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	<p><b>AN ECONOMIC COMPARISON OF NO- TILL SPRING WHEAT AND OILSEED ROTATIONS TO CONVENTIONAL WINTER WHEAT- FALLOW IN ADAMS COUNTY, WA, 2002</b></p>	
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# An Economic Comparison of No-till Spring Wheat and Oilseed Rotations to Conventional Winter Wheat-Fallow in Adams County, WA, 2002

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## Introduction

This publication presents comparisons of the production costs and profitability of traditional winter wheat-summer fallow (WW-SF) grown under conventional tillage with three no-till annual spring cropping rotations. The 1997-2001 yield results are based on an experiment that was conducted near Ritzville in Adams County, Washington, with an average annual rainfall of 11.4 inches (See figure 1).

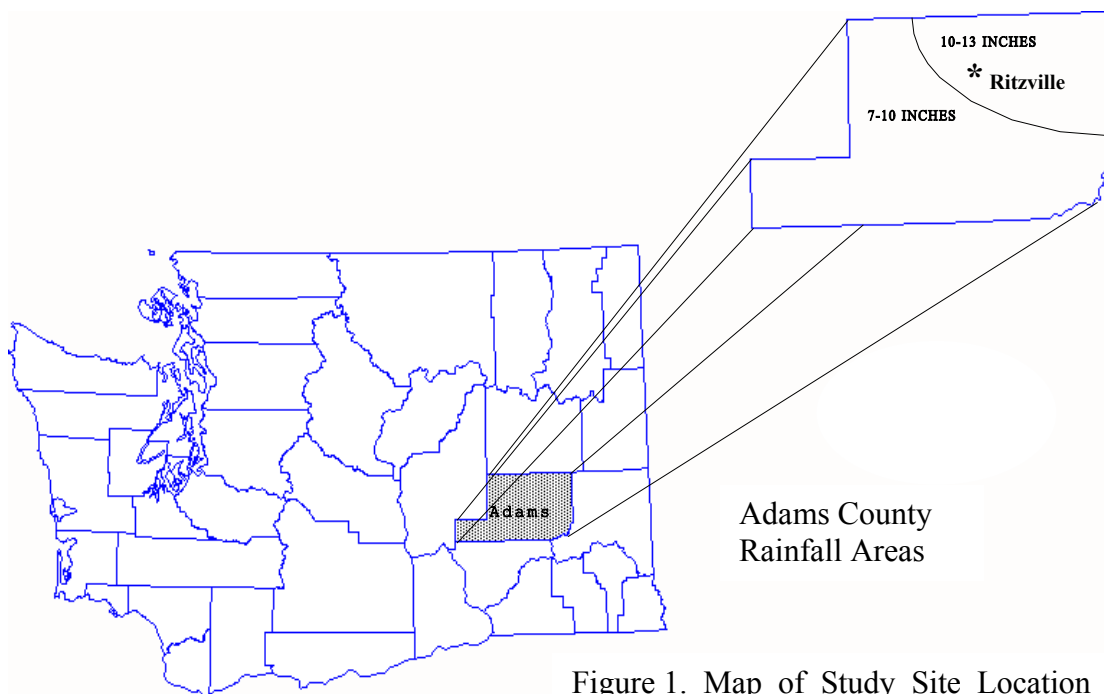


Figure 1. Map of Study Site Location

Since the native grass and sagebrush prairies of the semiarid Pacific Northwest were first plowed in the late 1800s, the region has been dominated by conventional tillage winter wheat-summer fallow. This durable wheat-fallow rotation provides several agronomic and economic advantages. It provides a means for controlling weeds, ensuring seed zone moisture, and stabilizing crop yields. Farmers and bankers appreciate the risk management advantages of the system as crop yields and production costs are stabilized over time. The WW-SF system also evens out the seasonal demands on farm machinery and labor. This reduces the need for

additional machinery and/or labor to handle the heavy demands during the short planting window for spring crops.

However, this conventionally tilled system is highly susceptible to wind and water erosion. Fields in south central Washington were reported to have lost .1 to .4 inch of topsoil (100-245 tons per acre) from wind erosion during the fall and winter of 1990 (Papendick, R.I. 1996. Farming systems and conservation needs in the northwest wheat region. *American Journal of Alternative Agriculture*. 11:52-57). During extreme wind events, soil conserving no-till spring grains reduced predicted small airborne dust particles by 94% when compared with the conventional tillage wheat fallow (Lee, B.H. 1998. *Regional air quality modeling of PM10 due to wind blown dust on the Columbian Plateau*. M.S. thesis. Department of Civil and Environmental Engineering, Washington State University). Wheat-fallow inflicts substantial off-site damage to human respiratory health, death and injury from traffic accidents during dust storms, and increased household and industrial cleaning costs. Wind erosion also depletes soil productivity on vulnerable parts of the landscape. To combat the off-site and on-site damage of wind erosion, agricultural researchers in the Pacific Northwest have been testing no-till annual spring cropping systems as an environmentally sustainable alternative. No-till spring cropping can successfully control soil erosion, reduce soil compaction, and decrease machinery wear and fuel consumption. Moisture conservation and use is improved with better moisture infiltration, soil tilth, and ground cover. Research has also shown that incorporating diverse spring crops into the rotation reduces disease and weed problems.

Nationwide, the advantages of annual spring cropping in semiarid regions have led to substantial adoption. U.S. farmers reduced summer fallow acreage by 43 percent from 1964 to 1997, with the largest reductions in the Great Plains. The Conservation Tillage Information Center reports that 36% of total U.S. cropland was in no-till or minimum-till whereas the proportion in Washington State was only 23% (Conservation Tillage Information Center. 2000. *Crop residue management statistics*. <http://www.ctic.purdue.edu>). In semiarid eastern Washington, where annual precipitation ranges from 6 to 12 inches, even minimum tillage is rare. In Adams County, where this study is located, conservation tillage was practiced on only 17% of the cropland. In east central Washington, WW-SF remains the dominant cropping system on approximately 4.0 million acres.

Why have Pacific Northwest farmers been slow to adopt reduced tillage cropping systems? While farmers have been interested in the environmental benefits of these systems, concerns about economic risk and profitability appear to have been a barrier to adoption. Two multi-year experiments have recently compared the profitability of no-till spring grain systems to tilled fallow-winter wheat systems at Ralston in Adams County, WA and at the Horse Heaven Hills in Benton County, WA. In both sites, annual net returns over total costs before government payments averaged a net loss of \$46 per rotational acre per year (Young, D.L. 2002a. "Economics of Wind Erosion Control," pp. 90-101. Northwest Columbia Plateau Wind Erosion/Air Quality Project 2002 Annual Report, Washington State University, Pullman, WA; Young, D.L. 2002b. "Economics of Wind Erosion Control Practices," Ralston Project 2002 Annual Report, Washington State University, Pullman, WA). This shortfall of \$46/ ac translates into \$184,000 for the typical 4,000-acre farm in the area. This amount could mean failing to meet fixed payments for land and machinery plus family living expenses in many years.

WW-SF was not only more profitable in all comparisons, but it also demonstrated less annual yield and income risk.

Given the unpromising economic comparison of no-till HRSW with WW-SF in this region, a need clearly exists for alternative spring crops that offer greater economic viability. The objective of this study will be to compare the economic performance of a variety of no-till annual soft white spring wheat and oilseed rotations to that of conventional tillage WW-SF in semiarid Adams County.

