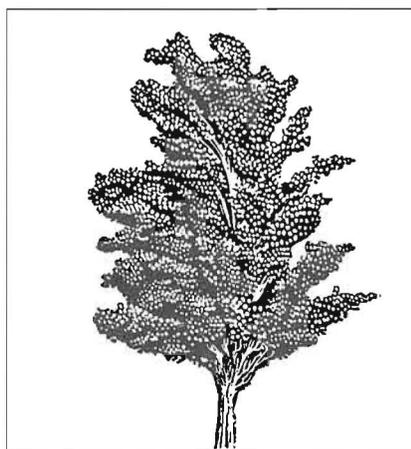


ESTIMATING 1990 PRODUCTION
COSTS IN ARKANSAS

EXTENSION TECHNICAL BULLETIN NO. 104

GRAIN SORGHUM

LOAMY SOILS



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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 2; a summary of specified operating and ownership costs, page 3; a sensitivity analysis, page 4; returns above total specified costs at various yield, price, and cost combinations, page 5; a sequential listing of field operations, pages 6 and 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 3. The specified operating costs are derived from the sequential listing of operations presented on pages 6 and 7. 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 3. 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 4. 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 hauling and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 5 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 6 and 7. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION FEED GRAIN COMMITTEE

Donald Adams, Chairman	Ford L. Baldwin
Raymond C. Benz	Albert Bivings
Stanley L. Chapman	Jerry Don Clark
Charlie Guy	Gary Huitink
Billy E. Herrington	Donald R. Johnson
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Roy N. Sharp	Phil L. Tacker
Tony E. Windham	

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	\$5.48	
FERTILIZER	\$30.85	
LIME + APPLICATION	\$0.00	
HERBICIDE	\$8.75	
FUNGICIDE	\$0.00	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$7.20	
REPAIRS	\$15.37	
LABOR	\$5.84	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$0.00	
REPAIRS	\$0.00	
IRRIGATION LABOR	\$0.00	
CUSTOM SPREAD	\$5.00	
CUSTOM HAUL	\$10.99	
CUSTOM DRY OR GINNING	\$14.35	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$4.92	

TOTAL SPECIFIED OPERATING COSTS \$108.74

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST
YIELD IN CWT.

26.00	30.00	40.00	50.00	54.00
\$3.83	\$3.41	\$2.72	\$2.31	\$2.18

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$5.17	
INTEREST	\$4.27	
EQUIPMENT:		
DEPRECIATION	\$5.25	
INTEREST	\$2.71	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$10.93	
INTEREST	\$4.00	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
TAXES & INSURANCE	\$2.50	
INTEREST	\$0.27	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$35.10

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$143.85

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

26.00	30.00	40.00	50.00	54.00
\$5.18	\$4.58	\$3.60	\$3.01	\$2.83

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: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9001
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 3	+20% DEVIATION
(A)	(B)	(D)	(F)
FERTILIZER	\$24.68	\$30.85	\$37.01
DEPRECIATION	\$17.08	\$21.35	\$25.63
REPAIRS	\$12.30	\$15.37	\$18.45
DRY OR GINNING (COMMERCIAL)	\$11.48	\$14.35	\$17.22
OWNERSHIP INTEREST	\$9.00	\$11.25	\$13.50
HAUL (CUSTOM HIRE)	\$8.79	\$10.99	\$13.19
HERBICIDE	\$7.00	\$8.75	\$10.50
MACHINERY FUEL & OIL	\$5.76	\$7.20	\$8.63
HIRED LABOR	\$4.68	\$5.84	\$7.01
SEED	\$4.38	\$5.48	\$6.57
SPREAD (CUSTOM HIRE)	\$4.00	\$5.00	\$6.00
INTEREST ON OP. CAP.	\$3.94	\$4.92	\$5.91
FARM TAXES	\$1.60	\$2.00	\$2.40
FARM INSURANCE	\$0.40	\$0.50	\$0.60
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRYING FUEL			
FINANCIAL SERVICES			
FUNGICIDE			
INSECTICIDE			
IRRIGATION FUEL & OIL			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$115.08 \$143.85 \$172.62

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	26.00	\$4.15	\$5.18	\$6.22
-25% OF BASE YIELD	30.00	\$3.66	\$4.58	\$5.50
BASE YIELD	40.00	\$2.88	\$3.60	\$4.32
+25% OF BASE YIELD	50.00	\$2.41	\$3.01	\$3.61
+35% OF BASE YIELD	54.00	\$2.27	\$2.83	\$3.40

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9001
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: NONE

- 20% DEVIATION FROM BASE COSTS: \$115.08 PER ACRE
 YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	26.00	30.00	40.00	50.00	54.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$41.07)	(\$32.88)	(\$12.38)	\$8.08	\$16.28
	\$3.26	(\$23.10)	(\$12.14)	\$15.27	\$42.65	\$53.60
BASE PRICE =	\$3.95	(\$5.13)	\$8.60	\$42.92	\$77.21	\$90.93
	\$4.64	\$12.85	\$29.33	\$70.57	\$111.77	\$128.26
	\$5.33	\$30.82	\$50.07	\$98.22	\$146.33	\$165.59

