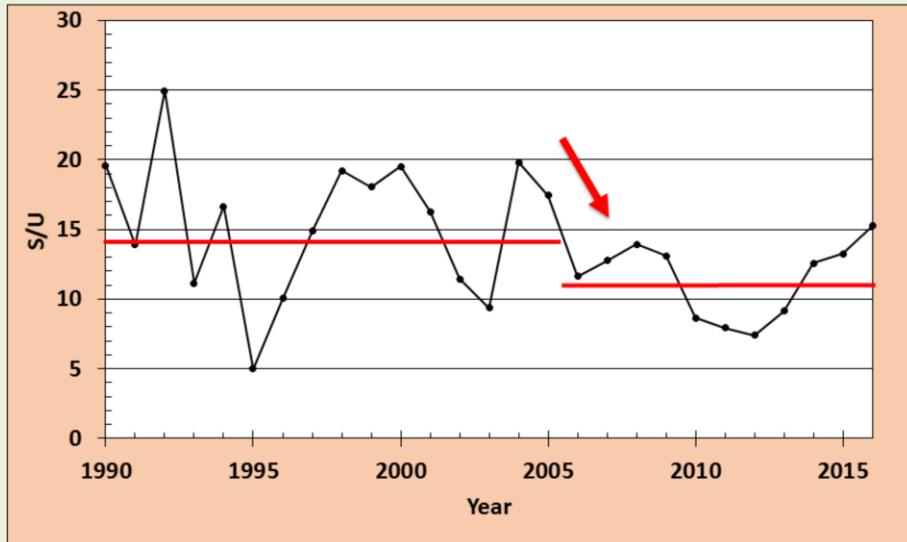
This is the same commodity price and production costs situation for the farm. With PLC and ARC payments, the farm has a positive net return of \$24,579 on approximately \$1.455 million of expenses.

## IV. Implications and Summary

# Net Returns and the Safety Net Concept



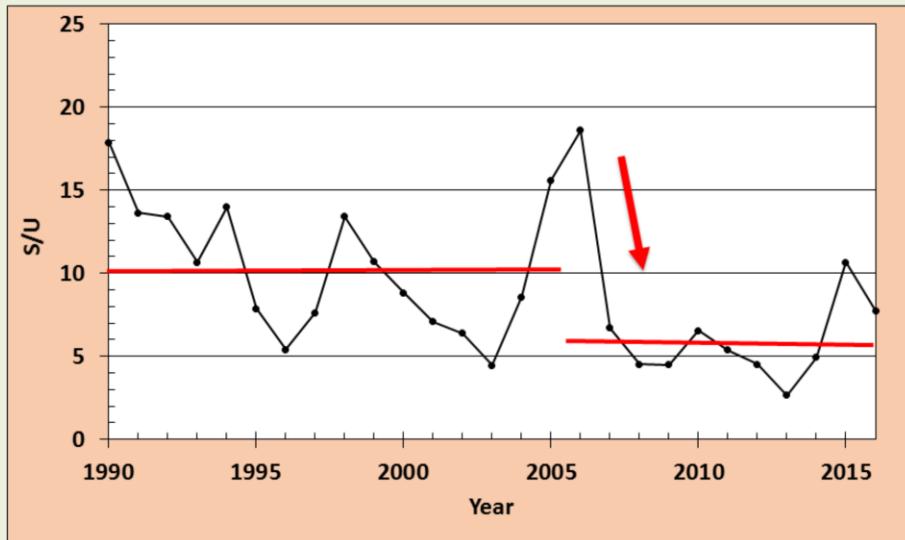
## Corn S/U, 1990 - 2016 (Projected) (FAS)



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Research at the UA Cooperative Extension Service indicates an inverse relationship with crop stocks-to-use and price. As S/U is above equilibriums represented by the red lines, prices decrease. As S/U is below equilibriums represented by the red lines, prices increase. Supply and demand adjustments that include changes in consumption (demand) and changes in acreage (supply) establish long-term equilibriums.

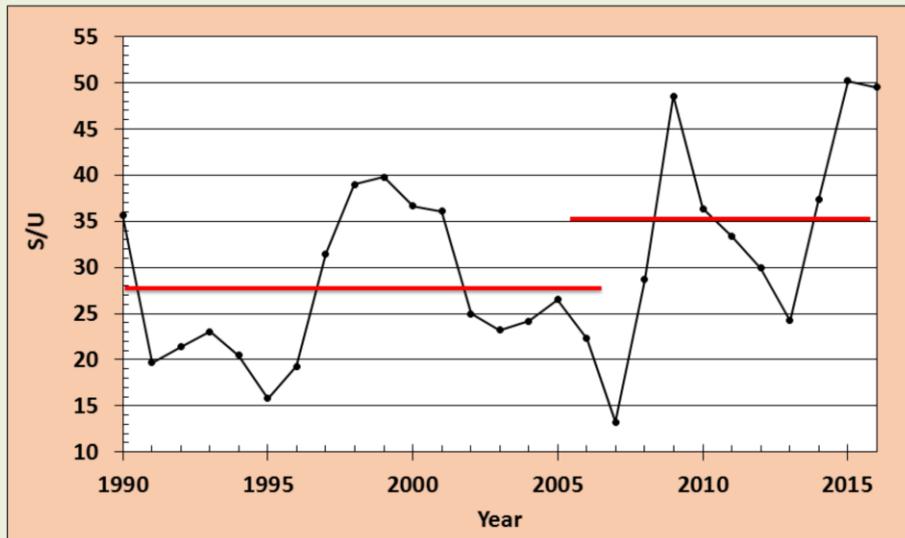
## Soybean S/U, 1990 - 2016 (Projected) (FAS)



