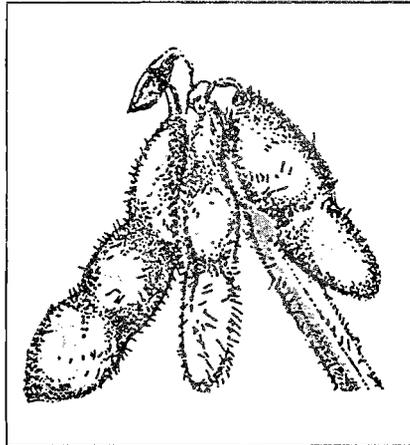


**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 40

SOYBEANS

LOAMY SOILS



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Brintle Jennings
Donald R. Johnson	Edward J. Jordon
Gus M. Lorenz	H.J. Hascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$9.48	
LIME + APPLICATION	\$7.91	
HERBICIDE	\$13.85	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$9.54	
REPAIRS	\$16.53	
LABOR	\$7.84	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$0.00	
REPAIRS	\$0.00	
IRRIGATION LABOR	\$0.00	
CUSTOM SPREAD	\$2.50	
CUSTOM HAUL	\$3.75	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$4.54	

TOTAL SPECIFIED OPERATING COSTS \$87.07

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

	16.25	18.75	25.00	31.25	33.75
	\$5.27	\$4.59	\$3.48	\$2.82	\$2.62

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$6.62	
INTEREST	\$5.46	
EQUIPMENT:		
DEPRECIATION	\$5.70	
INTEREST	\$3.15	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
TAXES & INSURANCE	\$2.76	
INTEREST	\$0.30	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$37.09

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$124.17

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

	16.25	18.75	25.00	31.25	33.75
	\$7.56	\$6.57	\$4.97	\$4.00	\$3.72

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8901
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$17.53	\$21.91	\$26.30
REPAIRS	\$13.22	\$16.53	\$19.83
HERBICIDE	\$11.08	\$13.85	\$16.62
OWNERSHIP INTEREST	\$9.94	\$12.43	\$14.91
SEED	\$7.74	\$9.68	\$11.61
MACHINERY FUEL & OIL	\$7.63	\$9.54	\$11.44
FERTILIZER	\$7.58	\$9.48	\$11.38
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
HIRED LABOR	\$6.27	\$7.84	\$9.41
INTEREST ON OP. CAP.	\$3.63	\$4.54	\$5.45
HAUL (CUSTOM HIRE)	\$3.00	\$3.75	\$4.50
SPREAD (CUSTOM HIRE)	\$2.00	\$2.50	\$3.00
FARM TAXES	\$1.76	\$2.20	\$2.64
FUNGICIDE	\$1.17	\$1.46	\$1.76
FARM INSURANCE	\$0.44	\$0.55	\$0.66
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
IRRIGATION FUEL & OIL			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$99.33 \$124.17 \$149.00

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	16.25	\$6.04	\$7.56	\$9.07
-25% OF BASE YIELD	18.75	\$5.26	\$6.57	\$7.88
BASE YIELD	25.00	\$3.97	\$4.97	\$5.96
+25% OF BASE YIELD	31.25	\$3.20	\$4.00	\$4.81
+35% OF BASE YIELD	33.75	\$2.98	\$3.72	\$4.46

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8901
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

- 20% DEVIATION FROM BASE COSTS: \$99.33 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	16.25	18.75	25.00	31.25	33.75	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- RETURNS PER ACRE -					
	\$4.71	(\$21.69)	(\$10.23)	\$18.42	\$47.06	\$58.52
	\$5.98	(\$1.05)	\$13.58	\$50.17	\$86.75	\$101.38
BASE PRICE =	\$7.25	\$19.59	\$37.40	\$81.92	\$126.44	\$144.25
	\$8.52	\$40.23	\$61.21	\$113.67	\$166.13	\$187.11
	\$9.79	\$60.86	\$85.02	\$145.42	\$205.81	\$229.97

BASE COSTS: \$124.17 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	16.25	18.75	25.00	31.25	33.75	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- RETURNS PER ACRE -					
	\$4.71	(\$46.24)	(\$34.86)	(\$6.42)	\$22.03	\$33.41
	\$5.98	(\$25.61)	(\$11.05)	\$25.33	\$61.72	\$76.27
BASE PRICE =	\$7.25	(\$4.97)	\$12.76	\$57.08	\$101.41	\$119.14
	\$8.52	\$15.67	\$36.57	\$88.83	\$141.10	\$162.00
	\$9.79	\$36.31	\$60.39	\$120.58	\$180.78	\$204.86

+ 20% DEVIATION FROM BASE COSTS: \$149.00 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	16.25	18.75	25.00	31.25	33.75	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- RETURNS PER ACRE -					
	\$4.71	(\$70.80)	(\$59.50)	(\$31.25)	(\$3.00)	\$8.30
	\$5.98	(\$50.16)	(\$35.69)	\$0.50	\$36.69	\$51.16
BASE PRICE =	\$7.25	(\$29.52)	(\$11.87)	\$32.25	\$76.38	\$94.03
	\$8.52	(\$8.89)	\$11.94	\$64.00	\$116.06	\$136.89
	\$9.79	\$11.75	\$35.75	\$95.75	\$155.75	\$179.75

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

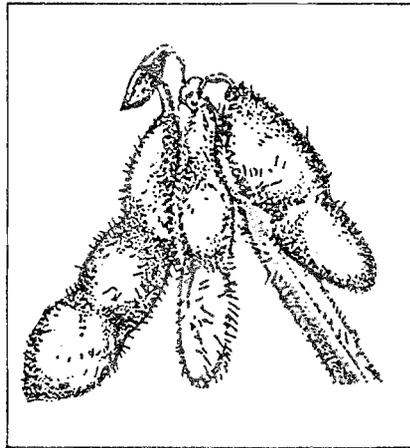
TB40-5300-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 41

SOYBEANS

LOAMY SOILS, FURROW IRRIGATION



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Bringle Jennings
Donald R. Johnson	Edward J. Jordan
Gus M. Lorenz	H.J. Mascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$13.83	
LIME + APPLICATION	\$7.91	
HERBICIDE	\$10.53	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$10.73	
REPAIRS	\$18.14	
LABOR	\$8.82	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$10.39	
REPAIRS	\$2.52	
IRRIGATION LABOR	\$8.96	
CUSTOM SPREAD	\$2.50	
CUSTOM HAUL	\$6.00	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$6.13	

TOTAL SPECIFIED OPERATING COSTS \$117.60

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$4.44	\$3.87	\$2.94	\$2.38	\$2.22

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$7.63	
INTEREST	\$6.29	
EQUIPMENT:		
DEPRECIATION	\$6.15	
INTEREST	\$3.40	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$10.96	
INTEREST	\$9.66	
TAXES & INSURANCE	\$5.20	
INTEREST	\$0.57	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$62.98

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$180.58

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$6.86	\$5.97	\$4.51	\$3.64	\$3.39

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAK-EVEN PRICES.

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8902
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FURROW

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$27.48	\$34.34	\$41.21
OWNERSHIP INTEREST	\$18.75	\$23.44	\$28.13
REPAIRS	\$16.53	\$20.66	\$24.79
HIRED LABOR	\$14.23	\$17.78	\$21.34
FERTILIZER	\$11.06	\$13.83	\$16.59
MACHINERY FUEL & OIL	\$8.59	\$10.73	\$12.88
HERBICIDE	\$8.42	\$10.53	\$12.63
IRRIGATION FUEL & OIL	\$8.31	\$10.39	\$12.47
SEED	\$7.74	\$9.68	\$11.61
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
INTEREST ON OP. CAP.	\$4.90	\$6.13	\$7.36
HAUL (CUSTOM HIRE)	\$4.80	\$6.00	\$7.20
FARM TAXES	\$3.33	\$4.16	\$4.99
SPREAD (CUSTOM HIRE)	\$2.00	\$2.50	\$3.00
FUNGICIDE	\$1.17	\$1.46	\$1.76
FARM INSURANCE	\$0.83	\$1.04	\$1.25
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$144.46 \$180.58 \$216.69

PER UNIT BREAK-EVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAK-EVEN PRICE		
-35% OF BASE YIELD	26.00	\$5.49	\$6.86	\$8.23
-25% OF BASE YIELD	30.00	\$4.77	\$5.97	\$7.16
BASE YIELD	40.00	\$3.61	\$4.51	\$5.42
+25% OF BASE YIELD	50.00	\$2.91	\$3.64	\$4.37
+35% OF BASE YIELD	54.00	\$2.71	\$3.39	\$4.06

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8902
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FURROW

- 20% DEVIATION FROM BASE COSTS: \$144.46 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	26.00	30.00	40.00	50.00	54.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$20.16)	(\$1.82)	\$44.04	\$89.90	\$108.24
	\$5.98	\$12.82	\$36.24	\$94.79	\$153.34	\$176.75
BASE PRICE =	\$7.25	\$45.81	\$74.31	\$145.54	\$216.77	\$245.27
	\$8.52	\$78.80	\$112.37	\$196.29	\$280.21	\$313.78
	\$9.79	\$111.79	\$150.43	\$247.04	\$343.65	\$382.29

BASE COSTS: \$180.58 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	26.00	30.00	40.00	50.00	54.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$55.84)	(\$37.62)	\$7.92	\$53.47	\$71.68
	\$5.98	(\$22.85)	\$0.44	\$58.67	\$116.90	\$140.20
BASE PRICE =	\$7.25	\$10.14	\$38.51	\$109.42	\$180.34	\$208.71
	\$8.52	\$43.13	\$76.57	\$160.17	\$243.78	\$277.22
	\$9.79	\$76.11	\$114.63	\$210.92	\$307.22	\$345.73

