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	ECONOMIC CASE STUDIES OF EASTERN WASHINGTON AND NORTHERN IDAHO NO-TILL FARMERS GROWING WHEAT, BARLEY, LENTILS, AND PEAS IN THE 19-22 INCH PRECIPITATION ZONE	
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Note

This bulletin presents production costs, cultural practices, and profitability of dryland farming systems used by six leading no-till farmers in the 19-22 inch precipitation zone of the Pacific Northwest (PNW). The budgets represent particular farms, which explains why the enterprise costs and returns vary over farms. Farmers were interviewed from October 1997 through July 1998. Variability stems from differences in:

- Farm location
- Cultural practices
- Crop yields
- Capital, land, and management resources
- Type and size of machinery complement
- Size of farm enterprise
- Farm business structure

Input and output prices were held constant at average levels for all farmers. Consequently, differential marketing performance does not contribute to variable economic results.

It is hoped that this record of the economic performance of no-till farmers will be useful to farmers contemplating adopting no-till, agricultural lenders, agribusiness representatives, researchers, extension workers, and government service agency personnel.

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ECONOMIC CASE STUDIES OF EASTERN WASHINGTON AND NORTHERN IDAHO NO-TILL FARMERS GROWING WHEAT, BARLEY, LENTILS, AND PEAS IN THE 19-22 INCH PRECIPITATION ZONE

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Introduction

Conservation tillage reduces soil erosion by leaving more crop residue on the surface. However, farmers are legitimately concerned about the economic viability of conservation tillage. Results of the early University of Idaho STEEP trials from 1974 to 1987 showed that winter wheat yields were highest under conventional tillage and lowest under no-till, with minimum till yields being in the middle (Young et al.). Later tillage trials conducted near Pullman, Washington, during 1986-1991 revealed that a combination no-till and minimum till system in a winter wheat-spring barley-spring pea rotation with high weed management dominated all other systems in profitability and had low economic risk (Young et al.). The study identified several keys to no-till success. It stressed that effective weed control, a diverse crop rotation, and no-till planting equipment with proper seed and fertilizer placement were important for no-till. The combination of minimum tillage after high residue crops and no-till after lower-residue crops provided the most benefit and the least risk (Young et al.).

This bulletin utilizes data from personal interviews with six no-till farmers from the 19-22 inch precipitation zone of southeastern Washington and northern Idaho. The purpose of the study was to evaluate the cultural practices, production costs, and profitability of their no-till farming systems. Results are compared with a revised Washington State University Cooperative Extension representative conventional tillage farming system for the area (Painter, Hinman, and Burns). The comparison with the revised extension budget reveals that for these six farmers the cost of no-till is lower than that of conventional tillage. Although these results cannot be generalized to the no-till and conventional systems of all farmers within the PNW, they do provide a useful insight into what is economically possible with no-till.

Sources of Information

Farms in this study were large commercial farms ranging from 1,600 through 4,500 cultivated acres (Table 1). The crops included in the six farmers' rotations are winter wheat, spring wheat, spring barley, lentils, and peas. The six case study

farmers will be identified in this bulletin by the letters A, B, C, D, E, and F.

Because there are relatively few long-term dominantly no-till farmers in the Pacific Northwest and there is no official list of long-term no-till farmers, the sample was not formally random. U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS) staff and the Washington State University (WSU) Department of Crop and Soil Sciences, extension faculty, recommended possible case study candidates. The farmers were recommended because they had practiced no-till farming for a long time and/or could provide extensive economic details on their no-till farming system. Another selection criterion was the presence of substantial total acreage dedicated to no-till.

Table 1. Size and Crop Rotation of the Case Study Farms

Farmer	Acres	Crop Rotation
A	2,000	Winter Wheat/Spring Barley/Peas
B	4,500	Winter Wheat/Spring Barley/Spring Wheat
C	2,110	Winter Wheat/Spring Wheat/Lentils
D	1,600	Winter Wheat/Spring Wheat/Lentils
E	2,200	Winter Wheat/Spring Wheat/Peas
F	1,720	Winter Wheat/Spring Wheat/Lentils

Each interview lasted between one and one-half and three hours. Three types of forms were used to assist in the survey process. The data was divided into three parts. The first listed the schedule of operations for each crop. Information was solicited on the operations, month performed, tooling used, whether owned, custom hired, or rented machinery was used, acres per hour, fuel consumption, and type and amount of materials used. The second part inventoried the machinery complement including the type of machine, new or used, purchase value, year bought, remaining years of life, average annual hours of use, salvage value, and estimated annual repairs. The last part elicited crop yields for the crop rotation.

Farmers' costs were compared with conventional tillage budgets in a revised WSU Extension Bulletin (Painter, Hinman, and Burns) for eastern Whitman County, WA (Appendix G Tables). The extension budgets were revised slightly to conform to the same budgeting assumptions and input prices as the no-till farmers' budgets.

Table 2 lists farmers' estimated five-year average yields and average precipitation per year of case study farms and for the extension conventional tillage farming system. Winter wheat yields ranged from 72 to 110 bushels per acre, spring wheat yields ranged from 55 to 70 bushels per acre, spring barley

yields ranged from 1.37 to 2.35 tons per acre, and lentil yields ranged from 1,200 to 1,500 pounds per acre.

Table 2. Average Crop Yield and Average Precipitation Per Year of Case Study Farms

Farmer	Winter Wheat (bu/ac)	Spring Wheat (bu/ac)	Spring Barley (t/ac)	Lentils (lb/ac)	Peas (lb/ac)	Ppt/Yr. (in)
A	85		1.37			20
B	110	70	2.35			21
C	85	55		1,500		22
D	72	59		1,200		20
E	75	56			1,951	20
F	91	65		1,500		19
Ext.	75	50	1.75	1,200	2,000	19.5

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Budgeting Procedures

The detailed budget tables, by crop, for each farmer and the extension budget in Appendices A through G are constructed using the following procedures.

Machinery Data

The actual purchase price of all machinery purchased used was updated for inflation to 1998 dollars so that fixed and variable costs could be summed to obtain total production costs in the same units of measurement. If machinery was purchased new, current new 1997 or 1998 ownership costs from Smathers and Willett were substituted.

The 1998-dollar values were used to compute depreciation and other ownership costs. When farmers did not estimate salvage or remaining farm values (RFV), the RFV tables in Smathers and Willett were used. Farmers' average annual machinery repair costs were used when provided. If the farmer did not supply repair costs, the average values in Smathers and Willett were used.

Hauling

Budgets included all production costs up to and including hauling grain from the combine to storage, but excluded hauling stored grain to market. Hauling water, hauling seed, and other miscellaneous two-ton truck tasks were entered under Misc. Use, two-ton truck. Use of a farm pickup was entered under Misc. Use, ¾ ton pickup. If the farmer provided purchase price and other data on his two-ton truck and pickup truck, this data was used.

Otherwise the default data in Painter, Hinman, and Burns was used.

Inputs and Crop Prices

Average input prices for 1998 were obtained from Pullman, Washington, agricultural input dealers (Appendix Table H1). The same input prices were used for all farmers to focus on production efficiency differences. Crop prices used in this bulletin are the Washington marketing year averages for 1993-94 through 1997-98 (Washington Agricultural Statistics Service):

Winter Wheat	$ 3.72/bu
Spring Wheat	3.74/bu
Spring Barley	85.00/ton
Lentils	0.15/pound
Peas	0.09/pound

The five-year average prices considerably exceed crop prices during calendar year 1998. For example, average farm gate soft white wheat prices during 1998 averaged about $2.70 per bushel. Although most producers in this study participated in government programs, farm-specific transition payments were not added to the average market prices in this study. Readers who wish to evaluate farm-wide costs and returns could add these government payments.

Insurance

All insurance costs except insurance on machinery were excluded due to incomplete data.

Burning

A common cost of $2.00 per acre was charged for burning of grain stubble for all farmers who used this practice.

Interest Rate

The effective annual interest rate on operating capital and on the average investment in machinery was 10.25 percent. This interest rate represents both the direct cost of borrowed capital and foregone return on equity capital.

Overhead Costs

Overhead costs cover such items as shop costs, utilities, telephone, legal, and accounting fees. Consistent with WSU extension budgets, these are estimated to be 5 percent of total variable costs.

Labor Costs

Labor costs, including benefits, for both hired and owner-operator labor, are charged at $10.00 per hour.

Land Costs

The average property tax for the six farmers and the extension budgets is set at $5.00 per acre per year. Based on the assumed typical lease agreement for wheat and barley in Whitman County, the net rent land cost for each budget is:

Net Rent = 1/3 crop revenue – 1/3 fertilizer and herbicide expense – land tax

The lessee covers all other production expenses. The landowner receives one-third of the crop returns. Government transition payments are also shared in practice, but are not considered in this study. Net rent for wheat and barley for each case study farmer is presented in Table 3.

The typical lease agreement for peas and lentils in this region is one-fourth landowner and three-fourth lessee crop share, with the landowner paying taxes plus one-fourth of the crop insurance expense. The lessee covers all other production expenses. Net rent for dry peas and lentils is presented in Table 3.

Table 3. Net Rent Charges ($/acre) by Farmer and by Crop

	Crop				
Farmer	WW	SW	SB	Lentils	Peas
A	85.00		21.51		
B	110.48	56.00	41.30		
C	84.00	42.85		60.00	
D	64.35	53.73		44.00	
E	68.89	44.00			46.00
F	91.00	55.74		59.00	
Average	83.95	50.46	31.40	54.33	46.00
Extension	72.85	40.53	30.00	42.42	39.97

NOTE: Ext. = Extension estimates from (Painter, Hinman, and Burns).

While net rent will not be a cash cost for farmers who own their land, it is a measure of the opportunity cost of the owner-operator using the land rather than renting it out. Net rent

varies positively with the farmer's yield. All farmers paid share rent except for Farmer D who cash rented. However, share rent was assumed for Farmer D in this study to be consistent with the other producers in order to focus on production efficiency.

Fixed and Variable Costs of Production

Fixed costs of production are incurred whether a crop is grown or not. They include land costs and machinery depreciation, interest, taxes, housing, and insurance. These costs will vary from farm to farm based on crop yields and machinery complements.

Machinery and tractor interest are calculated on the average annual investment in the equipment (Smathers and Willett):

(Interest Rate) (Replacement Cost + Salvage Value)/ 2

Replacement cost may refer to new or used machinery depending on how each case study farmer replaced individual machines. Per acre machinery interest, depreciation, and other costs for a given operation are determined by multiplying the respective machine hours per acre for the given operation times per hour costs. A machine's per hour costs are determined by dividing its total fixed cost by its annual hours used on the case study farm. Land fixed costs include taxes and net rent.

Variable costs of production increase directly with additional acreage. These include fuel, repairs, fertilizer, chemicals, custom work, overhead, labor for machinery operation, and interest on operating capital. Differences in variable costs among farmers are due to farm size differences and to unique fertilizer and/or herbicide rates, and to different machinery operations. The sum of fixed and variable costs equals total cost.

Detailed Crop Budget Tables

The budgets for each crop grown by the six no-till farmers and the extension conventional tillage budget are reported in Appendices A, B, C, D, E, F, and G. All results in this bulletin are based on these appendix budgets. These budgets follow the budgeting methodology and assumptions described in the previous sections. Readers who wish to see more detail on the summary results presented in the next sections are invited to refer to these appendices. The content of the appendix tables is briefly reviewed below.

Appendix Tables A1, B1, C1, D1, E1, F1, and G1: Machinery Complement and Hourly Machinery Costs.

These appendix tables present the estimated fixed and variable costs per hour of machines used by each case study farmer. Machinery prices and all other values are in 1998 dollars.

Appendix Tables A2 and A4; B2, B4, and B6; C2, C4, and C6; D2, D4, and D6; E2, E4, and E6; F2, F4, and F6; G2, G4, G6, G8, and G10: Schedule of Operations and Estimated Costs Per Acre.

These tables outline the schedule of field operations by calendar month, the type of machinery used, labor and machinery hours per acre, and variable and fixed costs per acre per operation for winter wheat, spring wheat, spring barley, lentils, and peas by no-till farmers and for the conventional tillage budget.

Appendix Tables A3 and A5; B3, B5, and B7; C3, C5, and C7; D3, D5, and D7; E3, E5, and E7; F3, F5, and F7; G3, G5, G7, G9, and G11: Materials and Services.

These tables list specific services and materials used, quantities used, and prices paid for materials and services for each crop for each of the six no-till farmers and for the conventional tillage budget.

Costs and Returns Summary

Tables 4 through 8 present variable, fixed, and total costs of production, and break-even selling price to cover variable and total costs for winter wheat, spring wheat, spring barley, lentils, and peas, for the case study no-till farmers and the extension conventional tillage budget. These cost summaries are based on the detailed budget tables by farmer and by crop presented in Appendices A through G. Variable costs range from $95.55 to $131.99 per acre for winter wheat, $97.61 to $133.35 for spring wheat, $105.14 to $126.54 for spring barley, $86.42 to $100.59 for lentils, and $78.82 for peas. Fixed costs per acre for winter wheat, spring wheat, spring barley, lentils, and peas range from $38.68 to $155.52 (Tables 4-8). Differences in variable and fixed costs among farmers will be disaggregated in a later section among planting, tillage, herbicide and application, fertilizer, harvest and other, and land costs.

The break-even selling price for total variable costs (TVC) is the price that would cover total variable costs of production given the average yield provided by each farmer. For example, dividing the total variable costs of winter wheat for Farmer A of

$122.20 by his yield of 85 bushels per acre, results in a break-even price to cover variable costs of $1.44 per bushel (Table 4). Farmer A's break-even selling price to cover total costs of production is $2.66 per bushel. The break-even prices do not include the costs of marketing. We assumed the same input prices and the same market prices for all the no-till case study farmers and the extension budget.

