

1998 Burley Tobacco Costs and Returns

KENTUCKY FARM BUSINESS MANAGEMENT PROGRAM

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Overview

An analysis of a small number of burley tobacco enterprises summarized from the Kentucky Farm Business Management Program (KFBM) indicate that 1998 was generally a profitable crop year for burley tobacco farmers. Complete input cost, production, and sales information was collected from twelve KFBM farmer cooperators. The enterprises ranged in size from 5 to 114 acres, and were a mix of owner operator, cash leased, and share crop arrangements. Average yield per acre was 2,255 pounds, with yields ranging from 1,220 pounds to 2,857 pounds per acre. Hours of labor, paid and unpaid combined, averaged 213 hours, and ranged from 169 to 251 hours per acre.

Costs and returns were calculated on a per acre and per pound basis. Operator and landlord data were combined to calculate returns for the enterprise as a whole. Returns consisted of actual sales, the value of the unsold inventory at the end of the year, and the warehouse hauling rebate. Average per acre returns were \$4,097 per acre (\$1.81 per pound), and ranged from \$2,138 to \$5,345 per acre.

Variable costs include items like fertilizer, pesticides, seed (transplants), utilities, machinery repairs, fuel, hired labor, and interest on operating costs and inventory. Quota was not included in the variable costs section, but was considered a fixed cost. Variable costs averaged \$0.82 per pound (\$1,829 per acre) so returns above variable costs averaged \$0.99 per pound or \$2,268 per acre.

All fixed costs including operator labor, depreciation, and interest on investment were calculated. Unpaid operator and family labor was valued at \$22,800 per year. Interest on crop inventory, machinery, buildings, and operating expenses were charged at 9% per year while interest on the land used for tobacco production was charged at 5% per year. These are standard interest on investment values that are charged to owned assets in KFBM analysis.

Quota was charged at \$0.27 per pound, the state average lease price for 1998, rather than the average values paid for quota by farms in this study. Thus quota costs reflect the average market value of quota in Kentucky for 1998. This compensates for the variability that exists in quota prices from county to county.

Fixed costs averaged \$1,111 per acre. A charge for land is not included in the per acre calculations because the return to land and management is considered to be a payment for the land resource. Fixed costs averaged \$0.28 per pound. A charge for quota is not included in the per pound fixed costs because (like land) the return to management and quota is a return to the quota resource.

Table 1 is a summary of some of the results. More detailed information can be found in the Appendix tables. Return to land and management is what is left after all inputs and resources except for land and the operator's management or risk have been paid for. Return to quota is a

similar value expressed as a per pound return to the quota and the operator's management. This reflects what is left for profit and for a payment for quota, either owned or leased. Return to land and management averaged \$640 per acre while returns to quota and management averaged \$0.47 per pound. If growers paid the state average of \$0.27 per pound, then \$0.20 was left to pay the operator for their management.

Table 1. Summary of 1998 burley tobacco costs and returns. Kentucky Farm Business Management Program. Average of 12 participating farms.		
	\$/Ac	\$/Lb
Gross Returns	\$4,097	\$1.81
Total Variable Costs	\$1,829	\$0.82
Return Above Variable Costs	\$2,268	\$0.99
Fixed Costs	\$1,111	\$0.28
Operator Labor	\$518	\$0.24
Return to Land and Management (\$/ac)	\$640	
Return to Quota and Management (\$/lb)		\$0.47

High-Low Return Comparison

As with most growing seasons, average profitability does not mean that every farm showed a profit. There was large variability in returns across farms. These farms were sorted into three groups by net returns to land and management per acre: top third, bottom third, and average of all farms. Table 2 is a summary of results from this sorting. More detailed information is found in Tables A1 and A2 in the Appendix.

The top third farms had higher yields, higher prices, and higher variable costs than the average farms. The farms that ranked in the top third used 8 more labor hours per acre than the average farm. Those farms in the bottom third used 15 less hours per acre than average. The top third of farms used the most labor hours per acre but made higher yields, and collected a higher price per pound. The combination of yield and price gave nearly \$900 per acre higher gross returns than the average farm and nearly \$2,000 per acre higher gross returns than the bottom third farms.

The most profitable farms had higher variable costs per acre than average, but when these costs were spread over higher yields, they were actually \$.07 per pound lower than the average and \$0.27 per pound less than the bottom third. In fact, the bottom third farms had the lowest per acre variable costs, but due to low yields, they had the highest variable costs per pound, \$1.02.

