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Tennessee Soybean Maximum Profit Contest Results and Findings

Delton C. Gerloff, Associate Professor, Agricultural Economics
Charles M. Farmer, Professor - Agricultural Economics

Acknowledgments

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Support and cooperation were also provided on behalf of the Tennessee soybean growers through Parks Wells, Executive Director of the Tennessee Soybean Association.

Each contestant's entry was supplemented by several hours of input by University of Tennessee Agricultural Extension personnel, including both county agricultural Extension agents and area specialists - farm management.

The Soybean Maximum Profit Contest's state committee developed the contest, set the regulations, determined the winners and formulated the findings and results. The committee for the 1993 contest included: Charles Farmer, Wayne Flinchum, Clark Garland, Delton Gerloff, Estel Hudson and Richard Powell. Stephen Lester was added to the committee in 1994, replacing Richard Powell.

Tennessee Soybean Maximum Profit Contest

The Tennessee Soybean Maximum Profit Contest (SMPC) was established in 1993 to benefit soybean producers and the soybean industry in Tennessee. To participate in the contest, producers shared cost and revenue data, as well as production and marketing records. The information gathered provided valuable insights into the production, management and marketing practices of some of the state's leading soybean producers. As expected, contest entrants were better-than-average producers, based on comparisons to state-wide data, rather than a random sample of Tennessee soybean growers.

Soybean acreage has been declining in Tennessee over the past 15 years. In 1979, soybean production reached an all-time high in Tennessee, with 2,620,000 acres harvested. In contrast, 1,040,00 and 1,050,000 acres of soybeans were harvested in 1993 and 1994, respectively. Reasons for this decline in soybean production stem primarily from declining profitability in real (deflated) terms and also relative to other crops. There has also been substantial acreage lost to the

Conservation Reserve Program. Government program features have meant that the comparative advantage for Tennessee farmers has been toward cotton and corn, with those crops increasing by 370,000 acres and 180,000 acres, respectively, since 1983. If government program support continues to decline for program crops, soybeans could become more economically viable for many Tennessee farmers. This study attempts to define factors which will allow Tennessee farmers to increase the profitability of soybean production and marketing.

Objectives

The primary objective was to gather information from soybean producers on factors that affect profitability. Our hypothesis was that per-acre profits from soybeans could be substantially improved by challenging better growers to combine the best proven production, management and marketing practices through the operation of a statewide contest. The experiences of farmers participating in the Maximum Profit Contest would then be publicized and incorporated into ongoing total Extension educational programs for the benefit of thousands of Tennessee soybean producers. Maximizing the number of contestants by a simple surveying technique was not considered. Rather, the contest was designed to gather a broad base of reliable information from a selective group of soybean farmers. Both county and area Extension personnel sought out soybean farmers in their areas who were able to provide the necessary information to enter the contest.

Methodology

The registration forms completed by the entrants covered production, marketing and management practices. Producers completed the forms, with the help of county Agricultural Extension agents and area specialists-farm management employed by The University of Tennessee Agricultural Extension Service. This report summarizes the data gathered from the soybean contest.

Contest guidelines divided Tennessee into three regions, with one "winner" named in each region. The regional winner with the highest net return per acre became the state winner. Regional and state winners received cash awards. The county Extension agent and area specialist-farm management in the county and area where the regional winners resided also received cash awards. State winners for 1993 and 1994 received expense-paid trips for two to the American Soybean Association Expo.

Winners were determined by ranking per-acre net return to the soybean enterprise. "Net return" was defined as the contest acreage yield (per acre) multiplied by a calculated market price, minus per-acre variable and fixed costs.

Contest regulations required a minimum of five "contest acres." County Extension agents described and measured the contest acreage on which the contest yield was measured. Elevator weigh tickets, adjusted for moisture and foreign material, were required to prove contest yields.

Calculating the market price meant collecting sales information on all soybeans produced — not just on the contest acreage. Producers sent copies of sale tickets or forward contracts on soybeans sold or priced before December 15. If futures hedges or option contracts were still open, a December 15 price was used for the individual contracts, adjusted for basis. The local cash market established the price for all unsold soybeans as of December 15. A weighted average price was calculated for each contestant.