Table 4. Winter Wheat Costs of Production and Break-Even Prices for Six No-Till Farmers and the Extension Conventional Tillage Budget

Farmer	Yield (bu/ acre)	Variable Costs ($/acre)	Fixed Costs ($/acre)	Total Costs ($/acre)	B-E Price for TVC ($/bu)	B-E Price for TC ($/bu)
A	85.00	122.20	103.63	225.84	1.44	2.66
B	110.00	131.99	155.52	287.51	1.20	2.61
C	85.00	115.77	104.74	220.51	1.36	2.59
D	72.00	107.30	103.19	210.49	1.49	2.92
E	75.00	101.96	92.59	194.55	1.36	2.59
F	92.00	95.55	133.54	229.09	1.04	2.52
Av.	86.50	112.46	115.54	228.00	1.30	2.64
Ext.	75.00	99.60	121.28	220.88	1.33	2.95
----------1993-97 Average Market Price------$3.72/bu---------						

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Break-even prices over variable costs are substantially lower than five-year marketing average prices for all crops – winter wheat, spring wheat, spring barley, lentils, and peas – for the farmers. Farmers produce winter wheat, spring wheat, and peas at a lower total cost per unit (break-even price for TC) than the five-year average prices of $3.72 per bushel for winter wheat, $3.74 per bushel for spring wheat, and $0.095 per pound for peas. The six no-till farmers' average production cost for winter wheat of only $2.64 per bushel is lower than the revised extension conventional tillage budget estimate of $2.95 per bushel (Table 4). The no-till farmers' tight-fisted average production costs of $2.64 per bushel fall slightly below the depressed 1998 wheat price of about $2.70 per bushel.

The no-till farmers' average production cost for spring wheat of $202.16 per acre is lower than the conventional tillage revised extension budget estimate of $219.64 per acre. The farmers' average break-even selling prices per bushel for TVC and TC of $1.92 and $3.31, respectively, fall below the extension

estimates of $2.33 and $4.39 and the five-year marketing spring wheat selling price of $3.74 (Table 5).

Table 5. Spring Wheat Costs of Production and Break-Even Prices for Five No-Till Farmers and the Extension Conventional Tillage Budget

Farmer	Yield (bu/ acre)	Variable Costs ($/acre)	Fixed Costs ($/acre)	Total Costs ($/acre)	B-E Price for TVC ($/bu)	B-E Price for TC ($/bu)
B	70.00	133.35	98.24	231.598	1.91	3.31
C	55.00	117.57	61.44	179.01	2.14	3.25
D	59.00	97.61	96.97	194.58	1.65	3.30
E	56.00	106.49	73.26	179.75	1.90	3.21
F	65.00	129.96	95.88	225.84	2.00	3.47
Av.	61.00	117.00	85.16	202.16	1.92	3.34
Ext.	50.00	116.35	103.29	219.64	2.33	4.39
----------1993-97 Average Market Price------$3.74/bu-------						

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Two no-till farmers' (A and B) spring barley average production cost of $176.92 per acre is lower than the conventional tillage extension budget estimate of $209.29 per acre. The farmers' average break-even prices per ton to cover TVC and TC equal $65.30 and $97.18 respectively. These break-even prices fall below the extension estimate of $65.60 per ton and $119.59 per ton, but not below the five-year average barley price of $85.00 per ton (Table 6).

Table 6. Spring Barley Costs of Production and Break-Even Prices for Two No-Till Farmers and the Extension Conventional Tillage Budget

Farmer	Yield (ton/ acre)	Variable Costs ($/acre)	Fixed Costs ($/acre)	Total Costs ($/acre)	B-E Price for TVC ($/ton)	B-E Price for TC ($/ton)
A	1.37	105.14	38.68	143.82	76.74	104.98
B	2.35	126.54	83.49	210.02	53.85	89.37
Av.	1.86	115.84	61.09	176.92	65.30	97.18
Ext.	1.75	114.80	94.49	209.29	65.60	119.59
----------1993-97 Average Market Price------$85.00/ton---------						

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Three no-till farmers' average production costs for lentils of $196.43 per acre are lower than the extension conventional

tillage estimate of $221.23 per acre. The farmers' average break-even selling price for TVC and TC of $0.068 per pound and $0.140 per pound are lower than the extension results and are also below the five-year average market selling price of $0.152 per pound (Table 7).

Table 7. Lentil Costs of Production and Break-Even Prices for Three No-Till Farmers and the Extension Conventional Tillage Budget

Farmer	Yield (lb/ acre)	Variable Costs ($/acre)	Fixed Costs ($/acre)	Total Costs ($/acre)	B-E Price for TVC ($/lb)	B-E Price for TC ($/lb)
C	1500	100.59	88.24	188.83	0.067	0.126
D	1200	97.96	101.94	199.90	0.082	0.167
F	1500	86.42	111.14	197.56	0.058	0.132
Av.	1400	94.99	100.44	195.43	0.069	0.140
Ext.	1200	108.23	113.00	221.23	0.090	0.184
----------1993-97 Average Market Price------$0.152/lb---------						

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Farmer E's production costs for peas of $155.28 per acre are about $80.00 lower than the conventional extension estimate of $237.33 (Table 8). Farmer E's break-even TVC and TC selling price of only $0.040 per pound and $0.080 per pound respectively, are under both the extension break-even selling prices and the five-year marketing average price of $0.095 per pound.

Table 8. Pea Costs of Production and Break-Even Prices for 0ne No-Till Farmer and the Extension Conventional Tillage Budget

Farmer	Yield (lb/ acre)	Variable Costs ($/acre)	Fixed Costs ($/acre)	Total Costs ($/acre)	B-E Price for TVC ($/lb)	B-E Price for TC ($/lb)
E	1951	78.82	76.46	155.28	0.040	0.080
Ext.	2000	130.34	106.99	237.33	0.065	0.119
----------1993-97 Average Market Price------$0.095/lb---------						

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

The break-even prices over total cost in Tables 4 through 8 are the case study farmers' average cost of production per unit of wheat, barley, peas, and lentils. Taken as a whole, these results are remarkable for two reasons:

1. These no-till farmers have achieved a high level of production efficiency compared to standards of the extension conventional tillage budget.

2. The six long-term no-till farmers are remarkably uniform in their level of economic efficiency as measured by cost of production.

During 1998, soft white wheat prices were at a multi-year low with farm-gate prices averaging around $2.70 per bushel in the study region. The conventional wisdom among farmers, lenders, and economists was that the 1998 wheat price was well below production costs for the large majority of PNW farmers. Nonetheless, five of the six no-till farmers in this case study produced winter wheat at a total cost of $2.70/bushel or less. This evidence shows the economic promise of no-till with proper management.

Is it possible that these results overstate the economic case for no-till? Several arguments could be raised:

1. Perhaps, this sample of six farmers is atypically successful due to personal experience, managerial acumen, or favorable agro-climatic environment. While these farmers may be further along on the learning curve than most, they were very humble about mistakes and failures along the way. They did not claim to be blessed with any particular knowledge or luck.

2. Perhaps this study has missed or underestimated some major costs of production. It is true that some costs like machine transport, fixed costs of rarely used equipment, and insurance have been excluded. On the other hand, general overhead costs, operator labor and other opportunity costs have been fully included. Readers may judge whether other important costs have been under or overestimated by consulting the detailed budgets in Appendices A-G.

3. Possibly some case study farmers overestimated their five-year average crop yields in Tables 4 through 8 and thereby reduced their average costs per crop unit. Indeed, the estimated yields are relatively high, even for the 19-22 inch rainfall region. For example, four of the six no-till farmers averaged winter wheat yields of 85 to 110 bushels per acre (Table 2). These crop yields are subjective as no documentation was requested. Nonetheless, there was generally a correlation between higher input use and crop yield over the sample. It is possible that relative modesty in yield estimation could decrease the production

efficiency ranking of individual farmers in the sample. For example, if Farmer D, who incurred the highest total cost per bushel for winter wheat of $2.92 (Table 4), had estimated average yields of 10 bushels per acre higher, he would have tied Farmer F for the lowest production cost per acre.

4. Possibly the extension conventional tillage yield estimates were over conservative. For winter wheat there was an 11.5 bushel greater average production with no-till than that estimated for conventional tillage. This yield difference, if not accurate, will bias the cost results in favor of no-till.

The central result of Tables 4 through 8 remains: all six no-till farmers' production costs, especially for winter wheat, are impressively low and relatively similar. As expected, the per unit production costs for winter wheat are lower relative to recent market prices than are those for spring crops. Winter wheat has long been the most productive and profitable crop in the study region. Consequently, it is expected to "carry" more than its share of total rotation production costs in order to "subsidize" some of the less profitable, but agronomically necessary, spring crops.

Readers should recognize that the production efficiency results in Tables 4 through 8 do not permit any conclusions about the comparative profitability of the six no-till farms. Profit comparisons require information on both sides of the economic equation—production costs and marketing performance. For example, it is known that one of the farmers with higher production costs for winter wheat forward contracted his 1998 wheat crop for over $4.00 per bushel. This farmer earned significantly higher profits than farmers who may have had slightly lower production costs but who sold their wheat on the spot market during the last six months of 1998 for less than $3.00 per bushel.

Components of Costs for Growers

Costs differ among farmers by component such as planting, fertilizer, herbicides, tillage, harvest, and land costs. Some of the variations are attributed to differing machinery costs and farming practices such as burning stubble or using supplementary tillage. Farmers C, E, and F don't burn stubble. Farmer A burns winter wheat stubble and 50 percent of spring barley stubble. Farmer B burns winter wheat stubble. Farmer D burns 30 percent of winter wheat stubble. Farmers A and B use some tillage on all their crops, Farmers C and D till only lentils, while Farmers E and F till spring wheat and lentils (See Appendices A-G for

tillage schedules). It was difficult to identify a close correlation between per unit production costs and farmer practices. For example, Farmer A and B—who burn stubble and use some supplementary tillage—produce winter wheat and spring wheat at slightly below sample average costs, and spring barley at above and below average costs. However, Farmer F never burns stubble and uses supplementary tillage only on spring wheat and lentils but produces winter wheat and lentils at the lowest cost and spring wheat near the sample average cost.

Tables 9 through 13 present the percentage share of total production costs for planting, tillage, fertilizer, herbicide and application, harvest and other costs, and land costs for winter wheat, spring wheat, spring barley, lentils, and peas for each of the six farmers and the extension conventional tillage budget.

Planting costs for winter wheat ranged from 12 to 20 percent of total cost among the farmers. Due to high no-till drill costs, the average 15 percent planting costs for the no-till farmers exceeded those for the conventional tillage budget of 10 percent (Table 9). Planting costs include the drilling operation and seed but exclude the costs of any fertilizer applied when seeding. The differences in planting costs are partly due to different (1998 dollars) purchase prices for no-till drills which ranged from $34,339 to $93,370 (Table 14). Farmer C hired custom seeding for wheat at a cost of $22.00 per acre and for lentils at $16.00 per acre.

The no-till farmers' average tillage share of costs for winter wheat of 1 percent was below the 3 percent extension estimate for conventional tillage. Supplementary tillage with no-till included limited use of disc, harrow, chisel, cultivator, cultiweeder, and/or sweep, on some farms (See Appendices A-G).

Table 9. Winter Wheat Production Cost Results for Farmers and the Extension Conventional Tillage Budget, 19-22 Inch Precipitation Zone

Farmer	Plant.	Till.	Herb. & Appl.	Fert.	Harvest & Other	Land Cost	Total Cost	Cost /bu	Avg Yield
	. . . . .	% of total	cost	. . . . .			$/ac	$/bu	bu/ac
A	13	1	19	14	15	38	225.84	2.65	85.00
B	12	2	6	17	25	38	287.51	2.61	110.00
C	20	0	11	13	18	38	220.51	2.59	85.00
D	14	0	22	11	22	30	210.49	2.92	72.00
E	12	0	19	16	18	35	194.55	2.59	75.00
F	19	0	12	12	17	40	229.09	2.52	91.00
Avg	15	1	15	14	19	37	228.00	2.64	86.33
Ext.	10	3	19	12	23	33	220.88	2.95	75.00

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Table 10. Spring Wheat Production Cost Results for Farmers and the Extension Conventional Tillage Budget, 19-22 Inch Precipitation Zone

Farmer	Plant.	Till.	Herb. & Appl.	Fert.	Harvest & Other	Land Cost	Total Cost	Cost /bu	Avg Yield
	. . . . . % of total cost						$/ac	$/bu	bu/ac
B	13	7	13	18	24	24	231.58	3.31	70.00
C	19	0	24	13	20	24	179.01	3.25	55.00
D	17	0	19	12	24	27	194.58	3.30	59.00
E	16	3	19	18	19	24	179.75	3.21	56.00
F	19	6	17	15	18	25	225.84	3.47	65.00
Avg	17	3	18	15	21	25	202.15	3.31	61.00
Ext.	10	15	19	9	29	18	219.64	4.39	50.00

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Table 11. Spring Barley Production Cost Results for Farmers and the Extension Conventional Tillage Budget, 19-22 Inch Precipitation Zone

Farmer	Plant.	Till.	Herb. & Appl.	Fert.	Harvest & Other	Land Cost	Total Cost	Cost/t	Avg Yield
	. . . . . % of total cost						$/ac	$/ton	t/acre
A	18	1	29	16	22	15	143.82	104.98	1.37
B	16	8	10	20	27	20	210.02	89.37	2.35
Avg.	17	5	20	18	25	18	176.92	97.18	1.86
Ext.	10	15	22	9	30	14	209.29	119.59	1.75

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Table 12. Lentil Production Cost Results for Farmers and the Extension Conventional Tillage Budget, 19-22 Inch Precipitation Zone

Farmer	Plant.	Till.	Herb. & Appl.	Fert.	Harvest & Other	Land Cost	Total Cost	Cost/lb	Avg Yield
	. . . . . % of total cost						$/ac	$/lb	lb/ac
C	14	9	19	0	26	32	188.83	0.126	1500
D	11	20	25	0	23	22	199.90	0.167	1200
F	10	12	24	0	23	30	197.56	0.132	1500
Avg	12	14	23	0	24	28	195.43	0.140	1400
Ext.	9	22	20	0	30	19	221.23	0.184	1200

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Table 13. Pea Production Cost Results for Farmers and the Extension Conventional Tillage Budget, 19-22 Inch Precipitation Zone

Farmer	Plant.	Till.	Herb. & Appl.	Fert.	Harvest & Other	Land Cost	Total Cost	Cost/lb	Avg Yield lb/acre
	. . . . .	% of total cost					$/ac	$/lb	
E	3	17	23	0	23	30	155.28	0.080	1951
Ext.	14	18	26	0	26	17	237.33	0.119	2000

NOTE: Ext. = Extension (Painter, Hinman, and Burns).