### **Experiment Description**

A five-year experiment from 1997 to 2001 was conducted on twenty acres near Ritzville, Adams County, Washington, with an annual rainfall of 11.4 inches. The crops in this experiment included yellow mustard (YM), safflower (SAF), Soft White Spring Wheat (SW), and spring barley (SB). The cropping rotations included a 4-yr SAF/YM/SW/SW rotation, a 2-yr SW/SB rotation, and continuous SW. The soil type was uniform Ritzville silt loam (coarse-silty, mixed, mesic Calcic Haploxeroll) with a depth of 2 meters, no restrictive layers, and slopes less than 1%. The field where the experiment was established had been planted to spring wheat in 1996 following decades of WW-SF.

The experimental design was a randomized complete block with four replications. Each crop in all rotations occurred each year in 20 X 150 yd plots, making a total of 28 plots. During the first 3 years (1997, 1998, and 1999), all plots were planted and fertilized in one pass directly into the undisturbed soil and residue left by the previous crop using the grower's Flexi-Coil 6000 (Flexi-Coil Ltm., Saskatoon, SK, Canada S7K 3S5) air-delivery no-till drill equipped with Barton II™ dual-disk openers on 7.5-inch spacing for simultaneous and precision placement of seed and fertilizer in the same row. In 2000 and 2001, all plots were planted and fertilized in one pass using a custom-built no-till drill equipped with Cross-slot™ (Baker Mfg., Christ Church, NZ) notched-coulter openers on 7.8-inch spacing for simultaneous and precision placement of seed and fertilizer in the same row. Both openers are low-disturbance and place fertilizer beneath and slightly to one side of the seed. All plots were harvested with a commercial-size combine, and grain yield was determined on site by auguring grain into a weigh wagon.

The dominant conventional tillage WW-SF rotation was not included in the experiment. However, the economic comparison of this traditional system with the experiment's no-till annual spring cropping rotations was accomplished by conducting a multi-year yield survey of ten responding neighboring farmers growing WW-SF. A one-page mailed questionnaire with telephone follow-up as necessary was used. The sample size of ten farmers represents 53 percent of the original mailing to 19 farmers. The ten neighboring farmers were less than six miles from the experiment and had climate and soils similar to the experiment site. Of the ten participating farmers, one farmer reported on three different fields, with varying yields. This farmer's data were added independently, increasing the sample size to 12.

The survey approach permitted deriving the variation of winter wheat yields over time and farmers, as well as deriving average yields. The sample yields were divided into the top,

middle, and lower thirds to permit comparisons of each group with the spring crop rotations from the experiment. Typical fixed and variable costs for the WW-SF rotation were computed from data provided by the farmer hosting the experiment.

### **Budgeting Procedures and Assumptions**

Detailed cost of production budgets were prepared for every crop for all five years for each of the three rotations. A set of production costs was also prepared for the WW-SF system determined from the survey. The summaries of cost and profitability results by rotation are based on this substantial volume of budgeting. However, to reduce the volume of somewhat repetitive budget tables, the results for year 2000 were selected to represent the detailed cost and production practice information by crop and by rotation in the Appendix. Production costs were actually similar over the five years of the experiment, and 2000 was relatively typical in terms of crop yields. This section describes the procedures and assumptions for the budgeting.

The machinery complement of the no-till farmer who provided the land for this experiment was used for the field operations in this study (see Appendix Table 19). The equipment included a 250-horsepower four-wheel drive tractor, 30' Flexi-Coil 6000 no-till drill with an air cart, chisel, rod weeder, skew treader, 80' homebuilt sprayer, 150-horsepower two-wheel drive tractor for spraying and a 24' combine for harvesting. Other equipment included two trucks, one semi, and a four-wheel all-terrain vehicle. The ages, used or new purchase prices, sizes, annual hours' use, and service lives of the farmer's machinery were considered typical of the area.

The total cost of production was estimated using standard enterprise budgeting techniques with costs divided between fixed and variable costs. For a given land and machinery base, fixed costs do not vary with the number of acres planted. Machinery fixed cost include depreciation, interest, taxes, housing, and insurance. The "Itemized Costs per Acre" tables in the Appendix itemize the costs appearing in the "Schedule of Operations and Costs Per Acre" tables. They also give farmers an opportunity to compare the costs reported in this publication to costs experienced on their own farm.

Tractor and machinery interest fixed costs are calculated on the average annual investment in the machine. The average machine investment is  $(\text{Purchase cost} + \text{Salvage value})/2$ . The interest charge made against this average investment represents either an opportunity cost (returns forgone by investing in the given machine rather than in an alternative investment) or interest paid on money borrowed to finance machine purchases, or both.

Land fixed costs include both property taxes and net rent. Net rent is rent actually paid for rented land or rental income foregone for owned land. In the study region net rent is based on the prevailing 1/3 landlord and 2/3 tenant crop share with the landlord also responsible for paying land taxes and 1/3 of the fertilizer expense. Farmers who own their land are assessed net rent, as an opportunity cost. This is because this cost is the forgone rent that they chose to decline because they wanted to farm the land themselves. Opportunity cost is the farmer's second best option, and in this case, the second best option is to lease out his or her land to

another farmer. By including the opportunity cost, budgets can be standardized between farmers regardless of whether they own or rent their land.

Variable costs include any costs that vary proportionately with the area planted. Machinery repairs, fuel, labor, custom hire of services, seed, fertilizers, pesticides, and crop insurance are typical variable costs. The actual operations and input rates used in the five-year experiment were used in computing variable costs. The cost of fertilizer, herbicide, seed and other inputs are from Patterson and Smathers (Patterson, P. and R. Smathers. 2001. *Crop Input Price Summary for 2001*, University of Idaho). Interest on capital invested in machinery and operating capital was assumed to be eight percent. Overhead expenses for general items like farm lighting, utility sheds, legal and accounting fees were computed at five percent of variable cost.

The long run Soft White Wheat (SWW) and spring barley prices used in this analysis are \$3.36/bu for SWW and \$84.10/ton for spring barley. These are the regional average 1996-2001 marketing year farm gate prices. The safflower and yellow mustard prices, \$.12/lb, are the average contract regional prices that local farmers received during this period (R. Jirava, personal communication).

Net returns in this study include only market returns, excluding government payments or crop insurance indemnities. Although government payments have been and are a very important source of farm income, the purpose of this study is to compare and rank the market profitability of different rotations, not to measure the total farm income of individual growers. Adding predetermined (decoupled) government payments which do not vary by rotation would not affect profitability rankings. Including government payments would require assumptions on the historical yields and base acreages of individual “representative farms.” These histories vary considerably from farm to farm. Secondly, farm programs vary substantially from farm bill to farm bill and, in some years, with discretionary annual supplemental payments awarded by Congress. Readers may add the government payments to the base market returns reported here consistent with their particular assumptions if desired.

The net return per rotational acre is used to correctly measure the profitability of different crop rotations. For example, a rotational acre of WW-SF includes 0.5 acre of winter wheat and 0.5 acre of fallow. This approach also correctly portrays the annual income of farmers who commonly allocate 1/n of their land to each crop in an n-year rotation. The annual diversification reduces annual income risk by growing a “portfolio” of crops. The practice also evens out seasonal machinery utilization permitting more efficient use of these resources.

Safflower was discontinued from the four-year rotation in year 2001. However, in 2001 the remaining crops of the original 4-year rotation were planted in the original sequence. To permit estimating profitability of the 4-year rotation for 2001, the yield for safflower was estimated based on its historical relationship with yellow mustard.

## Listing of Appendix Budget Tables

The Appendix contains detailed budget tables for the crop rotations described earlier. Each Appendix table number is followed by codes denoting the source of the data (S for Survey and EX for Experiment), crop and rotation abbreviations (ROT1 for Rotation 1, a 2-yr SWSW/barley rotation; ROT2 for Rotation 2, a 4-yr safflower, yellow mustard, spring wheat(1), spring wheat(2) rotation; ROT3 for Rotation 3, a continuous SWSW rotation).