Across the three groups of farms, there was only a \$200 spread in fixed cost per acre; fixed costs were not a major determinant of profit differences. After deducting both fixed and variable

costs from gross returns, the top third farms had a return of \$1,855 per acre. After deducting the charge for operator and family labor, total return to land and management was \$1,482 per acre. The bottom third farms had a \$401 return before deducting operator and family labor and lost \$52 per acre after considering operator labor. Low yields rather than high costs were the primary reason for this outcome.

This return comparison illustrates some major points for tobacco farmers. First, it is not enough to simply cut costs. Producers must effectively utilize inputs to generate better yields and prices. All twelve farms in this study were from Central Kentucky, so theoretically, they experienced similar weather conditions. The least profitable farms had the lowest production costs per acre but the highest costs per pound. The most profitable farms spent the most money, but got better results from their production inputs.

Table 2. Summary of 1998 burley tobacco costs and returns. Farms sorted by net returns per acre.			
	Average	Top Third	Bottom Third
Yield in pounds per acre	2255	2708	1687
Gross Returns	\$4,097	\$4,982	\$3,002
Total Variable Costs	\$1,829	\$2,060	\$1,685
Return Above Variable Costs	\$2,268	\$2,921	\$1,317
Fixed Costs	\$1,111	\$1,066	\$916
Return to Operator Labor, Land, and Management	\$1,157	\$1,855	\$401
Unpaid Operator Labor	\$518	\$373	\$453
Total Costs Per Acre	\$3,458	\$3,500	\$3,054
Return to Land and Management	\$640	\$1,482	(\$52)

Size Comparison

These farms were also sorted by size categories: farms producing over 50 acres, farms producing between 10 and 50 acres, and those farms producing less than 10 acres. This is to examine the effects that scale of production has on profitability. Table 3 is a summary of the size comparison results. More detailed information is included in Appendix Tables A3 and A4.

Table 3. Summary of 1998 burley tobacco costs and returns. Farms sorted by number of acres produced.			
	Over 50 acres	10-50 acres	under 10 acres
Yield in pounds per acre	2243	2297	2203
Gross Returns	\$4,041	\$4,236	\$3,942
Total Variable Costs	\$2,080	\$1,643	\$1,806
Return Above Variable Costs	\$1,961	\$2,593	\$2,136
Fixed Costs	\$1,265	\$1,061	\$989
Return to Operator Labor, Land, and Management	\$693	\$1,533	\$1,147
Unpaid Operator Labor	\$284	\$507	\$847
Total Costs Per Acre	\$3,629	\$3,211	\$3,642
Return to Land and Management	\$409	\$1,026	\$300

Yields were relatively consistent across size categories, ranging from 2,203 to 2,297 pounds per acre. Comparisons of variable costs suggest that some differences exist across farm size. Farms that raised over 50 acres of tobacco spent \$2,080 per acre on variable costs, medium sized farms spent \$1,643 per acre, and small farms spent \$1,806 per acre. Larger producers tended to spend more on hired labor, chemicals, and fertilizer/lime per acre than medium sized farms.

Large farms also had higher fixed costs per acre primarily due to building depreciation and investment. Both medium sized and small farms had fixed costs in the \$1,000 per acre range, more than \$200 less than those with 50 acres or more. After considering the value of operator labor, farm sizes of 10-50 acres were the most profitable per acre. Their returns to land and management were \$1,026 per acre. This is over \$600 greater than that of larger farms, and over \$700 greater than smaller farms.

Farms that produced less than ten acres of tobacco performed better than the largest farms until operator labor was considered. Returns to land, operator labor, and management were over \$1,100 per acre, but this number was drastically reduced when the value of operator labor was deducted. Smaller farmers provided 92 hours of unpaid labor per acre which is valued at nearly

\$850. Total returns to land and management were only \$300 per acre for farms producing less than ten acres. The charge for operator labor greatly reduced returns on smaller farms.

There are many reasons why medium sized farms might have appeared to be more profitable. First, medium sized farms saw cost savings from labor efficiency. They received slightly better yields and higher prices with fewer labor hours per acre. Medium sized farms used 203 hours per acre, while large and small farms used 221 and 218 hours respectively.