Table 14. Farmers' No-Till Drill Cost Data

Farmer	Cost (1998$)	Year Bought	Annual Hours	TFC $/hour	TVC $/hour
A	58,800	1997 New	500	18.09	28.00
B	93,370	1991 Used	500	21.40	12.00
D	34,339	1993 Used	200	21.60	24.75
E	64,963	1997 New	166	60.33	15.81
F	47,024	1994 Used	160	61.68	6.25

Herbicide and application costs for winter wheat ranged from 6 to 22 percent of total cost among the farmers. Surprisingly, the no-till farmers' 15 percent average herbicide application cost share was lower than the conventional tillage extension budget share of 19 percent (Table 9). Farmer A rents a sprayer at a cost of $1.25 per acre. His herbicide application cost is among the highest of the six farmers.

Fertilizer costs for winter wheat ranged from 11 to 17 percent of total cost among the farmers. Case study no-till farmers' average fertilizer costs of 14 percent exceeded the conventional tillage extension budget share of 12 percent (Table 9). Fertilizer costs differ among farmers due to precipitation levels and general farming practices. Farmer B has both the highest fertilizer rates (Table 15) and the greatest yields (Table 9) among the six winter wheat farmers.

Harvest and other costs for winter wheat ranged from 15 to 25 percent of total cost among the farmers. The six no-till farmers' average harvest and other costs of 19 percent are lower than the conventional tillage extension budget share of 23 percent (Table 9). Variations among farmers' harvest costs are partially explained by differing combine purchase prices which ranged from $77,338 to $200,000 (Table 16).

Table 15. Farmers' Fertilizer Rates (lb/acre) by Grain Crop

Farmer	Crop	Nitrogen	Phosphate	Sulfur	Potassium
A	Winter Wheat	96	20		
B	Winter Wheat	150	35	25	30
C	Winter Wheat	100	20	14	
D	Winter Wheat	80	20	14	
E	Winter Wheat	90	30	15	
F	Winter Wheat	93	25	15	
B	Spring Wheat	120	35	25	
C	Spring Wheat	80	20		
E	Spring Wheat	100	15	20	
F	Spring Wheat	98	45	15	
A	Spring Barley	78	20		
B	Spring Barley	120	35	25	30

Table 16. Farmers' Combine Cost Data

Farmer	Cost (98$)	Year Bought	Annual Hrs	TFC $/hr	TVC $/hr
A	117000	1995 New	475	30.01	30.63
B	151490	1990 Used	300	77.73	31.57
C	77338	1996 Used	280	35.77	19.03
D	200000	1996 New	250	118.33	25.06
E	135833	1988 New	300	60.54	16.53
F	154526	1995 New	250	88.16	26.53

Land cost for winter wheat ranged from 30 to 40 percent of total cost among the farmers average. Average land cost for the no-till farmers at 37 percent exceeded those for the conventional tillage extension budget of 33 percent (Table 9). Land costs vary directly with crop yields based on the net rent formula, and the no-till farmers averaged 11 bushels per acre higher winter wheat yields than the extension conventional tillage estimate.

Similar percentage breakdowns of costs of production for spring wheat, spring barley, lentils, and peas are presented in Tables 10 through 13.

Concluding Note

This analysis of six no-till farmers in the 19-22 inch rainfall area of the PNW reveals that no-till can be economically efficient. All six case study farmers achieved total variable costs per bushel lower than the five-year average selling prices

for all grain and legume crops grown. As expected, the per unit production costs for winter wheat are lower relative to recent market prices than are those for spring crops. Winter wheat has long been the most productive and profitable crop in the study region.

The case study results showed that most farmers had lower total costs of production per unit for each crop grown than a "typical" extension conventional tillage budget. Only one farmer's winter wheat total costs per bushel exceeded those of the winter wheat conventional tillage budget. These no-till farmers have achieved a high level of production efficiency compared to standards of the extension conventional tillage budget. The group of six long-term no-till farmers are also remarkably uniform in their level of economic efficiency as measured by cost of production.

Perhaps this sample of six farmers represents a group that has been atypically successful due to personal experience, managerial acumen, or favorable agro-climatic environment. The central point remains: all six no-till farmers' production costs, especially for winter wheat, are impressively low and relatively similar.

The results of these budgets are dependant upon the sample of case study farmers. It is not possible to generalize these results to all no-till farms in the 19-22 inch rainfall region in the Pacific Northwest. Nonetheless, these results show that promising economic results are possible with no-till farming with proper management.

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APPENDICES

DETAILED BUDGET TABLES FOR FARMERS

Note: Appendices are titled A through H in this bulletin to correspond with the letters used to denote the case study farmers in the 19-22 inch precipitation zone. A companion bulletin for the 8-13 inch precipitation zone titles Appendices I through N to correspond with the letters used to denote the case study farmers in that zone.

TABLE A1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS FOR FARMER A

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
250HP-TRACTOR	49,400.00	22	1000	1.11	3.72	.22	.67	.37	6.09	5.00	4.90	9.90	15.99
400HP-TRACTOR	98,315.00	12	1000	2.78	8.17	.49	1.47	.82	13.72	7.50	8.17	15.67	29.38
29'NO-TILL DRILL	58,800.00	11	500	8.87	6.88	.41	1.24	.69	18.09	28.00	.00	28.00	46.09
24' COMBINE	117,000.00	19	475	10.97	14.21	.85	2.56	1.42	30.01	27.37	3.27	30.63	60.65
DISC	19,900.00	25	50	14.72	21.40	1.28	3.85	2.14	43.40	40.00	.00	40.00	83.40
2 ½ TON TRUCK	35,000.00	33	400	2.23	5.06	.30	.91	.51	9.02	1.88	2.59	4.46	13.48
PICK UP TRUCK	36,400.00	20	500	3.29	3.99	.24	.72	.40	8.64	7.00	2.59	9.59	18.22

TABLE A2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, FARMER A

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST: FUEL, LUBE, & REPAIRS	VARIABLE COST: MACH LABOR	VARIABLE COST: SERVICE	VARIABLE COST: MATER.	VARIABLE COST: INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	250HP-TRACTOR, RENTAL SPRAYER	SEP	1996	.10	.12	.61	.99	1.20	1.25	12.96	1.50	17.90	18.51
BORDER WORK	400HP-TRACTOR, DISC	SEP	1996	.00	.00	.00	.00	.00	2.00	.00	.18	2.18	2.18
50% BURN	6 WHEELER	SEP	1996	.00	.00	.00	.00	.00	1.00	.00	.09	1.09	1.09
SEED/FERTILIZE	400HP-TRACTOR, 29'NT-DRILL	OCT	1996	.11	.13	3.65	4.98	1.30	.00	44.60	4.24	55.12	58.77
APPLY HERBICIDE	250HP-TRACTOR, RENTAL SPRAYER	MAR	1997	.10	.12	.61	.99	1.20	1.25	18.19	.90	22.53	23.14
HARVEST	24' COMBINE	AUG	1997	.25	.28	7.50	7.66	2.80	.00	.00	.00	10.46	17.96
HAUL GRAIN	2 ½ TON TRUCK	AUG	1997	.14	.28	1.26	.62	2.80	.00	.00	.00	3.42	4.69
MISC USE	PICKUP	ANN	1997	.25	.29	.00	.00	2.90	.00	.00	.15	3.04	3.04
MISC USE	2 ½ TON TRUCK	ANN	1997	.05	.06	.00	.00	.60	.00	.00	.03	.63	.63
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC	ANN	1997	.00	.00	.00	.00	.00	.00	5.82	.00	5.82	5.82
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	LAND RENT	ANN	1997	.00	.00	85.00	.00	.00	.00	.00	.00	.00	85.00
TOTAL PER ACRE				1.00	1.28	103.63	15.24	12.80	5.50	81.57	7.09	122.20	225.84

TABLE A3: MATERIALS AND SERVICES FOR WINTER WHEAT, FARMER A

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	RENTAL SPRAYER @ $1.25/ACRE 54 OUNCE OF LANDMASTER @ $0.24/OUNCE
SEED/FERTILIZE	OCTOBER	100 POUNDS OF WHEAT SEED @ $0.14/POUND 80 POUNDS OF NITROGEN @ $0.22/POUND 100 POUNDS OF 16-20 @ $0.13/POUND
APPLY HERBICIDE	MARCH	RENTAL SPRAYER @ $1.25/ACRE 0.30 OUNCE OF FINESSE @ $16.26/OUNCE 1.50 PINTS OF HOELON @ $8.88/PINT
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE A4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING BARLEY FOR FARMER A

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST: FUEL, LUBE, & REPAIRS	VARIABLE COST: MACH LABOR	VARIABLE COST: SERVICE	VARIABLE COST: MATER.	VARIABLE COST: INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	250HP-TRACTOR, RENTAL SPRAYER	SEP	1996	.10	.12	.61	.99	1.20	.00	12.96	1.39	16.54	17.15
APPLY HERBICIDE	250HP-TRACTOR, RENTAL SPRAYER	MAR	1997	.10	.12	.61	.99	1.20	1.25	4.81	.34	8.59	9.20
BURN	6 WHEELER	MAR	1997	.00	.00	.00	.00	.00	2.00	.00	.08	2.08	2.08
SEED/FERTILIZE	400HP-TRACTOR,29'NT-DRILL	APR	1997	.11	.13	3.65	4.98	1.30	.00	37.39	1.46	45.12	48.77
APPLY HERBICIDE	250HP-TRACTOR, RENTAL SPRAYER	MAY	1997	.10	.12	.61	.99	1.20	1.25	10.71	.35	14.51	15.12
HARVEST	24' COMBINE	AUG	1997	.13	.14	3.90	3.98	1.40	.00	.00	.00	5.38	9.28
HAUL GRAIN	2 ½ TON TRUCK	AUG	1997	.07	.14	.63	.31	1.40	.00	.00	.00	1.71	2.34
MISC USE	PICKUP	ANN	1997	.25	.29	2.16	2.40	2.90	.00	.00	.26	5.56	7.72
MISC USE	2 ½ TON TRUCK	ANN	1997	.05	.06	.00	.00	.60	.00	.00	.03	.63	.63
0VERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	5.01	.00	5.01	5.01
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	LAND RENT	ANN	1997	.00	.00	21.51	.00	.00	.00	.00	.00	.00	21.51
TOTAL PER ACRE				.91	1.12	38.68	14.64	11.20	4.50	70.88	3.92	105.14	143.82

TABLE A5: MATERIALS AND SERVICES FOR SPRING BARLEY, FARMER A

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	RENTAL SPRAYER @ $1.25/ACRE 54 OUNCES OF LANDMASTER @ $0.24/OUNCE
APPLY HERBICIDE	MARCH	RENTAL SPRAYER @ $1.25/ACRE 16 OUNCES OF ROUNDUP @ $0.29/OUNCE
SEED/FERTILIZE	APRIL	100 POUNDS OF BARLEY SEED @ $0.14/POUND 67 POUNDS OF NITROGEN @ $ 0.22/POUND 75 POUNDS OF 16-20 @ $0.13/POUND
APPLY HERBICIDE	MAY	RENTAL SPRAYER @ $1.25/ACRE 1.5 PINTS OF MCPA @ $2.78/PINT O.4 OUNCES OF HARMONY EXTRA @ $16.36/0Z
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE B1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS FOR FARMER B

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
400HP-WH TRACTOR*	79,000.00	15	650	5.03	8.38	.50	1.51	.84	16.26	3.69	11.43	15.12	31.38
400HP-WH TRACTOR**	79,000.00	15	650	5.03	8.38	.50	1.51	.84	16.26	3.69	10.61	14.31	30.57
400HP-WH TRACTOR***	79,000.00	15	650	5.03	8.38	.50	1.51	.84	16.26	3.69	9.80	13.49	29.75
400HP-WT TRACTOR****	79,000.00	15	650	5.03	8.38	.50	1.51	.84	16.26	3.69	6.94	10.63	26.89
400HP-WH TRACT.*****	79,000.00	15	650	5.03	8.38	.50	1.51	.84	16.26	3.69	5.72	9.41	25.67
160HP-CRAWLER	60,000.00	15	350	7.62	11.43	.69	2.06	1.14	22.93	6.57	4.90	11.47	34.40
NO-TILL DRILL	93,370.00	21	500	8.89	9.34	.56	1.68	.93	21.40	12.00	.00	12.00	33.40
110' SPRAYER	28,916.00	11	150	17.52	9.64	.58	1.73	.96	30.44	5.33	.00	5.33	35.77
24' COMBINE	151,490.00	10	300	30.50	35.25	2.11	6.34	3.52	77.73	26.67	4.90	31.57	109.30
50'TINE HARROW	16,458.00	18	420	1.38	2.67	.16	.48	.27	4.97	.95	.00	.95	5.92
80'FLEX HARROW	7,000.00	30	52	4.49	6.73	.40	1.21	.67	13.51	3.85	.00	3.85	17.35
27'CHISEL PLOW	34,339.00	30	150	7.63	11.45	.69	2.06	1.14	22.97	4.00	.00	4.00	26.97
25' OFFSET DISC	23,600.00	42	187	3.00	6.31	.38	1.14	.63	11.46	2.14	.00	2.14	13.60
3/4 TON PICKUP	18,000.00	10	375	3.84	2.88	.17	.52	.29	7.70	5.33	1.73	7.06	14.76
TWO-TON TRUCK	18,000.00	15	150	7.11	6.67	.40	1.20	.67	16.04	6.67	2.59	9.25	25.30