BASE COSTS: \$143.85 PER ACRE
 YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	26.00	30.00	40.00	50.00	54.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$68.03)	(\$60.35)	(\$41.15)	(\$21.99)	(\$14.32)
	\$3.26	(\$50.06)	(\$39.62)	(\$13.50)	\$12.57	\$23.01
BASE PRICE =	\$3.95	(\$32.08)	(\$18.88)	\$14.15	\$47.14	\$60.34
	\$4.64	(\$14.11)	\$1.86	\$41.80	\$81.70	\$97.67
	\$5.33	\$3.86	\$22.60	\$69.45	\$116.26	\$134.99

+ 20% DEVIATION FROM BASE COSTS: \$172.62 PER ACRE
 YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	26.00	30.00	40.00	50.00	54.00	
-----	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$94.98)	(\$87.83)	(\$69.92)	(\$52.06)	(\$44.91)
	\$3.26	(\$77.01)	(\$67.09)	(\$42.27)	(\$17.50)	(\$7.58)
BASE PRICE =	\$3.95	(\$59.04)	(\$46.36)	(\$14.62)	\$17.06	\$29.75
	\$4.64	(\$41.07)	(\$25.62)	\$13.03	\$51.63	\$67.08
	\$5.33	(\$23.09)	(\$4.88)	\$40.68	\$86.19	\$104.40

LIST OF PUBLICATIONS FOR ESTIMATING 1990 PRODUCTION COSTS

<u>ECONOMIC SUMMARY</u>	<u>ETB</u>	<u>DESCRIPTION</u>
AG-2-10-89	ETB 71	Oats, Loamy Soils, Arkansas
AG-3-10-89	ETB 72	Wheat, Loamy Soils, Arkansas
AG-4-10-89	ETB 73	Wheat, Clay Soils, Arkansas
AG-5-10-89	ETB 75	Rapeseed (Canola), Loamy Soils, Arkansas
AG-6-10-89	ETB 76	Soybeans, Loamy Soils, Arkansas
AG-7-10-89	ETB 77	Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
AG-8-10-89	ETB 78	Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
AG-9-10-89	ETB 79	Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-10-10-89	ETB 80	Soybeans, Drilled, Loamy Soils, Arkansas
AG-11-10-89	ETB 81	Soybeans, Following Wheat, Loamy Soils, Arkansas
AG-12-10-89	ETB 82	Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-13-10-89	ETB 83	Soybeans, Clay Soils, Arkansas
AG-14-10-89	ETB 84	Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 Acres, Arkansas
AG-15-10-89	ETB 85	Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-16-10-89	ETB 86	Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-17-10-89	ETB 87	Rice, Long Grain, Midseason Variety (Newbonnet), Silt Loam Soils, Eastern Arkansas
AG-18-10-89	ETB 88	Rice, Long Grain, Very Short Season Variety (Tebonnet), Silt Loam Soils, Eastern Arkansas
AG-19-10-89	ETB 89	Rice, Long Grain, Semi-dwarf Variety (Lemont), Silt Loam Soils, Eastern Arkansas
AG-20-10-89	ETB 90	Rice, Medium Grain, Short Season Variety (Mars), Silt Loam Soils, Eastern Arkansas
AG-21-10-89	ETB 91	Rice, Long Grain, Midseason Variety (Newbonnet), Clay Soils, Eastern Arkansas
AG-22-10-89	ETB 92	Rice, Long Grain, Midseason Variety (Newbonnet), Grand Prairie Soils, Grand Prairie Region, Arkansas
AG-23-10-89	ETB 93	Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
AG-24-10-89	ETB 94	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-25-10-89	ETB 95	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-26-10-89	ETB 96	Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
AG-27-10-89	ETB 97	Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
AG-28-10-89	ETB 98	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
AG-29-10-89	ETB 99	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
AG-30-10-89	ETB 100	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-31-10-89	ETB 101	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-32-10-89	ETB 102	Corn, Loamy Soils, Flood Irrigation, Arkansas
AG-33-10-89	ETB 103	Corn, Loamy Soils, Furrow Irrigation, Arkansas
AG-34-10-89	ETB 104	Grain Sorghum, Loamy Soils, Arkansas
AG-35-10-89	ETB 105	Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
AG-36-10-89	ETB 106	Grain Sorghum, Clay Soils, Arkansas
AG-37-10-89	ETB 107	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

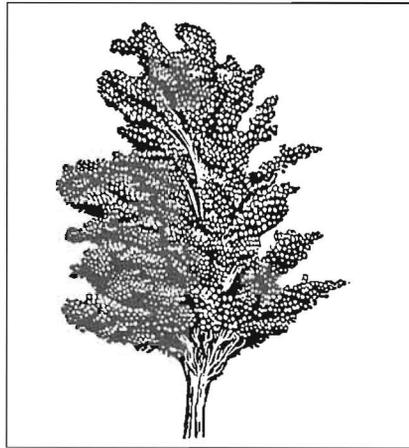
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ESTIMATING 1990 PRODUCTION
COSTS IN ARKANSAS

EXTENSION TECHNICAL BULLETIN NO. 105

GRAIN SORGHUM

LOAMY SOILS,
FLOOD IRRIGATION



AUTHORS

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EXTENSION ECONOMISTS - MANAGEMENT