Secondly, it seems that these operators work enough hours themselves to effectively manage the enterprise, but hire enough labor that they are not spread too thin. Large scale farmers provided only 34 hours per acre of their own unpaid labor compared to 55 hours from the more profitable medium scale farms. Medium sized farmers worked 21 more hours per acre themselves, but employed 39 fewer hours of hired labor.

It appears that farm sizes of 10-50 acres are large enough to spread fixed cost over many acres, and still small enough that operators can effectively manage inputs. Higher than average fertilizer, lime, and chemical costs indicate that perhaps more inputs were used than was necessary on large scale farms. Also, medium size producers received better prices, so perhaps these managers were better able to control quality of the finished product.

Conclusion

Considerable variability exists across burley tobacco farms in terms of size, yields, costs, and returns. Even in this relatively small sample, profitability varied widely within the same year and in a relatively small geographic area. Management factors apparently play a major role in determining relative profitability. The Appendix in this publication contains more detailed information on both a per acre and per pound basis. Much of this information is also displayed in graphs included in the Appendix.

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Appendix Tables

Table A1. KFBM Tobacco enterprise costs and returns per pound for 1998. Farms sorted by net returns.

PRODUCTION INFORMATION	Average	Top 1/3	Bottom 1/3
Total Acres Produced	37	31	51
Yield (lb/ac)	2,255	2,708	1,687
Unpaid Labor (hr/ac)	57	40	51
Paid Labor (hr/ac)	155	181	147
Total Labor (hr/ac)	213	221	198

GROSS RETURNS	Average	Top 1/3	Bottom 1/3
New Crop Sales & Inventory	\$1.77	\$1.80	\$1.74
Hauling/Rebate	\$0.04	\$0.04	\$0.04
TOTAL RETURNS	\$1.81	\$1.84	\$1.78

VARIABLE COSTS			
Transplants	\$0.07	\$0.09	\$0.05
Fertilizer and Lime	\$0.09	\$0.06	\$0.10
Chemicals and Pesticides	\$0.07	\$0.05	\$0.10
Farm Fuel and Oil	\$0.02	\$0.02	\$0.03
Utilities	\$0.01	\$0.01	\$0.02
Light Vehicle	\$0.00	\$0.00	\$0.00
Machinery Repair	\$0.04	\$0.04	\$0.04
Building Repair	\$0.01	\$0.01	\$0.02
Machine Hire	\$0.00	\$0.00	\$0.00
Crop Insurance	\$0.01	\$0.01	\$0.02
Storage/Barn Rent	\$0.00	\$0.00	\$0.00
Cash Labor	\$0.43	\$0.40	\$0.56
Interest on Operating Costs	\$0.04	\$0.04	\$0.05
Interest on Crop Inventory	\$0.02	\$0.01	\$0.02
Miscellaneous	\$0.01	\$0.01	\$0.01
TOTAL VARIABLE COSTS	\$0.82	\$0.75	\$1.02
RETURN OVER VARIABLE COSTS	\$0.99	\$1.09	\$0.76

FIXED COSTS			
Machinery Depreciation	\$0.05	\$0.02	\$0.05
Building Depreciation	\$0.06	\$0.03	\$0.06
Interest on:			
Machinery Investment	\$0.02	\$0.01	\$0.02
Building Investment	\$0.08	\$0.05	\$0.11
Land Investment	\$0.05	\$0.03	\$0.06
Property/Liability Insurance	\$0.01	\$0.00	\$0.01
Property Taxes	\$0.01	\$0.00	\$0.00
TOTAL FIXED COSTS	\$0.28	\$0.14	\$0.31

RETURN TO OPERATOR LABOR, QUOTA & MGT	\$0.71	\$0.95	\$0.45
Operator or Unpaid Labor	\$0.24	\$0.14	\$0.28

RETURN TO QUOTA & MGT	\$0.47	\$0.81	\$0.17
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Table A2. KFBM Tobacco enterprise costs and returns per acre for 1998. Farms sorted by net returns.