+ 20% DEVIATION FROM BASE COSTS: \$216.69 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	26.00	30.00	40.00	50.00	54.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$91.51)	(\$73.42)	(\$28.19)	\$17.04	\$35.13
	\$5.98	(\$58.52)	(\$35.35)	\$22.56	\$80.47	\$103.64
BASE PRICE =	\$7.25	(\$25.53)	\$2.71	\$73.31	\$143.91	\$172.15
	\$8.52	\$7.46	\$40.77	\$124.06	\$207.35	\$240.66
	\$9.79	\$40.44	\$78.83	\$174.81	\$270.79	\$309.18

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO
RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

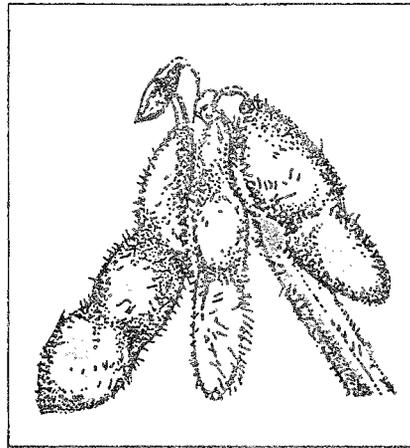
TB41-3550-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 42

SOYBEANS

**IN RICE ROTATION,
LOAMY SOILS, FLOOD IRRIGATION**



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Bingling Jennings
Donald R. Johnson	Edward J. Jordon
Gus M. Lorenz	H.J. Mascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$22.74	
LIME + APPLICATION	\$0.00	
HERBICIDE	\$18.23	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$13.10	
REPAIRS	\$20.73	
LABOR	\$10.48	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$9.09	
REPAIRS	\$3.17	
IRRIGATION LABOR	\$5.98	
CUSTOM SPREAD	\$2.50	
CUSTOM HAUL	\$6.00	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$1.25	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$6.84	
TOTAL SPECIFIED OPERATING COSTS	\$131.26	

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$4.96	\$4.32	\$3.28	\$2.66	\$2.47

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$9.67	
INTEREST	\$7.97	
EQUIPMENT:		
DEPRECIATION	\$7.08	
INTEREST	\$4.10	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$8.99	
INTEREST	\$8.30	
TAXES & INSURANCE	\$5.43	
INTEREST	\$0.60	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		
TOTAL SPECIFIED OWNERSHIP COSTS	\$65.25	

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS **\$196.51**

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$7.47	\$6.50	\$4.91	\$3.96	\$3.68

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, IN RICE ROTATION, 1989
 ENTERPRISE FILE NO.: SOY8903
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$28.27	\$35.34	\$42.41
OWNERSHIP INTEREST	\$19.59	\$24.48	\$29.38
REPAIRS	\$19.12	\$23.91	\$28.69
FERTILIZER	\$18.19	\$22.74	\$27.28
HERBICIDE	\$14.58	\$18.23	\$21.88
HIRED LABOR	\$13.17	\$16.46	\$19.75
MACHINERY FUEL & OIL	\$10.48	\$13.10	\$15.73
SEED	\$7.74	\$9.68	\$11.61
IRRIGATION FUEL & OIL	\$7.27	\$9.09	\$10.91
INTEREST ON OP. CAP.	\$5.47	\$6.84	\$8.21
HAUL (CUSTOM HIRE)	\$4.80	\$6.00	\$7.20
FARM TAXES	\$3.47	\$4.34	\$5.21
SPREAD (CUSTOM HIRE)	\$2.00	\$2.50	\$3.00
FUNGICIDE	\$1.17	\$1.46	\$1.76
MISCELLANEOUS	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.87	\$1.09	\$1.30
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
OVERHEAD			
UTILITIES			
TOTAL SPECIFIED COST/ACRE	\$157.21	\$196.51	\$235.81
=====			
PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS			
	YIELD	BREAKEVEN PRICE	
-35% OF BASE YIELD	26.00	\$5.98	\$7.47
-25% OF BASE YIELD	30.00	\$5.20	\$6.50
BASE YIELD	40.00	\$3.93	\$4.91
+25% OF BASE YIELD	50.00	\$3.17	\$3.96
+35% OF BASE YIELD	54.00	\$2.94	\$3.68

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, IN RICE ROTATION, 1989
 ENTERPRISE FILE NO.: SOY8903
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

- 20% DEVIATION FROM BASE COSTS: \$157.21 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELLS					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$32.97)	(\$14.64)	\$31.19	\$77.03	\$95.36
	\$5.98	\$0.05	\$23.46	\$81.99	\$140.53	\$163.94
BASE PRICE =	\$7.25	\$33.07	\$61.56	\$132.79	\$204.03	\$232.52
	\$8.52	\$66.09	\$99.66	\$183.59	\$267.53	\$301.10
	\$9.79	\$99.11	\$137.76	\$234.39	\$331.03	\$369.68

BASE COSTS: \$196.51 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELLS					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$71.83)	(\$53.63)	(\$8.11)	\$37.41	\$55.62
	\$5.98	(\$38.81)	(\$15.53)	\$42.69	\$100.91	\$124.20
BASE PRICE =	\$7.25	(\$5.79)	\$22.57	\$93.49	\$164.41	\$192.78
	\$8.52	\$27.23	\$60.67	\$144.29	\$227.91	\$261.36
	\$9.79	\$60.25	\$98.77	\$195.09	\$291.41	\$329.94

+ 20% DEVIATION FROM BASE COSTS: \$235.81 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELLS					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$110.69)	(\$92.61)	(\$47.41)	(\$2.21)	\$15.87
	\$5.98	(\$77.67)	(\$54.51)	\$3.39	\$61.29	\$84.45
BASE PRICE =	\$7.25	(\$44.65)	(\$16.41)	\$54.19	\$124.79	\$153.03
	\$8.52	(\$11.63)	\$21.69	\$104.99	\$188.29	\$221.61
	\$9.79	\$21.39	\$59.79	\$155.79	\$251.79	\$290.19

SEQUENCE OF OPERATIONS

ENTERPRISE: SOYBEANS, IN RICE ROTATION, 1989
 ENTERPRISE FILE NO.: SOY8903
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

MACHINERY COST

OPER- ATION NO. (A)	DATE (B)	OPERATION (C)	WIDTH (FEET) (D)	HORSE POWER PTO (E)	PERFORMANCE RATE (AC/HR) (F)	TIMES OVER (NO.) (G)	OPERATING COST		OWNERSHIP COST			TOTAL COST (M)
							REPAIRS & MAINTENANCE (H)	FUEL, OIL & LUB (I)	DEPRE- CIATION (J)	INTEREST (K)	TAXES & INSURANCE (L)	
1		11 DISK, MC 9.0" SPACING	27.0	190.0	11.782	1.000	\$1.00	\$0.70	\$1.14	\$0.83	\$0.19	\$3.86
2		3 DISK, MC 9.0" SPACING	27.0	190.0	11.782	1.000	\$1.00	\$0.70	\$1.14	\$0.83	\$0.19	\$3.86
3		4 FIELD CULTIVATOR	25.5	165.0	9.891	1.000	\$1.03	\$0.73	\$1.09	\$0.82	\$0.19	\$3.86
4		4 LAND FLOAT	16.0	190.0	7.273	1.000	\$1.32	\$1.14	\$1.16	\$1.05	\$0.24	\$4.91
5		5 APPLY FERTILIZER	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		5	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		5	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6		5 FIELD CULTIVATOR	25.5	165.0	9.891	1.000	\$1.03	\$0.73	\$1.09	\$0.82	\$0.19	\$3.86
7		5 BED CONDITIONER	20.0	165.0	8.727	1.000	\$1.12	\$0.82	\$1.11	\$0.88	\$0.20	\$4.13
		5 SPRAYER, SADDLE MTD BC	20.0	0.0	8.727	1.000	\$0.15	\$0.00	\$0.36	\$0.20	\$0.04	\$0.75
		5 PICKUP, WATER TANK	20.0	130.0	8.485	0.120	\$0.10	\$0.07	\$0.06	\$0.02	\$0.00	\$0.26
8		5 PLANTER 8 ROW @ 30"	20.0	165.0	7.309	1.000	\$1.77	\$0.98	\$1.87	\$1.03	\$0.23	\$5.89
		5	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
9		5 LEVEE SURVEY	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
10		5 DITCHER, REAR MTD POWER	3.0	140.0	0.436	0.010	\$0.14	\$0.14	\$0.33	\$0.22	\$0.05	\$0.87
11		6 ROW CULTIVATOR	20.0	140.0	5.091	1.000	\$1.61	\$1.20	\$1.47	\$1.08	\$0.25	\$5.61
12		6 SPRAYER, SADDLE MTD BC	20.0	140.0	7.879	1.000	\$0.91	\$0.77	\$1.05	\$0.76	\$0.17	\$3.66
		6 PICKUP, WATER TANK	20.0	130.0	8.485	0.060	\$0.05	\$0.04	\$0.03	\$0.01	\$0.00	\$0.13
13		6 ROW CULTIVATOR	20.0	140.0	5.091	1.000	\$1.61	\$1.20	\$1.47	\$1.08	\$0.25	\$5.61
		6 SPRAYER, DIR 8 ROW @ 30"	20.0	0.0	5.091	1.000	\$0.20	\$0.00	\$0.49	\$0.27	\$0.06	\$1.02
		6	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		6 PICKUP, WATER TANK	20.0	130.0	8.485	0.060	\$0.05	\$0.04	\$0.03	\$0.01	\$0.00	\$0.13
14		7 ROW CULTIVATOR	20.0	140.0	5.091	1.000	\$1.61	\$1.20	\$1.47	\$1.08	\$0.25	\$5.61
15		7 DITCHER, REAR MTD POWER	3.0	140.0	0.436	0.010	\$0.14	\$0.14	\$0.33	\$0.22	\$0.05	\$0.87
16		7 LEVEE DISK-BUILD	9.0	165.0	4.800	0.150	\$0.23	\$0.22	\$0.27	\$0.20	\$0.05	\$0.97
17		7 BLADE- 8', BUTT LEVEES	8.0	100.0	1.745	0.050	\$0.16	\$0.14	\$0.16	\$0.15	\$0.03	\$0.64
18		7 FLOOD IRRIGATION	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
19		7 LEVEE DISK-BUILD	9.0	165.0	4.800	0.100	\$0.15	\$0.15	\$0.18	\$0.13	\$0.03	\$0.65
20		8 FLOOD IRRIGATION	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
21		8 LEVEE DISK-BUILD	9.0	165.0	4.800	0.100	\$0.15	\$0.15	\$0.18	\$0.13	\$0.03	\$0.65
22		8 FLOOD IRRIGATION	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
23		9 LEVEE DISK-KNOCK	9.0	165.0	4.800	0.100	\$0.15	\$0.15	\$0.18	\$0.13	\$0.03	\$0.65
24		9 BLADE- SMOOTH LEVEES	8.0	100.0	1.745	0.050	\$0.16	\$0.14	\$0.16	\$0.15	\$0.03	\$0.64
25		10 COMBINE, 4WD, SOYBEANS	20.0	165.0	5.091	1.000	\$4.90	\$1.55	\$9.52	\$3.49	\$0.79	\$20.24
26		10 CUSTOM HAUL	0.0	0.0	0.000	1.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		0	0.0	0.0	0.000	0.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		0	0.0	0.0	0.000	0.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		0	0.0	0.0	0.000	0.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		0	0.0	0.0	0.000	0.000	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SPECIFIED INTEREST												
TOTAL SPECIFIED COSTS							\$20.73	\$13.10	\$26.35	\$15.59	\$3.54	\$79.31