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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 2; a summary of specified operating and ownership costs, page 3; a sensitivity analysis, page 4; returns above total specified costs at various yield, price, and cost combinations, page 5; a sequential listing of field operations, pages 6 and 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 3. The specified operating costs are derived from the sequential listing of operations presented on pages 6 and 7. 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 3. 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 4. 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 hauling and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 5 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 6 and 7. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

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SPECIFIED OPERATING COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
SEED	\$5.48	
FERTILIZER	\$34.58	
LIME + APPLICATION		
HERBICIDE	\$8.75	
FUNGICIDE		
INSECTICIDE		
DEFOLIANT		
AERIAL APPLICATION		
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$7.80	
REPAIRS	\$16.01	
LABOR	\$6.35	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$4.48	
REPAIRS	\$2.15	
IRRIGATION LABOR	\$3.98	
CUSTOM SPREAD	\$5.00	
CUSTOM HAUL	\$16.51	
CUSTOM DRY OR GINNING	\$21.56	
MISCELLANEOUS	\$1.25	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$6.18	

TOTAL SPECIFIED OPERATING COSTS \$140.08

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST YIELD IN CWT.

	39.00	45.00	60.00	75.00	81.00
	\$3.24	\$2.90	\$2.33	\$2.00	\$1.90

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$5.75	
INTEREST	\$4.74	
EQUIPMENT:		
DEPRECIATION	\$5.46	
INTEREST	\$2.84	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$10.93	
INTEREST	\$4.00	
MISCELLANEOUS:		
DEPRECIATION		
INTEREST		
IRRIGATION:		
DEPRECIATION	\$6.09	
INTEREST	\$5.62	
TAXES & INSURANCE	\$3.91	
INTEREST	\$0.43	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$49.77

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$189.85

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

	39.00	45.00	60.00	75.00	81.00
	\$4.52	\$4.00	\$3.16	\$2.66	\$2.51

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: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9002
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 3	+20% DEVIATION
(A)	(B)	(D)	(F)
FERTILIZER	\$27.66	\$34.58	\$41.50
DEPRECIATION	\$22.58	\$28.23	\$33.87
DRY OR GINNING (COMMERCIAL)	\$17.25	\$21.56	\$25.87
REPAIRS	\$14.53	\$18.16	\$21.79
OWNERSHIP INTEREST	\$14.11	\$17.63	\$21.16
HAUL (CUSTOM HIRE)	\$13.21	\$16.51	\$19.81
HIRED LABOR	\$8.27	\$10.33	\$12.40
HERBICIDE	\$7.00	\$8.75	\$10.50
MACHINERY FUEL & OIL	\$6.24	\$7.80	\$9.36
INTEREST ON OP. CAP.	\$4.94	\$6.18	\$7.41
SEED	\$4.38	\$5.48	\$6.57
SPREAD (CUSTOM HIRE)	\$4.00	\$5.00	\$6.00
IRRIGATION FUEL & OIL	\$3.59	\$4.48	\$5.38
FARM TAXES	\$2.50	\$3.13	\$3.75
MISCELLANEOUS	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.63	\$0.78	\$0.94
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRYING FUEL			
FINANCIAL SERVICES			
FUNGICIDE			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$151.88 \$189.85 \$227.82

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	39.00	\$3.61	\$4.52	\$5.42
-25% OF BASE YIELD	45.00	\$3.20	\$4.00	\$4.80
BASE YIELD	60.00	\$2.53	\$3.16	\$3.80
+25% OF BASE YIELD	75.00	\$2.13	\$2.66	\$3.19
+35% OF BASE YIELD	81.00	\$2.01	\$2.51	\$3.01

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9002
 LOCATION: ARKANSAS
 SOILS TYPE: LOAMY
 IRRIGATION METHOD: FLOOD

- 20% DEVIATION FROM BASE COSTS: \$151.88 PER ACRE
 YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	39.00	45.00	60.00	75.00	81.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$40.82)	(\$28.53)	\$2.17	\$32.91	\$45.20
	\$3.26	(\$13.86)	\$2.57	\$43.64	\$84.75	\$101.19
BASE PRICE =	\$3.95	\$13.09	\$33.68	\$85.12	\$136.60	\$157.18
	\$4.64	\$40.05	\$64.78	\$126.59	\$188.44	\$213.17
	\$5.33	\$67.01	\$95.89	\$168.07	\$240.28	\$269.16

BASE COSTS: \$189.85 PER ACRE
 YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	39.00	45.00	60.00	75.00	81.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$76.06)	(\$64.55)	(\$35.80)	(\$7.00)	\$4.51
	\$3.26	(\$49.10)	(\$33.45)	\$5.67	\$44.84	\$60.50
BASE PRICE =	\$3.95	(\$22.15)	(\$2.34)	\$47.15	\$96.68	\$116.49
	\$4.64	\$4.81	\$28.77	\$88.62	\$148.53	\$172.48
	\$5.33	\$31.77	\$59.87	\$130.10	\$200.37	\$228.47