PRODUCTION INFORMATION	Average	Top 1/3	Bottom 1/3
Total Acres Produced	37	31	51
Yield (lb/ac)	2,255	2,708	1,687
Unpaid Labor (hr/ac)	57	40	51
Paid Labor (hr/ac)	155	181	147
Total Labor (hr/ac)	213	221	198

GROSS RETURNS	Average	Top 1/3	Bottom 1/3
New Crop Sales & Inventory	\$4,007	\$4,874	\$2,935
Hauling/Rebate	\$90	\$108	\$67
TOTAL RETURNS	\$4,097	\$4,982	\$3,002

VARIABLE COSTS			
Transplants	\$157	\$252	\$85
Fertilizer and Lime	\$191	\$175	\$171
Chemicals and Pesticides	\$141	\$147	\$164
Farm Fuel and Oil	\$54	\$53	\$45
Utilities	\$26	\$22	\$35
Light Vehicle	\$8	\$5	\$0
Machinery Repair	\$96	\$115	\$67
Building Repair	\$27	\$36	\$30
Machine Hire	\$9	\$12	\$0
Crop Insurance	\$29	\$14	\$44
Storage/Barn Rent	\$4	\$8	\$0
Cash Labor	\$937	\$1,070	\$916
Interest on Operating Costs	\$91	\$112	\$80
Interest on Crop Inventory	\$37	\$22	\$29
Miscellaneous	\$22	\$18	\$20
TOTAL VARIABLE COSTS	\$1,829	\$2,060	\$1,685
RETURN OVER VARIABLE COSTS	\$2,268	\$2,921	\$1,317

FIXED COSTS			
Machinery Depreciation	\$114	\$67	\$86
Building Depreciation	\$124	\$88	\$113
Quota @ 27 cents per pound	\$609	\$731	\$456
Interest on:			
Machinery Investment	\$56	\$26	\$39
Building Investment	\$171	\$138	\$204
Property/Liability Insurance	\$23	\$11	\$11
Property Taxes	\$14	\$6	\$7
TOTAL FIXED COSTS	\$1,111	\$1,066	\$916

RETURN TO OPERATOR LABOR, LAND & MGT	\$1,157	\$1,855	\$401
Operator or Unpaid Labor	\$518	\$373	\$453

RETURN TO LAND & MGT	\$640	\$1,482	(\$52)
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Table A3. KFBM Tobacco enterprise costs and returns per pound for 1998. Farms sorted by number of acres produced.

PRODUCTION INFORMATION	over 50 ac	10-50 ac	under 10 ac
New Crop Sales & Inventory (lb)	179,509	43,681	11,919
Total Acres Produced	81.2	19.8	5.3
Yield (lb/ac)	2,243	2,297	2,203
Unpaid Labor (hr/ac)	34	55	92
Paid Labor (hr/ac)	187	148	126
Total Labor (hr/ac)	221	203	218

GROSS RETURNS	over 50 ac	10-50 ac	under 10 ac
New Crop Sales & Inventory	\$1.76	\$1.80	\$1.74
Hauling/Rebate	\$0.04	\$0.04	\$0.04
TOTAL RETURNS	\$1.80	\$1.84	\$1.78

VARIABLE COSTS			
Transplants	\$0.05	\$0.06	\$0.10
Fertilizer and Lime	\$0.10	\$0.07	\$0.10
Chemicals and Pesticides	\$0.07	\$0.04	\$0.11
Farm Fuel and Oil	\$0.03	\$0.03	\$0.02
Utilities	\$0.02	\$0.01	\$0.01
Light Vehicle	\$0.00	\$0.00	\$0.01
Machinery Repair	\$0.05	\$0.04	\$0.03
Building Repair	\$0.01	\$0.01	\$0.02
Machine Hire	\$0.00	\$0.00	\$0.01
Crop Insurance	\$0.01	\$0.01	\$0.02
Storage/Barn Rent	\$0.00	\$0.00	\$0.00
Cash Labor	\$0.52	\$0.38	\$0.41
Interest on Operating Costs	\$0.04	\$0.04	\$0.04
Interest on Crop Inventory	\$0.01	\$0.02	\$0.02
Miscellaneous	\$0.01	\$0.01	\$0.01
TOTAL VARIABLE COSTS	\$0.93	\$0.72	\$0.89
RETURN OVER VARIABLE COSTS	\$0.87	\$1.12	\$0.89

FIXED COSTS			
Machinery Depreciation	\$0.05	\$0.05	\$0.05
Building Depreciation	\$0.08	\$0.05	\$0.03
Interest on:			
Machinery Investment	\$0.02	\$0.03	\$0.05
Building Investment	\$0.13	\$0.06	\$0.03
Land Investment	\$0.05	\$0.04	\$0.05
Property/Liability Insurance	\$0.02	\$0.01	\$0.00
Property Taxes	\$0.00	\$0.01	\$0.00
TOTAL FIXED COSTS	\$0.36	\$0.25	\$0.21

RETURN TO OPERATOR LABOR, QUOTA, & MGT	\$0.51	\$0.88	\$0.67
Operator or Unpaid Labor	\$0.14	\$0.23	\$0.40

RETURN TO QUOTA & MGT	\$0.37	\$0.64	\$0.28
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Table A4. KFBM Tobacco enterprise costs and returns per acre for 1998. Farms sorted by number of acres produced.