Variable costs were assumed constant over the entire soybean acreage of each producer. Every producer reported units and prices of variable inputs for use in deriving total variable costs. A minimum fertilizer charge was estimated based on the yield in the 1993 contest. This procedure prohibited the use of "carry-over" nutrients from previously-grown crops from influencing costs to the soybeans. For 1994, however, actual costs for fertilizer were used. Comparisons between the two years' data must acknowledge this difference. Variable machinery costs (fuel, repairs, labor) were estimated, based on the size of machinery used.

Fixed costs included land and machinery expenses. Extension agents estimated the land charge, defined as the current cash rental value of the land utilized in the contest. The size, speed and type of equipment were factors used to estimate machinery costs for each entrant. ASAE (The American Society of Agricultural Engineers) standards defined the mathematical relationships used in estimating the costs for depreciation, labor, repairs and fuel.

Results

Tables 1 and 2 summarize the production, marketing and financial data collected in the contest for 1993 and 1994, respectively. The tables also contain maximum, minimum and average statistics for each item. The data are grouped into the top and bottom 25 percent of the contest entrants, based on net returns. The top 25 percent and the lower 25 percent consist of five farms each for 1993 results and nine each for 1994. Analysis of the data in Tables 1 and 2 centers on the comparison between the top and the lower groups.

1993 Results

Row width ranged from 7.0 to 38.0 inches, with the top farms averaging 12.1 inches compared to 24.3 inches in the lower group. The difference in average row widths between the top and lower farms may reflect more efficient production practices for the top farms.

The planting and harvesting dates for the top and lower farms are similar, although the top farms planted and harvested a week earlier than the lower farms. Soybean acreage was much higher, on the average, for the top farms compared to farms in the lower group, at 906 acres versus 356 acres.

Seed, fertilizer and lime costs were similar for the two groups of farms. The herbicide cost for the top farms was more than $5 higher than that of the lower farms ($30.99 versus $25.72). The difference in chemical costs was explained by the fact that all top five farms were no-tillage operations. The lower group made use of both no-tillage and conventional tillage operations.

Operating interest and machinery costs were also similar for the two groups. Labor expenses were slightly lower for the top group, again reflecting greater use of no-tillage operations.

Total costs per acre, as defined by the sum of variable and fixed costs in Table 1, show little difference between the two groups. The average total cost was $154.32 for the top five farms, and $152.63 for the lower five farms. However, on a per bushel basis, the top group had a much lower production cost ($2.50 versus $3.85, on a per-bushel cost basis).

A big difference between the two groups was yield per acre. The top group had an average yield of 61.6 bushels per acre on contest acreage and 42.7 bushels per acre on total acreage. In contrast, the lower group averaged 39.6 and 30.9 bushels per acre on contest and total acreage, respectively.

The top group also did a more effective job of marketing soybeans, averaging $6.77 per bushel, compared to an average of $6.60 for the lower group. Although this difference does not appear to be great, it amounted to an additional net return of $6,577 for the average producer in the top group.

Net returns for the top group were more than $150 per acre higher than for the lower group ($262.22 versus $107.76 per acre). This large income difference clearly demonstrates how improvements in several areas can add up to much greater revenue on the "bottom line."

A more detailed analysis of the land charges is provided in a later section. In addition, there is a section on price establishment and a comparison of other cost information.

1994 Results

Little difference was shown between the top and lower groups on row width, planting date, harvesting date and land charges (Table 2). Seed costs were $3.46 higher for the lower group ($10.79 vs. $7.33), but fertilizer costs were quite close between the two groups.

Lime costs were $3.55 higher and herbicide costs were $8.69 higher per acre for the lower group in 1994, but machinery fuel and repair, machinery depreciation and insurance, and labor costs were very close to those of the top group.

Total variable costs were substantially higher for the lower group, at a difference of $17.09 per acre ($72.90 less $55.81). Fixed costs were very similar for the two groups.

Yields on both contest and total acreage were higher for the top group. Contest acreage yield was 21 bushels per acre higher and total acreage yield was 6.7 bushels per acre higher for the top group. In addition, the average market price received for the top group was $0.28 per bushel more for the top group than for the lower group.

With the differences in variable costs, yields and market price, net returns were much higher for the top group. On contest acreage, the top group averaged $150.67 more per acre ($260.78 less $110.11),and on total acreage the top group averaged $67.91 more per acre ($141.38 less $73.47).