SEQUENCE OF OPERATIONS (CONTINUED)

ENTERPRISE: SOYBEANS, IN RICE ROTATION, 1989
 ENTERPRISE FILE NO.: SOY8903
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

MATERIAL AND/OR MISCELLANEOUS

OPER- ATION NO. (A)	CHEMICAL TRADE NAME OR ITEM (B)	FORMU- LATION (UNIT) (C)	UNIT RATE (MEASURE) (D)	PRICE PER UNIT (E)	PRODUCT RATE (ACRE) (F)	ROW WIDTH (INCHES) (G)	BAND WIDTH (INCHES) (H)	PERCENT COVERED (I)	OPER- ATING COST (J)	OWNER- SHIP COST (K)	LABOR COST (L)	TOTAL SPECIFIED COST (M)
1								0.00%	\$0.00		\$0.42	\$4.28
2								0.00%	\$0.00		\$0.42	\$4.28
3								0.00%	\$0.00		\$0.50	\$4.36
4								0.00%	\$0.00		\$0.68	\$5.60
5	CSTM AP FERT GRND		ACRE	\$2.500	1.000			100.00%	\$2.50		\$0.00	\$2.50
	POTASH (MATERIAL)		POUND	\$0.079	175.000			100.00%	\$13.83		\$0.00	\$13.83
	PHOSPHATE (MATERIAL)		POUND	\$0.099	90.000			100.00%	\$8.91		\$0.00	\$8.91
6								0.00%	\$0.00		\$0.50	\$4.36
7	DUAL	8EC	PINT	\$6.014	2.000			100.00%	\$12.03		\$0.00	\$12.78
								0.00%	\$0.00		\$0.00	\$0.26
8	SOYBEAN SEED		POUND	\$0.215	45.000			100.00%	\$9.68		\$1.31	\$16.87
	SEED TREATMENT		ACRE	\$1.463	1.000			100.00%	\$1.46		\$0.00	\$1.46
9	CSTM LASER SURVEY		ACRE	\$1.25	1.000			100.00%	\$1.25		\$0.00	\$1.25
10								0.00%	\$0.00		\$0.11	\$0.99
11								0.00%	\$0.00		\$0.98	\$6.59
12	BLAZER	2L	PINT	\$5.488	1.500	30	15	50.00%	\$4.12		\$0.79	\$8.57
								0.00%	\$0.00		\$0.00	\$0.13
13								0.00%	\$0.00		\$1.22	\$6.83
	2,4-DB	2#/GAL	PINT	\$1.792	0.800	30	15	50.00%	\$0.72		\$0.00	\$1.74
	GRAMOXONE	1.5#/GAL	PINT	\$4.090	0.670	30	15	50.00%	\$1.37		\$0.00	\$1.37
								0.00%	\$0.00		\$0.00	\$0.13
14								0.00%	\$0.00		\$0.98	\$6.59
15								0.00%	\$0.00		\$0.11	\$0.99
16								0.00%	\$0.00		\$0.16	\$1.13
17								0.00%	\$0.00		\$0.14	\$0.78
18	FLOOD IRRIGATION		AC IN	\$1.520	4.000			100.00%	\$6.08	\$6.39	\$0.00	\$12.47
19								0.00%	\$0.00		\$0.10	\$0.75
20	FLOOD IRRIGATION		AC IN	\$1.520	4.000			100.00%	\$6.08	\$6.39	\$0.00	\$12.47
21								0.00%	\$0.00		\$0.10	\$0.75
22	FLOOD IRRIGATION		AC IN	\$1.520	4.000			100.00%	\$6.08	\$6.39	\$0.00	\$12.47
23								0.00%	\$0.00		\$0.10	\$0.75
24								0.00%	\$0.00		\$0.14	\$0.78
25								0.00%	\$0.00		\$0.98	\$21.22
26	HAULING CHARGE		BUSHEL	\$0.150	40.000			100.00%	\$6.00		\$0.00	\$6.00
								0.00%	\$0.00		\$0.00	\$0.00
								0.00%	\$0.00		\$0.00	\$0.00
								0.00%	\$0.00		\$0.00	\$0.00
								0.00%	\$0.00		\$0.00	\$7.44
									\$80.09	\$19.18	\$10.48	\$196.51

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

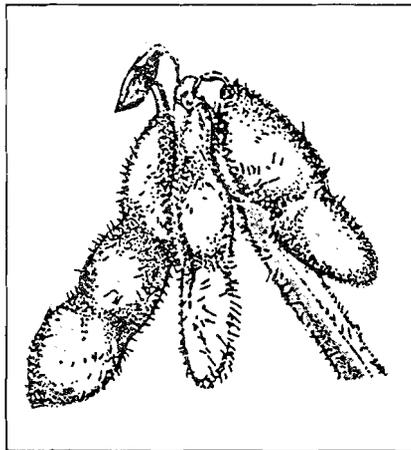
TB42-4600-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 43

SOYBEANS

**LOAMY SOILS, CENTER PIVOT IRRIGATION,
TOWABLE, 260 ACRES**



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Bringle Jennings
Donald R. Johnson	Edward J. Jordon
Gus M. Lorenz	H.J. Mascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	_____
FERTILIZER	\$13.83	_____
LIME + APPLICATION	\$7.91	_____
HERBICIDE	\$10.53	_____
FUNGICIDE	\$1.46	_____
INSECTICIDE	\$0.00	_____
DEFOLIANT	\$0.00	_____
AERIAL APPLICATION	\$0.00	_____
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$10.73	_____
REPAIRS	\$18.14	_____
LABOR	\$8.82	_____
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$8.33	_____
REPAIRS	\$5.61	_____
IRRIGATION LABOR	\$2.49	_____
CUSTOM SPREAD	\$2.50	_____
CUSTOM HAUL	\$6.00	_____
CUSTOM DRY OR GINNING	\$0.00	_____
MISCELLANEOUS	\$0.00	_____
CROP INSURANCE PREMIUM		_____
OTHER		_____
INTEREST ON OP. CAP.	\$5.83	_____
TOTAL SPECIFIED OPERATING COSTS	\$111.85	_____

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$4.22	\$3.68	\$2.80	\$2.27	\$2.11

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$7.63	_____
INTEREST	\$6.29	_____
EQUIPMENT:		
DEPRECIATION	\$6.15	_____
INTEREST	\$3.40	_____
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	_____
INTEREST	\$3.51	_____
MISCELLANEOUS:		
DEPRECIATION	\$0.00	_____
INTEREST	\$0.00	_____
IRRIGATION:		
DEPRECIATION	\$15.32	_____
INTEREST	\$13.39	_____
TAXES & INSURANCE	\$6.05	_____
INTEREST	\$0.67	_____
OVERHEAD LABOR		_____
OTHER OVERHEAD		_____
LAND & PROPERTY TAX		_____
MANAGEMENT		_____
TOTAL SPECIFIED OWNERSHIP COSTS	\$72.01	_____
TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS	\$183.86	_____

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$6.99	\$6.08	\$4.60	\$3.71	\$3.45

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8904
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: CENTER PIVOT, TOWABLE, 260 ACRES

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$30.96	\$38.70	\$46.44
OWNERSHIP INTEREST	\$21.81	\$27.27	\$32.72
REPAIRS	\$19.00	\$23.75	\$28.49
FERTILIZER	\$11.06	\$13.83	\$16.59
HIRED LABOR	\$9.05	\$11.31	\$13.57
MACHINERY FUEL & OIL	\$8.59	\$10.73	\$12.88
HERBICIDE	\$8.42	\$10.53	\$12.63
SEED	\$7.74	\$9.68	\$11.61
IRRIGATION FUEL & OIL	\$6.67	\$8.33	\$10.00
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
HAUL (CUSTOM HIRE)	\$4.80	\$6.00	\$7.20
INTEREST ON OP. CAP.	\$4.66	\$5.83	\$7.00
FARM TAXES	\$3.87	\$4.84	\$5.80
SPREAD (CUSTOM HIRE)	\$2.00	\$2.50	\$3.00
FUNGICIDE	\$1.17	\$1.46	\$1.76
FARM INSURANCE	\$0.97	\$1.21	\$1.45
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$147.09 \$183.86 \$220.63

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	26.00	\$5.59	\$6.99	\$8.38
-25% OF BASE YIELD	30.00	\$4.86	\$6.08	\$7.29
BASE YIELD	40.00	\$3.68	\$4.60	\$5.52
+25% OF BASE YIELD	50.00	\$2.97	\$3.71	\$4.45
+35% OF BASE YIELD	54.00	\$2.76	\$3.45	\$4.14