Tables 1EXROT1SB and 2EXROT1SB present the Experiment's Rotation 1 Schedule of Operations and Estimated costs per acre for Spring Barley for the year 2000. The costs are presented in an itemized manner. Recall that Rotation 1 is a two-year spring barley, soft white spring wheat rotation.

Tables 3EXROT1SW and 4EXROT1SW present the Experiment's Rotation 1 Schedule of Operations and Estimated costs per acre for Soft White Spring Wheat for the year 2000.

Tables 5EXROT2SAF and 6EXROT2SAF present the Experiment's Rotation 2 Schedule of Operations and Estimated costs per acre for Safflower for the year 2000. Recall Rotation 2 is a four-year safflower, yellow mustard, spring wheat(1), spring wheat(2) rotation.

Tables 7EXROT2YM and 8EXROT2YM present the Experiment's Rotation 2 Schedule of Operations and Estimated costs per acre for Yellow Mustard.

Tables 9EXROT2SW1 and 10EXROT2SW1 present the Experiment's Rotation 2 Schedule of Operations and Estimated costs per acre for Soft White Spring Wheat (1). Again, Rotation 2 is a four-year safflower, yellow mustard, spring wheat(1), spring wheat(2) rotation.

Tables 11EXROT2SW2 and 12EXROT2SW2 present the Experiment's Rotation 2 Schedule of Operations and Estimated costs per acre for Soft White Spring Wheat(2).

Tables 13EXROT3SW and 14EXROT3SW present the Experiment's Rotation 3 Schedule of Operations and Estimated costs per acre for Soft White Spring Wheat. Recall Rotation 3 is a continuous soft white spring wheat rotation.

Tables 15SSF and 16SSF present the Surveyed Summer Fallow's Schedule of Operations and Estimated costs per acre.

Tables 17SWWW and 18SWWW present the Surveyed Soft White Winter Wheat after Summer Fallow's Schedule of Operations and Estimated costs per acre. The costs are presented in an itemized manner.

Table 19 presents the hourly machinery costs for the various machines used throughout this project.

## Summary of Cost and Profitability Comparisons by Crop Rotation

This section summarizes the cost of production estimates illustrated in the Appendix and gross revenue calculations in order to estimate profitability by rotation and by year. As expected, varying annual precipitation had considerable effect on yields. Crop year (Sept. 1 to Aug. 31) precipitation was 20.6, 11.3, 8.0, 9.2, and 8.1 inches for 1997, 1998, 1999, 2000, and 2001, respectively. The five-year average precipitation of 11.4 inches per year is near the long-term annual average of 11.7 in. Yellow mustard exhibited the greatest yield variation which fluctuated from 1430 lbs in 1997 to 110 lbs in 1999. Safflower experienced much lower yield variation because of its ability to take up deeper moisture with a long tap root. As expected, the exceptionally high precipitation in 1997 produced the highest yields, while the yields of all crops but safflower fell sharply during the low precipitation years of 1999 and 2001. For example, spring barley's yield fell 85%, from 2.30 ton/ac in 1997 to 0.35 ton/ac in 2001. SW following oilseeds in the 4-year rotation fared the worst of all crops in 2001 yielding only 8 and 6 bu/ac. In contrast, safflower's yield only dropped 51%, from 1420 lbs/ac in 1997 to 702 lbs/ac in 2001 (Table 1).

The results of a 1997-2001 yield survey for conventional WW-SF from 10 neighboring farms are reported in Table 2. For all farms and all years, reported WW-SF yields averaged 56.8 bu/ac. Five-year average yields varied from 50.0 bu/ac (farmer 5) to 67.6 bu/ac (farmer 4). These variations are likely due to differences in soil quality and microclimate, as well as management. Annual average yields peaked in the high rainfall year of 1997 at 72.3 bu/ac and were lowest in the dry year of 2001 at 35.5 bu/ac.

Table 3 lists the annual net returns per rotational acre for all no-till spring crop rotations and the different yield groups of the surveyed WW-SF farmers. Five-year averages and S.D.'s of net returns are listed for each rotation. Among the spring crop rotations, conversion of the results to dollars per rotational acre provides a common unit of measurement for the different rotations that permits comparisons of average profitability. Continuous no-till SW had the highest average net return at \$4.90/ac, followed by SW/Spring Barley and Safflower/Yellow Mustard/SW/SW at -\$4.90/ac and -\$12.73/ac, respectively. Not surprisingly, the top one-third of WW-SF farmers would significantly exceed the average profit for SWSW; however, the top one-third of farmers might also achieve better than average SW returns in actual practice. Similar average profitability between a no-till spring grains system and WW-SF is a very welcome result in this region given the \$46 shortfall in annual profitability in previous research comparisons of no-till HRSW to WW-SF.

**Table 1. Crop Yields from all Rotations for Ritzville, Adams County, WA, 1997-2001.**

Rotation	Units	1997	1998	1999	2000	2001	5-yr Avg.	C.V.(%) ‡
1. Four-Year								
Safflower	lb/acre	1420	720	1040	600	702†	896	37.5
Yellow Mustard	lb/acre	1430	340	110	490	350	544	94.4
Soft White Spring Wheat	bu/acre	63.8	41.0	27.0	40.0	8.0	36.0	57.0
Soft White Spring Wheat	bu/acre	57.9	37.1	25.0	38.0	6.0	32.8	58.1
2. Two-Year								
Soft White Spring Wheat	bu/acre	64.8	40.0	28.0	44.0	12.0	37.8	51.9
Spring Barley	ton/acre	2.30	1.13	0.76	1.30	0.35	1.17	62.6
3. Continuous SWSW	bu/acre	64.0	41.0	27.0	43.0	14.0	37.8	49.6
Precipitation	mm/year	515	282	200	231	203	286	46.2

† 2001 Safflower yield is estimated using its historical relationship to yellow mustard.

‡ C.V. = Coefficient of Variation

**Table 2. SWWW Following Summer Fallow Yield (bu/ac) Survey Results for Ritzville, Adams County, WA, 1997-2001.**

Farmer I.D.	1997	1998	1999	2000	2001	S.D.	Average
1	75	69	66	61	38	14.2	61.8
2	73	69	52	69	46	12.0	61.8
3a†	91	47	66	57	42	19.3	60.6
3b†	72	59	55	56	33	14.1	55.0
3c†	62	54	53	55	39	8.4	52.6
4	92	63	61	76	46	14.3	67.6
5	50	50	65	55	30	12.7	50.0
6	60	59	48	58	28	13.5	50.6
7	76	52	60	69	37	15.2	58.8
8	70	56	58	54	34	13.0	54.4
9	77	50	53	66	36	15.7	56.4
10	70	63	57	53	17	20.6	52.0
Upper 1/3	84	66	65	70	43	14.7	65.6
Middle 1/3	73	57	58	58	36	13.2	56.3
Lower 1/3	61	50	52	54	27	12.9	48.6
Range	50-92	47-69	48-66	53-76	17-46		
S.D.	11.9	7.4	10.2	12.3	8.1	14.5‡	
Average	72.3	57.6	57.8	60.8	35.5		56.8‡

† Farmer 3 reported varying yields on three different fields.

‡ These statistics apply to the entire data set.