*First entry for the 400-horsepower tractor denotes 14 gallons per hour fuel use for chisel operations
**Second entry for the 400-horsepower tractor denotes 13 gallons per hour fuel use for disc operations
***Third entry for the 400- horsepower tractor denotes 8.5 gallons per hour fuel use for seeding operation
****Fourth entry for the 400-horsepower tractor denotes 7 gallons per hour fuel use for spraying operation
***** Fifth entry for the 400-horsepower tractor denotes 6 gallons per hour fuel use for harrow operation

TABLE B2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, FARMER B

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST: FUEL, LUBE, & REPAIRS	VARIABLE COST: MACH LABOR	VARIABLE COST: SERVICE	VARIABLE COST: MATER.	VARIABLE COST: INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
BURN SW STUBBLE	400HP-WT, 25' OFFSET DISC	SEP	1996	.00	.00	.00	.00	.00	2.00	.00	.18	2.18	2.18
TINE HARROW	400HP-WT, 50' TINE HARROW	SEP	1996	.08	.08	1.71	1.25	1.20	.00	.00	.22	2.67	4.39
SEED/FERTILIZE	400HP-WT, 20' NO-TILL DRILL	SEP	1996	.13	.16	5.11	3.72	2.32	.00	58.65	5.93	70.62	75.73
APPLY HERB/FERT	400HP-WT, 110' SPRAYER	APR	1997	.01	.01	.48	.16	.17	.00	20.91	.71	21.95	22.43
HARVEST	24' COMBINE	AUG	1997	.30	.33	23.32	9.47	4.79	.00	.00	.00	14.25	37.57
HAUL GRAIN	TAMDEM TRUCK	AUG	1997	.15	.33	6.69	1.64	4.79	.00	.00	.00	6.43	13.12
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	1.92	1.76	4.20	.00	.00	.30	6.27	8.19
MISC USE	TWO-TON TRUCK	ANN	1997	.05	.06	.80	.46	.80	.00	.00	.06	1.32	2.13
OVERHEAD	UTILITIES, LEGAL, ACCT., ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	6.29	.00	6.29	6.29
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	110.48	.00	.00	.00	.00	.00	.00	110.48
TOTAL PER ACRE				.97	1.26	155.52	18.47	18.26	2.00	85.85	7.41	131.99	287.51

TABLE B3: MATERIALS AND SERVICES FOR WINTER WHEAT, FARMER B

OPERATION	MONTH	MATERIAL AND/OR SERVICE
SEED/FERTILIZE	SEPTEMBER	120 POUNDS OF WHEAT SEED @ $0.14/POUND 120 POUNDS OF NITROGEN @ $0.22/POUND 35 POUNDS OF PHOSPATE @ $0.25/POUND 30 POUNDS OF POTASSIUM @ $0.14/POUND 25 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	APRIL	1 PINT OF BRONATE @ $7.38/PINT 0.25 PINTS OF HOELON @ $8.88/PINT 0.25 OUNCES OF CANVAS @ $18.75/OUNCE
FERTILIZE	APRIL	30 POUNDS OF NITROGEN @ $0.22/POUND
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE B4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING WHEAT, FARMER B

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
CHISEL SB STUB	400HP-WT, 27'CHISEL	SEP	1996	.10	.11	4.09	2.06	1.60	.00	.00	.34	3.99	8.08
DISC	400HP-WT, 25' OFFSET DISC	OCT	1996	.05	.06	1.47	.85	.80	.00	.00	.14	1.78	3.25
APPLY HERBICIDE	400HP-WT, 110' SPRAYER	APR	1997	.01	.01	.48	.16	.17	.00	4.64	.17	5.14	5.62
TINE HARROW	400HP-WT, 50' HARROW	APR	1997	.08	.09	1.83	1.34	1.31	.00	.00	.09	2.73	4.56
SEED/FERTILIZE	400HP-WT, NO-TILL DRILL	APR	1997	.13	.16	5.11	3.08	2.32	.00	54.25	1.99	61.64	66.75
HARROW	160HP-CT, 80' HARROW	APR	1997	.02	.02	.60	.27	.32	.00	.00	.02	.61	1.21
APPLY HERB/FERT	400HP-WT, 110' SPRAYER	MAY	1997	.01	.01	.48	.16	.16	.00	28.50	.72	29.54	30.02
HARVEST	24' COMBINE	AUG	1997	.20	.22	15.55	6.31	3.19	.00	.00	.00	9.50	25.05
HAUL GRAIN	TANDEM TRUCK	AUG	1997	.11	.22	4.91	1.20	3.19	.00	.00	.00	4.39	9.30
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	1.92	1.76	4.20	.00	.00	.30	6.27	8.19
MISC USE	TWO-TON TRUCK	ANN	1997	.05	.06	.80	.46	.87	.00	.00	.07	1.40	2.20
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	6.35	.00	6.35	6.35
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	56.00	.00	.00	.00	.00	.00	.00	56.00
TOTAL PER ACRE				1.01	1.25	98.24	17.66	18.12	.00	93.74	3.82	133.35	231.58

TABLE B5: MATERIALS AND SERVICES FOR SPRING WHEAT, FARMER B

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	APRIL	16 OUNCES OF ROUNDUP @ $0.29/OUNCE
SEED/FERTILIZE	APRIL	120 POUNDS OF WHEAT SEED @ $0.14/POUND 100 POUNDS OF NITROGEN @ $0.22/POUND 35 POUNDS OF PHOSPHATE @ $0.25/POUND 30 POUNDS OF POTASSIUM @ $0.14/POUND 25 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	MAY	1 PINT OF BRONATE @ $7.38/PINT 1.35 PINTS OF HOELON @ $8.88/PINT 0.25 OUNCES OF CANVAS @ $18.75/OUNCE
FERTILIZE	MAY	20 POUNDS OF NITROGEN @ $O.22/POUND
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE B6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING BARLEY, FARMER B

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
CHISEL WHT STUB	400HP-WT, 27' CHISEL	SEP	1996	.10	.11	4.09	2.06	1.60	.00	.00	.34	3.99	8.08
DISC	400HP-WT, 25' OFFSET DISC	OCT	1996	.05	.06	1.47	.85	.80	.00	.00	.14	1.78	3.25
HARROW	200HP-CT, 80' HARROW	APR	1997	.02	.02	.66	.30	.35	.00	.00	.02	.67	1.34
TINE HARROW	400HP-WT, 50' HARROW	APR	1997	.08	.08	1.71	1.25	1.20	.00	.00	.08	2.53	4.24
APPLY HERBICIDE	400HP-WT, 110' SPRAYER	APR	1997	.01	.01	.48	.16	.17	.00	4.64	.17	5.14	5.62
SEED/FERTILIZE	400HP-WT, NO-TILL DRILL	APR	1997	.13	.16	5.11	3.08	2.32	.00	57.75	2.11	65.26	70.36
APPLY HERB/FERT	400HP-WT, 110' SPRAYER	MAY	1997	.01	.01	.48	.16	.17	.00	18.77	.48	19.58	20.06
HARVEST	24' COMBINE	AUG	1997	.20	.22	15.55	6.31	3.19	.00	.00	.00	9.50	25.05
HAUL GRAIN	TANDEM TRUCK	AUG	1997	.11	.22	4.91	1.20	3.19	.00	.00	.00	4.39	9.30
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	1.92	1.76	4.20	.00	.00	.30	6.27	8.19
MISC USE	TWO-TON TRUCK	ANN	1997	.05	.06	.80	.46	.87	.00	.00	.07	1.40	2.20
OVERHEAD	UTILITIES,LEGAL,ACCT., ETC...	ANN	1997	.00	.00	.00	.00	.00	.00	6.03	.00	6.03	6.03
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT BARLEY	ANN	1997	.00	.00	41.30	.00	.00	.00	.00	.00	.00	41.30
TOTAL PER ACRE				1.01	1.25	83.49	17.60	18.06	.00	87.18	3.69	126.54	210.02

TABLE B7: MATERIALS AND SERVICES FOR SPRING BARLEY, FARMER B

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	APRIL	16 OUNCES OF ROUNDUP @ $0.29/OUNCE
SEED/FERTILIZE	APRIL	145 POUNDS OF BARLEY SEED @ $0.14/POUND 100 POUNDS OF NITROGEN @ $0.22/POUND 35 POUNDS OF PHOSPHATE @ $0.25/POUND 30 POUNDS OF POTASSIUM @ $0.14/POUND 25 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	MAY	1 PINT OF BRONATE @ $7.38/PINT 0.40 PINTS OF AVENGE @ $5.70/PINT 0.25 OUNCES OF CANVAS @ $18.75/OUNCE
FERTILIZE	MAY	20 POUNDS OF NITROGEN @ $0.22/POUND
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE C1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS FOR FARMER C

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
350HP-WH TRACTOR	31,361.00	15	150	12.61	11.45	.69	2.06	1.14	27.95	4.00	7.35	11.35	39.30
27' COMBINE	72,000.00	26	200	13.85	18.00	1.08	3.24	1.80	37.97	17.50	6.53	24.03	62.00
25' COMBINE	77,338.00	16	280	17.26	13.81	.83	2.49	1.38	35.77	12.50	6.53	19.03	54.80
3/4 TON PICKUP	18,000.00	10	200	6.34	5.83	.35	1.05	.58	14.15	5.45	2.59	8.04	22.19
TRUCK	27,000.00	20	150	9.00	9.00	.54	1.62	.90	21.06	3.33	2.59	5.92	26.98
12'DISC RIPPER	18,000.00	15	250	.53	6.80	.41	1.22	.68	9.65	1.20	.00	1.20	10.85
70'TRUCK SPRAYER	31,762.00	28	100	11.34	15.88	.95	2.86	1.59	32.62	10.00	6.53	16.53	49.16
60'HARROW	7,527.00	15	100	4.54	4.12	.25	.74	.41	10.06	1.00	.00	1.00	11.06

TABLE C2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, FARMER C

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	70'TRUCK SPRAYER	SEP	1996	.02	.02	.65	.33	.20	.00	10.05	.97	11.56	12.21
SEED/FERTILIZE	CUSTOM SEEDING	OCT	1996	.00	.00	.00	.00	.00	22.00	45.20	5.60	72.80	72.80
APPLY HERBICIDE	70'TRUCK SPRAYER	MAR	1997	.02	.02	.65	.33	.20	.00	6.64	.30	7.47	8.12
SPOT SPRAY(33%)	70'TRUCK SPRAYER	APR	1997	.01	.01	.33	.17	.10	.00	3.00	.11	3.37	3.70
HARVEST	25' COMBINE	AUG	1997	.20	.23	7.15	3.81	2.25	.00	.00	.00	6.06	13.21
HAUL GRAIN	TRUCK	AUG	1997	.11	.23	2.36	.66	2.25	.00	.00	.00	2.91	5.27
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	3.54	2.01	2.90	.00	.00	.25	5.16	8.69
MISC USE	TRUCK	ANN	1997	.05	.06	1.05	.30	.60	.00	.00	.04	.94	1.99
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	5.51	.00	5.51	5.51
LAND COST	NET RENT	ANN	1997	.00	.00	84.00	.00	.00	.00	.00	.00	.00	84.00
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
TOTAL PER ACRE				.66	.85	104.74	7.60	8.50	22.00	70.40	7.27	115.77	220.51

TABLE C3 MATERIALS AND SERVICES FOR WINTER WHEAT, FARMER C

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	12 OUNCES OF ROUNDUP @ $0.29/OUNCE 0.56 OUNCES OF AMBER @ $11.74/OUNCE
SEED/FERTILIZE	OCTOBER	CUSTOM SEEDING @ $22.00/ACRE 80 POUNDS OF WHEAT SEED @ $0.14/POUND 100 POUNDS OF NITROGEN @ $0.22/POUND 20 POUNDS OF PHOSPHATE @ $0.25/POUND 14 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	MARCH	4 OUNCES OF SENCOR @ $1.66/OUNCE
SPOT SPRAY(33%)	APRIL	2.64 OUNCES OF BRONATE @ $0.46/OUNCE 0.11 OUNCES OF HARMONY EXTRA @ $16.36/OUNCE
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE C4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING WHEAT, FARMER C

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	70'TRUCK SPRAYER	FEB	1997	.02	.02	.52	.26	.19	.00	3.48	.20	4.13	4.65
APPLY HERBICIDE	70'TRUCK SPRAYER	APR	1997	.02	.02	.52	.26	.19	.00	3.48	.13	4.07	4.59
SEED/FERTILIZE	CUSTOM SEEDING	MAY	1997	.00	.00	.00	.00	.00	22.00	33.80	1.40	57.20	57.20
APPLY HERBICIDE	70'TRUCK SPRAYER	JUN	1997	.02	.02	.52	.26	.19	.00	32.61	.55	33.61	34.13
HARVEST	25'COMBINE	AUG	1997	.16	.17	5.58	2.97	1.70	.00	.00	.00	4.67	10.25
HAUL GRAIN	TRUCK	AUG	1997	.09	.17	1.83	.50	1.70	.00	.00	.00	2.20	4.03
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	3.54	2.01	2.90	.00	.00	.25	5.16	8.69
MISC USE	TRUCK	ANN	1997	.05	.06	1.08	.30	.60	.00	.00	.04	.94	2.02
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	5.60	.00	5.60	5.60
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	42.85	.00	.00	.00	.00	.00	.00	42.85
TOTAL PER ACRE				.59	.75	61.44	6.57	7.47	22.00	78.97	2.56	117.57	179.01

TABLE C5: MATERIALS AND SERVICES FOR SPRING WHEAT, FARMER C

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	FEBRUARY	12 OUNCES OF ROUNDUP @ $0.29/OUNCE
APPLY HERBICIDE	MARCH	12 OUNCES OF ROUNDUP @ $0.29/OUNCE
SEED/FERTILIZE	MAY	CUSTOM SEEDING @ $22.00/ACRE 80 POUNDS OF WHEAT SEED @ $0.14/POUND 80 POUNDS OF NITROGEN @ $0.22/POUND 20 POUNDS OF PHOSPHATE @ $0.25/POUND
APPLY HERBICIDE	JUNE	2.70 PINTS OF HOELON @ $8.88/PINT 0.40 OUNCES OF HARMONY EXTRA @ $16.36/OUNCE 1.05 QUART OF SODIUM SALT @ $1.05/QUART
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE C6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR LENTILS, FARMER C