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8904
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: CENTER PIVOT, TOWABLE, 260 ACRES

- 20% DEVIATION FROM BASE COSTS: \$147.09 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$22.86)	(\$4.52)	\$41.31	\$87.14	\$105.48
	\$5.98	\$10.16	\$33.58	\$92.11	\$150.64	\$174.06
BASE PRICE =	\$7.25	\$43.18	\$71.68	\$142.91	\$214.14	\$242.64
	\$8.52	\$76.20	\$109.78	\$193.71	\$277.64	\$311.22
	\$9.79	\$109.22	\$147.88	\$244.51	\$341.14	\$379.80

BASE COSTS: \$183.86 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$59.19)	(\$40.98)	\$4.54	\$50.06	\$68.26
	\$5.98	(\$26.17)	(\$2.88)	\$55.34	\$113.56	\$136.84
BASE PRICE =	\$7.25	\$6.85	\$35.22	\$106.14	\$177.06	\$205.42
	\$8.52	\$39.87	\$73.32	\$156.94	\$240.56	\$274.00
	\$9.79	\$72.89	\$111.42	\$207.74	\$304.06	\$342.58

+ 20% DEVIATION FROM BASE COSTS: \$220.63 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$95.52)	(\$77.43)	(\$32.23)	\$12.97	\$31.05
	\$5.98	(\$62.50)	(\$39.33)	\$18.57	\$76.47	\$99.63
BASE PRICE =	\$7.25	(\$29.48)	(\$1.23)	\$69.37	\$139.97	\$168.21
	\$8.52	\$3.54	\$36.87	\$120.17	\$203.47	\$236.79
	\$9.79	\$36.56	\$74.97	\$170.97	\$266.97	\$305.37

LIST OF PUBLICATIONS FOR ESTIMATING PRODUCTION COSTS

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO
RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

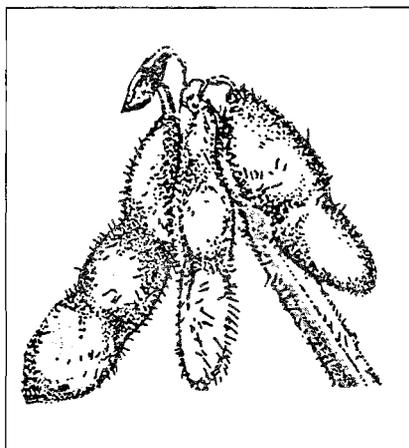
TB43-2900-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 44

SOYBEANS

DRILLED, LOAMY SOILS



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Larry O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Bringle Jennings
Donald R. Johnson	Edward J. Jordan
Gus M. Lorenz	H.J. Mascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$12.90	
FERTILIZER	\$9.48	
LIME + APPLICATION	\$7.91	
HERBICIDE	\$16.55	
FUNGICIDE	\$1.95	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$4.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$6.33	
REPAIRS	\$11.94	
LABOR	\$4.83	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$0.00	
REPAIRS	\$0.00	
IRRIGATION LABOR	\$0.00	
CUSTOM SPREAD	\$2.50	
CUSTOM HAUL	\$3.75	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$4.52	

TOTAL SPECIFIED OPERATING COSTS \$86.66

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELLS

	16.25	18.75	25.00	31.25	33.75
	\$5.25	\$4.57	\$3.47	\$2.80	\$2.61

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$3.98	
INTEREST	\$3.28	
EQUIPMENT:		
DEPRECIATION	\$4.23	
INTEREST	\$2.57	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.56	
INTEREST	\$3.50	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
TAXES & INSURANCE	\$2.13	
INTEREST	\$0.23	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$29.47

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$116.13

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELLS

	16.25	18.75	25.00	31.25	33.75
	\$7.06	\$6.14	\$4.65	\$3.75	\$3.48

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, DRILLED, 1989
 ENTERPRISE FILE NO.: SOY8905
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$14.21	\$17.76	\$21.31
HERBICIDE	\$13.24	\$16.55	\$19.86
SEED	\$10.32	\$12.90	\$15.48
REPAIRS	\$9.55	\$11.94	\$14.32
OWNERSHIP INTEREST	\$7.67	\$9.59	\$11.51
FERTILIZER	\$7.58	\$9.48	\$11.38
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
MACHINERY FUEL & OIL	\$5.06	\$6.33	\$7.60
HIRED LABOR	\$3.86	\$4.83	\$5.80
INTEREST ON OP. CAP.	\$3.61	\$4.52	\$5.42
AERIAL APPLI. (CUSTOM HIRE)	\$3.20	\$4.00	\$4.80
HAUL (CUSTOM HIRE)	\$3.00	\$3.75	\$4.50
SPREAD (CUSTOM HIRE)	\$2.00	\$2.50	\$3.00
FUNGICIDE	\$1.56	\$1.95	\$2.34
FARM TAXES	\$1.36	\$1.70	\$2.04
FARM INSURANCE	\$0.34	\$0.43	\$0.51
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
IRRIGATION FUEL & OIL			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

 TOTAL SPECIFIED COST/ACRE \$92.91 \$116.13 \$139.36
 =====

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	16.25	\$5.65	\$7.06	\$8.47
-25% OF BASE YIELD	18.75	\$4.91	\$6.14	\$7.37
BASE YIELD	25.00	\$3.72	\$4.65	\$5.57
+25% OF BASE YIELD	31.25	\$3.00	\$3.75	\$4.50
+35% OF BASE YIELD	33.75	\$2.79	\$3.48	\$4.18

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, DRILLED, 1989
 ENTERPRISE FILE NO.: SOY8905
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

=====

- 20% DEVIATION FROM BASE COSTS: \$92.91 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	16.25	18.75	25.00	31.25	33.75	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$15.26)	(\$3.80)	\$24.84	\$53.49	\$64.95
	\$5.98	\$5.38	\$20.01	\$56.59	\$93.18	\$107.81
BASE PRICE =	\$7.25	\$26.02	\$43.82	\$88.34	\$132.87	\$150.67
	\$8.52	\$46.65	\$67.64	\$120.09	\$172.55	\$193.54
	\$9.79	\$67.29	\$91.45	\$151.84	\$212.24	\$236.40

BASE COSTS: \$116.13 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	16.25	18.75	25.00	31.25	33.75	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$38.21)	(\$26.83)	\$1.62	\$30.07	\$41.45
	\$5.98	(\$17.57)	(\$3.02)	\$33.37	\$69.75	\$84.31
BASE PRICE =	\$7.25	\$3.07	\$20.80	\$65.12	\$109.44	\$127.17
	\$8.52	\$23.70	\$44.61	\$96.87	\$149.13	\$170.03
	\$9.79	\$44.34	\$68.42	\$128.62	\$188.82	\$212.90

+ 20% DEVIATION FROM BASE COSTS: \$139.36 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	16.25	18.75	25.00	31.25	33.75	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$61.16)	(\$49.86)	(\$21.61)	\$6.64	\$17.94
	\$5.98	(\$40.52)	(\$26.05)	\$10.14	\$46.33	\$60.81
BASE PRICE =	\$7.25	(\$19.88)	(\$2.23)	\$41.89	\$86.02	\$103.67
	\$8.52	\$0.75	\$21.58	\$73.64	\$125.71	\$146.53
	\$9.79	\$21.39	\$45.39	\$105.39	\$165.39	\$189.39

=====

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

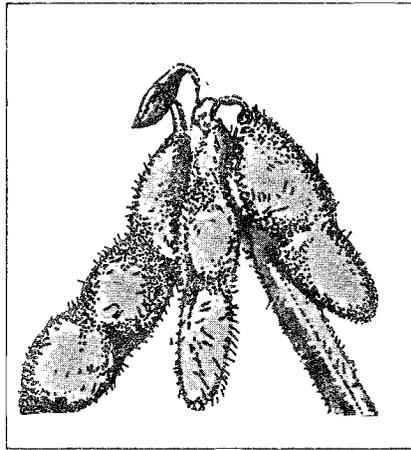
TB44-3800-10-88

ESTIMATING PRODUCTION COSTS
IN ARKANSAS

EXTENSION TECHNICAL BULLETIN NO. 45

SOYBEANS

FOLLOWING WHEAT,
LOAMY SOILS



BY

JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.

EXTENSION ECONOMISTS - MANAGEMENT

UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman
Claude M. Bonner
Marc C. Hirrel
Donald R. Johnson
Gus M. Lorenz
Michael L. May
Clifford S. Snyder
Timothy Tripp

Ford L. Baldwin
Dennis R. Gardisser
Bingie Jennings
Edward J. Jordon
H.J. Mascagni
Roy N. Sharp
Phil L. Tacker

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$9.48	
LIME + APPLICATION	\$7.91	
HERBICIDE	\$10.53	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$8.11	
REPAIRS	\$14.50	
LABOR	\$6.91	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$0.00	
REPAIRS	\$0.00	
IRRIGATION LABOR	\$0.00	
CUSTOM SPREAD	\$1.25	
CUSTOM HAUL	\$3.00	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$4.01	

TOTAL SPECIFIED OPERATING COSTS \$76.83

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

	13.00	15.00	20.00	25.00	27.00
	\$5.82	\$5.07	\$3.84	\$3.10	\$2.89

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$5.40	
INTEREST	\$4.46	
EQUIPMENT:		
DEPRECIATION	\$4.68	
INTEREST	\$2.51	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
TAXES & INSURANCE	\$2.38	
INTEREST	\$0.26	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$32.80