+ 20% DEVIATION FROM BASE COSTS: \$227.82 PER ACRE
 YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	39.00	45.00	60.00	75.00	81.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$111.30)	(\$100.57)	(\$73.77)	(\$46.92)	(\$36.19)
	\$3.26	(\$84.34)	(\$69.46)	(\$32.30)	\$4.93	\$19.81
BASE PRICE =	\$3.95	(\$57.38)	(\$38.36)	\$9.18	\$56.77	\$75.80
	\$4.64	(\$30.43)	(\$7.25)	\$50.65	\$108.61	\$131.79
	\$5.33	(\$3.47)	\$23.85	\$92.13	\$160.46	\$187.78

LIST OF PUBLICATIONS FOR ESTIMATING 1990 PRODUCTION COSTS

<u>ECONOMIC SUMMARY</u>	<u>ETB</u>	<u>DESCRIPTION</u>
AG-2-10-89	ETB 71	Oats, Loamy Soils, Arkansas
AG-3-10-89	ETB 72	Wheat, Loamy Soils, Arkansas
AG-4-10-89	ETB 73	Wheat, Clay Soils, Arkansas
AG-5-10-89	ETB 75	Rapeseed (Canola), Loamy Soils, Arkansas
AG-6-10-89	ETB 76	Soybeans, Loamy Soils, Arkansas
AG-7-10-89	ETB 77	Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
AG-8-10-89	ETB 78	Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
AG-9-10-89	ETB 79	Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-10-10-89	ETB 80	Soybeans, Drilled, Loamy Soils, Arkansas
AG-11-10-89	ETB 81	Soybeans, Following Wheat, Loamy Soils, Arkansas
AG-12-10-89	ETB 82	Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-13-10-89	ETB 83	Soybeans, Clay Soils, Arkansas
AG-14-10-89	ETB 84	Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 Acres, Arkansas
AG-15-10-89	ETB 85	Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-16-10-89	ETB 86	Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-17-10-89	ETB 87	Rice, Long Grain, Midseason Variety (Newbonnet), Silt Loam Soils, Eastern Arkansas
AG-18-10-89	ETB 88	Rice, Long Grain, Very Short Season Variety (Tebonnet), Silt Loam Soils, Eastern Arkansas
AG-19-10-89	ETB 89	Rice, Long Grain, Semi-dwarf Variety (Lemont), Silt Loam Soils, Eastern Arkansas
AG-20-10-89	ETB 90	Rice, Medium Grain, Short Season Variety (Mars), Silt Loam Soils, Eastern Arkansas
AG-21-10-89	ETB 91	Rice, Long Grain, Midseason Variety (Newbonnet), Clay Soils, Eastern Arkansas
AG-22-10-89	ETB 92	Rice, Long Grain, Midseason Variety (Newbonnet), Grand Prairie Soils, Grand Prairie Region, Arkansas
AG-23-10-89	ETB 93	Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
AG-24-10-89	ETB 94	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-25-10-89	ETB 95	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-26-10-89	ETB 96	Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
AG-27-10-89	ETB 97	Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
AG-28-10-89	ETB 98	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
AG-29-10-89	ETB 99	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
AG-30-10-89	ETB 100	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-31-10-89	ETB 101	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-32-10-89	ETB 102	Corn, Loamy Soils, Flood Irrigation, Arkansas
AG-33-10-89	ETB 103	Corn, Loamy Soils, Furrow Irrigation, Arkansas
AG-34-10-89	ETB 104	Grain Sorghum, Loamy Soils, Arkansas
AG-35-10-89	ETB 105	Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
AG-36-10-89	ETB 106	Grain Sorghum, Clay Soils, Arkansas
AG-37-10-89	ETB 107	Grain Sorghum, Clay Soils, Flood Irrigation, Arkansas

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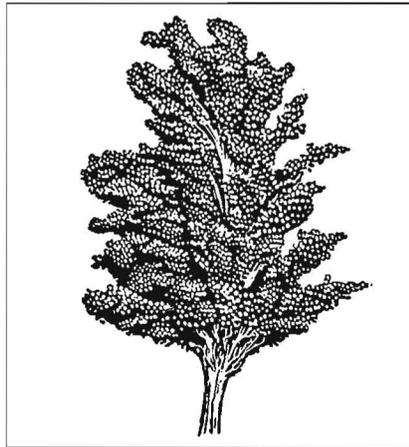
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**ESTIMATING 1990 PRODUCTION
COSTS IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 106

GRAIN SORGHUM

CLAY SOILS



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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 2; a summary of specified operating and ownership costs, page 3; a sensitivity analysis, page 4; returns above total specified costs at various yield, price, and cost combinations, page 5; a sequential listing of field operations, pages 6 and 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 3. The specified operating costs are derived from the sequential listing of operations presented on pages 6 and 7. 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 3. 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 4. 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 hauling and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 5 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 6 and 7. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

ACKNOWLEDGEMENTS EXTENSION FEED GRAIN COMMITTEE

Donald Adams, Chairman	Ford L. Baldwin
Raymond C. Benz	Albert Bivings
Stanley L. Chapman	Jerry Don Clark
Charlie Guy	Gary Huitink
Billy E. Herrington	Donald R. Johnson
H.J. Mascagni	Michael L. May
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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	\$5.48	
FERTILIZER	\$18.26	
LIME + APPLICATION	\$0.00	
HERBICIDE	\$9.95	
FUNGICIDE	\$0.00	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$7.97	
REPAIRS	\$16.63	
LABOR	\$6.35	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$0.00	
REPAIRS	\$0.00	
IRRIGATION LABOR	\$0.00	
CUSTOM SPREAD	\$5.00	
CUSTOM HAUL	\$10.99	
CUSTOM DRY OR GINNING	\$14.35	
MISCELLANEOUS	\$0.00	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$4.43	

TOTAL SPECIFIED OPERATING COSTS \$99.40

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST YIELD IN CWT.