**Table 3. Comparison of Net Returns Over Total Costs by Rotation and Year Between Varying Yield Levels of SWWW and Three No-Till Spring Crop Rotations for Ritzville, Adams County, WA, 1997-2001.**

Rotation	1997	1998	1999	2000	2001	1997 - 2001	
	----- \$ per rotational acre -----					Average	S.D.
Saff/Y.M./SWSW/SWSW	50.29	-14.96	-33.97	-23.08	-41.92†	-12.73a‡	36.70
SWSW/Spring Barley	57.40	2.41	-22.44	-4.88	-56.97	-4.90ab	41.69
Continuous SWSW	63.41	17.41	-14.75	5.60	-47.16	4.90b	40.86
SWWW/Summer Fallow Average	26.11	9.61	9.91	13.11	-15.19	8.71	14.96
SWWW/Summer Fallow Upper 1/3	39.21	19.01	17.31	23.51	-6.47	18.51	16.43
SWWW/Summer Fallow Middle 1/3	26.31	8.91	9.51	10.01	-14.29	8.09	14.48
SWWW/Summer Fallow Lower 1/3	12.81	0.81	2.77	5.85	-24.69	-0.49	14.27

† 2001 Safflower net return is estimated using its historical relationship to yellow mustard.

‡ Average net returns followed by same lower case letter are not significantly different. LSD<sub>.05</sub> for first three rotations is \$11.98/ac

WW-SF was the least risky rotation over 1997-2001 with a S.D. of \$14.96, compared with \$36.70/ac for SAF/YM/SW/SW, \$40.86 for continuous SW, and \$41.69 for SW/Spring Barley (Table 3). Farmers generally prefer cropping systems that have the potential of sustaining profitability while reducing annual economic risk. These results show that during 1997-2001, WW-SF had this advantage.

The lower relative variance of SAF/YM/SW/SW is attributable to consistently negative, but slightly more uniform net returns throughout the study period. In contrast, the other two spring crop rotations enjoyed positive net returns in 1997, 1998, and 2000. The yield results in Table 1 drive the annual profit variation in Table 3. The drought-depressed yields in 1999 and 2001 both deflate the average profitability and inflate the economic risk of the three spring crop rotations displayed in Table 3. While net returns for WW-SF were not immune from the 1999 and 2001 drought years, this rotation was able to withstand reductions to a greater extent, especially in 1999.

The results in Table 3 reveal that the upper, middle, and lower thirds of the WW-SF survey sample all average net returns over total costs per rotational acre of \$18.51, \$8.09, and -\$0.49. Under the possibly untenable assumption that continuous SW yields could hold at average levels on the lower third of WW-SF farms, then continuous SW would exceed the estimated average profitability of WW-SF by \$5.39/ac ( $4.90 - (-\$0.49)$ ) on these farms.

The most promising result of this study was that continuous no-till SW was economically competitive with the traditional WW-SF system in the low-rainfall study region. The result may be somewhat robust considering that the five-year study contained four years of below average precipitation and two major drought years. Two previous multi-year experiments in east-central Washington have shown that no-till HRSW has lagged WW-SF by \$46/ac/yr. The results suggest that no-till SWSW may be more resilient to moisture stress in this region. However, these results should be confirmed in additional experiments directly comparing no-till HRSW, no-till SW, and conventional WW-SF in more locations.

Continuous no-till SW showed considerably more economic risk compared to WW-SF. Future production and breeding research should focus on improving the yield stability of no-till SW under variable precipitation patterns. Targeted agricultural policies such as “green payments” for no-till spring cropping in areas vulnerable to wind erosion could also help tip the scale toward adoption of these soil conserving cropping systems. Subsidized crop insurance for farmers adopting these spring cropping systems could also reduce their economic risk. A negative \$47.16/ac net return for SW as in 2001 is an unacceptable risk for most growers even if long-run average prospects are positive.

Given the potential for no-till SW to reduce dust emissions by up to 94% compared with conventional WW-SF, the equivalent profitability of these two systems in this study provides a positive opportunity for farmers and the environment. Further policy and research efforts to reduce the risk of continuous spring wheat rotations in low rainfall areas should be considered.



**Appendix**

**Experiment Budget Tables**

TABLE 1EXROT1SB. ITEMIZED COST PER ACRE FOR SPRING BARLEY,  
RITZVILLE, WA, 2000. TWO-YEAR WHEAT/BARLEY  
ROTATION

		PRICE OR	QUANTITY	VALUE OR	YOUR
	UNIT	COST/UNIT		COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
BARLEY SEED	LB.	.15	69.00	10.35	_____
THIO-SULFATE	GAL.	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
2, 4D	OZ.	.20	8.00	1.60	_____
HARMONY	OZ.	13.20	.33	4.40	_____
SURFACTANT	ACRE	.40	1.00	.40	_____
TRACTOR REPAIR	ACRE	3.01	1.00	3.01	_____
TRACTOR FUEL/LUBE	ACRE	2.95	1.00	2.95	_____
MACHINERY REPAIRS	ACRE	1.74	1.00	1.74	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOOR	12.50	.56	7.05	_____
OVERHEAD	ACRE	3.57	1.00	3.57	_____
INTEREST ON OP. CAP.	ACRE	1.94	1.00	1.94	_____
				-----	
TOTAL VARIABLE COST				71.32	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	2.10	1.00	2.10	_____
TRACTOR INTEREST	ACRE	2.58	1.00	2.58	_____
TRACTOR INSURANCE	ACRE	.21	1.00	.21	_____
TRACTOR TAXES	ACRE	.62	1.00	.62	_____
TRACTOR HOUSING	ACRE	.33	1.00	.33	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.68	1.00	8.68	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.08	1.00	2.08	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
INSURANCE	ACRE	.70	1.00	.70	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	24.97	1.00	24.97	_____
				-----	
TOTAL FIXED COST				55.62	_____
TOTAL COST				126.94	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 BARLEY CROP - 1/3 FERTILIZER COST - 1 YEAR OF LAND TAXES.

BARLEY YIELD ASSUMED TO BE 1.3 TONS.

PRICE OF BARLEY TO PRODUCER ASSUMED TO BE \$84.10/TON.

TABLE 2EXROT1SB. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SPRING BARLEY, RITZVILLE, WA, 2000. TWO-YEAR WHEAT/BARLEY ROTATION

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.		
						\$	\$	\$	\$	\$	\$	\$	
FALL SPRAY	150HP JD, 80' SPRAYER	SEP	1999	.02	.02	.49	.23	.24	.00	6.77 (1)	.50	7.74	8.23
SPRAY ROUNDUP	150HP JD, 80' SPRAYER	MAR	2000	.02	.02	.49	.23	.24	.00	4.39 (2)	.15	5.01	5.50
PLANTING	250HP JD, 30' FLEXICOIL NO-TIL	APR	2000	.10	.11	17.00	2.77	1.40	.00	33.49 (3)	.94	38.60	55.60
SPRAY BROADLEAF	150HP JD, 80' SPRAYER	MAY	2000	.02	.02	.49	.23	.24	.00	6.40 (4)	.13	6.99	7.48
HARVEST	24' JD COMBINE	AUG	2000	.07	.07	.49	1.52	.93	.00	.00	.00	2.45	2.95
HAUL	C-60 30000 GWV TRUCK	AUG	2000	.05	.06	.53	.33	.70	.00	.00	.00	1.03	1.56
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	MACHINE SHED & SHOP BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.79	.49	1.05	.00	.00	.06	1.60	2.39
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	.68	1.16	1.40	.00	.00	.10	2.66	3.33
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.13
INSURANCE	INSURANCE	ANN	2000	.00	.00	.70	.00	.00	.00	.00	.00	.00	.50
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	2000	.00	.00	.00	.00	.00	3.57 (5)	.00	.00	3.57	3.57
LAND RENT	NET RENT/OPPORTUNITY COST	ANN	2000	.00	.00	24.97	.00	.00	.00	.00	.00	.00	24.97
TAXES	LAND TAXES	ANN	2000	.00	.00	3.75	.00	.00	.00	.00	.00	.00	3.75
TOTAL PER ACRE				.50	.56	55.62	7.71	7.05	3.57	51.05	1.94	71.32	126.94