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	70' TRUCK SPRAYER	FEB	1997	.02	.02	.52	.26	.19	.00	3.48	.20	4.13	4.65
APPLY HERBICIDE	70' TRUCK SPRAYER	APR	1997	.02	.02	.52	.26	.19	.00	9.04	.32	9.81	10.33
SEED	CUSTOM SEEDING	MAY	1997	.00	.00	.00	.00	.00	16.00	9.90	.65	26.55	26.55
HARROW 2X	60'HARROW, 350HP-TRACTOR	MAY	1997	.03	.03	1.02	.34	.28	.00	.00	.02	.63	1.65
SPOT SPRAY 80%	70'TRUCK SPRAYER	MAY	1997	.02	.02	.52	.26	.18	.00	13.94	.36	14.74	15.26
SWATH	HIRE SWATHER	JUN	1997	.00	.00	.00	.00	.00	15.00	.00	.25	15.25	15.25
APPLY INSECT.75%	CUSTOM AERIAL APPLICATION	JUL	1997	.00	.00	.00	.00	.00	3.56	2.63	.05	6.24	6.24
HARVEST	27'COMBINE	AUG	1997	.20	.22	13.74	7.30	2.20	.00	.00	.00	9.50	23.25
HAUL GRAIN	TRUCK	AUG	1997	.11	.22	2.32	.65	2.20	.00	.00	.00	2.85	5.17
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	3.54	2.01	2.90	.00	.00	.25	5.16	8.69
MISC USE	TRUCK	ANN	1997	.05	.06	1.05	.30	.60	.00	.00	.04	.94	1.99
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	4.79	.00	4.79	4.79
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	60.00	.00	.00	.00	.00	.00	.00	60.00
TOTAL PER ACRE				.68	.87	88.24	11.39	8.74	34.56	43.77	2.13	100.59	188.83

TABLE C7: MATERIALS AND SERVICES FOR LENTILS, FARMER C

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	FEBRUARY	12 OUNCES OF ROUNDUP @ $0.29/OUNCE
APPLY HERBICIDE	APRIL	12 OUNCES OF ROUNDUP @ $0.29/OUNCE 1 OUNCE OF PURSUIT @ $5.56/OUNCE
SEEDING	MAY	CUSTOM SEEDING @ $16.00/ACRE 55 POUNDS OF LENTIL SEED @ $0.18/POUND
SPOT SPRAY(80%)	MAY	3.20 OUNCES OF SENCOR @ $1.66/OUNCE 8 OUNCES OF ASSERT @ $1.08/OUNCE
APPLY INSECTICIDE(75%)	JULY	CUSTOM AERIAL APPLICATION @ $3.56/ACRE 75% OF INSECTICIDE @ $3.50/ACRE
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE D1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS FOR FARMER D

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
CHISEL/HARROW	11,155.00	23	20	24.25	27.89	1.67	5.02	2.79	61.62	10.00	12.25	22.25	83.87
15'NO-TILL DRILL	34,339.00	17	200	10.10	8.58	.52	1.55	.86	21.60	12.50	12.25	24.75	46.35
30'DISC DRILL	28,000.00	12	50	40.18	31.89	1.91	5.74	3.19	82.92	20.00	.00	20.00	102.92
30' COMBINE	200,000.00	12	250	56.80	45.92	2.76	8.27	4.59	118.33	12.00	13.06	25.06	143.40
25'HILL COMBINE	137,475.00	31	250	17.74	27.50	1.65	4.95	2.75	54.58	14.00	8.17	22.17	76.75
80' SPRAYER	14,200.00	30	100	4.73	7.10	.43	1.28	.71	14.25	13.00	.00	13.00	27.24
TWO-TON TRUCK	35,000.00	43	200	4.07	8.75	.53	1.58	.88	15.79	5.00	2.59	7.59	23.38
50'FLEX HARROW	9,000.00	21	50	8.57	9.00	.54	1.62	.90	20.63	8.00	.00	8.00	28.63
400 HP-TRACTOR	77,139.00	21	300	12.24	12.86	.77	2.31	1.29	29.47	11.67	12.25	23.91	53.39
36' CULTIWEEDER	16,600.00	34	60	8.14	13.83	.83	2.49	1.38	26.67	13.33	.00	13.33	40.00
36'CULTIVATOR	18,380.00	25	120	6.13	7.66	.46	1.38	.77	16.39	3.33	.00	3.33	19.72
50'PACKER	10,000.00	56	26	6.87	19.23	1.15	3.46	1.92	32.64	50.00	.00	50.00	82.64
12'SWATHER	26,677.00	32	100	8.34	13.34	.80	2.40	1.33	26.21	8.00	4.08	12.08	38.29
3/4 TON PICKUP	20,603.00	10	375	4.52	3.23	.19	.58	.32	8.85	2.67	2.59	5.25	14.11

TABLE D2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, FARMER D

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST: FUEL, LUBE, & REPAIRS	VARIABLE COST: MACH LABOR	VARIABLE COST: SERVICE	VARIABLE COST: MATER.	VARIABLE COST: INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	400HP-TRACTOR, 80'SPRAYER	SEP	1996	.04	.05	1.87	1.57	.50	.00	6.51	.79	9.37	11.24
SEED/FERTILIZE	400HP-TRACTOR,15'NT-DRILL	OCT	1996	.13	.15	6.75	6.38	1.50	.00	35.20	3.59	46.67	53.42
APPLY HERBICIDE	400HP-TRACTOR,80' SPRAYER	APR	1997	.04	.05	1.87	1.57	.50	.00	29.28	1.05	32.40	34.27
HARVEST	30'COMBINE	AUG	1997	.16	.18	18.93	4.01	1.80	.00	.00	.00	5.81	24.74
HAUL GRAIN	TWO-TON TRUCK	AUG	1997	.09	.18	1.42	.68	1.80	.00	.00	.00	2.48	3.90
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	2.21	1.31	2.90	.00	.00	.21	4.42	6.64
MISC USE	TWO-TON TRUCK	ANN	1997	.05	.06	.79	.38	.60	.00	.00	.05	1.03	1.82
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	5.11	.00	5.11	5.11
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	64.35	.00	.00	.00	.00	.00	.00	64.35
TOTAL PER ACRE				.76	.96	103.19	15.91	9.60	.00	76.11	5.68	107.30	210.49

TABLE D3: MATERIALS AND SERVICES FOR WINTER WHEAT, FARMER D

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	1 PINT OF ROUNDUP @ $4.64/PINT 1 PINT OF 2, 4-D AMINE @ $1.88/PINT
SEED/FERTILIZE	OCTOBER	80 POUNDS OF WHEAT SEED @ $0.14/POUND 80 POUNDS OF NITROGEN @ $0.22/POUND 20 POUNDS OF PHOSPHATE @ $0.25/POUND 14 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	APRIL	2 PINTS OF HOELON @ $8.89/PINT 1 PINT OF BUCTRIL @ $7.66/PINT 0.33 OUNCES OF AMBER @ $11.74/OUNCE
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE D4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING WHEAT, FARMER D

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	400HP-TRACTOR,80'SPRAYER	SEP	1996	.04	.05	1.87	1.57	.50	.00	4.64	.62	7.33	9.19
BURN 30%	6 WHEELER	MAR	1997	.00	.00	.00	.00	.00	.60	.00	.03	.63	.63
APPLY HERBICIDE	400HP-TRACTOR, 80'SPRAYER	MAR	1997	.04	.05	1.87	1.57	.50	.00	4.64	.28	6.99	8.86
APPLY HERBICIDE	400HP-TRACTOR, 80'SPRAYER	MAY	1997	.04	.05	1.87	1.57	.50	.00	11.19	.33	13.59	15.46
SEED/FERTILIZE	400HP-TRACTOR, 15'NT-DRILL	MAY	1997	.13	.15	6.75	6.38	1.50	.00	40.80	1.22	49.90	56.65
HARVEST	30'COMBINE	AUG	1997	.17	.18	19.73	4.18	1.80	.00	.00	.00	5.98	25.70
HAUL GRAIN	TWO-TON TRUCK	AUG	1997	.09	.18	1.42	.68	1.80	.00	.00	.00	2.48	3.90
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	3.95	1.90	2.90	.00	.00	.24	5.04	8.99
MISC USE	TWO-TON TRUCK	ANN	1997	.05	.06	.79	.38	.60	.00	.00	.05	1.03	1.82
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	4.65	.00	4.65	4.65
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	53.73	.00	.00	.00	.00	.00	.00	53.73
TOTAL PER ACRE				.80	1.01	96.97	18.23	10.10	.60	65.92	2.76	97.61	194.58

TABLE D5: MATERIALS AND SERVICES FOR SPRING WHEAT, FARMER D

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	1 PINT OF ROUNDUP @ $4.64/PINT
APPLY HERBICIDE	MARCH	1 PINT OF ROUNDUP @ $4.64/PINT
APPLY HERBICIDE	MARCH	1 QUART OF GRANULAR FARGO @ $2.30/QT
PLANT	APRIL	120 POUNDS OF WHEAT SEED @ $0.14/POUND
APPLY HERBICIDE	APRIL	0.33 OUNCE OF AMBER @ $11.74/0UNCE 1 PINT OF BRONATE @ $7.38/PINT
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE D6 : SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR LENTILS FOR FARMER D

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
CHISEL/HARROW	400HP-TRACTOR, 16'CHISEL HARR	SEP	1996	.07	.08	6.58	3.40	.80	.00	.00	.38	4.58	11.17
APPLY HERBICIDE	400HP-TRACTOR, 80'SPRAYER	SEP	1996	.04	.05	1.87	1.57	.50	.00	8.39	.96	11.42	13.29
APPLY HERBICIDE	400HP-TRACTOR, 80'SPRAYER	MAR	1997	.04	.05	1.87	1.57	.50	.00	8.39	.44	10.90	12.76
CULTIVATE	400HP-TRACTOR, 36'CULTIVATOR	MAR	1997	.07	.08	3.42	2.07	.80	.00	.00	.12	2.99	6.41
APPLY HERBICIDE	400HP-TRACTOR, 80'SPRAYER	APR	1997	.04	.05	1.87	1.57	.50	.00	18.28	.68	21.03	22.90
CULITWEED	400HP-TRACTOR,36'CULTIWEEDER	APR	1997	.07	.08	4.14	2.77	.80	.00	.00	.12	3.69	7.83
SEED	400HP-TRACTOR,30'DISC DRILL	MAY	1997	.07	.08	8.07	3.24	.80	.00	9.90	.35	14.29	22.36
PACK	400HP-TRACTOR, 50'PACKER	MAY	1997	.04	.04	2.60	3.05	.40	.00	.00	.09	3.54	6.14
SWATH	12' SWATHER	AUG	1997	.14	.15	3.67	1.69	1.50	.00	.00	.00	3.19	6.86
HARVEST	20'COMBINE	AUG	1997	.25	.28	13.65	5.54	2.80	.00	.00	.00	8.34	21.99
HAUL GRAIN	TWO-TON TRUCK	AUG	1997	.14	.28	2.21	1.06	2.80	.00	.00	.00	3.86	6.07
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	2.21	1.31	2.90	.00	.00	.21	4.42	6.64
MISC USE	TWO-TON TRUCK	ANN	1997	.05	.06	.79	.38	.60	.00	.00	.05	1.03	1.82
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	4.66	.00	4.66	4.66
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	44.00	.00	.00	.00	.00	.00	.00	44.00
TOTAL PER ACRE				1.27	1.57	101.94	29.25	15.70	.00	49.62	3.39	97.96	199.90

TABLE D7: MATERIALS AND SERVICES FOR LENTILS, FARMER D

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	1 PINT OF ROUNDUP @ $4.64/PINT 2 PINTS OF 2,4-D @ $1.88/PINT
APPLY HERBICIDE	APRIL	1 QUART OF FARGO @ $2.30/QUART 2.50 OUNCES OF PURSUIT @ $5.56/OUNCE 8 OUNCES OF TREFLAN @ $0.26/OUNCE
PLANT	MAY	55 POUNDS OF LENTIL SEED @ $0.18/POUND
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE E1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS FOR FARMER E

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
200HP-TRACTOR*	78,000.00	10	400	13.75	12.63	.76	2.27	1.26	30.67	2.50	4.08	6.58	37.25
200HP-TRACTOR**	78,000.00	10	400	13.75	12.63	.76	2.27	1.26	30.67	2.50	6.53	9.03	39.70
33' DRILL	64,963.00	11	166	29.99	22.64	1.36	4.08	2.26	60.33	9.04	.00	9.04	69.36
72' SPRAYER	18,000.00	10	120	12.34	8.83	.53	1.59	.88	24.17	4.17	.00	4.17	28.34
22' COMBINE	30,564.00	9	300	8.91	6.18	.37	1.11	.62	17.19	8.33	6.53	14.87	32.05
25' COMBINE	135,833.00	15	300	27.11	24.95	1.50	4.49	2.49	60.54	10.00	6.53	16.53	77.07
TRUCK	24,037.00	12	450	3.83	3.04	.18	.55	.30	7.91	4.44	2.59	7.03	14.94
22'DISC	6,702.00	18	70	5.32	4.79	.29	.86	.48	11.73	7.14	.00	7.14	18.88
50'HARROW	18,000.00	15	60	18.08	16.44	.99	2.96	1.64	40.11	.00	.00	.00	40.11
60'HARROW	7,000.00	33	11	19.28	31.82	1.91	5.73	3.18	61.92	.00	.00	.00	61.92
PICKUP	4,178.00	11	160	2.00	1.51	.09	.27	.15	4.03	.63	2.59	3.21	7.24

* First entry for the 200-horsepower tractor denotes 5 gallons per hour fuel use for spraying operations
** Second entry for the 200-horsepower tractor denotes 8 gallons per hour fuel use for seeding and tillage operations