YIELD	26.00	30.00	40.00	50.00	54.00
Price	\$3.47	\$3.10	\$2.49	\$2.12	\$2.01

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$5.98	
INTEREST	\$4.93	
EQUIPMENT:		
DEPRECIATION	\$5.75	
INTEREST	\$3.04	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$10.93	
INTEREST	\$4.00	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
TAXES & INSURANCE	\$2.72	
INTEREST	\$0.30	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$37.65

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$137.06

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

YIELD	26.00	30.00	40.00	50.00	54.00
Price	\$4.92	\$4.35	\$3.43	\$2.87	\$2.71

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: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9003
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: NONE

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 3	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$18.13	\$22.66	\$27.19
FERTILIZER	\$14.61	\$18.26	\$21.91
REPAIRS	\$13.31	\$16.63	\$19.96
DRY OR GINNING (COMMERCIAL)	\$11.48	\$14.35	\$17.22
OWNERSHIP INTEREST	\$9.82	\$12.27	\$14.73
HAUL (CUSTOM HIRE)	\$8.79	\$10.99	\$13.19
HERBICIDE	\$7.96	\$9.95	\$11.94
MACHINERY FUEL & OIL	\$6.37	\$7.97	\$9.56
HIRED LABOR	\$5.08	\$6.35	\$7.62
SEED	\$4.38	\$5.48	\$6.57
SPREAD (CUSTOM HIRE)	\$4.00	\$5.00	\$6.00
INTEREST ON OP. CAP.	\$3.55	\$4.43	\$5.32
FARM TAXES	\$1.74	\$2.18	\$2.61
FARM INSURANCE	\$0.44	\$0.54	\$0.65
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRYING FUEL			
FINANCIAL SERVICES			
FUNGICIDE			
INSECTICIDE			
IRRIGATION FUEL & OIL			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
MISCELLANEOUS			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$109.65 \$137.06 \$164.47

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS

	YIELD	BREAKEVEN PRICE		
-35% OF BASE YIELD	26.00	\$3.94	\$4.92	\$5.91
-25% OF BASE YIELD	30.00	\$3.48	\$4.35	\$5.22
BASE YIELD	40.00	\$2.74	\$3.43	\$4.11
+25% OF BASE YIELD	50.00	\$2.30	\$2.87	\$3.45
+35% OF BASE YIELD	54.00	\$2.17	\$2.71	\$3.25

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9003
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: NONE

- 20% DEVIATION FROM BASE COSTS: \$109.65 PER ACRE

YIELD IN CWT.

PRODUCER PRICE ESTIMATES -----	-----					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - - - -RETURNS PER ACRE- - - - - - - -					
	\$2.57	(\$35.64)	(\$27.45)	(\$6.95)	\$13.52	\$21.71
	\$3.26	(\$17.67)	(\$6.71)	\$20.70	\$48.08	\$59.04
BASE PRICE =	\$3.95	\$0.30	\$14.03	\$48.35	\$82.64	\$96.36
	\$4.64	\$18.28	\$34.76	\$76.00	\$117.20	\$133.69
	\$5.33	\$36.25	\$55.50	\$103.65	\$151.77	\$171.02

BASE COSTS: \$137.06 PER ACRE

YIELD IN CWT.

PRODUCER PRICE ESTIMATES -----	-----					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - - - -RETURNS PER ACRE- - - - - - - -					
	\$2.57	(\$61.24)	(\$53.57)	(\$34.36)	(\$15.20)	(\$7.53)
	\$3.26	(\$43.27)	(\$32.83)	(\$6.71)	\$19.36	\$29.80
BASE PRICE =	\$3.95	(\$25.29)	(\$12.09)	\$20.94	\$53.93	\$67.13
	\$4.64	(\$7.32)	\$8.65	\$48.59	\$88.49	\$104.46
	\$5.33	\$10.65	\$29.38	\$76.24	\$123.05	\$141.78

+ 20% DEVIATION FROM BASE COSTS: \$164.47 PER ACRE

YIELD IN CWT.

PRODUCER PRICE ESTIMATES -----	-----					
	26.00	30.00	40.00	50.00	54.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - - - -RETURNS PER ACRE- - - - - - - -					
	\$2.57	(\$86.84)	(\$79.68)	(\$61.77)	(\$43.91)	(\$36.76)
	\$3.26	(\$68.87)	(\$58.95)	(\$34.12)	(\$9.35)	\$0.57
BASE PRICE =	\$3.95	(\$50.89)	(\$38.21)	(\$6.47)	\$25.21	\$37.89
	\$4.64	(\$32.92)	(\$17.47)	\$21.18	\$59.77	\$75.22
	\$5.33	(\$14.95)	\$3.27	\$48.83	\$94.34	\$112.55