MATERIALS:

- 24 OZ. SUREFIRE (\$6.47/AC), SURFACTANT (\$.30/AC)
- 16 OZ. ROUNDUP RT(\$4.37/AC), AMMONIUM SULFATE (\$.02/AC)
- 69 LBS. BARLEY SEED (\$10.35/AC), 5.23 GAL. THIO-SULFATE (\$6.80/AC), 2.51 GAL. AMMON. PHOSPHATE (\$4.64/AC), 7.09 GAL. SOLUTION 32 (\$11.70/AC)
- 8 OZ. 2,4D (\$1.60/AC), .33 OZ. HARMONY (\$4.40/AC), SURFACTANT (\$.40/AC)
- OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 3EXROT1SWSW. ITEMIZED COST PER ACRE FOR SOFT WHITE  
 SPRING WHEAT, RITZVILLE, WA, 2000.  
 TWO-YEAR WHEAT/BARLEY ROTATION

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
WHEAT SEED	LB.	.14	71.00	9.94	_____
THIO-SULFATE	GAL	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
2,4D	OZ.	.20	8.00	1.60	_____
HARMONY	OZ.	13.20	.33	4.40	_____
SURFACTANT	ACRE	.40	1.00	.40	_____
INTEREST ON OP. CAP.	ACRE	1.92	1.00	1.92	_____
TRACTOR REPAIR	ACRE	3.01	1.00	3.01	_____
TRACTOR FUEL/LUBE	ACRE	2.95	1.00	2.95	_____
MACHINERY REPAIRS	ACRE	1.74	1.00	1.74	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.56	7.05	_____
OVERHEAD	ACRE	3.54	1.00	3.54	_____
INTEREST ON OP. CAP.	ACRE	1.92	1.00	1.92	_____
				-----	
TOTAL VARIABLE COST				70.86	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	2.10	1.00	2.10	_____
TRACTOR INTEREST	ACRE	2.58	1.00	2.58	_____
TRACTOR INSURANCE	ACRE	.21	1.00	.21	_____
TRACTOR TAXES	ACRE	.62	1.00	.62	_____
TRACTOR HOUSING	ACRE	.33	1.00	.33	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.68	1.00	8.68	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.08	1.00	2.08	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
CROP INSURANCE	ACRE	1.20	1.00	1.20	_____
INSURANCE	ACRE	.50	1.00	.50	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	37.48	1.00	37.48	_____
				-----	
TOTAL FIXED COST				62.98	_____
TOTAL COST				133.84	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 WHEAT CROP - 1/3 FERTILIZER COST - 1/3 CROP INSURANCE -  
 1 YEAR OF LAND TAXES.

WHEAT YIELD ASSUMED TO BE 41.25 BUSHEL.  
 PRICE OF WHEAT TO PRODUCER ASSUMED TO BE \$3.36/BUSHEL.

TABLE 4EXROT1SWSW. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SOFT WHITE SPRING WHEAT,  
RITZVILLE, WA, 2000. TWO-YEAR WHEAT/BARLEY ROTATION

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.		
						\$	\$	\$	\$	\$	\$	\$	
FALL SPRAY	150HP JD, 80' SPRAYER	SEP	1999	.02	.02	.49	.23	.24	.00	6.77 (1)	.50	7.84	8.23
SPRAY ROUNDUP	150HP JD, 80' SPRAYER	MAR	2000	.02	.02	.49	.23	.24	.00	4.39 (2)	.15	5.01	5.50
PLANTING	250HP JD, 30' FLEXICOIL NO-TIL	APR	2000	.10	.11	17.00	2.77	1.40	.00	33.08 (3)	.93	38.18	55.18
SPRAY BROADLEAF	150HP JD, 80' SPRAYER	MAY	2000	.02	.02	.49	.23	.24	.00	6.40 (4)	.13	6.99	7.48
HARVEST	24' JD COMBINE	AUG	2000	.07	.07	.49	1.52	.93	.00	.00	.00	2.45	2.95
HAUL	C-60 30000 GWV TRUCK	AUG	2000	.05	.06	.53	.33	.70	.00	.00	.00	1.03	1.56
MISC. USE	MACHINE SHED & SHOP BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.79	.49	1.05	.00	.00	.06	1.60	2.39
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	.68	1.16	1.40	.00	.00	.10	2.66	3.33
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.13
INSURANCE	CROP INSURANCE	ANN	2000	.00	.00	1.20	.00	.00	.00	.00	.00	.00	1.20
INSURANCE	INSURANCE	ANN	2000	.00	.00	.50	.00	.00	.00	.00	.00	.00	.50
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	2000	.00	.00	.00	.00	.00	3.54 (5)	.00	.00	3.54	3.54
LAND RENT	NET RENT/OPPORTUNITY COST	ANN	2000	.00	.00	37.48	.00	.00	.00	.00	.00	.00	37.48
TAXES	LAND TAXES	ANN	2000	.00	.00	3.75	.00	.00	.00	.00	.00	.00	3.75
TOTAL PER ACRE				.50	.56	62.98	7.71	7.05	3.54	50.64	1.92	70.86	133.84

MATERIALS:

- 24 OZ. SUREFIRE (\$6.47/AC), SURFACTANT (\$.30/AC)
- 16 OZ. ROUNDUP RT(\$4.37/AC), AMMONIUM SULFATE (\$.02/AC)
- 71 LBS. SWSW SEED (\$9.94/AC), 5.23 GAL. THIO-SULFATE (\$6.80/AC), 2.51 GAL. AMMON. PHOSPHATE (\$4.64/AC), 7.09 GAL. SOLUTION 32 (\$11.70/AC)
- 8 OZ. 2,4D (\$1.60/AC), .33 OZ. HARMONY (\$4.40/AC), SURFACTANT (\$.40/AC)
- OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 5EXROT2SAF. ITEMIZED COST PER ACRE FOR SAFFLOWER,  
RITZVILLE, WA, 2000. 4-YEAR SAFFLOWER/  
YELLOW MUSTARD/WHEAT(1)/WHEAT(2) ROTATION

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
SAFFLOWER SEED	LB.	.30	39.00	11.70	_____
THIO-SULFATE	GAL	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
TRACTOR REPAIR	ACRE	3.01	1.00	3.01	_____
TRACTOR FUEL/LUBE	ACRE	2.95	1.00	2.95	_____
MACHINERY REPAIRS	ACRE	1.74	1.00	1.74	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOUR	12.50	.56	7.05	_____
OVERHEAD	ACRE	3.54	1.00	3.54	_____
INTEREST ON OP. CAP.	ACRE	2.03	1.00	2.03	_____
				-----	
TOTAL VARIABLE COST				70.70	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	2.10	1.00	2.10	_____
TRACTOR INTEREST	ACRE	2.58	1.00	2.58	_____
TRACTOR INSURANCE	ACRE	.21	1.00	.21	_____
TRACTOR TAXES	ACRE	.62	1.00	.62	_____
TRACTOR HOUSING	ACRE	.33	1.00	.33	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.68	1.00	8.68	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.08	1.00	2.08	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
INSURANCE	ACRE	.50	1.00	.50	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	11.73	1.00	11.73	_____
				-----	
TOTAL FIXED COST				42.19	_____
TOTAL COST				112.89	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 SAFFLOWER CROP - 1/3 FERTILIZER COST - 1 YEAR OF LAND TAXES.

SAFFLOWER YIELD ASSUMED TO BE 600 LBS.