Comparing 1993 and 1994

The major differences in the two years' data are reflected in average row width, total acreage, herbicide cost and total variable costs of the top groups. In 1994, row widths were much greater than in 1993 for the top income groups (22.3" versus 12.1"). Average acreage was lower for the top group in 1994 (371.4 versus 906.6 acres).

Also, per-acre herbicide costs were $11.28 lower for the top group in 1994, compared to 1993 ($30.99 versus $19.71), while the overall average for all farms for the two years was almost the same ($27.65 versus $27.58). Total variable costs for the top groups were $90.13 per acre in 1993 and $55.81 per acre in 1994. While about $16-$18 of this difference can be attributed to the fertilizer and lime costing methods between the two years, there was still $15-$20 lower variable cost per acre in 1994.

A possible explanation of these differences between the two years is suggested by the yield levels. Soybean yields in 1993 were average to above-average for Tennessee. But 1994 yields were records for Tennessee, as evidenced by the overall yield level of 45.9 bushels per acre for the top group.

In above-average yield situations, no-tillage loses some of its advantages, in terms of conserving moisture and reducing tillage costs. Five of the nine farms in the top group in 1994 were no-tillage operations, whereas all the top group in 1993 were no-tillage operations.

The lower herbicide and total variable cost, along with fewer acres per farm and narrower rows, all support the fact that there were more conventionally-tilled operations in the make-up of the top group in 1994.

Yields and Land Charges

As indicated, the difference in per-acre variable and fixed costs between the top and lower groups is negligible in 1993, and somewhat higher ($55.81 variable cost for the top group versus $72.90 for the lower group) in 1994. But the difference in average yields and per-bushel costs between the two groups is substantial. The explanation of the difference in yields could be that of more efficient and timely production practices among farmers in the top group, better quality land in the top group or simply a random event, where climatic conditions during 1993 and 1994 caused a wide difference in yields.

Further investigation revealed similar fertilizer application rates among the two groups of farms. Seed varieties varied considerably. All five of the top farms used no-tillage production, whereas only three in the lower group relied on no-tillage and one on reduced-tillage operations in 1993. In 1994, five of the nine farms in the top group used no-tillage, while five of nine in the lower group used no-tillage as well. As noted, there was a substantial difference in row spacing between the two groups, but its influence on yields is unclear.

Land quality, as measured by land charges in the contest data, implies little difference in land productivity between the two groups. In fact, the average land charge is higher in the lower group at $49.00 per acre than the top group at $45.20 per acre in 1993. In 1994, the lower group again had a slightly higher cost ($51.05 versus $49.61 per acre).

It would appear, based on the land charges and yields, that for the two years of this program, higher land costs did not correlate to higher yields or higher returns.

Market Price Analysis

Information on market prices was collected from contest participants for total soybean production. Each bushel was accounted for, as either sold on the cash market, priced ahead on a cash or futures contract, or stored on the farm.

In 1993, 14 of the 21 entrants used some kind of forward-pricing tool to market their soybeans. Interestingly, the lowest weighted average sales price reported for an entire farm was $6.19 per bushel. That farm forward-priced 64 percent of its total production, the highest percentage of any entrant. The highest average sales price for total production was $6.86 per bushel. That farm had the second-highest percentage of total crop forward-priced, at 54 percent. Timing is obviously very important in forward pricing.

The top group, on the average, forward-priced 30 percent of their crop, and had an average sales price for their total crop of $6.77 per bushel (Table 1). The lower group forward-priced 31 percent of their total production on average, and had an average sales price for their total production of $6.60 per bushel. It would appear that while forward pricing may have been more common among the group of contest participants than for the majority of soybean growers statewide, timing played an important role in establishing relatively higher prices.

In the 1994 contest, 16 of the 36 entrants used a forward-pricing tool. Those using forward pricing averaged $5.79 per bushel for their entire crop, while those who did not use forward pricing averaged $5.42 per bushel. Three of the top four farms and 13 of the top 20 farms used forward pricing. During the 1994 growing year, prices fell after weather influenced higher prices in May. Timing again appears to have influenced the price received by soybean farmers in 1994.

Statistical Analysis

A simple regression equation was estimated for both 1993 and 1994 of the form:

NR = A + B(YLD) + C(VC) + D(NT) + E(MKTG) + e;

where:

NR is SMPC net returns for the entire soybean acreage
YLD is the overall farm yield
VC is the variable cost
NT is a 0/1 variable where NT = 1 if no tillage is used and
NT = 0 elsewhere
MKTG is a 0/1 variable where MKTG = 1 if forward pricing is used and MKTG = 0 elsewhere

Coefficients for each term plus the intercept were estimated using simple linear regression.