LIST OF PUBLICATIONS FOR ESTIMATING 1990 PRODUCTION COSTS

<u>ECONOMIC SUMMARY</u>	<u>ETB</u>	<u>DESCRIPTION</u>
AG-2-10-89	ETB 71	Oats, Loamy Soils, Arkansas
AG-3-10-89	ETB 72	Wheat, Loamy Soils, Arkansas
AG-4-10-89	ETB 73	Wheat, Clay Soils, Arkansas
AG-5-10-89	ETB 75	Rapeseed (Canola), Loamy Soils, Arkansas
AG-6-10-89	ETB 76	Soybeans, Loamy Soils, Arkansas
AG-7-10-89	ETB 77	Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
AG-8-10-89	ETB 78	Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
AG-9-10-89	ETB 79	Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-10-10-89	ETB 80	Soybeans, Drilled, Loamy Soils, Arkansas
AG-11-10-89	ETB 81	Soybeans, Following Wheat, Loamy Soils, Arkansas
AG-12-10-89	ETB 82	Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-13-10-89	ETB 83	Soybeans, Clay Soils, Arkansas
AG-14-10-89	ETB 84	Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 Acres, Arkansas
AG-15-10-89	ETB 85	Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-16-10-89	ETB 86	Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-17-10-89	ETB 87	Rice, Long Grain, Midseason Variety (Newbonnet), Silt Loam Soils, Eastern Arkansas
AG-18-10-89	ETB 88	Rice, Long Grain, Very Short Season Variety (Tebonnet), Silt Loam Soils, Eastern Arkansas
AG-19-10-89	ETB 89	Rice, Long Grain, Semi-dwarf Variety (Lemont), Silt Loam Soils, Eastern Arkansas
AG-20-10-89	ETB 90	Rice, Medium Grain, Short Season Variety (Mars), Silt Loam Soils, Eastern Arkansas
AG-21-10-89	ETB 91	Rice, Long Grain, Midseason Variety (Newbonnet), Clay Soils, Eastern Arkansas
AG-22-10-89	ETB 92	Rice, Long Grain, Midseason Variety (Newbonnet), Grand Prairie Soils, Grand Prairie Region, Arkansas
AG-23-10-89	ETB 93	Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
AG-24-10-89	ETB 94	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-25-10-89	ETB 95	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-26-10-89	ETB 96	Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
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AG-28-10-89	ETB 98	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
AG-29-10-89	ETB 99	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
AG-30-10-89	ETB 100	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-31-10-89	ETB 101	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
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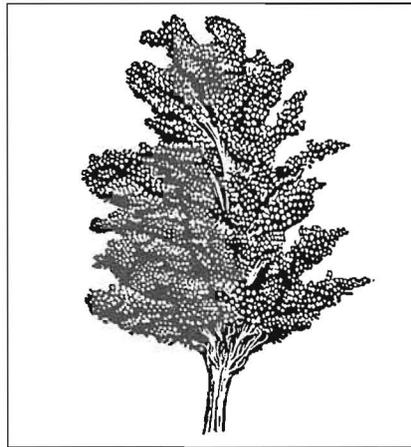
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**ESTIMATING 1990 PRODUCTION
COSTS IN ARKANSAS**

EXTENSION TECHNICAL BULLETIN NO. 107

GRAIN SORGHUM

CLAY SOILS, FLOOD IRRIGATION



AUTHORS

**TONY E. WINDHAM
BILLY E. HERRINGTON, JR.
JERRY DON CLARK, JR.**

REVIEWERS

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EXTENSION ECONOMISTS - MANAGEMENT

**UNIVERSITY OF ARKANSAS
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AGRICULTURAL ECONOMICS SECTION**

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SPECIFIED OPERATING AND OWNERSHIP COSTS

Specified operating and ownership costs for this particular enterprise, location, soil type, and irrigation method are located on page 3. The specified operating costs are derived from the sequential listing of operations presented on pages 6 and 7. 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 3. 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.

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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 4. 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 hauling and drying.

RETURNS ABOVE TOTAL SPECIFIED COSTS

Presented on page 5 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 6 and 7. These operations provide the foundation on which the economic analysis is based. Note the specified costs associated with each field operation.

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RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATED COST
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LIME + APPLICATION	\$0.00	
HERBICIDE	\$9.95	
FUNGICIDE	\$0.00	
INSECTICIDE	\$0.00	
DEFOLIANT	\$0.00	
AERIAL APPLICATION	\$0.00	
MACHINERY:		
FUEL, OIL, LUBRICANTS	\$8.57	
REPAIRS	\$17.27	
LABOR	\$6.85	
IRRIGATION:		
FUEL, OIL, LUBRICANTS	\$4.48	
REPAIRS	\$2.15	
IRRIGATION LABOR	\$3.98	
CUSTOM SPREAD	\$5.00	
CUSTOM HAUL	\$16.51	
CUSTOM DRY OR GINNING	\$21.56	
MISCELLANEOUS	\$1.25	
CROP INSURANCE PREMIUM		
OTHER		
INTEREST ON OP. CAP.	\$5.69	

TOTAL SPECIFIED OPERATING COSTS \$130.74

PER UNIT BREAKEVEN PRICE, TOTAL SPECIFIED OPERATING COST YIELD IN CWT.