PRODUCTION INFORMATION	over 50 ac	10-50 ac	under 10 ac
New Crop Sales & Inventory (lb)	179,509	43,681	11,919
Total Acres Produced	81.2	19.8	5.3
Yield (lb/ac)	2,243	2,297	2,203
Unpaid Labor (hr/ac)	34	55	92
Paid Labor (hr/ac)	187	148	126
Total Labor (hr/ac)	221	203	218

GROSS RETURNS	over 50 ac	10-50 ac	under 10 ac
New Crop Sales & Inventory	\$3,951	\$4,144	\$3,854
Hauling/Rebate	\$90	\$91	\$88
TOTAL RETURNS	\$4,041	\$4,236	\$3,942

VARIABLE COSTS			
Transplants	\$116	\$136	\$248
Fertilizer and Lime	\$214	\$159	\$213
Chemicals and Pesticides	\$137	\$100	\$215
Farm Fuel and Oil	\$59	\$62	\$33
Utilities	\$52	\$13	\$11
Light Vehicle	\$0	\$9	\$18
Machinery Repair	\$120	\$100	\$60
Building Repair	\$29	\$26	\$27
Machine Hire	\$3	\$2	\$27
Crop Insurance	\$28	\$27	\$36
Storage/Barn Rent	\$4	\$0	\$10
Cash Labor	\$1,172	\$855	\$762
Interest on Operating Costs	\$100	\$88	\$82
Interest on Crop Inventory	\$24	\$44	\$44
Miscellaneous	\$22	\$22	\$21
TOTAL VARIABLE COSTS	\$2,080	\$1,643	\$1,806
RETURN OVER VARIABLE COSTS	\$1,961	\$2,593	\$2,136

FIXED COSTS			
Machinery Depreciation	\$104	\$108	\$136
Building Depreciation	\$185	\$104	\$73
Quota @ 27 cents per lb	\$606	\$620	\$595
Interest on:			
Machinery Investment	\$42	\$58	\$72
Building Investment	\$285	\$130	\$90
Property/Liability Insurance	\$38	\$19	\$11
Property Taxes	\$6	\$20	\$13
TOTAL FIXED COSTS	\$1,265	\$1,061	\$989

RETURN TO OPERATOR LABOR, LAND & MGT	\$693	\$1,533	\$1,147
Operator or Unpaid Labor	\$284	\$507	\$847

RETURN TO LAND & MGT	\$409	\$1,026	\$300
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Appendix Graphs