The estimated equation for SMPC 1993 is:

NR = -91.7 + 5.7(YLD) - .5(VC) + 19.5(NT) + 8.4(MKTG)
(12.2) (-1.7) (2.4) (1.0)
R^2 = 0.928 n=21

The estimated equation for SMPC 1994 is:

NR = -37.2 + 4.8(YLD) - 1.1(VC) + 7.0(NT) + 14.8(MKTG)
(11.6) (-7.2) (1.1) (2.6)
R^3 = 0.869 n=36

The t-statistics are listed under each estimated coefficient, and significance is determined at the .05 level.

For the 1993 equation, yield has a positive and significant influence on net returns. The sign on variable costs is negative as expected, but is not significant. The no tillage coefficient is positive and significant for 1993. The coefficient can be interpreted as adding $19.50 to net returns when an operation is no tillage. The marketing coefficient is positive but not significant. The R^2 of the 1993 estimated equation is 92.8.

The 1994 estimated equation has consistent signs with the 1993 equation, but the variable cost and marketing coefficients are significant and the no tillage coefficient is not. Therefore, for 1994, no tillage had no significant impact on net returns, as evidenced by Table 2 earlier. Also, the marketing variable was significant, adding $14.80 to net returns. The R^2 of the 1994 equation was 86.9.

The interesting point about the estimated coefficients of the two equations has to do with the different growing and marketing seasons for 1993 and 1994. In 1993, growing conditions, as evidenced by yields, were average. No tillage was a significant variable, adding to net returns. Forward pricing was not significant, as floods reduced yields during the summer of 1993, and markets rose during the growing season.

For 1994, when yields were above average and prices dropped throughout the growing season, no tillage was not significant, but forward pricing was.

Comparison to Other Data Sources

Comparisons to other sources of information are made in Table 3. Costs in column one are taken from the 1991 cost of production estimates for Kentucky, North Carolina, South Carolina, Georgia, Alabama and Tennessee, summarized by the Economic Research Service (ERS), U. S. Department of Agriculture. Column two summarizes cost data from the 1995 field crop budgets generated by The University of Tennessee Agricultural Extension Service (Gerloff). The final two columns of Table 3 correspond to the SMPC data in Tables 1 and 2.

The land charge expense in row one shows the SMPC rates to be considerably higher than the ERS rate. ERS states that the land charge is its rental value. Since the SMPC results were mainly from Western Tennessee, there could be significant differences between rental values of the two areas.

Seed costs were relatively equal for all four sources. Fertilizer and lime costs are reported jointly with ERS, at $22.49 per acre. The Extension budget and the 1993 SMPC are summed to be $21.80 and $25.80, respectively. Minimum fertilizer charges were assessed in the 1993 SMPC. For the 1994 SMPC only actual fertilizer and lime charges were assessed. The costs dropped significantly to a total of $8.15 per acre for lime and fertilizer. Some sections of Tennessee have naturally-occurring lime deposits, and other areas are high in natural phosphorus. Whether residual fertilizer was available in any of the SMPC data cannot be determined. Herbicide and operating interest costs are similar for all sources.

There are substantial differences among the costs of machinery fuel and machinery repairs. The higher costs from ERS data may be partly due to the fact that electricity was included in ERS fuel cost calculations. If beans are dried in on-farm storage units, there could be additional electrical energy cost. However, on-farm drying is not a common practice in Tennessee. The machinery complement assumed in the UT budget explains its lower cost of $10.92 per acre. The UT budgets assume new, no tillage, 8-row equipment. This assumption suggests reduced repair costs because the equipment is new, and lower fuel costs because of the efficiency of using larger equipment and fewer tillage operations.

Machinery depreciation and insurance costs were similar for all sources except the Extension budgets. Again, the complement of equipment may be the explanation for the lower costs on the budgets. The budgets assume the minimum requirements for producing soybeans, whereas in practice other machinery may be used because it can be used with other crops grown on the farm. The category used in ERS data is called “capital replacement.”

Labor costs are varied, with ERS estimates being highest. This may be due to some overhead labor being included in the ERS estimates. Labor costs in the SMPC and UT budgets are calculated based on hours of machine use times a factor of 1.25 for “down time” at a wage rate of $5.25 per hour.