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$109.63

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

	13.00	15.00	20.00	25.00	27.00
	\$8.35	\$7.26	\$5.48	\$4.42	\$4.10

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, FOLLOWING WHEAT, 1989
 ENTERPRISE FILE NO.: SOY8906
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$15.75	\$19.68	\$23.62
REPAIRS	\$11.60	\$14.50	\$17.40
OWNERSHIP INTEREST	\$8.59	\$10.74	\$12.88
HERBICIDE	\$8.42	\$10.53	\$12.63
SEED	\$7.74	\$9.68	\$11.61
FERTILIZER	\$7.58	\$9.48	\$11.38
MACHINERY FUEL & OIL	\$6.48	\$8.11	\$9.73
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
HIRED LABOR	\$5.53	\$6.91	\$8.30
INTEREST ON OP. CAP.	\$3.20	\$4.01	\$4.81
HAUL (CUSTOM HIRE)	\$2.40	\$3.00	\$3.60
FARM TAXES	\$1.52	\$1.90	\$2.29
FUNGICIDE	\$1.17	\$1.46	\$1.76
SPREAD (CUSTOM HIRE)	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.38	\$0.48	\$0.57
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
IRRIGATION FUEL & OIL			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			
TOTAL SPECIFIED COST/ACRE	\$87.70	\$109.63	\$131.55
PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS			
	YIELD	BREAKEVEN PRICE	
-35% OF BASE YIELD	13.00	\$6.68	\$8.35
-25% OF BASE YIELD	15.00	\$5.80	\$7.26
BASE YIELD	20.00	\$4.39	\$5.48
+25% OF BASE YIELD	25.00	\$3.53	\$4.42
+35% OF BASE YIELD	27.00	\$3.28	\$4.10

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, FOLLOWING WHEAT, 1989
 ENTERPRISE FILE NO.: SOY8906
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

- 20% DEVIATION FROM BASE COSTS: \$87.70 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	13.00	15.00	20.00	25.00	27.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$25.59)	(\$16.42)	\$6.50	\$29.41	\$38.58
	\$5.98	(\$9.08)	\$2.63	\$31.90	\$61.16	\$72.87
BASE PRICE =	\$7.25	\$7.43	\$21.68	\$57.30	\$92.91	\$107.16
	\$8.52	\$23.94	\$40.73	\$82.70	\$124.66	\$141.45
	\$9.79	\$40.45	\$59.78	\$108.10	\$156.41	\$175.74

BASE COSTS: \$109.63 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	13.00	15.00	20.00	25.00	27.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$47.29)	(\$38.19)	(\$15.43)	\$7.33	\$16.43
	\$5.98	(\$30.78)	(\$19.14)	\$9.97	\$39.08	\$50.72
BASE PRICE =	\$7.25	(\$14.27)	(\$0.09)	\$35.37	\$70.83	\$85.01
	\$8.52	\$2.24	\$18.96	\$60.77	\$102.58	\$119.30
	\$9.79	\$18.75	\$38.01	\$86.17	\$134.33	\$153.59

+ 20% DEVIATION FROM BASE COSTS: \$131.55 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	13.00	15.00	20.00	25.00	27.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$68.99)	(\$59.95)	(\$37.35)	(\$14.75)	(\$5.71)
	\$5.98	(\$52.48)	(\$40.90)	(\$11.95)	\$17.00	\$28.58
BASE PRICE =	\$7.25	(\$35.97)	(\$21.85)	\$13.45	\$48.75	\$62.87
	\$8.52	(\$19.46)	(\$2.80)	\$38.85	\$80.50	\$97.16
	\$9.79	(\$2.95)	\$16.25	\$64.25	\$112.25	\$131.45

LIST OF PUBLICATIONS FOR ESTIMATING PRODUCTION COSTS

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

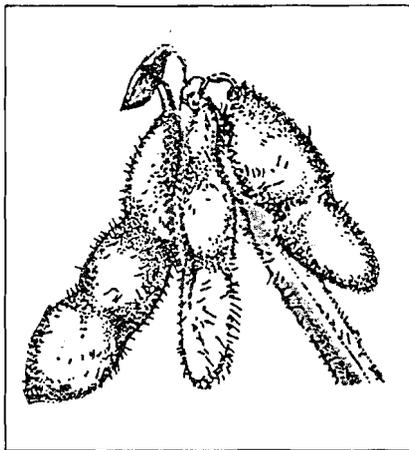
TB45-3900-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 46

SOYBEANS

**FOLLOWING WHEAT, LOAMY SOILS,
CENTER PIVOT IRRIGATION, TOWABLE, 260 ACRES**



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman
Claude M. Bonner
Marc C. Hirrel
Donald R. Johnson
Gus M. Lorenz
Michael L. May
Clifford S. Snyder
Timothy Tripp

Ford L. Baldwin
Dennis R. Gardisser
Bingling Jennings
Edward J. Jordon
H.J. Mascagni
Roy N. Sharp
Phil L. Tacker

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$13.83	
LIME + APPLICATION	\$7.91	
HERBICIDE	\$10.51	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$8.11	
REPAIRS	\$14.50	
LABOR	\$6.91	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$8.33	
REPAIRS	\$5.61	
IRRIGATION LABOR	\$2.49	
CUSTOM SPREAD	\$1.25	
CUSTOM HAUL	\$5.25	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$5.27	

TOTAL SPECIFIED OPERATING COSTS \$101.10

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHEL

YIELD	22.75	26.25	35.00	43.75	47.25
Price	\$4.36	\$3.80	\$2.89	\$2.34	\$2.18

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$5.40	
INTEREST	\$4.46	
EQUIPMENT:		
DEPRECIATION	\$4.68	
INTEREST	\$2.51	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$15.32	
INTEREST	\$13.39	
TAXES & INSURANCE	\$5.42	
INTEREST	\$0.60	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$64.89

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$165.98

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHEL

YIELD	22.75	26.25	35.00	43.75	47.25
Price	\$7.21	\$6.27	\$4.74	\$3.83	\$3.55

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, FOLLOWING WHEAT, 1989
 ENTERPRISE FILE NO.: SOY8907
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: CENTER PIVOT, TOWABLE, 260 ACRES

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$28.00	\$35.00	\$42.00
OWNERSHIP INTEREST	\$19.57	\$24.46	\$29.36
REPAIRS	\$16.08	\$20.10	\$24.12
FERTILIZER	\$11.06	\$13.83	\$16.59
HERBICIDE	\$8.41	\$10.51	\$12.61
SEED	\$7.74	\$9.68	\$11.61
HIRED LABOR	\$7.52	\$9.40	\$11.29
IRRIGATION FUEL & OIL	\$6.67	\$8.33	\$10.00
MACHINERY FUEL & OIL	\$6.48	\$8.11	\$9.73
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
INTEREST ON OP. CAP.	\$4.22	\$5.27	\$6.32
HAUL (CUSTOM HIRE)	\$4.20	\$5.25	\$6.30
FARM TAXES	\$3.47	\$4.34	\$5.21
FUNGICIDE	\$1.17	\$1.46	\$1.76
SPREAD (CUSTOM HIRE)	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.87	\$1.08	\$1.30
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

 TOTAL SPECIFIED COST/ACRE \$132.79 \$165.98 \$199.18
 =====

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS			
	YIELD	BREAKEVEN PRICE	
-35% OF BASE YIELD	22.75	\$5.77	\$7.21
-25% OF BASE YIELD	26.25	\$5.02	\$6.27
BASE YIELD	35.00	\$3.79	\$4.74
+25% OF BASE YIELD	43.75	\$3.06	\$3.83
+35% OF BASE YIELD	47.25	\$2.84	\$3.55

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, FOLLOWING WHEAT, 1989
 ENTERPRISE FILE NO.: SOY8907
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: CENTER PIVOT, TOWABLE, 260 ACRES

=====

- 20% DEVIATION FROM BASE COSTS: \$132.79 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	22.75	26.25	35.00	43.75	47.25	
-----	-35%	-25%	BASE YIELD	+25%	+35%	

	- - - - - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$24.08)	(\$8.04)	\$32.06	\$72.17	\$88.21
	\$5.98	\$4.81	\$25.29	\$76.51	\$127.73	\$148.22
BASE PRICE =	\$7.25	\$33.70	\$58.63	\$120.96	\$183.29	\$208.22
	\$8.52	\$62.59	\$91.97	\$165.41	\$238.85	\$268.23
	\$9.79	\$91.49	\$125.31	\$209.86	\$294.42	\$328.24

BASE COSTS: \$165.98 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	22.75	26.25	35.00	43.75	47.25	
-----	-35%	-25%	BASE YIELD	+25%	+35%	

	- - - - - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$56.89)	(\$40.96)	(\$1.13)	\$38.69	\$54.62
	\$5.98	(\$28.00)	(\$7.63)	\$43.32	\$94.26	\$114.63
BASE PRICE =	\$7.25	\$0.89	\$25.71	\$87.77	\$149.82	\$174.64
	\$8.52	\$29.78	\$59.05	\$132.22	\$205.38	\$234.65
	\$9.79	\$58.68	\$92.39	\$176.67	\$260.94	\$294.65

+ 20% DEVIATION FROM BASE COSTS: \$199.18 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	22.75	26.25	35.00	43.75	47.25	
-----	-35%	-25%	BASE YIELD	+25%	+35%	

	- - - - - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$89.70)	(\$73.88)	(\$34.33)	\$5.22	\$21.04
	\$5.98	(\$60.81)	(\$40.55)	\$10.12	\$60.78	\$81.05
BASE PRICE =	\$7.25	(\$31.92)	(\$7.21)	\$54.57	\$116.34	\$141.05
	\$8.52	(\$3.03)	\$26.13	\$99.02	\$171.91	\$201.06
	\$9.79	\$25.87	\$59.47	\$143.47	\$227.47	\$261.07

LIST OF PUBLICATIONS FOR ESTIMATING PRODUCTION COSTS

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

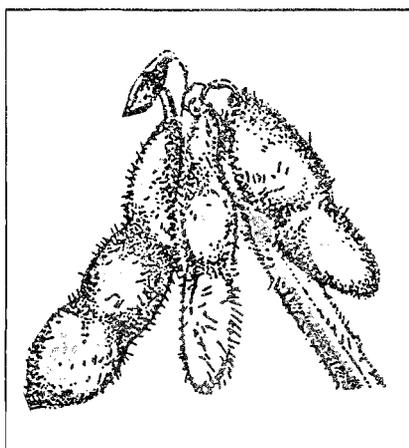
TB46-2800-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 47