TABLE E2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, FARMER E

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	200HP-T, RENTAL GRANULAR APPL	SEP	1996	.03	.04	.92	.27	.40	1.50	22.50	2.26	26.93	27.85
SEED/FERTILIZE	RENTAL TRACT,33'NO-TILL DRILL	SEP	1996	.08	.10	4.83	1.72	.00	4.00	40.70	4.26	50.68	55.50
APPLY HERBICIDE	200HP-TRACTOR, 72'SPRAYER	OCT	1996	.02	.02	1.16	.23	.20	.00	6.50	.58	7.51	8.67
HARVEST	24' COMBINE	AUG	1997	.16	.18	9.69	2.65	1.80	.00	.00	.00	4.45	14.13
HAUL GRAIN	TRUCK	SEP	1997	.09	.18	.71	.63	1.80	.00	.00	.22	2.66	3.37
MISC USE	PICKUP	ANN	1997	.25	.29	1.01	.80	2.90	.00	.00	.19	3.89	4.89
MISC USE	TRUCK	ANN	1997	.05	.06	.40	.35	.60	.00	.00	.05	1.00	1.39
0VERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	4.86	.00	4.86	4.86
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	LAND RENT	ANN	1997	.00	.00	68.89	.00	.00	.00	.00	.00	.00	68.89
TOTAL PER ACRE				.68	.87	92.59	5.65	8.70	5.50	74.56	7.55	101.96	194.55

TABLE E3: MATERIALS AND SERVICES FOR WINTER WHEAT, FARMER E

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	GRANULAR APPLICATOR RENTAL @ $1.50/ACRE 15 POUNDS OF GRANULAR FARGO @ $1.50/ACRE
SEED/FERTILIZE	SEPTEMBER	RENTAL TRACTOR @ $4.00/ACRE 85 POUNDS OF WHEAT SEED @ $0.14/POUND 90 POUNDS OF NITROGEN @ $0.22/POUND 30 POUNDS OF PHOSPHATE @ $0.25/POUND 15 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	OCTOBER	0.4 OUNCES OF FINESSE @ $16.26/OUNCE
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE E4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING WHEAT FOR FARMER E

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
50% DISC	200HP-TRACTOR, 22'DISC	SEP	1996	.03	.03	1.36	.51	.30	.00	.00	.07	.89	2.25
HARROW	50'HARROW,200HP-TRACTOR	SEP	1996	.03	.03	2.22	.30	.30	.00	.00	.05	.65	2.87
APPLY HERBICIDE	200HP-TRACTOR, 72'SPRAYER	OCT	1996	.02	.02	1.16	.28	.20	.00	4.64	.43	5.55	6.71
APPLY HERBICIDE	200HP-TRACTOR, 72'SPRAYER	APR	1997	.02	.02	1.16	.28	.20	.00	3.48	.13	4.09	5.25
SEED/FERTILIZE	RENTAL TRACT.,33'NO-TILL DRILL	APR	1997	.08	.10	4.83	.72	1.00	4.00	43.85	1.65	51.23	56.05
APPLY HERBICIDE	200HP-TRACTOR, 72' SPRAYER	MAY	1997	.03	.04	1.74	.42	.40	.00	20.71	.54	22.07	23.81
FERTILIZE	AERIAL	JUL	1997	.00	.00	.00	.00	.00	5.00	.00	.04	5.04	5.04
HARVEST	25'COMBINE	AUG	1997	.16	.18	9.69	2.65	1.76	.00	.00	.00	4.41	14.09
HAUL GRAIN	TRUCK	SEP	1997	.09	.18	.71	.63	1.76	.00	.00	.22	2.61	3.32
MISC USE	PICKUP	ANN	1997	.25	.29	1.01	.80	2.90	.00	.00	.19	3.89	4.89
MISC USE	TRUCK	ANN	1997	.05	.06	.40	.35	.60	.00	.00	.05	1.00	1.39
OVERHEAD	UTILITIES, LEGAL, ACCT, ECT.	ANN	1997	.00	.00	.00	.00	.00	.00	5.07	.00	5.07	5.07
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	44.00	.00	.00	.00	.00	.00	.00	44.00
TOTAL PER ACRE				.76	.94	73.26	6.95	9.42	9.00	77.75	3.37	106.49	179.75

TABLE E5: MATERIALS AND SERVICES FOR SPRING WHEAT, FARMER E

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	OCTOBER	16 OUNCES OF ROUNDUP @ $0.29/OUNCE
APPLY HERBICIDE	APRIL	12 OUNCES OF ROUNDUP @ $0.29/OUNCE
SEED/FERTILIZE	APRIL	RENTAL TRACTOR @ $4.00/ACRE 115 POUNDS OF WHEAT SEED @ $0.14/POUND 100 POUNDS OF NITROGEN @ $0.22/POUND 15 POUNDS OF PHOSPHATE @ $0.25/POUND 20 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	MAY	1.5 PINTS OF HOELON @ $8.88/PINT 5 OUNCES OF BUCTRIL @ $0.40/OUNCE 0.33 OUNCES OF HARMONY EXTRA @ $16.36 OUNCE
FERTILIZE	JULY	AERIAL UREA @ $5/ACRE
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE E6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PEAS FOR FARMER E

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST: FUEL, LUBE, & REPAIRS	VARIABLE COST: MACH LABOR	VARIABLE COST: SERVICE	VARIABLE COST: MATER.	VARIABLE COST: INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
HARROW	200HP-TRACTOR, 50'HARROW	SEP	1996	.03	.03	2.07	.28	.28	.00	.00	.05	.61	2.68
APPLY HERBICIDE	200HP-TRACTOR, 72' SPRAYER	OCT	1996	.02	.02	1.04	.21	.18	.00	4.64	.42	5.44	6.49
SEED	RENTAL TRACTOR, 33'NT-DRILL	MAY	1997	.08	.10	4.83	1.72	1.00	4.00	21.60	.68	28.01	32.83
HARROW	200HP-TRACTOR, 60' HARROW	MAY	1997	.02	.02	2.10	.22	.22	.00	.00	.01	.45	2.55
APPLY HERBICIDE	200HP-TRACTOR, 72' SPRAYER	JUN	1997	.02	.02	1.04	.21	.18	.00	19.42	.33	20.14	21.18
APPLY INSECT.	AERIAL APPLICATION	JUL	1997	.00	.00	.00	.00	.00	4.50	2.50	.06	7.06	7.06
HARVEST	25' COMBINE	AUG	1997	.20	.22	12.11	3.31	2.20	.00	.00	.00	5.51	17.61
MISC USE	PICKUP	ANN	1997	.25	.29	1.01	.80	2.90	.00	.00	.19	3.89	4.89
HAUL GRAIN	TRUCK	AUG	1997	.11	.22	.87	.77	2.20	.00	.00	.00	2.97	3.84
MISC USE	TRUCK	ANN	1997	.05	.06	.40	.35	.60	.00	.00	.05	1.00	1.39
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC	ANN	1997	.00	.00	.00	.00	.00	.00	3.75	.00	3.75	3.75
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	46.00	.00	.00	.00	.00	.00	.00	46.00
TOTAL PER ACRE				.78	.98	76.46	6.86	9.76	8.50	51.91	1.79	78.82	155.28

TABLE E7: MATERIALS AND SERVICES FOR PEAS, FARMER E

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	OCTOBER	16 OUNCE OF ROUNDUP @ $0.29/OUNCE
SEEDING	MAY	RENTAL TRACTOR @ $4.00/ACRE 180 POUNDS OF PEA SEED @ $0.12/POUND
APPLY HERBICIDE	JUNE	1.25 PINTS OF BASAGRAN @ $9.50/PINT 7 OUNCES OF ASSURE @ $1.08/OUNCE
APPLY INSECTICIDE	JULY	AERIAL SPRAY @ $4.50/ACRE 0.50 PINTS OF DIMETHOATE @ $5.00/PINT
OVERHEAD	ANNUAL	5 % OF VARIABLE COST

TABLE F1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS FOR FARMER F

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
240HP-TRACTOR*	52,900.00	9	300	13.30	11.65	.70	2.10	1.16	28.91	5.00	8.17	13.16	42.08
240HP-TRACTOR**	52,900.00	9	300	13.30	11.65	.70	2.10	1.16	28.91	5.00	5.72	10.72	39.63
160HP-TRACTOR***	23,512.00	12	200	7.35	7.35	.44	1.32	.73	17.19	5.00	3.27	8.27	25.46
160HP-TRACTOR****	23,512.00	12	200	7.35	7.35	.44	1.32	.73	17.19	5.00	4.08	9.08	26.28
120HP-TRACTOR	5,878.00	14	75	4.41	4.75	.28	.85	.47	10.78	2.67	2.45	5.12	15.89
TRUCK	9,405.00	14	100	5.99	5.21	.31	.94	.52	12.97	2.00	2.45	4.45	17.42
3/4 TON PICKUP	7,759.00	14	100	4.37	4.70	.28	.85	.47	10.67	3.00	2.45	5.45	16.12
NO-TILL DRILL	47,024.00	7	160	41.99	14.70	.88	2.65	1.47	61.68	6.25	.00	6.25	67.93
12'DISC RIPPER	18,000.00	15	175	.76	9.71	.58	1.75	.97	13.78	1.71	.00	1.71	15.49
66'SPRAYER	5,878.00	19	67	4.62	4.39	.26	.79	.44	10.50	11.94	.00	11.94	22.44
SWATHER	4,115.00	9	60	5.77	4.26	.26	.77	.43	11.48	8.33	2.45	10.78	22.26
50'HARROW	5,878.00	14	60	6.24	5.43	.33	.98	.54	13.51	3.33	.00	3.33	16.85
25' COMBINE	154,526.00	13	250	41.32	34.95	2.10	6.29	3.50	88.16	20.00	6.53	26.53	114.69
JD NT-DRILL	30,000.00	10	120	20.57	14.71	.88	2.65	1.47	40.29	8.33	.00	8.33	48.62
45' SPRAYER	1,763.00	19	50	1.86	1.76	.11	.32	.18	4.22	8.00	.00	8.00	12.22

* First entry for the 240-horsepower tractor denotes 10 gallons per hour fuel use for seeding operations
** Second entry for the 240-horsepower tractor denotes 7 gallons per hour fuel use for spraying operations
*** First entry for the 160-horsepower tractor denotes 4 gallons per hour fuel use for spraying and fertilizing operations
**** Second entry for the 160-horsepower tractor denotes 5 gallons per hour fuel use for tillage operations

TABLE F2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, FARMER F

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
APPLY HERBICIDE	240HP-WT, 66'SPRAYER	SEP	1996	.03	.04	1.27	.71	.40	.00	11.08	1.12	13.31	14.58
SEED/FERTILIZE	240HP-WT, NO-TILL DRILL	OCT	1996	.20	.24	18.70	4.15	2.40	.00	40.45	3.92	50.91	69.61
SPRAY/FERTILIZE	160HP-CT, 66'SPRAYER	APR	1997	.03	.04	.88	.63	.40	.00	12.68	.46	14.17	15.05
HARVEST	25' COMBINE	AUG	1997	.14	.16	12.34	3.71	1.60	.00	.00	.00	5.31	17.66
HAUL GRAIN	TRUCK	AUG	1997	.08	.16	1.04	.36	1.60	.00	.00	.00	1.96	2.99
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	2.67	1.36	2.90	.00	.00	.21	4.48	7.14
MISC USE	TRUCK	ANN	1997	.05	.06	.65	.22	.60	.00	.00	.04	.86	1.51
OVERHEAD	UTILITIES,LEGAL,ACCT.,ETC.	ANN	1997	.00	.00	.00	.00	.00	.00	4.55	.00	4.55	4.55
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	91.00	.00	.00	.00	.00	.00	.00	91.00
TOTAL PER ACRE				.78	.99	133.54	11.14	9.90	.00	68.76	5.75	95.55	229.09

TABLE F3: MATERIALS AND SERVICES FOR WINTER WHEAT, FARMER F

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	SEPTEMBER	32 OUNCES OF ROUNDUP @ $0.29/OUNCE 1 PINT OF 2, 4-D @ $1.80/PINT
SEED/FERTILIZE	OCTOBER	100 POUNDS OF WHEAT SEED @ $0.14/POUND 85 POUNDS OF NITROGEN @ $0.22/POUND 25 POUNDS OF PHOSPHATE @ $0.25/POUND 15 POUNDS OF SULFUR @ $0.10/POUND
SPRAY/FERTILIZE	APRIL	0.33 OUNCES OF HARMONY EXTRA @ $16.36/OUNCE 12 OUNCES OF BRONATE @ $0.46/OUNCE 8 POUNDS OF NITROGEN @ $0.22/POUND
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE F4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING WHEAT, FARMER F

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
50% SHRED	240HP-WT, SHREDDER	SEP	1996	.07	.08	2.02	.92	.80	.00	.00	.16	1.88	3.90
FERTILIZE	240HP-WT, RENTAL SPRAYER	SEP	1996	.03	.04	.87	.32	.40	.00	11.60	1.13	13.45	14.32
60% DISC RIP	160HP-CT, 12' DISC RIPPER	OCT	1996	.15	.17	4.90	1.62	1.70	.00	.00	.28	3.60	8.50
APPLY HERBICIDE	240HP-WT, 66'SPRAYER	NOV	1996	.03	.04	1.27	.71	.40	.00	3.48	.34	4.94	6.21
APPLY HERBICIDE	240HP-WT, 66' SPRAYER	MAR	1997	.03	.04	1.27	.71	.40	.00	4.64	.24	5.99	7.26
60% HARROW	160HP-CT, 50' HARROW	MAR	1997	.02	.03	.65	.27	.30	.00	.00	.02	.59	1.24
SEED/FERTILIZE	240HP-WT, RENTAL DRILL	APR	1997	.20	.24	5.78	2.63	2.40	13.00	37.75	1.86	57.64	63.42
APPLY HERBICIDE	120HP-TRACTOR, 45' SPRAYER	MAY	1997	.05	.06	.80	.68	.60	.00	17.75	.48	19.51	20.31
SPRAY/FERTILIZE	160HP-CT, 66'SPRAYER	MAY	1997	.03	.04	.88	.63	.40	.00	2.45	.09	3.57	4.45
HARVEST	25' COMBINE	AUG	1997	.14	.16	12.34	3.71	1.60	.00	.00	.00	5.31	17.66
HAUL GRAIN	TRUCK	AUG	1997	.08	.16	1.04	.36	1.60	.00	.00	.00	1.96	2.99
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	2.67	1.36	2.90	.00	.00	.21	4.48	7.14
MISC USE	TRUCK	ANN	1997	.05	.06	.65	.22	.60	.00	.00	.04	.86	1.51
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC	ANN	1997	.00	.00	.00	.00	.00	.00	6.19	.00	6.19	6.19
LAND COST	NET RENT	ANN	1997	.00	.00	55.74	.00	.00	.00	.00	.00	.00	55.74
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
TOTAL PER ACRE				1.13	1.41	95.88	14.15	14.10	13.00	83.86	4.85	129.96	225.84