Total variable costs are quite similar for ERS and 1993 SMPC data, but UT budget outlays are about $15 per acre lower. Labor, machinery and fertilizer cost disparity make up most of the difference among the sources. Again, the lower cost estimate in the UT budgets can be explained in part by the assumed age and type of the machinery complement being used. The 1994 variable costs are lowest of the four, at $67.82 per acre. The reduced fertilizer and lime charges are the main differences in the lower cost level.

Fixed costs per acre were about $15 per acre higher among SMPC participants than ERS averages. The difference is in the land charge noted above.

Calculating Your Own Cost of Production

Soybean producers are encouraged to compare their costs to those of the SMPC participants. To do so, the four-column worksheet in Table 4 may be helpful. The first column lists the line numbers for identifying each item in the table. The "Item" column lists the cost items used to calculate the cost of production in the SMPC. All costs of soybean production for the year associated with each entry in the "Item" column should be entered in the third column, "Total Cost." For example, all soybean seed costs for the 1995 soybean production year should be entered on line 1 under "Total Cost."

The last column, "Cost Per Acre," is the total cost in column three divided by the number of harvested acres. For example, if total seed cost in column 3 is $3,000 and 300 acres were harvested, $10 would be entered on line 1 under "Cost Per Acre."

Machinery costs associated with soybean production, shown on lines 6 and 9, are typically the most difficult to calculate. They are not usually kept for each crop grown, but rather are calculated for the whole farm, which may include several crops. Estimate your machinery costs for soybeans by allocating a portion of the machinery cost in relation to the number of acres or gross sales from soybeans, compared to the whole farm. For example, if soybeans make up 50 percent of the farm's total crop acres, then record 50 percent of machinery costs in Table 4.

The sum of lines 1 through 7 should be listed on line 8 for both the total cost and cost per acre columns. This sum will be the Total Variable Cost and Total Variable Cost Per Acre. Likewise, line 11 is the sum of lines 9 and 10, and is the Total Fixed Cost and Total Fixed Cost Per Acre for columns 3 and 4, respectively.

Line 12 is the sum of lines 8 and 11. It is the Total Cost (TC) for the soybean crop for a production year. By dividing the TC by the total number of soybeans produced during the year (line 13), the Total Cost Per Bushel is found (line 14).

By completing the worksheet in Table 4, soybean producers can derive comparable costs to compare with those who entered the contest.

No operator returns are included in the costs derived in Table 4. Therefore, producers should add an appropriate "cost" to account for operator labor, management, risk and family living expenses. For example, if the total cost of production were $5.50 per bushel (Line 14), a producer might want to set a price goal of $6.25 per bushel, giving the producer a $0.75 per bushel return for his/her own labor and management. Knowing this price goal does not guarantee that the price can be achieved. However, knowing a specific price that will cover all costs *and* add to "profits" may make the decision to forward price soybeans prior to harvest much easier.

Summary

The 1993 and 1994 Soybean Maximum Profit Contest generated some interesting results from a production, marketing and financial management framework. Data suggest that a disparity between land charges and yields may exist, and that management plays an important role in deciding net returns. Those farms that produced the highest net returns produced significantly higher yields for approximately the same cost per acre. This clearly indicates lower per-unit production costs.

Forward pricing was a popular marketing tool for soybean producers in the SMPC. Although it did not guarantee higher market prices, it was shown to be significantly correlated to net returns in 1994. Use of forward pricing over the past 10-15 years has generally been effective at increasing the average price received by growers. Managing the marketing component of the soybean program continues to be very important to the "bottom line."

No tillage was also shown to be significantly correlated to net returns in 1993, when yields were average.

Comparing the SMPC results to other sources of cost information showed individual cost items to be similar. Machinery expense calculations continue to be a challenge in estimating costs. Interest costs on machinery investment were not included in this study, but could have an important influence on the profitability of soybean production.

In addition to the data generated by this educational program, other benefits were evident. Soybean producers were asked to provide information on the factors that affect profitability most. The process of accumulating and reporting that information was a learning experience. Also, this contest provided an opportunity for the county Extension agents and area specialists-farm management to work closely with producers that they might not normally work with, in a subject matter area that is generally very challenging for producers. In addition, this program gave Extension agents the opportunity to address the total soybean program and discover any factor that was reducing producers' "bottom line." It is hoped that in subsequent years these benefits will continue to accrue to farmers and educators alike.