PRICE OF SAFFLOWER TO PRODUCER ASSUMED TO BE \$.12/LB.



TABLE 7EXROT2YM. ITEMIZED COST PER ACRE FOR YELLOW MUSTARD,  
RITZVILLE, WA, 2000. 4-YEAR SAFFLOWER/YELLOW  
MUSTARD/WHEAT(1)/WHEAT(2) ROTATION

		PRICE OR	QUANTITY	VALUE OR	YOUR
		UNIT COST/UNIT		COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
MUSTARD SEED	LB.	1.30	9.00	11.70	_____
THIO-SULFATE	GAL	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
TRACTOR REPAIR	ACRE	2.88	1.00	2.88	_____
TRACTOR FUEL/LUBE	ACRE	2.88	1.00	2.88	_____
MACHINERY REPAIRS	ACRE	1.72	1.00	1.72	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.54	6.81	_____
OVERHEAD	ACRE	3.27	1.00	3.27	_____
INTEREST ON OP. CAP.	ACRE	1.83	1.00	1.83	_____
-----					
TOTAL VARIABLE COST				65.39	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	1.94	1.00	1.94	_____
TRACTOR INTEREST	ACRE	2.39	1.00	2.39	_____
TRACTOR INSURANCE	ACRE	.19	1.00	.19	_____
TRACTOR TAXES	ACRE	.57	1.00	.57	_____
TRACTOR HOUSING	ACRE	.31	1.00	.31	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.64	1.00	8.64	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.07	1.00	2.07	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
INSURANCE	ACRE	.50	1.00	.50	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	8.13	1.00	8.13	_____
-----					
TOTAL FIXED COST				38.11	_____
TOTAL COST				103.50	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 YELLOW MUSTARD CROP - 1/3 FERTILIZER COST - 1 YEAR  
OF LAND TAXES.

YELLOW MUSTARD YIELD ASSUMED TO BE 490 LBS.  
PRICE OF YELLOW MUSTARD TO PRODUCER ASSUMED TO BE \$.12/LB



TABLE 9EXROT2SWSW1. ITEMIZED COST PER ACRE FOR SOFT WHITE  
 SPRING WHEAT, RITZVILLE, WA, 2000.  
 4-YEAR SAFFLOWER/YELLOW MUSTARD/  
 WHEAT (1)/WHEAT (2) ROTATION

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
WHEAT SEED	LB.	.14	71.00	9.94	_____
THIO-SULFATE	GAL	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
2,4D	OZ.	.20	8.00	1.60	_____
HARMONY	OZ.	13.20	.33	4.40	_____
SURFACTANT	ACRE	.40	1.00	.40	_____
TRACTOR REPAIR	ACRE	3.01	1.00	3.01	_____
TRACTOR FUEL/LUBE	ACRE	2.95	1.00	2.95	_____
MACHINERY REPAIRS	ACRE	1.74	1.00	1.74	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.56	7.05	_____
OVERHEAD	ACRE	3.54	1.00	3.54	_____
INTEREST ON OP. CAP.	ACRE	1.92	1.00	1.92	_____
				-----	
TOTAL VARIABLE COST				70.86	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	2.10	1.00	2.10	_____
TRACTOR INTEREST	ACRE	2.58	1.00	2.58	_____
TRACTOR INSURANCE	ACRE	.21	1.00	.21	_____
TRACTOR TAXES	ACRE	.62	1.00	.62	_____
TRACTOR HOUSING	ACRE	.33	1.00	.33	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.68	1.00	8.68	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.08	1.00	2.08	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
CROP INSURANCE	ACRE	1.20	1.00	1.20	_____
INSURANCE	ACRE	.50	1.00	.50	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	33.00	1.00	33.00	_____
				-----	
TOTAL FIXED COST				64.66	_____
TOTAL COST				135.52	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 WHEAT CROP - 1/3 FERTILIZER COST - 1/3 CROP INSURANCE -  
 1 YEAR OF LAND TAXES.

WHEAT YIELD ASSUMED TO BE 41.25 BUSHEL.  
 PRICE OF WHEAT TO PRODUCER ASSUMED TO BE \$3.36/BUSHEL.

TABLE 10EXROT2SWSW1. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SOFT WHITE SPRING WHEAT,  
RITZVILLE, WA, 2000. 4-YEAR SAFFLOWER/YELLOW MUSTARD/WHEAT (1)/WHEAT (2) ROTATION

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.			
						\$	\$	\$	\$	\$	\$	\$	
FALL SPRAY	150HP JD, 80' SPRAYER	SEP	1999	.02	.02	.49	.23	.24	.00	6.77 (1)	.50	7.84	8.23
SPRAY ROUNDUP	150HP JD, 80' SPRAYER	MAR	2000	.02	.02	.49	.23	.24	.00	4.39 (2)	.15	5.01	5.50
PLANTING	250HP JD, 30' FLEXICOIL NO-TIL	APR	2000	.10	.11	17.00	2.77	1.40	.00	33.08 (3)	.93	38.18	55.18
SPRAY BROADLEAF	150HP JD, 80' SPRAYER	MAY	2000	.02	.02	.49	.23	.24	.00	6.40 (4)	.13	6.99	7.48
HARVEST	24' JD COMBINE	AUG	2000	.07	.07	.49	1.52	.93	.00	.00	.00	2.45	2.95
HAUL	C-60 30000 GWV TRUCK	AUG	2000	.05	.06	.53	.33	.70	.00	.00	.00	1.03	1.56
MISC. USE	MACHINE SHED & SHOP BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.79	.49	1.05	.00	.00	.06	1.60	2.39
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	.68	1.16	1.40	.00	.00	.10	2.66	3.33
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.13
INSURANCE	CROP INSURANCE	ANN	2000	.00	.00	1.20	.00	.00	.00	.00	.00	.00	1.20
INSURANCE	INSURANCE	ANN	2000	.00	.00	.50	.00	.00	.00	.00	.00	.00	.50
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	2000	.00	.00	.00	.00	.00	3.54 (5)	.00	.00	3.54	3.54
LAND RENT	NET RENT/OPPORTUNITY COST	ANN	2000	.00	.00	33.00	.00	.00	.00	.00	.00	.00	33.00
TAXES	LAND TAXES	ANN	2000	.00	.00	3.75	.00	.00	.00	.00	.00	.00	3.75
TOTAL PER ACRE				.50	.56	64.66	7.71	7.05	3.54	50.64	1.92	70.86	135.52

MATERIALS:

- 24 OZ. SUREFIRE (\$6.47/AC), SURFACTANT (\$.30/AC)
- 16 OZ. ROUNDUP RT(\$4.37/AC), AMMONIUM SULFATE (\$.02/AC)
- 71 LBS. SWSW SEED (\$9.94/AC), 5.23 GAL. THIO-SULFATE (\$6.80/AC), 2.51 GAL. AMMON. PHOSPHATE (\$4.64/AC), 7.09 GAL. SOLUTION 32 (\$11.70/AC)
- 8 OZ. 2,4D (\$1.60/AC), .33 OZ. HARMONY (\$4.40/AC), SURFACTANT (\$.40/AC)
- OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 11EXROT2SWSW2. ITEMIZED COST PER ACRE FOR SOFT WHITE  
 SPRING WHEAT, RITZVILLE, WA, 2000.  
 4-YR SAFFLOWER/YELLOW MUSTARD/  
 WHEAT (1)/WHEAT (2) ROTATION