Fig 1. Variable Cost Distribution.
Average of all farms

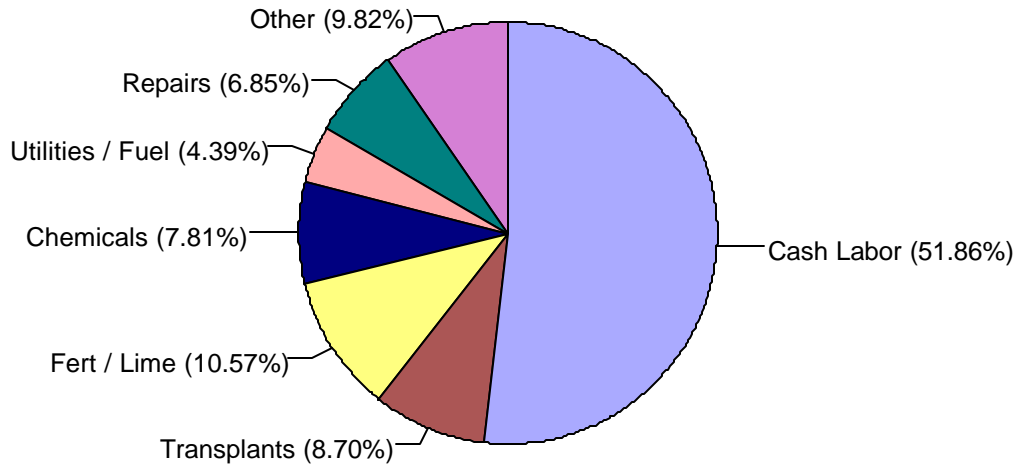


Fig 2. Total Cost Distribution
Average of all farms

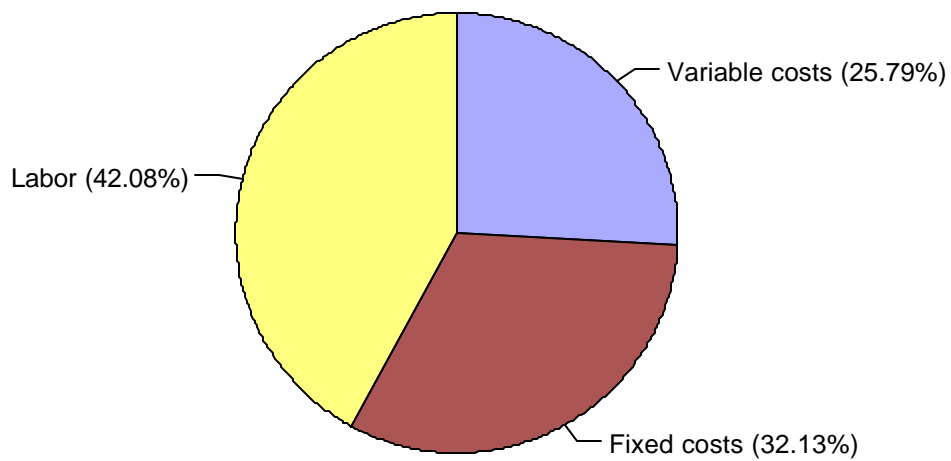


Fig 3. Variable Cost Comparison
Farms sorted by net returns