39.00	45.00	60.00	75.00	81.00
\$3.00	\$2.69	\$2.18	\$1.87	\$1.78

SPECIFIED OWNERSHIP COSTS

RESOURCE OR INPUT	PER ACRE COST	YOUR ESTIMATE
TRACTORS:		
DEPRECIATION	\$6.55	
INTEREST	\$5.41	
EQUIPMENT:		
DEPRECIATION	\$5.96	
INTEREST	\$3.17	
SPECIAL EQUIPMENT:		
DEPRECIATION	\$10.93	
INTEREST	\$4.00	
MISCELLANEOUS:		
DEPRECIATION	\$0.00	
INTEREST	\$0.00	
IRRIGATION:		
DEPRECIATION	\$6.09	
INTEREST	\$5.62	
TAXES & INSURANCE	\$4.14	
INTEREST	\$0.45	
OVERHEAD LABOR		
OTHER OVERHEAD		
LAND & PROPERTY TAX		
MANAGEMENT		

TOTAL SPECIFIED OWNERSHIP COSTS \$52.32

TOTAL SPECIFIED OPERATING AND OWNERSHIP COSTS \$183.06

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

39.00	45.00	60.00	75.00	81.00
\$4.34	\$3.85	\$3.05	\$2.57	\$2.43

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: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9004
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: FLOOD

RESOURCE OR INPUT	-20% DEVIATION	BASE COST PAGE 3	+20% DEVIATION
(A)	(B)	(D)	(F)
DEPRECIATION	\$23.63	\$29.53	\$35.44
FERTILIZER	\$17.60	\$22.00	\$26.39
DRY OR GINNING (COMMERCIAL)	\$17.25	\$21.56	\$25.87
REPAIRS	\$15.54	\$19.42	\$23.31
OWNERSHIP INTEREST	\$14.92	\$18.65	\$22.38
HAUL (CUSTOM HIRE)	\$13.21	\$16.51	\$19.81
HIRED LABOR	\$8.67	\$10.84	\$13.01
HERBICIDE	\$7.96	\$9.95	\$11.94
MACHINERY FUEL & OIL	\$6.86	\$8.57	\$10.28
INTEREST ON OP. CAP.	\$4.55	\$5.69	\$6.83
SEED	\$4.38	\$5.48	\$6.57
SPREAD (CUSTOM HIRE)	\$4.00	\$5.00	\$6.00
IRRIGATION FUEL & OIL	\$3.59	\$4.48	\$5.38
FARM TAXES	\$2.65	\$3.31	\$3.97
MISCELLANEOUS	\$1.00	\$1.25	\$1.50
FARM INSURANCE	\$0.66	\$0.83	\$0.99
AERIAL APPLI. (CUSTOM HIRE)			
CROP INSURANCE PREM.			
CROP MKT. & COM. STORAGE			
DEFOLIANT			
DRYING FUEL			
FINANCIAL SERVICES			
FUNGICIDE			
INSECTICIDE			
LAND CHARGE			
LEASE PAYMENTS			
LIME + APPLICATION			
MACHINE HIRE			
MANAGEMENT			
OVERHEAD			
UTILITIES			

TOTAL SPECIFIED COST/ACRE \$146.45 \$183.06 \$219.68

PER UNIT BREAKEVEN PRICE--TOTAL SPECIFIED COSTS			
	YIELD	BREAKEVEN PRICE	
-35% OF BASE YIELD	39.00	\$3.48	\$5.21
-25% OF BASE YIELD	45.00	\$3.08	\$4.62
BASE YIELD	60.00	\$2.44	\$3.66
+25% OF BASE YIELD	75.00	\$2.06	\$3.08
+35% OF BASE YIELD	81.00	\$1.94	\$2.91

ESTIMATED ENTERPRISE RETURNS ABOVE TOTAL SPECIFIED COSTS

ENTERPRISE: GRAIN SORGHUM
 ENTERPRISE FILE NO.: GR9004
 LOCATION: ARKANSAS
 SOILS TYPE: CLAY
 IRRIGATION METHOD: FLOOD

- 20% DEVIATION FROM BASE COSTS: \$146.45 PER ACRE

YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	39.00	45.00	60.00	75.00	81.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$35.39)	(\$23.10)	\$7.60	\$38.34	\$50.63
	\$3.26	(\$8.43)	\$8.00	\$49.07	\$90.18	\$106.62
BASE PRICE =	\$3.95	\$18.52	\$39.11	\$90.55	\$142.03	\$162.61
	\$4.64	\$45.48	\$70.21	\$132.02	\$193.87	\$218.60
	\$5.33	\$72.44	\$101.32	\$173.50	\$245.72	\$274.59

BASE COSTS: \$183.06 PER ACRE

YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	39.00	45.00	60.00	75.00	81.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$69.27)	(\$57.76)	(\$29.01)	(\$0.21)	\$11.30
	\$3.26	(\$42.32)	(\$26.66)	\$12.46	\$51.63	\$67.29
BASE PRICE =	\$3.95	(\$15.36)	\$4.45	\$53.94	\$103.47	\$123.28
	\$4.64	\$11.60	\$35.55	\$95.41	\$155.32	\$179.27
	\$5.33	\$38.56	\$66.66	\$136.89	\$207.16	\$235.26

+ 20% DEVIATION FROM BASE COSTS: \$219.68 PER ACRE

YIELD IN CWT.