SOYBEANS

CLAY SOILS



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Bringle Jennings
Donald R. Johnson	Edward J. Jordon
Gus M. Lorenz	H.J. Mascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$0.00	
LIME + APPLICATION	\$0.00	
HERBICIDE	\$12.77	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$8.81	
REPAIRS	\$15.50	
LABOR	\$7.32	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$0.00	
REPAIRS	\$0.00	
IRRIGATION LABOR	\$0.00	
CUSTOM SPREAD	\$0.00	
CUSTOM HAUL	\$3.30	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$3.24	

TOTAL SPECIFIED OPERATING COSTS \$62.08

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELLS

	14.30	16.50	22.00	27.50	29.70
	\$4.26	\$3.71	\$2.82	\$2.29	\$2.13

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$6.01	
INTEREST	\$4.96	
EQUIPMENT:		
DEPRECIATION	\$5.21	
INTEREST	\$2.83	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
TAXES & INSURANCE	\$2.57	
INTEREST	\$0.28	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$34.97

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$97.05

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELLS

	14.30	16.50	22.00	27.50	29.70
	\$6.70	\$5.83	\$4.41	\$3.56	\$3.31

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:
EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, 1989
ENTERPRISE FILE NO.: SOY8908
LOCATION: ARKANSAS
SOILS TYPE: CLAY
IRRIGATION METHOD: NONE

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$16.66	\$20.82	\$24.98
REPAIRS	\$12.40	\$15.50	\$18.60
HERBICIDE	\$10.22	\$12.77	\$15.33
OWNERSHIP INTEREST	\$9.27	\$11.58	\$13.90
SEED	\$7.74	\$9.68	\$11.61
MACHINERY FUEL & OIL	\$7.05	\$8.81	\$10.57
HIRED LABOR	\$5.86	\$7.32	\$8.78
HAUL (CUSTOM HIRE)	\$2.64	\$3.30	\$3.96
INTEREST ON OP. CAP.	\$2.59	\$3.24	\$3.88
FARM TAXES	\$1.64	\$2.05	\$2.47
FUNGICIDE	\$1.17	\$1.46	\$1.76
FARM INSURANCE	\$0.41	\$0.51	\$0.62
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FERTILIZER			
FINANCIAL SERVICES			
INSECTICIDE			
IRRIGATION FUEL & OIL			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
SPREAD (CUSTOM HIRE)			
UTILITIES			
TOTAL SPECIFIED COST/ACRE	\$77.64	\$97.05	\$116.46
=====			
PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS			
	YIELD	BREAKEVEN PRICE	
	-----	-----	
-35% OF BASE YIELD	14.30	\$5.36	\$8.04
-25% OF BASE YIELD	16.50	\$4.66	\$6.99
BASE YIELD	22.00	\$3.53	\$5.29
+25% OF BASE YIELD	27.50	\$2.85	\$4.27
+35% OF BASE YIELD	29.70	\$2.65	\$3.97

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8908
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: NONE

=====

- 20% DEVIATION FROM BASE COSTS: \$77.64 PER ACRE

PRODUCER PRICE ESTIMATES -----	YIELD IN BUSHEL					
	14.30	16.50	22.00	27.50	29.70	
	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$9.31)	\$0.77	\$25.98	\$51.19	\$61.27
	\$5.98	\$8.85	\$21.73	\$53.92	\$86.11	\$98.99
BASE PRICE =	\$7.25	\$27.01	\$42.68	\$81.86	\$121.04	\$136.71
	\$8.52	\$45.17	\$63.64	\$109.80	\$155.96	\$174.43
	\$9.79	\$63.33	\$84.59	\$137.74	\$190.89	\$212.15

BASE COSTS: \$97.05 PER ACRE

PRODUCER PRICE ESTIMATES -----	YIELD IN BUSHEL					
	14.30	16.50	22.00	27.50	29.70	
	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$28.48)	(\$18.46)	\$6.57	\$31.61	\$41.62
	\$5.98	(\$10.32)	\$2.49	\$34.51	\$66.53	\$79.34
BASE PRICE =	\$7.25	\$7.84	\$23.45	\$62.45	\$101.46	\$117.06
	\$8.52	\$26.01	\$44.40	\$90.39	\$136.38	\$154.78
	\$9.79	\$44.17	\$65.36	\$118.33	\$171.31	\$192.50

+ 20% DEVIATION FROM BASE COSTS: \$116.46 PER ACRE

PRODUCER PRICE ESTIMATES -----	YIELD IN BUSHEL					
	14.30	16.50	22.00	27.50	29.70	
	-35%	-25%	BASE YIELD	+25%	+35%	
	----- RETURNS PER ACRE -----					
	\$4.71	(\$47.64)	(\$37.70)	(\$12.84)	\$12.02	\$21.97
	\$5.98	(\$29.48)	(\$16.74)	\$15.10	\$46.95	\$59.69
BASE PRICE =	\$7.25	(\$11.32)	\$4.21	\$43.04	\$81.87	\$97.40
	\$8.52	\$6.84	\$25.17	\$70.98	\$116.80	\$135.12
	\$9.79	\$25.00	\$46.12	\$98.92	\$151.72	\$172.84

=====

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO
RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

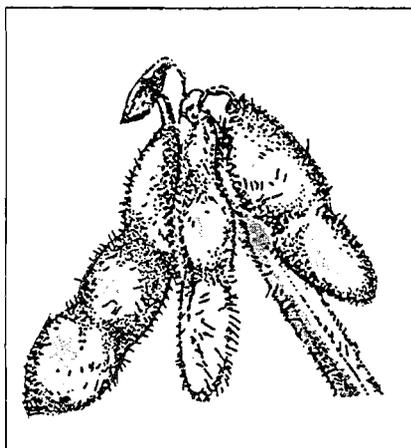
TB47-3750-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 48

SOYBEANS

**CLAY SOILS, CENTER PIVOT
IRRIGATION, NON-TOWABLE, 130 ACRES**



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman
Claude M. Bonner
Marc C. Hirrel
Donald R. Johnson
Gus M. Lorenz
Michael L. May
Clifford S. Snyder
Timothy Tripp

Ford L. Baldwin
Dennis R. Gardisser
Bringle Jennings
Edward J. Jordon
H.J. Mascagni
Roy N. Sharp
Phil L. Tacker

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$0.00	
LIME + APPLICATION	\$0.00	
HERBICIDE	\$12.77	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$10.01	
REPAIRS	\$17.11	
LABOR	\$8.30	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$8.33	
REPAIRS	\$5.45	
IRRIGATION LABOR	\$1.25	
CUSTOM SPREAD	\$0.00	
CUSTOM HAUL	\$6.00	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$4.42	

TOTAL SPECIFIED OPERATING COSTS \$84.78

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$3.18	\$2.77	\$2.12	\$1.73	\$1.61

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$7.02	
INTEREST	\$5.79	
EQUIPMENT:		
DEPRECIATION	\$5.67	
INTEREST	\$3.08	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$24.99	
INTEREST	\$21.37	
TAXES & INSURANCE	\$7.67	
INTEREST	\$0.84	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$89.55

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$174.33

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

	26.00	30.00	40.00	50.00	54.00
	\$6.62	\$5.76	\$4.36	\$3.52	\$3.27

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8909
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: CENTER PIVOT, NON-TOWABLE, 130 ACRES

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$37.82	\$47.28	\$56.73
OWNERSHIP INTEREST	\$27.68	\$34.60	\$41.52
REPAIRS	\$18.05	\$22.56	\$27.08
HERBICIDE	\$10.22	\$12.77	\$15.33
MACHINERY FUEL & OIL	\$8.01	\$10.01	\$12.01
SEED	\$7.74	\$9.68	\$11.61
HIRED LABOR	\$7.64	\$9.54	\$11.45
IRRIGATION FUEL & OIL	\$6.67	\$8.33	\$10.00
FARM TAXES	\$4.91	\$6.14	\$7.37
HAUL (CUSTOM HIRE)	\$4.80	\$6.00	\$7.20
INTEREST ON OP. CAP.	\$3.54	\$4.42	\$5.30
FARM INSURANCE	\$1.23	\$1.53	\$1.84
FUNGICIDE	\$1.17	\$1.46	\$1.76
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FERTILIZER			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
SPREAD (CUSTOM HIRE)			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$139.46 \$174.33 \$209.20

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	26.00	\$5.30	\$6.62	\$7.94
-25% OF BASE YIELD	30.00	\$4.61	\$5.76	\$6.91
BASE YIELD	40.00	\$3.49	\$4.36	\$5.23
+25% OF BASE YIELD	50.00	\$2.81	\$3.52	\$4.22
+35% OF BASE YIELD	54.00	\$2.62	\$3.27	\$3.92

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, 1989
 ENTERPRISE FILE NO.: SOY8909
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: CENTER PIVOT, NON-TOWABLE, 130 ACRES

- 20% DEVIATION FROM BASE COSTS: \$139.46 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$15.23)	\$3.10	\$48.94	\$94.77	\$113.10
	\$5.98	\$17.79	\$41.20	\$99.74	\$158.27	\$181.68
BASE PRICE =	\$7.25	\$50.81	\$79.30	\$150.54	\$221.77	\$250.26
	\$8.52	\$83.83	\$117.40	\$201.34	\$285.27	\$318.84
	\$9.79	\$116.85	\$155.50	\$252.14	\$348.77	\$387.42

BASE COSTS: \$174.33 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$49.65)	(\$31.45)	\$14.07	\$59.59	\$77.79
	\$5.98	(\$16.63)	\$6.65	\$64.87	\$123.09	\$146.37
BASE PRICE =	\$7.25	\$16.39	\$44.75	\$115.67	\$186.59	\$214.95
	\$8.52	\$49.41	\$82.85	\$166.47	\$250.09	\$283.53
	\$9.79	\$82.43	\$120.95	\$217.27	\$313.59	\$352.11