Finally, this contest demonstrates that soybeans have favorable net income potential and can be an extremely valuable supplementary crop in Tennessee when reasonably good production resources and good management are combined.

Table 1. Production, Marketing and Financial Summary Data, 1993 Soybean Maximum Profit Contest[a] (Based on Contest Acres Only).

Item	Lowest (or earliest)	Greatest (or latest)	Average	Average Top 25%	Average Lower 25%
Row Width	7.0"	38.0"	21.4"	12.1"	24.3"
Planting Date	May 3	June 22	May 26	May 20	May 28
Harvest Date	Oct 4	Nov 29	Nov 3	Oct 29	Nov 6
Land Charge/Acre	$12.00	$60.00	$44.75	$45.20	$49.00
Soybean Acreage (Total)	31.0	2436.0	474.5	906.6	356.3
Seed Cost/Acre	$4.67	$21.60	$10.00	$11.68	$10.94
Fertilizer Cost/Acre[b]	$4.88	$24.50	$15.21	$14.77	$14.34
Lime Cost/Acre[b]	$8.25	$12.75	$10.59	$9.00	$11.02
Herbicide Cost/Acre	$14.35	$42.13	$27.65	$30.99	$25.72
Operating Interest/Acre[c]	$0.78	$3.09	$2.29	$2.44	$2.24
Mach Fuel & Rep./Acre[d]	$9.57	$23.47	$14.74	$13.08	$14.64
Mach Depr. & Ins./Acre[d]	$13.42	$26.94	$19.37	$18.99	$18.47
Labor Cost/Acre[d]	$2.46	$10.44	$5.18	$4.25	$5.40
Total Variable Cost/Acre	$58.96	$105.29	$87.04	$90.13	$85.16
Total Fixed Cost/Acre	$30.08	$80.28	$64.12	$64.19	$67.47
Yield/Acre-Contest Acres (bu)	27.5	66.0	49.2	61.6	39.6
Yield/Acre-Total Acres (bu)	23.0	50.0	37.5	42.7	30.9
Price/Bushel	$6.19	$6.86	$6.58	$6.77	$6.60
Net Returns/Acre-Contest	$20.13	$274.53	$172.73	$262.22	$107.76
Net Returns/Acre-Total	-$2.58	$176.44	$96.07	$134.81	$52.70

[a] Number of farms in the contest was 21 in 1993.
[b] Minimum cost levels were assumed.
[c] Calculated at 8% of one-half the production expenses.
[d] Estimated from machinery complements.
Source: 1993 Soybean Maximum Profit Contest Data.

Table 2. Production, Marketing and Financial Summary Data, 1994 Soybean Maximum Profit Contest[a] (Based on Contest Acres Only).

Item	Lowest (or earliest)	Greatest (or latest)	Average	Average Top 25%	Average Lower 25%
Row Width	7.5"	38.0"	20.8"	22.3"	26.0"
Planting Date	Apr 18	June 23	May 27	May 25	May 29
Harvest Date	Sep 28	Dec 3	Oct 29	Oct 29	Oct 28
Land Charge	$20.00	$94.19	$52.79	$49.61	$51.05
Soybean Acres (Total)	25.0	3000.0	409.6	371.4	314.4
Seed Cost/Acre	$4.68	$20.08	$9.75	$7.33	$10.79
Fertilizer Cost/Acre	$0.00	$22.24	$5.29	$5.47	$5.33
Lime Cost/Acre	$0.00	$10.00	$2.86	$1.74	$5.29
Herbicide Cost/Acre	$9.50	$63.52	$27.58	$19.71	$28.40
Operating Interest/Acre[b]	$0.67	$3.86	$1.92	$1.34	$2.11
Mach Fuel & Rep./Acre[c]	$9.31	$19.64	$12.99	$13.50	$13.44
Mach Depr. & Ins./Acre[c]	$12.26	$21.18	$16.10	$16.76	$16.41
Labor Cost/Acre[c]	$3.35	$13.13	$6.12	$6.39	$6.38
Total Variable Cost/Acre	$39.76	$103.12	$67.82	$55.81	$72.90
Total Fixed Cost/Acre	$37.91	$113.20	$67.70	$66.37	$65.84
Yield/Acre-Contest Acres (bu)	35.9	75.1	56.6	67.0	46.0
Yield/Acre-Total Acres (bu)	25.7	52.8	43.1	45.9	39.2
Price/Bushel	$5.12	$6.68	$5.58	$5.71	$5.43
Net Returns/Acre-Contest	$68.06	$304.55	$181.46	$260.78	$110.11
Net Returns/Acre-Total	$3.61	$182.82	$105.79	$141.38	$73.47