PRODUCER PRICE ESTIMATES	YIELD IN CWT.					
	39.00	45.00	60.00	75.00	81.00	
	-35%	-25%	BASE YIELD	+25%	+35%	
	- - - - - RETURNS PER ACRE - - - - -					
	\$2.57	(\$103.16)	(\$92.42)	(\$65.63)	(\$38.77)	(\$28.04)
	\$3.26	(\$76.20)	(\$61.32)	(\$24.15)	\$13.07	\$27.95
BASE PRICE =	\$3.95	(\$49.24)	(\$30.21)	\$17.32	\$64.92	\$83.94
	\$4.64	(\$22.28)	\$0.89	\$58.80	\$116.76	\$139.93
	\$5.33	\$4.68	\$32.00	\$100.27	\$168.60	\$195.93

LIST OF PUBLICATIONS FOR ESTIMATING 1990 PRODUCTION COSTS

<u>ECONOMIC SUMMARY</u>	<u>ETB</u>	<u>DESCRIPTION</u>
AG-2-10-89	ETB 71	Oats, Loamy Soils, Arkansas
AG-3-10-89	ETB 72	Wheat, Loamy Soils, Arkansas
AG-4-10-89	ETB 73	Wheat, Clay Soils, Arkansas
AG-5-10-89	ETB 75	Rapeseed (Canola), Loamy Soils, Arkansas
AG-6-10-89	ETB 76	Soybeans, Loamy Soils, Arkansas
AG-7-10-89	ETB 77	Soybeans, Loamy Soils, Furrow Irrigation, Arkansas
AG-8-10-89	ETB 78	Soybeans, In Rice Rotation, Loamy Soils, Flood Irrigation, Arkansas
AG-9-10-89	ETB 79	Soybeans, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-10-10-89	ETB 80	Soybeans, Drilled, Loamy Soils, Arkansas
AG-11-10-89	ETB 81	Soybeans, Following Wheat, Loamy Soils, Arkansas
AG-12-10-89	ETB 82	Soybeans, Following Wheat, Loamy Soils, Center Pivot Irrigation, Towable, 260 Acres, Arkansas
AG-13-10-89	ETB 83	Soybeans, Clay Soils, Arkansas
AG-14-10-89	ETB 84	Soybeans, Clay Soils, Center Pivot Irrigation, Non-Towable, 130 Acres, Arkansas
AG-15-10-89	ETB 85	Soybeans, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-16-10-89	ETB 86	Soybeans, No-Till, Following Wheat, Loamy Soils, Flood Irrigation, Arkansas
AG-17-10-89	ETB 87	Rice, Long Grain, Midseason Variety (Newbonnet), Silt Loam Soils, Eastern Arkansas
AG-18-10-89	ETB 88	Rice, Long Grain, Very Short Season Variety (Tebonnet), Silt Loam Soils, Eastern Arkansas
AG-19-10-89	ETB 89	Rice, Long Grain, Semi-dwarf Variety (Lemont), Silt Loam Soils, Eastern Arkansas
AG-20-10-89	ETB 90	Rice, Medium Grain, Short Season Variety (Mars), Silt Loam Soils, Eastern Arkansas
AG-21-10-89	ETB 91	Rice, Long Grain, Midseason Variety (Newbonnet), Clay Soils, Eastern Arkansas
AG-22-10-89	ETB 92	Rice, Long Grain, Midseason Variety (Newbonnet), Grand Prairie Soils, Grand Prairie Region, Arkansas
AG-23-10-89	ETB 93	Cotton, Loamy Soils, Solid Planted, South of I-40, Eastern Arkansas
AG-24-10-89	ETB 94	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-25-10-89	ETB 95	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-26-10-89	ETB 96	Cotton, Loamy Soils, Solid Planted, North of I-40, Eastern Arkansas
AG-27-10-89	ETB 97	Cotton, Clay Soils, Solid Planted, North of I-40, Eastern Arkansas
AG-28-10-89	ETB 98	Cotton, Loamy Soils, Solid Planted, Furrow Irrigation, North of I-40, Eastern Arkansas
AG-29-10-89	ETB 99	Cotton, Loamy Soils, Solid Planted, Center Pivot Irrigation, 130 Acres, North of I-40, Eastern Arkansas
AG-30-10-89	ETB 100	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Furrow Irrigation, South of I-40, Eastern Arkansas
AG-31-10-89	ETB 101	Cotton, Loamy Soils, Narrow 2x1 Skip Row, Center Pivot Irrigation, 130 Acres, South of I-40, Eastern Arkansas
AG-32-10-89	ETB 102	Corn, Loamy Soils, Flood Irrigation, Arkansas
AG-33-10-89	ETB 103	Corn, Loamy Soils, Furrow Irrigation, Arkansas
AG-34-10-89	ETB 104	Grain Sorghum, Loamy Soils, Arkansas
AG-35-10-89	ETB 105	Grain Sorghum, Loamy Soils, Flood Irrigation, Arkansas
AG-36-10-89	ETB 106	Grain Sorghum, Clay Soils, Arkansas
AG-37-10-89	ETB 107	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

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