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## Wheat S/U, 1990 - 2016 (Projected) (FAS)



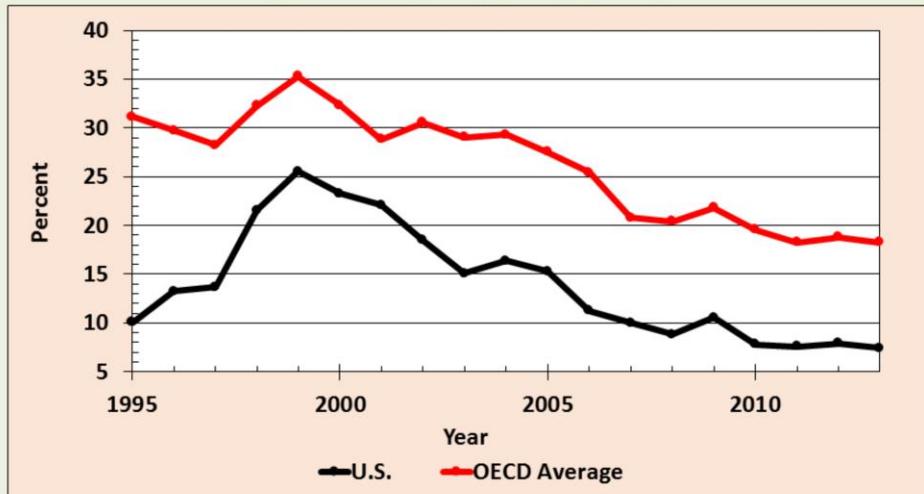
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## International Considerations for Agricultural Policy

- 1) International food security from lower costs for U.S. food exports
- 2) International competitiveness includes competitiveness in agricultural commodity programs

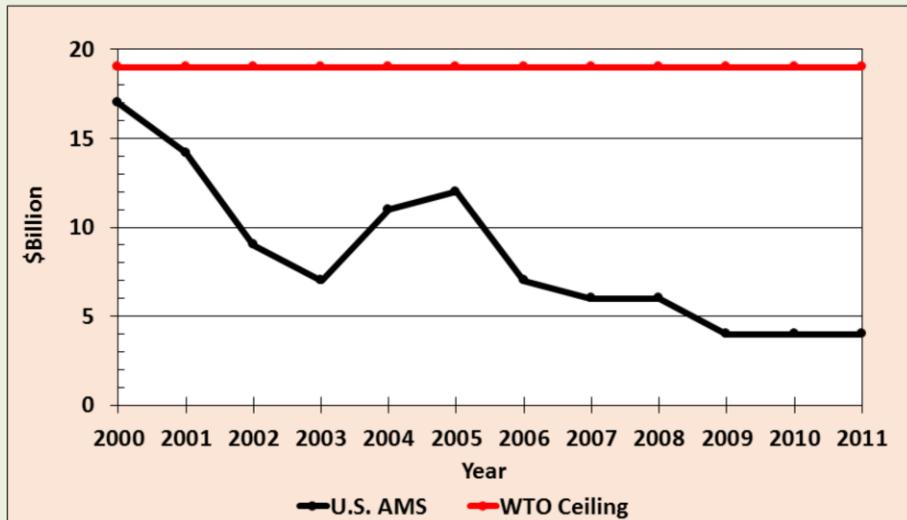
### OECD, Organization for Economic Cooperation and Development, Producer Support, % of Farm Receipts (including support) (ERS)



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U.S. farms are much less dependent on producer support from commodity programs than approximately 30 European countries composing the OECD. These are the most recent data available from the USDA Economic Research Service.

## WTO, Aggregate Measure of Support (AMS) (ERS)



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U.S. commodity program support totals are much less than the ceiling imposed by WTO obligations. These are the most recent data available from the USDA Economic Research Service.

| Country<br>(WTO data) | Average Tariff %<br>for Ag Imports |
|-----------------------|------------------------------------|
| Argentina             | 10.5                               |
| Australia             | 1.2                                |
| Brazil                | 10.1                               |
| Canada                | 16.2                               |
| China                 | 15.6                               |
| European Union        | 13.2                               |
| India                 | 33.5                               |
| Korea, Republic of    | 52.7                               |
| Mexico                | 21.2                               |
| Russian Federation    | 13.3                               |
| United States         | 4.7                                |


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Tariffs imposed by countries have the effect of increasing prices for imports. This protects prices for domestic producers. Average tariffs imposed on agricultural imports are much less in the U.S. than other countries. Only Australia with average tariffs of 1.2% of commodity value imposes lower tariffs than the U.S. Average tariffs imposed by the U.S. are 4.7% of commodity value. The European Union imposes average tariffs of 13.2 %. This increases prices of U.S. agricultural commodities going to the E.U. relative to E.U. commodities going to the U.S.

## Final Considerations for Agricultural Policy

- ❖ Prices: Decreasing commodity and food prices are directly attributable to agricultural policy.
- ❖ Prices: Agricultural policy enables producers to sustain production with decreasing commodity prices which results in decreasing food prices.

# Conclusion

- Questions?

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- Comments?