[a] Number of farms in the contest was 36 in 1994.
[b] Calculated at 8% of one-half the production expenses.
[c] Estimated from machinery complements, custom operations excluded.
Source: 1994 Soybean Maximum Profit Contest Data.

Table 3. Comparison Data on Production Costs

Item	ERS-COP SE District 1991	TN Budget[a] 1995	Average SMPC 1993	Average SMPC 1994
Land Charge	$29.80	-	$44.75	$52.79
Seed Cost/Acre	$10.16	$9.08	$10.00	$9.75
Fertilizer Cost/Acre[b]	$22.49	$9.80	$15.21	$5.29
Lime Cost/Acre[c]	-	$12.00	$10.59	$2.86
Herbicide Cost/Acre	$24.44[d]	$26.45	$27.65	$27.58
Operating Interest/Acre	$2.44	$2.73	$2.29	$1.92
Mach. Fuel & Repair/Acre	$21.97[e]	$10.92	$14.74	$12.99
Mach. Depr. & Insurance /Acre	$20.46[f]	$13.15	$19.37	$16.10
Labor Cost/Acre	$11.19[g]	$4.28	$5.18	$6.12
Total Variable Cost/Acre[h]	$89.77[i]	$71.28	$87.04	$67.82
Total Fixed Cost/Acre	$50.26[j]	-	$64.12	$67.70

[a] No-tillage soybean budget, 8 row equipment, no land charge estimated.
[b] Minimum input levels assumed on contest results in 1993.
[c] Minimum input levels assumed in contest, 1993; lime costs included in fertilizer costs for ERS data.
[d] Reported as "chemicals" in ERS data.
[e] Also includes electricity expenses.
[f] Reported as "capital replacement," which includes interest.
[g] Reported as "hired labor."
[h] Includes charges for custom work.
[i] Other expenses items not included in this table are included in totals.
[j] Sum of land charges and capital replacement.

Sources: 1) 1993 and 1994 Soybean Maximum Profit Contest Data
2) Tennessee Agricultural Statistics Service
3) University of Tennessee Agricultural Extension Service, "1995 Field Crop Budgets"

Table 4. Estimating Your Own Cost of Production			
Line Number	Item	Total Cost	Cost Per Acre (Total Cost Divided by the Number of Harvested Acres)
1	Seed		
2	Fertilizer		
3	Lime		
4	Herbicide		
5	Operating Interest		
6	Machinery Fuel&Repairs		
7	Hired Labor		
8	**Total Variable Cost (Sum Lines 1-7)**		
9	Machinery Depreciation and Interest		
10	Land Charges		
11	**Total Fixed Cost (Line 9 + Line 10)**		
12	**Total Cost (Line 8 + Line 11)**		
13	**Total Number of Bushels Produced**		
14	**Total Cost Per Bushel (Line 12/Line 13)**		

References

Gerloff, Delton C. and L.J. Maxey "Field Crop Budgets For 1995," AE&RD INFO # 33, University of Tennessee Agricultural Extension Service, January, 1995.

a U.T. Ag. Extension Reminder...

The University of Tennessee Agricultural Extension Service has an ongoing educational program to assist farm families in financial planning and management. Known statewide as "MANAGE", this educational program has assisted hundreds of farm families.

Area specialists-farm management, trained in financial planning, administer this program. These area specialists travel to the farm to meet with the family. Information on the farm's production expenses, yields, output prices, and proposed changes are needed to complete the financial planning program.

Often, computers are used to help create financial reports needed for planning. The computer software allows the farm families to consider several "what-if" strategies, concerning the financial future of their farm.

Changes in the farm's profitability can be predicted, based on each strategy. The farm family can then decide on putting the proposed changes into effect.

If interested in this financial planning program, please call the local University of Tennessee Agricultural Extension office, or call the toll-free hotline at 1-800-345-0561.

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and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.
Agricultural Extension Service
Billy G. Hicks, Dean