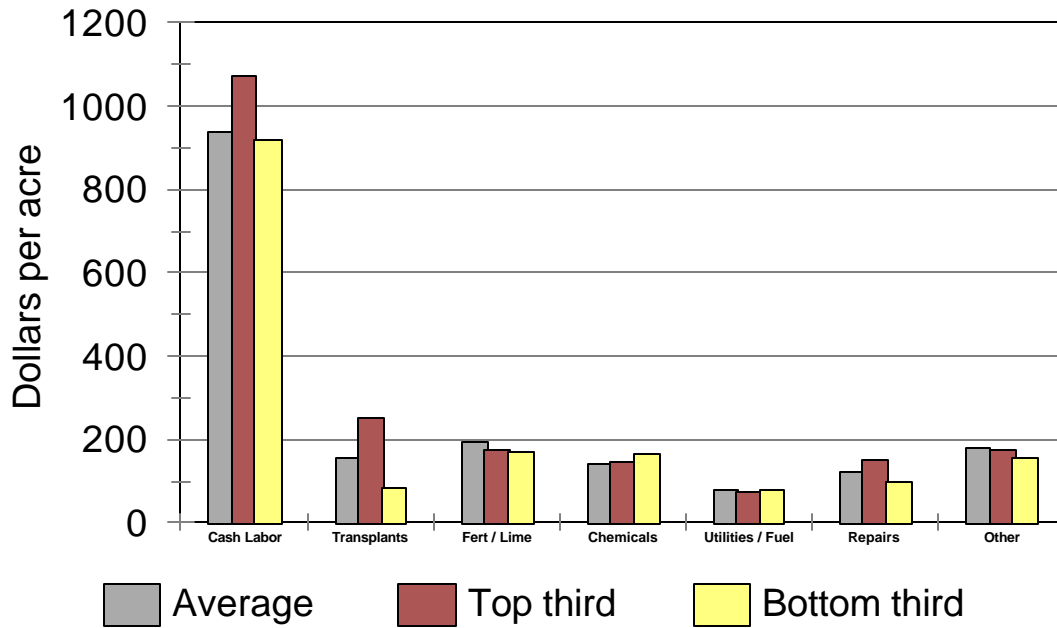


Fig 4. Variable Cost Comparison
Farms sorted by size

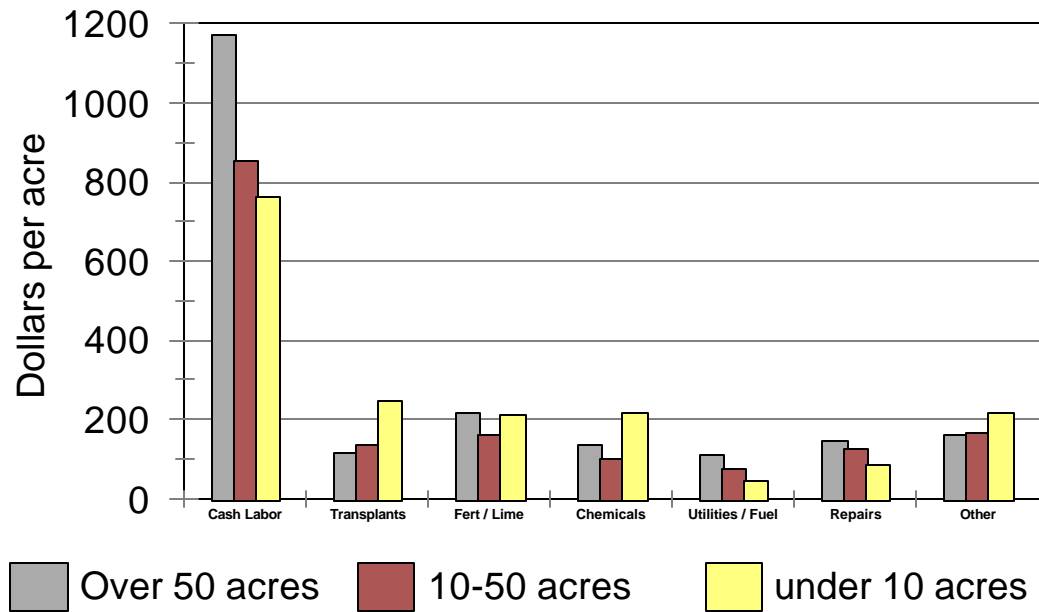


Fig 5. Labor Distribution
Farms sorted by net returns

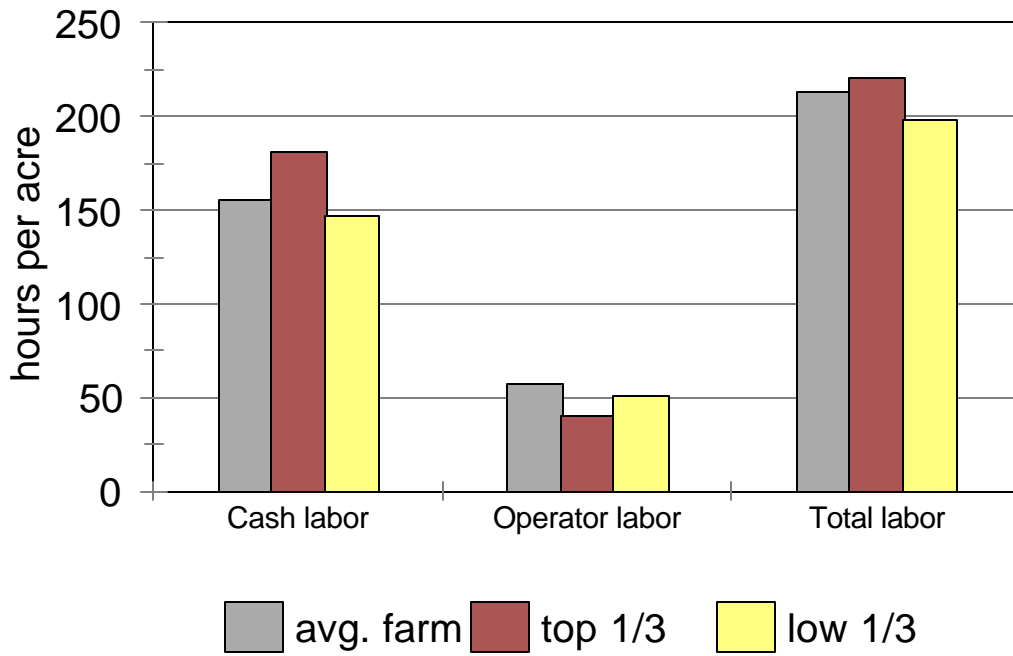