+ 20% DEVIATION FROM BASE COSTS: \$209.20 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$84.08)	(\$66.00)	(\$20.80)	\$24.41	\$42.49
	\$5.98	(\$51.06)	(\$27.90)	\$30.00	\$87.91	\$111.07
BASE PRICE =	\$7.25	(\$18.04)	\$10.20	\$80.80	\$151.41	\$179.65
	\$8.52	\$14.98	\$48.30	\$131.60	\$214.91	\$248.23
	\$9.79	\$48.00	\$86.40	\$182.40	\$278.41	\$316.81

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO
RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

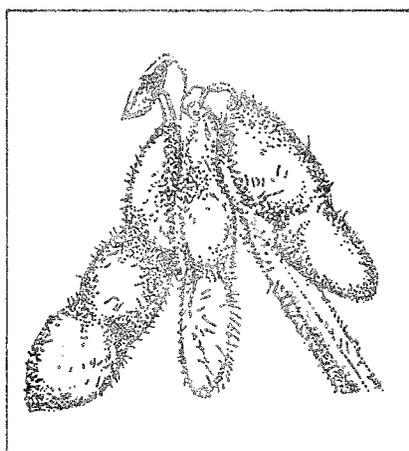
TB48-2850-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 49

SOYBEANS

**FOLLOWING WHEAT,
LOAMY SOILS, FLOOD IRRIGATION**



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and estimate costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 25 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. Not included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

**ACKNOWLEDGEMENTS
EXTENSION SOYBEAN COMMITTEE**

- | | |
|----------------------------|---------------------|
| Lanny O. Ashlock, Chairman | Paul W. Baldwin |
| Claude M. Bonner | Dennis R. Gardisser |
| Marc C. Hirrel | Bringing Landings |
| Donald R. Johnson | Edward L. Jordan |
| Gus M. Lorenz | Paul Mascegné |
| Michael L. May | Robert Sharp |
| Clifford S. Snyder | Paul W. Tacker |
| Timothy Tripp | |

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$9.68	
FERTILIZER	\$13.83	
LIME + APPLICATION	\$7.91	
HERBICIDE	\$10.53	
FUNGICIDE	\$1.46	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$9.34	
REPAIRS	\$15.77	
LABOR	\$7.90	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$10.39	
REPAIRS	\$2.76	
IRRIGATION LABOR	\$5.98	
CUSTOM SPREAD	\$1.25	
CUSTOM HAUL	\$5.25	
CUSTOM DRY OR GINNING	\$0.00	
MISCELLANEOUS	\$1.25	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$5.68	

TOTAL SPECIFIED OPERATING COSTS \$108.96

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHEL

YIELD	22.75	26.25	35.00	43.75	47.25
Price	\$4.70	\$4.10	\$3.11	\$2.52	\$2.35

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$6.45	
INTEREST	\$5.33	
EQUIPMENT:		
DEPRECIATION	\$5.43	
INTEREST	\$2.96	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.60	
INTEREST	\$3.51	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$7.84	
INTEREST	\$7.25	
TAXES & INSURANCE	\$4.33	
INTEREST	\$0.48	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$53.19

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$162.15

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHEL

YIELD	22.75	26.25	35.00	43.75	47.25
Price	\$7.04	\$6.12	\$4.63	\$3.74	\$3.47

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, FOLLOWING WHEAT, 1989
 ENTERPRISE FILE NO.: SOY8910
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$23.46	\$29.33	\$35.19
OWNERSHIP INTEREST	\$15.62	\$19.53	\$23.44
REPAIRS	\$14.82	\$18.53	\$22.24
HIRED LABOR	\$11.10	\$13.87	\$16.65
FERTILIZER	\$11.06	\$13.83	\$16.59
HERBICIDE	\$8.42	\$10.53	\$12.63
IRRIGATION FUEL & OIL	\$8.31	\$10.39	\$12.47
SEED	\$7.74	\$9.68	\$11.61
MACHINERY FUEL & OIL	\$7.47	\$9.34	\$11.21
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
INTEREST ON OP. CAP.	\$4.54	\$5.68	\$6.82
HAUL (CUSTOM HIRE)	\$4.20	\$5.25	\$6.30
FARM TAXES	\$2.77	\$3.46	\$4.16
FUNGICIDE	\$1.17	\$1.46	\$1.76
MISCELLANEOUS	\$1.00	\$1.25	\$1.50
SPREAD (CUSTOM HIRE)	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.69	\$0.87	\$1.04
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$129.72 \$162.15 \$194.57

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	22.75	\$5.63	\$7.04	\$8.45
-25% OF BASE YIELD	26.25	\$4.90	\$6.12	\$7.35
BASE YIELD	35.00	\$3.71	\$4.63	\$5.56
+25% OF BASE YIELD	43.75	\$2.99	\$3.74	\$4.49
+35% OF BASE YIELD	47.25	\$2.78	\$3.47	\$4.17

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, FOLLOWING WHEAT, 1989
 ENTERPRISE FILE NO.: SOY8910
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

- 20% DEVIATION FROM BASE COSTS: \$129.72 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	22.75	26.25	35.00	43.75	47.25	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$21.01)	(\$4.97)	\$35.13	\$75.24	\$91.28
	\$5.98	\$7.88	\$28.37	\$79.58	\$130.80	\$151.29
BASE PRICE =	\$7.25	\$36.77	\$61.70	\$124.03	\$186.36	\$211.30
	\$8.52	\$65.66	\$95.04	\$168.48	\$241.93	\$271.30
	\$9.79	\$94.56	\$128.38	\$212.93	\$297.49	\$331.31

BASE COSTS: \$162.15 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	22.75	26.25	35.00	43.75	47.25	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$53.05)	(\$37.12)	\$2.70	\$42.53	\$58.46
	\$5.98	(\$24.16)	(\$3.79)	\$47.15	\$98.10	\$118.47
BASE PRICE =	\$7.25	\$4.73	\$29.55	\$91.60	\$153.66	\$178.48
	\$8.52	\$33.62	\$62.89	\$136.05	\$209.22	\$238.49
	\$9.79	\$62.52	\$96.23	\$180.50	\$264.78	\$298.49

+ 20% DEVIATION FROM BASE COSTS: \$194.57 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHEL					
	22.75	26.25	35.00	43.75	47.25	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$4.71	(\$85.10)	(\$69.28)	(\$29.72)	\$9.83	\$25.65
	\$5.98	(\$56.20)	(\$35.94)	\$14.73	\$65.39	\$85.65
BASE PRICE =	\$7.25	(\$27.31)	(\$2.60)	\$59.18	\$120.95	\$145.66
	\$8.52	\$1.58	\$30.74	\$103.63	\$176.51	\$205.67
	\$9.79	\$30.47	\$64.07	\$148.08	\$232.08	\$265.68

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO
RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

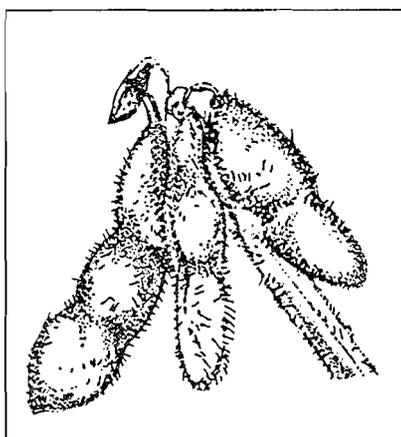
TB49-4200-10-88

**ESTIMATING PRODUCTION COSTS
IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 50

SOYBEANS

**NO-TILL, FOLLOWING WHEAT,
LOAMY SOILS, FLOOD IRRIGATION**



BY

**JERRY DON CLARK, JR.
BILLY E. HERRINGTON, JR.
CLYDE A. STUART
TONY E. WINDHAM
ROBERT E. COATS, JR.**

EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
COOPERATIVE EXTENSION SERVICE
AGRICULTURAL ECONOMICS SECTION**

ESTIMATING PRODUCTION COSTS IN ARKANSAS

INTRODUCTION

Estimating Production Costs is an Extension Technical Bulletin prepared by the Agricultural Economics Section within the University of Arkansas Cooperative Extension Service. The authors are Economists specializing in management and finance of the farm business.

The primary purpose of this analysis is to provide a systematic procedure for estimating specified costs associated with producing a defined enterprise. Costs are first developed for each field operation and then aggregated by input item.

This publication has seven major parts: A written discussion, page 1; a summary of specified operating and ownership costs, page 2; a sensitivity analysis, page 3; returns above total specified costs at various yield, price, and cost combinations, page 4; a sequential listing of field operations, pages 5 and 6; and a list of all publications for estimating enterprise production costs for 1989 crops, page 7.

SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 2. The specified operating costs are derived from the sequential listing of operations presented on pages 5 and 6. Breakeven prices for total specified operating costs are given for a base yield and at deviations of 25 and 35 percent.

Total specified ownership costs and breakeven prices for total specified costs are also given on page 2. The depreciation and interest cost components represent an average cost allocated over the entire useful life of the machinery. Various financing arrangements and tax depreciation methods can produce costs that vary significantly from these estimates

in a given year. The ability to estimate the actual cost is a complex economic procedure whereby cash accounting and economic costs may vary greatly.

SENSITIVITY ANALYSIS

A sensitivity analysis is presented to provide a broader perspective from which an individual may analyze the specific situation budgeted. Since input prices and quantity may vary, costs are increased and decreased by 20 percent as shown on page 3. A per unit breakeven price is provided for a base yield and at yields of 25 and 35 percent above and below the base yield. These breakeven prices account for changes in costs due to yield differences, such as ginning and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 4 are estimated enterprise returns above total specified costs at various yield, price, and cost combinations. No included in these returns are charges for land, risk, overhead labor, other overhead, crop insurance, real estate taxes, and management.