TABLE F5: MATERIALS AND SERVICES FOR SPRING WHEAT, FARMER F

OPERATION	MONTH	MATERIAL AND/OR SERVICE
FERTILIZE	SEPTEMBER	30 POUNDS OF NITROGEN @ $0.22/POUND 20 POUNDS OF PHOSPHATE @ $O.25
APPLY HERBICIDE	NOVEMBER	12 OUNCES OF ROUNDUP @ $0.29/OUNCE
APPLY HERBICIDE	MARCH	16 OUNCES OF ROUNDUP @ $0.29/OUNCE
SEED/FERTILIZE	APRIL	RENTAL DRILL @ $13.00/ACRE 120 POUNDS OF WHEAT SEED @ $0.14/POUND 60 POUNDS OF NITROGEN @ $0.22/POUND 25 POUNDS OF PHOSPHATE @ $O.25/POUND 15 POUNDS OF SULFUR @ $0.10/POUND
APPLY HERBICIDE	MAY	2 PINTS OF HOELON @ $8.88/PINT
SPRAY/FERTILIZE	MAY	1.50 OUNCES OF BRONATE @ $0.46/OUNCE 8 POUNDS OF NITROGEN @ $0.22/POUND
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE F6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR LENTILS, FARMER F

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
33% SHRED	240HP-WT, SHREDDER	SEP	1996	.05	.05	1.45	.66	.50	.00	.00	.11	1.26	2.71
50% DISC RIP	240HP-WT, 12' DISC RIPPER	SEP	1996	.13	.14	5.93	1.76	1.40	.00	.00	.29	3.44	9.37
60% APPL HERB	240HP-WT, 66' SPRAYER	NOV	1996	.03	.04	1.27	.71	.40	.00	3.48	.34	4.94	6.21
APPLY HERBICIDE	240HP-WT, 66' SPRAYER	APR	1997	.03	.04	1.27	.71	.40	.00	15.76	.56	17.43	18.70
HARROW	160HP-CT, 50' HARROW	APR	1997	.04	.04	1.30	.53	.40	.00	.00	.03	.96	2.26
SEED	240HP-WT, NO-TILL DRILL	MAY	1997	.13	.15	9.37	2.97	1.50	.00	6.30	.27	11.04	20.41
HARROW	160HP-CT, 50' HARROW	MAY	1997	.04	.04	1.01	.36	.40	.00	.00	.02	.78	1.79
APPLY HERBICIDE	160HP-CT, 66' SPRAYER	JUN	1997	.03	.04	.88	.66	.40	.00	13.53	.24	14.83	15.71
APPL INSECTICIDE	AERIAL	JUN	1997	.00	.00	.00	.00	.00	4.85	2.67	.13	7.65	7.65
15% SWATH	SWATHER	JUN	1997	.20	.22	2.30	2.16	2.20	.00	.00	.07	4.43	6.73
HARVEST	25' COMBINE	AUG	1997	.20	.22	17.63	5.31	2.20	.00	.00	.00	7.51	25.14
HAUL GRAIN	TRUCK	AUG	1997	.11	.22	1.43	.49	2.20	.00	.00	.00	2.69	4.12
MISC USE	3/4 TON PICKUP	ANN	1997	.25	.29	2.67	1.36	2.90	.00	.00	.21	4.48	7.14
MISC USE	TRUCK	ANN	1997	.05	.06	.65	.22	.60	.00	.00	.04	.86	1.51
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC	ANN	1997	.00	.00	.00	.00	.00	.00	4.12	.00	4.12	4.12
TAXES	LAND TAXES	ANN	1997	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1997	.00	.00	59.00	.00	.00	.00	.00	.00	.00	59.00
TOTAL PER ACRE				1.29	1.55	111.14	17.89	15.50	4.85	45.86	2.32	86.42	197.56

TABLE F7: MATERIALS AND SERVICES FOR LENTILS, FARMER F

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE(60%)	NOVEMBER	12 OUNCES OF ROUNDUP @ $0.29/OUNCE
APPLY HERBICIDE	APRIL	16 OUNCES OF ROUNDUP @ $0.29/OUNCE 2 OUNCES OF PURSUIT @ $5.56/OUNCE
SEED	MAY	35 POUNDS OF LENTIL SEED @ $0.18/POUND
APPLY HERBICIDE	JUNE	11 OUNCES OF ASSURE @ $1.23/OUNCE
APPLY INSECTICIDE	JUNE	AERIAL APPLICATOR @ $4.85/ACRE 0.50 PINTS OF DIMETHOATE @ $5.36/PINT
OVERHEAD	ANNUAL	5% OF VARIABLE COST

TABLE G1: MACHINERY COMPLEMENT AND HOURLY MACHINERY COSTS, EXTENSION

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	$			COST PER HOUR									
300HP-WT	86,250.00	15	500	9.63	10.28	.60	1.80	1.00	23.32	7.00	8.17	15.17	38.48
200HP-CT	69,000.00	15	350	11.89	11.06	.65	1.94	1.08	26.63	6.57	5.72	12.29	38.91
DBL DISC DRILL	34,500.00	12	85	29.12	23.69	1.39	4.16	2.31	60.67	11.76	.00	11.76	72.44
22' HILL COMBINE	161,000.00	10	270	55.19	32.84	1.92	5.77	3.20	98.92	18.52	4.90	23.42	122.33
TWO-TON TRUCK	20,700.00	15	150	8.33	7.74	.45	1.36	.76	18.64	6.67	6.12	12.79	31.43
36' CULTIWEEDER	20,700.00	10	125	13.63	9.99	.58	1.75	.97	26.93	6.40	.00	6.40	33.33
MOLDBOARD PLOW	18,400.00	20	125	7.36	7.54	.44	1.32	.74	17.41	4.80	.00	4.80	22.21
36' CULTIVATOR	17,250.00	15	125	8.32	7.75	.45	1.36	.76	18.64	4.00	.00	4.00	22.64
60' FLEX HARROW	9,775.00	20	50	9.78	10.02	.59	1.76	.98	23.12	9.00	.00	9.00	32.12
40' PACKER	17,250.00	20	100	8.63	8.84	.52	1.55	.86	20.40	3.00	.00	3.00	23.40
3/4 TON PICKUP	20,700.00	10	375	3.89	3.66	.21	.64	.36	8.77	5.33	.00	5.33	14.10
14' SWATHER	28,750.00	12	100	20.63	16.78	.98	2.95	1.64	42.98	10.00	.00	10.00	52.98

SOURCE: EXTENSION (PAINTER, HINMAN, AND BURNS)

TABLE G2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR WINTER WHEAT, EASTERN WHITMAN COUNTY, WASHINGTON, EXTENSION

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
SPOT SPRAY	SPRAY (10%)	SEP	1994	.01	.01	.23	.15	.10	.15	2.22	.25	2.87	3.10
FERTILIZE	300HP-WT, RENTED RIPPER SHOOTR	SEP	1994	.08	.10	1.87	1.21	1.00	2.50	27.25	3.00	34.97	36.83
CULTIWEED	300HP-WT, 36' CULTIWEEDER	SEP	1994	.07	.07	3.68	1.62	.70	.00	.00	.22	2.53	6.21
PLANT	200HP-CT, 36' DBL DISC DRILL	SEP	1994	.07	.08	6.30	1.77	.80	.00	11.90	1.36	15.83	22.13
SPOT SPRAY	SPRAY WILD OATS (10%)	APR	1995	.01	.01	.23	.15	.10	.15	2.22	.09	2.71	2.94
APPLY HERBICIDE	300HP-WT, 80' RENTAL SPRAYER	APR	1995	.02	.03	.47	.30	.30	1.50	13.78	.54	16.43	16.90
HARVEST	22'COMBINE	AUG	1995	.25	.30	24.73	5.85	3.00	.00	.00	.00	8.85	33.58
HAUL GRAIN	TWO-TON TRUCK	AUG	1995	.15	.30	2.80	1.92	3.00	.00	.00	.00	4.92	7.71
MISC USE	3/4 TON PICKUP	ANN	1995	.25	.29	2.19	1.33	2.90	.00	.00	.22	4.45	6.64
MISC USE	TWO-TON TRUCK	ANN	1995	.05	.06	.93	.64	.60	.00	.00	.06	1.30	2.24
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1995	.00	.00	.00	.00	.00	.00	4.74	.00	4.74	4.74
TAXES	LAND TAXES	ANN	1995	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1995	.00	.00	72.85	.00	.00	.00	.00	.00	.00	72.85
TOTAL PER ACRE				.96	1.25	121.28	14.95	12.50	4.30	62.11	5.74	99.60	220.88

TABLE G3: MATERIALS AND SERVICES FOR WINTER WHEAT

OPERATION	MONTH	MATERIAL AND/OR SERVICE
FERTILIZE	SEPTEMBER	RENTAL RIPPER SHOOTER @ $2.50/ACRE 100 POUNDS OF NITROGEN @ $0.29/POUND. 15 POUNDS OF SULFUR @ $0.10/POUND. 15 POUNDS OF PHOSPHATE @ $0.25/POUND.
PLANT	SEPTEMBER	85 POUNDS OF WHEAT SEED @ $0.14/POUND
APPLY HERBICIDE	APRIL	RENTAL SPRAYER @ $1.50/ACRE 0.33 OUNCES OF HARMONY EXTRA @ $16.26/OUNCE 16 OUNCES OF BUCTRIL @ $0.48/ OUNCE 6.4 OUNCES OF SURFACTANT @ $0.135/OUNCE
OVERHEAD	ANNUAL	5% OF VARIABLE COST

SOURCE: EXTENSION (PAINTER, HINMAN, AND BURNS)

TABLE G4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING BARLEY, EASTERN WHITMAN COUNTY, WASHINGTON, EXTENSION

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
PLOW	300HP-WT, 19' MOLDBOARD PLOW	SEP	1994	.20	.22	8.61	4.30	2.20	.00	.00	.61	7.11	15.72
APPLY HERBICIDE	300HP-WT, 80' RENTAL SPRAYER	MAR	1995	.04	.05	.93	.61	.50	1.50	3.39	.26	6.25	7.18
CULTIVATE/HARROW	300HP-WT, 36' CULTIVATOR	APR	1995	.07	.07	4.72	2.08	.70	.00	.00	.09	2.87	7.59
HARROW	300HP-WT, 60' FLEX HARROW	APR	1995	.03	.04	1.46	.77	.40	.00	.00	.04	1.21	2.67
FERTILIZE	300HP-WT, RIPPER SHOOTER	APR	1995	.05	.06	1.17	.76	.60	2.50	19.60	.80	24.26	25.43
CULT/HARROW/SPRY	300HP-WT, 36'CULT/HARROW/SPRAY	APR	1995	.07	.07	4.72	2.08	.70	1.50	13.89	.62	18.79	23.51
PLANT	200HP-CT, 36' DBL. DISC DRILL	APR	1995	.07	.08	6.30	1.77	.80	.00	11.20	.47	14.24	20.54
APPLY HERBICIDE	300HP-WT, 80' RENTAL SPRAYER	MAY	1995	.04	.05	.93	.61	.50	1.50	11.98	.37	14.96	15.90
HARVEST	20' COMBINE	JUL	1995	.25	.30	24.73	5.85	3.00	.00	.00	.08	8.93	33.66
HAUL GRAIN	TWO-TON TRUCK	JUL	1995	.15	.30	2.80	1.92	3.00	.00	.00	.04	4.96	7.76
MISC USE	3/4 TON PICKUP	ANN	1995	.25	.29	2.19	1.33	2.90	.00	.00	.22	4.45	6.64
MISC USE	TWO-TON TRUCK	ANN	1995	.05	.06	.93	.64	.60	.00	.00	.06	1.30	2.24
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	1995	.00	.00	.00	.00	.00	.00	5.47	.00	5.47	5.47
TAXES	LAND TAXES	ANN	1995	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1995	.00	.00	30.00	.00	.00	.00	.00	.00	.00	30.00
TOTAL PER ACRE				1.27	1.59	94.49	22.71	15.90	7.00	65.53	3.67	114.80	209.29

TABLE G5: MATERIALS AND SERVICES FOR SPRING BARLEY

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	MARCH	RENTAL SPRAYER @ $1.50/ACRE 6.4 OUNCES OF SURFACTANT @ $0.135/OUNCE 8 OUNCES OF ROUNDUP @ $0.29/OUNCE 1.7 POUNDS OF AMMONIUM SULFATE @ $0.12/POUND
FERTILIZE	APRIL	RENTAL RIPPER SHOOTER @ $2.50/ACRE 80 POUNDS OF NITROGEN @ $0.29/POUND. 20 POUNDS OF SULFUR @ $0.10/POUND.
CULT./SPRAY/HARROW	APRIL	RENTAL SPRAYER @ $1.50/ACRE 6.4 OUNCES OF SURFACTANT @ $0.135/OUNCE 1.25 QUARTS OF FARGO @ $10.42/QUART
PLANT	APRIL	85 POUNDS. OF BARLEY SEED @ $0.14/POUND
APPLY HERBICIDE	APRIL	RENTAL SPRAYER @ $1.50/ACRE 4 PINTS OF MCPA ESTER @ $2.78/PINT 6.4 OUNCES OF SURFACTANT @ $0.135/OUNCE
OVERHEAD	ANNUAL	5% OF VARIABLE COST