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
WHEAT SEED	LB.	.14	71.00	9.94	_____
THIO-SULFATE	GAL	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
2,4D	OZ.	.20	8.00	1.60	_____
HARMONY	OZ.	13.20	.33	4.40	_____
SURFACTANT	ACRE	.40	1.00	.40	_____
TRACTOR REPAIR	ACRE	3.01	1.00	3.01	_____
TRACTOR FUEL/LUBE	ACRE	2.95	1.00	2.95	_____
MACHINERY REPAIRS	ACRE	1.74	1.00	1.74	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.56	7.05	_____
OVERHEAD	ACRE	3.54	1.00	3.54	_____
INTEREST ON OP. CAP.	ACRE	1.92	1.00	1.92	_____
				-----	
TOTAL VARIABLE COST				70.86	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	2.10	1.00	2.10	_____
TRACTOR INTEREST	ACRE	2.58	1.00	2.58	_____
TRACTOR INSURANCE	ACRE	.21	1.00	.21	_____
TRACTOR TAXES	ACRE	.62	1.00	.62	_____
TRACTOR HOUSING	ACRE	.33	1.00	.33	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.68	1.00	8.68	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.08	1.00	2.08	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
CROP INSURANCE	ACRE	1.20	1.00	1.20	_____
INSURANCE	ACRE	.50	1.00	.50	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	30.76	1.00	30.76	_____
				-----	
TOTAL FIXED COST				62.42	_____
TOTAL COST				133.28	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 WHEAT CROP - 1/3 FERTILIZER COST - 1/3 CROP INSURANCE -  
 1 YEAR OF LAND TAXES.

WHEAT YIELD ASSUMED TO BE 41.25 BUSHEL.  
 PRICE OF WHEAT TO PRODUCER ASSUMED TO BE \$3.36/BUSHEL.

TABLE 12EXROT2SWSW2. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SOFT WHITE SPRING WHEAT,  
RITZVILLE, WA, 2000. 4-YEAR SAFFLOWER/YELLOW MUSTARD/WHEAT (1)/WHEAT (2) ROTATION

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.		
						\$	\$	\$	\$	\$	\$	\$	\$
FALL SPRAY	150HP JD, 80' SPRAYER	SEP	1999	.02	.02	.49	.23	.24	.00	6.77 (1)	.50	7.84	8.23
SPRAY ROUNDUP	150HP JD, 80' SPRAYER	MAR	2000	.02	.02	.49	.23	.24	.00	4.39 (2)	.15	5.01	5.50
PLANTING	250HP JD, 30' FLEXICOIL NO-TIL	APR	2000	.10	.11	17.00	2.77	1.40	.00	33.08 (3)	.93	38.18	55.18
SPRAY BROADLEAF	150HP JD, 80' SPRAYER	MAY	2000	.02	.02	.49	.23	.24	.00	6.40 (4)	.13	6.99	7.48
HARVEST	24' JD COMBINE	AUG	2000	.07	.07	.49	1.52	.93	.00	.00	.00	2.45	2.95
HAUL	C-60 30000 GWV TRUCK	AUG	2000	.05	.06	.53	.33	.70	.00	.00	.00	1.03	1.56
MISC. USE	MACHING SHED & SHOP BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.79	.49	1.05	.00	.00	.06	1.60	2.39
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	.68	1.16	1.40	.00	.00	.10	2.66	3.33
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.13
INSURANCE	CROP INSURANCE	ANN	2000	.00	.00	1.20	.00	.00	.00	.00	.00	.00	1.20
INSURANCE	INSURANCE	ANN	2000	.00	.00	.50	.00	.00	.00	.00	.00	.00	.50
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	2000	.00	.00	.00	.00	.00	3.54 (5)	.00	.00	3.54	3.54
LAND RENT	NET RENT/OPPORTUNITY COST	ANN	2000	.00	.00	30.76	.00	.00	.00	.00	.00	.00	30.76
TAXES	LAND TAXES	ANN	2000	.00	.00	3.75	.00	.00	.00	.00	.00	.00	3.75
TOTAL PER ACRE				.50	.56	62.42	7.71	7.05	3.54	50.64	1.92	70.86	133.28

MATERIALS:

- 24 OZ. SUREFIRE (\$6.47/AC), SURFACTANT (\$.30/AC)
- 16 OZ. ROUNDUP RT(\$4.37/AC), AMMONIUM SULFATE (\$.02/AC)
- 71 LBS. SWSW SEED (\$9.94/AC), 5.23 GAL. THIO-SULFATE (\$6.80/AC), 2.51 GAL. AMMON. PHOSPHATE (\$4.64/AC), 7.09 GAL. SOLUTION 32 (\$11.70/AC)
- 8 OZ. 2,4D (\$1.60/AC), .33 OZ. HARMONY (\$4.40/AC), SURFACTANT (\$.40/AC)
- OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 13EXROT3SWSW. ITEMIZED COST PER ACRE FOR SOFT WHITE  
 SPRING WHEAT, RITZVILLE, WA, 2000. A  
 CONTINUOUS SWSW ROTATION

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUREFIRE	OZ.	.27	24.00	6.47	_____
SURFACTANT	ACRE	.30	1.00	.30	_____
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AMMON. SULFATE	OZ.	.10	.18	.02	_____
WHEAT SEED	LB.	.14	71.00	9.94	_____
THIO-SULFATE	GAL	1.30	5.23	6.80	_____
PHOSPHATE	GAL.	1.85	2.51	4.64	_____
SOLUTION 32	GAL.	1.65	7.09	11.70	_____
2,4D	OZ.	.20	8.00	1.60	_____
HARMONY	OZ.	13.20	.33	4.40	_____
SURFACTANT	ACRE	.40	1.00	.40	_____
TRACTOR REPAIR	ACRE	3.01	1.00	3.01	_____
TRACTOR FUEL/LUBE	ACRE	2.95	1.00	2.95	_____
MACHINERY REPAIRS	ACRE	1.74	1.00	1.74	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.56	7.05	_____
OVERHEAD	ACRE	3.54	1.00	3.54	_____
INTEREST ON OP. CAP.	ACRE	1.92	1.00	1.92	_____
				-----	
TOTAL VARIABLE COST				70.86	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	2.10	1.00	2.10	_____
TRACTOR INTEREST	ACRE	2.58	1.00	2.58	_____
TRACTOR INSURANCE	ACRE	.21	1.00	.21	_____
TRACTOR TAXES	ACRE	.62	1.00	.62	_____
TRACTOR HOUSING	ACRE	.33	1.00	.33	_____
MACHINE DEPRECIATION*	ACRE	8.05	1.00	8.05	_____
MACHINE INTEREST*	ACRE	8.68	1.00	8.68	_____
MACHINE INSURANCE*	ACRE	.69	1.00	.69	_____
MACHINE TAXES*	ACRE	2.08	1.00	2.08	_____
MACHINE HOUSING*	ACRE	.86	1.00	.86	_____
CROP INSURANCE	ACRE	1.20	1.00	1.20	_____
INSURANCE	ACRE	.50	1.00	.50	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	36.36	1.00	36.36	_____
				-----	
TOTAL FIXED COST				64.10	_____
TOTAL COST				134.96	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 WHEAT CROP - 1/3 FERTILIZER COST - 1/3 CROP INSURANCE -  
 1 YEAR OF LAND TAXES.

WHEAT YIELD ASSUMED TO BE 41.25 BUSHEL.  
 PRICE OF WHEAT TO PRODUCER ASSUMED TO BE \$3.36/BUSHEL.