SEQUENCE OF OPERATIONS

A sequential listing of each operation performed for this enterprise is given on pages 5 and 6. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION SOYBEAN COMMITTEE

Lanny O. Ashlock, Chairman	Ford L. Baldwin
Claude M. Bonner	Dennis R. Gardisser
Marc C. Hirrel	Bingle Jennings
Donald R. Johnson	Edward J. Jordan
Gus M. Lorenz	H.J. Mascagni
Michael L. May	Roy N. Sharp
Clifford S. Snyder	Phil L. Tacker
Timothy Tripp	

THE MENTION OF ANY COMMERCIAL PRODUCT IN THIS ANALYSIS DOES NOT IMPLY ITS ENDORSEMENT BY THE UNITED STATES DEPARTMENT OF AGRICULTURE OR THE UNIVERSITY OF ARKANSAS COOPERATIVE EXTENSION SERVICE OVER OTHER PRODUCTS NOT NAMED, NOR DOES THE OMISSION IMPLY THAT THEY ARE NOT SATISFACTORY.

SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$12.90	_____
FERTILIZER	\$13.83	_____
LIME + APPLICATION	\$7.91	_____
HERBICIDE	\$34.41	_____
FUNGICIDE	\$1.95	_____
INSECTICIDE	\$0.00	_____
DEFOLIANT	\$0.00	_____
AERIAL APPLICATION	\$8.00	_____
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$4.90	_____
REPAIRS	\$9.86	_____
LABOR	\$4.51	_____
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$10.39	_____
REPAIRS	\$2.76	_____
IRRIGATION LABOR	\$5.98	_____
CUSTOM SPREAD	\$1.25	_____
CUSTOM HAUL	\$5.25	_____
CUSTOM DRY OR GINNING	\$0.00	_____
MISCELLANEOUS	\$1.25	_____
CROP INSURANCE PREMIUM		_____
OTHER		_____
INTEREST ON OP. CAP.	\$6.88	_____

TOTAL SPECIFIED OPERATING COSTS \$132.03

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN BUSHELS

YIELD	BREAKEVEN PRICE				
22.75	26.25	35.00	43.75	47.25	
\$5.72	\$4.98	\$3.77	\$3.05	\$2.84	

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$2.77	_____
INTEREST	\$2.29	_____
EQUIPMENT:		
DEPRECIATION	\$3.68	_____
INTEREST	\$2.06	_____
SPECIAL EQUIPMENT:		
DEPRECIATION	\$9.56	_____
INTEREST	\$3.50	_____
MISCELLANEOUS:		
DEPRECIATION	\$0.00	_____
INTEREST	\$0.00	_____
IRRIGATION:		
DEPRECIATION	\$7.84	_____
INTEREST	\$7.25	_____
TAXES & INSURANCE	\$3.43	_____
INTEREST	\$0.38	_____
OVERHEAD LABOR		_____
OTHER OVERHEAD		_____
LAND & PROPERTY TAX		_____
MANAGEMENT		_____

TOTAL SPECIFIED OWNERSHIP COSTS \$42.76

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$174.78

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OWNERSHIP & OPERATING COST
YIELD IN BUSHELS

YIELD	BREAKEVEN PRICE				
22.75	26.25	35.00	43.75	47.25	
\$7.60	\$6.61	\$4.99	\$4.03	\$3.74	

NOT INCLUDED IN THIS REPORT ARE CHARGES FOR LAND, RISK, OVERHEAD LABOR, OTHER OVERHEAD, CROP INSURANCE, REAL ESTATE TAXES, AND MGT.

SENSITIVITY ANALYSIS:

EFFECTS OF A 20% VARIATION IN SPECIFIED INPUT COSTS ON
PER UNIT BREAKEVEN PRICES.

ENTERPRISE: SOYBEANS, NO-TILL, FOLLOWING WHEAT,
ENTERPRISE FILE NO.: SOY8911
LOCATION: ARKANSAS
SOILS TYPE: LOAMY
IRRIGATION METHOD: FLOOD

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 2	+20% DEVIATION
(A)	(B)	(D)	(F)
HERBICIDE	\$27.53	\$34.41	\$41.30
DEPRECIATION	\$19.07	\$23.84	\$28.61
OWNERSHIP INTEREST	\$12.38	\$15.48	\$18.58
FERTILIZER	\$11.06	\$13.83	\$16.59
SEED	\$10.32	\$12.90	\$15.48
REPAIRS	\$10.09	\$12.62	\$15.14
HIRED LABOR	\$8.39	\$10.49	\$12.58
IRRIGATION FUEL & OIL	\$8.31	\$10.39	\$12.47
AERIAL APPLI. (CUSTOM HIRE)	\$6.40	\$8.00	\$9.60
LIME + APPLICATION	\$6.33	\$7.91	\$9.49
INTEREST ON OP. CAP.	\$5.51	\$6.88	\$8.26
HAUL (CUSTOM HIRE)	\$4.20	\$5.25	\$6.30
MACHINERY FUEL & OIL	\$3.92	\$4.90	\$5.88
FARM TAXES	\$2.20	\$2.75	\$3.30
FUNGICIDE	\$1.56	\$1.95	\$2.34
MISCELLANEOUS	\$1.00	\$1.25	\$1.50
SPREAD (CUSTOM HIRE)	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.55	\$0.69	\$0.82
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRY OR GINNING (COMMERCIAL)			
DRYING FUEL			
FINANCIAL SERVICES			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
MACHINE HIRE			
MANAGEMENT			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$139.82 \$174.78 \$209.74

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	22.75	\$6.08	\$7.60	\$9.12
-25% OF BASE YIELD	26.25	\$5.28	\$6.61	\$7.93
BASE YIELD	35.00	\$3.99	\$4.99	\$5.99
+25% OF BASE YIELD	43.75	\$3.22	\$4.03	\$4.83
+35% OF BASE YIELD	47.25	\$2.99	\$3.74	\$4.49

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: SOYBEANS, NO-TILL, FOLLOWING WHEAT, 1
 ENTERPRISE FILE NO.: SOY8911
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

- 20% DEVIATION FROM BASE COSTS: \$139.82 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	22.75	26.25	35.00	43.75	47.25	
	-35%	-25%	BASE YIELD	+25%	+35%	
	\$4.71	(\$31.12)	(\$15.08)	\$25.03	\$65.13	\$81.17
	\$5.98	(\$2.23)	\$18.26	\$69.48	\$120.69	\$141.18
BASE PRICE =	\$7.25	\$26.66	\$51.60	\$113.93	\$176.25	\$201.19
	\$8.52	\$55.56	\$84.93	\$158.38	\$231.82	\$261.19
	\$9.79	\$84.45	\$118.27	\$202.83	\$287.38	\$321.20

BASE COSTS: \$174.78 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	22.75	26.25	35.00	43.75	47.25	
	-35%	-25%	BASE YIELD	+25%	+35%	
	\$4.71	(\$65.69)	(\$49.76)	(\$9.93)	\$29.90	\$45.83
	\$5.98	(\$36.80)	(\$16.42)	\$34.52	\$85.46	\$105.84
BASE PRICE =	\$7.25	(\$7.91)	\$16.92	\$78.97	\$141.02	\$165.84
	\$8.52	\$20.99	\$50.25	\$123.42	\$196.58	\$225.85
	\$9.79	\$49.88	\$83.59	\$167.87	\$252.15	\$285.86

+ 20% DEVIATION FROM BASE COSTS: \$209.74 PER ACRE

PRODUCER PRICE ESTIMATES	YIELD IN BUSHELS					
	22.75	26.25	35.00	43.75	47.25	
	-35%	-25%	BASE YIELD	+25%	+35%	
	\$4.71	(\$100.26)	(\$84.44)	(\$44.89)	(\$5.34)	\$10.48
	\$5.98	(\$71.37)	(\$51.10)	(\$0.44)	\$50.23	\$70.49
BASE PRICE =	\$7.25	(\$42.47)	(\$17.76)	\$44.01	\$105.79	\$130.50
	\$8.52	(\$13.58)	\$15.57	\$88.46	\$161.35	\$190.51
	\$9.79	\$15.31	\$48.91	\$132.91	\$216.91	\$250.51

**LIST OF PUBLICATIONS FOR
ESTIMATING PRODUCTION COSTS**

- ETB 36 - Estimating Farm Machinery Costs in Arkansas, May 1988
- ETB 37 - Wheat, Loamy Soils, Arkansas
- ETB 38 - Wheat, Clay Soils, Arkansas
- ETB 39 - Oats, Loamy Soils, Arkansas
- ETB 40 - Soybeans, Loamy Soils, Arkansas
- ETB 41 - Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 42 - Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
- ETB 43 - Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 44 - Soybeans, Drilled, Loamy Soils, Arkansas
- ETB 45 - Soybeans, Following Wheat, Loamy Soils, Arkansas
- ETB 46 - Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
- ETB 47 - Soybeans, Clay Soils, Arkansas
- ETB 48 - Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 acres, Arkansas
- ETB 49 - Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 50 - Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
- ETB 51 - Rice, Silt Loam Soils, Eastern Arkansas
- ETB 52 - Rice, Clay Soils, Eastern Arkansas
- ETB 53 - Rice, Grand Prairie Soils, Grand Prairie Region, Arkansas
- ETB 54 - Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
- ETB 55 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 56 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 57 - Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 58 - Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
- ETB 59 - Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
- ETB 60 - Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
- ETB 61 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
- ETB 62 - Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
- ETB 63 - Corn, Loamy Soils, Flood Irrigation, Arkansas
- ETB 64 - Corn, Loamy Soils, Furrow Irrigation, Arkansas
- ETB 65 - Grain Sorghum, Loamy Soils, Arkansas
- ETB 66 - Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
- ETB 67 - Grain Sorghum, Clay Soils, Arkansas
- ETB 68 - Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

INFORMATION PRESENTED IN THIS DOCUMENT IS PREPARED SOLELY AS A GENERAL GUIDE AND IS NOT INTENDED TO RECOGNIZE OR PREDICT THE COSTS AND RETURNS FROM ANY ONE PARTICULAR FARM OR RANCH OPERATION

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Dr. Ted L. Jones, Director of Extension Service, University of Arkansas. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or handicap, and is an Equal Opportunity Employer.

TB50-2800-10-88