Fig 6. Labor Distribution
Farms sorted by size

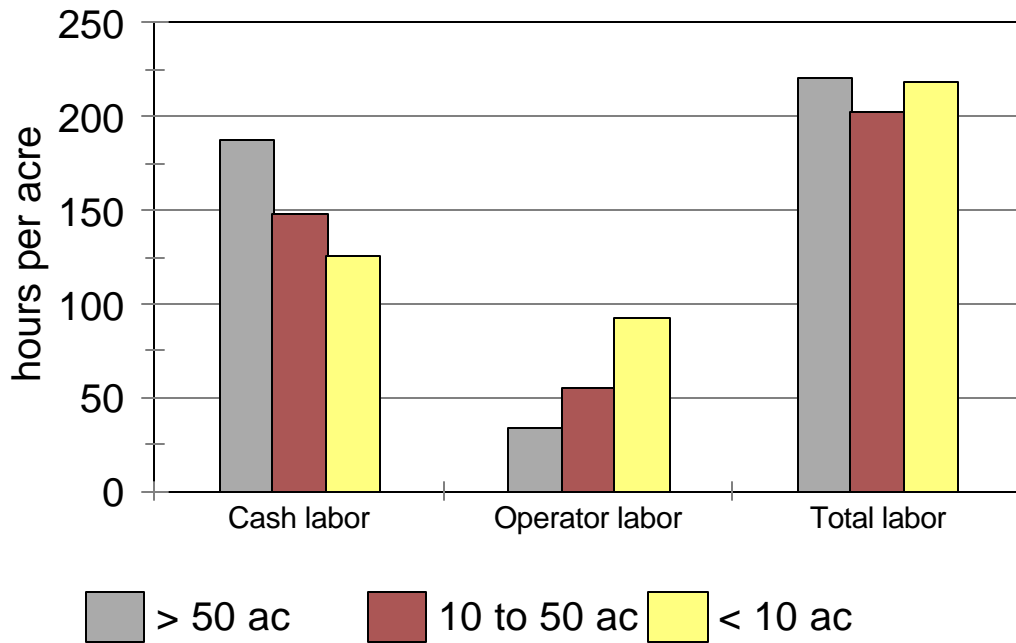


Fig 7. Yield Comparison
Farms sorted by net returns

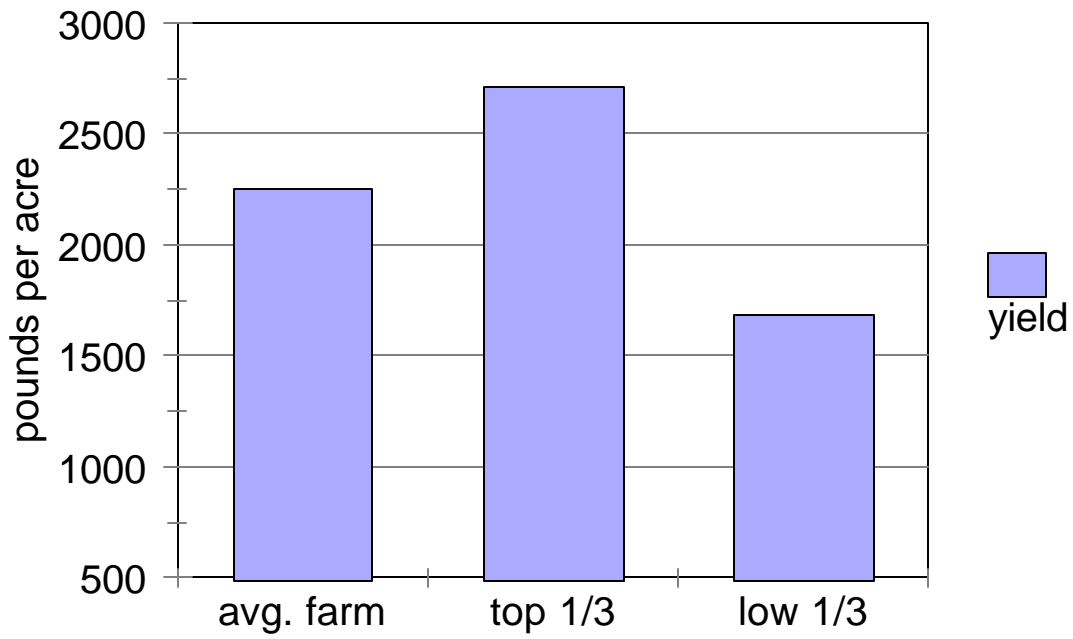


Fig 8. Yield Comparison
Farms sorted by size