SOURCE: EXTENSION (PAINTER, HINMAN, AND BURNS)

TABLE G6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING WHEAT, EASTERN WHITMAN COUNTY, WASHINGTON, EXTENSION

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
PLOW	300HP-WT, 19' CHISEL PLOW	OCT	1994	.20	.22	8.61	4.30	2.20	.00	.00	.55	7.05	15.66
APPLY HERBICIDE	300HP-WT, 80' RENTED SPRAYER	MAR	1995	.02	.03	.47	.30	.30	1.50	3.18	.23	5.51	5.98
CULTIVATE/HARROW	300HP-WT, 36' CULT/TINE HARROW	APR	1995	.07	.07	4.72	2.08	.70	.00	.00	.09	2.87	7.59
APPLY HERBICIDE	300HP-WT, 80' RENTED SPRAYER	APR	1995	.04	.05	.93	.61	.50	1.50	11.90	.50	15.01	15.94
HARROW/SPRAY	300HP-WT, 60' HARROW, SPRAYER	APR	1995	.07	.07	3.41	1.80	.70	1.50	13.03	.58	17.60	21.02
HARROW	300HP-WT, 60' FLEX HARROW	APR	1995	.05	.06	2.44	1.28	.60	.00	.00	.06	1.95	4.39
FERTILIZE	300HP-WT, FERTILIZER APPLICATR	APR	1995	.01	.02	.23	.15	.20	.00	19.60	.68	20.63	20.87
PLANT	200HP-CT, 36' DBL. DISC. DRILL	APR	1995	.07	.08	6.30	1.77	.80	.00	13.30	.54	16.41	22.71
INSECT CONTROL	CUSTOM AERIAL, DIMETHOATE 30%	JUN	1995	.00	.00	.00	.00	.00	1.50	2.67	.07	4.25	4.25
HARVEST	20' COMBINE	AUG	1995	.25	.30	24.73	5.85	3.00	.00	.00	.00	8.85	33.58
HAUL GRAIN	TWO-TON TRUCK	AUG	1995	.15	.30	2.80	1.92	3.00	.00	.00	.00	4.92	7.71
MISC USE	3/4 TON PICKUP	ANN	1995	.25	.29	2.19	1.33	2.90	.00	.00	.22	4.45	6.64
MISC USE	TWO-TON TRUCK	ANN	1995	.05	.06	.93	.64	.60	.00	.00	.06	1.30	2.24
OVERHEAD	UTILITIES, ACCT, LEGAL, ETC.	ANN	1995	.00	.00	.00	.00	.00	.00	5.54	.00	5.54	5.54
TAXES	LAND TAXES	ANN	1995	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1995	.00	.00	40.53	.00	.00	.00	.00	.00	.00	40.53
TOTAL PER ACRE				1.23	1.55	103.29	22.03	15.50	6.00	69.23	3.59	116.35	219.64

TABLE G7: MATERIALS AND SERVICES FOR SPRING WHEAT

OPERATION	MONTH	MATERIAL AND/OR SERVICE
APPLY HERBICIDE	MARCH	RENTAL SPRAYER @ $1.50/ACRE 6.4 OUNCES OF SURFACTANT @ $0.135/OUNCE 8 OUNCES OF ROUNDUP @ $0.29/OUNCE
FERTILIZE	APRIL	RENTAL RIPPER SHOOTER @ $2.50/ACRE 80 POUNDS OF NITROGEN @ $0.29/POUND. 20 POUNDS OF SULFUR @ $0.10/POUND.
PLANT	APRIL	95 POUNDS OF WHEAT SEED @ $0.14/POUND
APPLY HERBICIDE	APRIL	RENTAL SPRAYER @ $1.50/ACRE 1.25 QUARTS OF FARGO @ $10.42/QUART
APPLY HERBICIDE	APRIL	RENTAL SPRAYER @ $1.50/ACRE 6.4 OUNCES OF SURFACTANT @ $0.135/OUNCE 0.33 OUNCES OF HARMONY EXTRA @ $16.26/OUNCE 12 OUNCES OF BUCTRIL @ $0.47/ OUNCE
INSECT CONTROL	JUNE	CUSTOM AERIAL @ $5.00/ACRE 0.5 PINTS OF DIMETHOATE @ $5.36/PINT
OVERHEAD	ANNUAL	5% OF VARIABLE COST

SOURCE: EXTENSION (PAINTER, HINMAN, AND BURNS)

TABLE G8: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR PEAS, EASTERN WHITMAN COUNTY, WASHINGTON, EXTENSION

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST: FUEL, LUBE, & REPAIRS	VARIABLE COST: MACH LABOR	VARIABLE COST: SERVICE	VARIABLE COST: MATER.	VARIABLE COST: INTER.	TOTAL VARIABLE COST	TOTAL COST
						$	$	$	$	$	$	$	$
PLOW	300HP-WT, 19' MOLDBOARD PLOW	SEP	1994	.20	.22	8.61	4.30	2.20	.00	.00	.61	7.11	15.72
SPRAY WEEDS	SPRING WEED SPRAY (50%)	MAR	1995	.02	.03	.47	.30	.30	1.50	1.59	.16	3.85	4.32
CULTIVATE/HARROW	300HP-WT, 36 CULTIVATOR/HARROW	APR	1995	.07	.07	4.72	2.08	.70	.00	.00	.09	2.87	7.59
CULTIVATE/HARROW	300HP-WT, 36'CULTIVATOR/HARROW	APR	1995	.07	.08	4.72	2.08	.80	.00	.00	.10	2.98	7.69
CULT/SPRAY/HARRW	300HP-WT, 36' CULT/SPRAYER/HAR	APR	1995	.07	.07	4.72	2.08	.70	1.50	29.70	1.16	35.14	39.86
PLANT	200HP-CT, 36' DBL DISC DRILL	MAY	1995	.07	.09	6.30	1.77	.90	.00	24.00	.68	27.35	33.65
PACK	300HP-WT, 40' PACKER	MAY	1995	.04	.04	1.84	.79	.40	.00	.00	.03	1.22	3.06
INSECT CONTROL	CUSTOM AERIAL, IMIDAN	JUN	1995	.00	.00	.00	.00	.00	5.00	5.76	.18	10.94	10.94
INSECT CONTROL	CUSTOM AERIAL, DIMETHOATE	JUL	1995	.00	.00	.00	.00	.00	5.00	8.02	.11	13.14	13.14
HARVEST	20' COMBINE	AUG	1995	.25	.30	24.73	5.85	3.00	.00	.00	.00	8.85	33.58
HAUL GRAIN	TWO-TON TRUCK	AUG	1995	.15	.30	2.80	1.92	3.00	.00	.00	.00	4.92	7.71
MISC USE	3/4 TON PICKUP	ANN	1995	.25	.29	2.19	1.33	2.90	.00	.00	.22	4.45	6.64
MISC USE	TWO-TON TRUCK	ANN	1995	.05	.06	.93	.64	.60	.00	.00	.06	1.30	2.24
OVERHEAD	UTILITIES, ACCT, LEGAL, ETC.	ANN	1995	.00	.00	.00	.00	.00	.00	6.21	.00	6.21	6.21
TAXES	LAND TAXES	ANN	1995	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1995	.00	.00	39.97	.00	.00	.00	.00	.00	.00	39.97
TOTAL PER ACRE				1.24	1.55	106.99	23.14	15.50	13.00	75.29	3.41	130.34	237.33

TABLE G9: MATERIALS AND SERVICES FOR PEAS

OPERATION	MONTH	MATERIAL AND/OR SERVICE
CULT./SPRAY/HARROW	APRIL	RENTAL SPRAYER @ $1.50/ACRE 3 OUNCES OF PURSUIT @ $5.56/OUNCE 1.25 QUARTS OF FARGO @ $10.42/QUART
PLANT	MAY	200 POUNDS. OF PEA SEED @ $0.12/POUND
INSECT CONTROL	JUNE	CUSTOM AERIAL @ $5.00/ACRE 1.5 POUNDS OF IMIDAN @ $3.84/POUND.
INSECT CONTROL	JULY	CUSTOM AERIAL @ $5.00/ACRE 0.5 PINTS OF DIMETHOATE @ $5.36/PINT
OVERHEAD	ANNUAL	5% OF VARIABLE COST

SOURCE: EXTENSION (PAINTER, HINMAN, AND BURNS)

TABLE G10: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR LENTILS, EASTERN WHITMAN COUNTY, WASHINGTON

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE	MATER.	INTER.		
						$	$	$	$	$	$	$	$
PLOW	300HP-WT, 19' MOLDBOARD PLOW	SEP	1994	.20	.22	8.61	4.30	2.20	.00	.00	.61	7.11	15.72
CULT/SPRAY/HAR	300HP-WT, 36' CULT/SPRAY/HAR	APR	1995	.07	.07	2.97	1.39	.74	1.50	29.70	1.14	34.47	37.44
CULTIVATE/HARROW	300HP-WT, 36' CULT/TINE HARROW	APR	1995	.07	.07	2.97	1.39	.74	.00	.00	.07	2.20	5.17
CULTIVATE/HARROW	300HP-WT, 36' CULT/TINE HARROW	APR	1995	.07	.07	2.97	1.39	.74	.00	.00	.07	2.20	5.17
PLANT	200HP-CT, 36' DOUBLE DISC DRIL	MAY	1995	.07	.09	6.03	1.69	.87	.00	11.70	.37	14.63	20.66
PACK	300HP-WT, 40' PACKER	MAY	1995	.04	.04	1.84	.79	.44	.00	.00	.03	1.26	3.10
INSECT CONTROL	CUSTOM AERIAL, DIMETHOATE	JUL	1995	.00	.00	.00	.00	.00	5.00	8.02	.11	13.14	13.14
SWATH	300HP-WT, 14' SWATHER	AUG	1995	.14	.16	9.61	3.74	1.60	.00	.00	.00	5.34	14.94
HARVEST	20' HILL COMBINE	AUG	1995	.25	.30	24.73	5.85	3.00	2.07	.00	.00	10.92	35.65
HAUL GRAIN	TWO-TON TRUCK	AUG	1995	.15	.30	2.74	3.17	3.00	.00	.00	.00	6.17	8.91
MISC USE	3/4 TON PICKUP	ANN	1995	.25	.28	2.19	1.33	2.80	.00	.00	.21	4.35	6.54
MISC USE	TWO-TON TRUCK	ANN	1995	.05	.06	.93	.64	.60	.00	.00	.06	1.30	2.24
OVERHEAD	UTIL., LEGAL, ACCT., ETC.	ANN	1995	.00	.00	.00	.00	.00	.00	5.31	.00	5.31	5.31
TAXES	LAND TAX	ANN	1995	.00	.00	5.00	.00	.00	.00	.00	.00	.00	5.00
LAND COST	NET RENT	ANN	1995	.00	.00	42.42	.00	.00	.00	.00	.00	.00	42.42
TOTAL PER ACRE				1.35	1.67	113.00	26.67	16.73	8.57	54.58	2.68	108.23	221.23

TABLE G11: MATERIALS AND SERVICES FOR LENTILS

OPERATION	MONTH	MATERIAL AND/OR SERVICE
CULT./SPRAY/HARROW	APRIL	RENTAL SPRAYER @ $1.50/ACRE 3 OUNCES OF PURSUIT @ $5.56/OUNCE 1.25 QUARTS OF FARGO @ $10.42/QUART
PLANT	MAY	65 POUNDS OF LENTIL SEED @ $0.18/POUND
INSECT CONTROL	JUNE	CUSTOM AERIAL @ $5.00/ACRE 1.5 POUNDS OF IMIDAN @ $3.84/POUND.
INSECT CONTROL	JULY	CUSTOM AERIAL @ $5.00/ACRE 0.5 PINTS OF DIMETHOATE @ $5.35/PINT
OVERHEAD	ANNUAL	5% OF VARIABLE COST

SOURCE: EXTENSION (PAINTER, HINMAN, AND BURNS)

Table H1: Prices of Inputs

	Unit	Price
		$
Herbicides/Insecticides:		
2, 4-D	Quart	3.75
Amber	Ounce	11.74
Assert	Gallon	138.00
Assure	Gallon	153.00
Avenge	Gallon	45.50
Banvel	Gallon	101.92
Basagran	Pint	9.50
Bronate	Pint	7.38
Buctril	Gallon	61.27
Candice	Ounce	17.28
Canvas	Ounce	18.75
Cerone	Gallon	81.00
Curtail	Gallon	42.50
Dimethoate	Gallon	42.85
Fargo	Pound	1.15
Finesse	Ounce	16.26
Harmony Extra	Ounce	16.36
Hoelon	Pint	8.88
Imidan	Pound	3.84
Landmaster	Ounce	0.24
MCPA	Pint	2.78
Pursuit	Ounce	5.56
Roundup	Ounce	0.29
Salt	Pound	0.51
Sencor	Pound	26.50
Treflan	Pound	4.22

(TABLE H1 Continued)

	Unit	Price
		$
Fertilizers:		
11-52	Pound	0.18
16-20	Pound	70.13
Ammonium Sulfate	Pound	0.12
Boron	Pound	2.90
Nitrogen	Pound	0.22
Phosphate	Pound	0.25
Potash	Pound	0.14
Potassium	Pound	0.14
Sulfur	Pound	0.10
Urea	Pound	0.29
Seeds:		
Barley	Pound	0.14
Hard red spring wheat	Pound	0.18
Soft white spring wheat	Pound	0.14
Soft white winter wheat	Pound	0.14
Lentils	Pound	0.18
Peas	Pound	0.12
Fuel:		
Diesel	Gallon	0.71
Gasoline	Gallon	0.75
Other:		
Burning	Acre	2.00
Land Taxes	Acre	5.00
Machine Operator Labor	Hour	10.00
Truck Driver Labor	Hour	6.50
Combine Driver Labor	Hour	12.00

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is violation of law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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