TABLE 14EXROT3SWSW. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SOFT WHITE SPRING WHEAT, RITZVILLE, WA, 2000. A CONTINUOUS SWSW ROTATION

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.		
						\$	\$	\$	\$	\$	\$	\$	\$
FALL SPRAY	150HP JD, 80' SPRAYER	SEP	1999	.02	.02	.49	.23	.24	.00	6.77 (1)	.50	7.84	8.23
SPRAY ROUNDUP	150HP JD, 80' SPRAYER	MAR	2000	.02	.02	.49	.23	.24	.00	4.39 (2)	.15	5.01	5.50
PLANTING	250HP JD, 30' FLEXICOIL NO-TIL	APR	2000	.10	.11	17.00	2.77	1.40	.00	33.08 (3)	.93	38.18	55.18
SPRAY BROADLEAF	150HP JD, 80' SPRAYER	MAY	2000	.02	.02	.49	.23	.24	.00	6.40 (4)	.13	6.99	7.48
HARVEST	24' JD COMBINE	AUG	2000	.07	.07	.49	1.52	.93	.00	.00	.00	2.45	2.95
HAUL	C-60 30000 GWV TRUCK	AUG	2000	.05	.06	.53	.33	.70	.00	.00	.00	1.03	1.56
MISC. USE	MACHINE SHED & SHOP BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.79	.49	1.05	.00	.00	.06	1.60	2.39
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	.68	1.16	1.40	.00	.00	.10	2.66	3.33
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.13
INSURANCE	CROP INSURANCE	ANN	2000	.00	.00	1.20	.00	.00	.00	.00	.00	.00	1.20
INSURANCE	INSURANCE	ANN	2000	.00	.00	.50	.00	.00	.00	.00	.00	.00	.50
OVERHEAD	UTILITIES, LEGAL, ACCT, ETC.	ANN	2000	.00	.00	.00	.00	.00	3.54 (5)	.00	.00	3.54	3.54
LAND RENT	NET RENT/OPPORTUNITY COST	ANN	2000	.00	.00	36.36	.00	.00	.00	.00	.00	.00	36.36
TAXES	LAND TAXES	ANN	2000	.00	.00	3.75	.00	.00	.00	.00	.00	.00	3.75
TOTAL PER ACRE				.50	.56	64.10	7.71	7.05	3.54	50.64	1.92	70.86	134.28

MATERIALS:

- 24 OZ. SUREFIRE (\$6.47/AC), SURFACTANT (\$.30/AC)
- 16 OZ. ROUNDUP RT(\$4.37/AC), AMMONIUM SULFATE (\$.02/AC)
- 71 LBS. SWSW SEED (\$9.94/AC), 5.23 GAL. THIO-SULFATE (\$6.80/AC), 2.51 GAL. AMMON. PHOSPHATE (\$4.64/AC), 7.09 GAL. SOLUTION 32 (\$11.70/AC)
- 8 OZ. 2,4D (\$1.60/AC), .33 OZ. HARMONY (\$4.40/AC), SURFACTANT (\$.40/AC)
- OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 15SSF. ITEMIZED COST PER ACRE FOR SURVEYED SUMMER FALLOW,  
RITZVILLE, WA.

		PRICE OR		VALUE OR	YOUR
		UNIT COST/UNIT	QUANTITY	COST	FARM
VARIABLE COSTS		\$		\$	
ROUNDUP-RT	OZ.	.27	16.00	4.37	_____
AQUA. N 20-0-0	LB.	.25	50.00	12.50	_____
THISOL S.	LB.	.40	5.00	2.00	_____
OVERHEAD	ACRE	1.82	1.00	1.82	_____
INTEREST ON OP. CAP.	ACRE	.90	1.00	.90	_____
TRACTOR REPAIR	ACRE	3.27	1.00	3.27	_____
TRACTOR FUEL/LUBE	ACRE	3.05	1.00	3.05	_____
MACHINERY REPAIRS	ACRE	.84	1.00	.84	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.62	7.74	_____
OVERHEAD	ACRE	1.82	1.00	1.82	_____
INTEREST ON OP. CAP.	ACRE	.90	1.00	.90	_____
TOTAL VARIABLE COST				36.49	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	5.44	1.00	5.44	_____
TRACTOR INTEREST	ACRE	5.53	1.00	5.53	_____
TRACTOR INSURANCE	ACRE	.44	1.00	.44	_____
TRACTOR TAXES	ACRE	1.33	1.00	1.33	_____
TRACTOR HOUSING	ACRE	.44	1.00	.44	_____
MACHINE DEPRECIATION*	ACRE	1.50	1.00	1.50	_____
MACHINE INTEREST*	ACRE	.82	1.00	.82	_____
MACHINE INSURANCE*	ACRE	.07	1.00	.07	_____
MACHINE TAXES*	ACRE	.20	1.00	.20	_____
MACHINE HOUSING*	ACRE	.11	1.00	.11	_____
LAND TAXES	YEAR	2.58	1.00	2.58	_____
TOTAL FIXED COST				18.45	_____
TOTAL COST				54.94	_____

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

TABLE 16SSF. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SURVEYED SUMMER FALLOW, RITZVILLE, WA.

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.		
						\$	\$	\$	\$	\$	\$	\$	
UNDERCUT	150 HP JD, 33' UNDERCUTTER	SEP	1999	.01	.01	.34	.23	.16	.00	.00	.03	.41	.75
CHISEL	250 HP JD, 26' CHISEL	NOV	1999	.07	.08	1.53	1.31	.94	.00	.00	.13	2.38	3.90
SPRAY ROUNDUP	150 HP JD, 80' SPRAYER	MAR	2000	.02	.02	.63	.29	.31	.00	4.37 (1)	.16	5.13	5.75
SKEW TREAD	250 HP JD, 48' SKEW TREADER	APR	2000	.03	.04	2.31	.69	.46	.00	.00	.03	1.19	3.50
CHISEL	250 HP JD, 26' CHISEL	MAY	2000	.07	.08	1.53	1.13	.94	.00	14.50 (2)	.31	16.87	18.41
ROD WEED	250 HP JD, 51' JD500	JUN	2000	.03	.03	.80	.45	.38	.00	.00	.01	.84	1.64
ROD WEED	250 HP JD, 51' JD500	JUL	2000	.03	.03	.80	.45	.38	.00	.00	.01	.83	1.63
ROD WEED	250 HP JD, 26' JD500	AUG	2000	.01	.02	.40	.22	.19	.00	.00	.00	.41	.81
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	FARM BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.13
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.51	.87	1.05	.00	.00	.07	1.99	2.50
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	1.23	.43	1.40	.00	.00	.07	1.90	3.14
MISC. USE	C-60 TRUCK 30000 GVW	ANN	2000	.05	.06	.53	.33	.70	.00	.00	.04	1.07	1.59
OVERHEAD	OVERHEAD (5% OF VARIABLE COST)	ANN	2000	.00	.00	.00	.00	.00	1.82 (3)	.00	.00	1.82	1.82
LAND TAXES	LAND TAXES	ANN	2000	.00	.00	2.58	.00	.00	.00	.00	.00	.00	2.58
TOTAL PER ACRE				.55	.62	18.45	7.16	7.74	1.82	18.87	.90	36.49	54.94

MATERIALS:

1. 16 OZ. ROUNDUP (\$4.37)
2. 50 LB. AQUA N 20-0-0 (\$12.50), 5 LB. THIOSOL S. (\$2.00)
3. OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 17SSWWW. ITEMIZED COST PER ACRE FOR SURVEYED WINTER WHEAT  
AFTER SUMMER FALLOW, RITZVILLE, WA.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
WHEAT SEED	LB.	.14	40.00	5.60	_____
2,4D	OZ.	.20	8.00	1.60	_____
HARMONY	OZ.	13.20	.25	3.30	_____
OVERHEAD	ACRE	1.41	1.00	1.41	_____
INTEREST ON OP. CAP.	ACRE	.91	1.00	.91	_____
TRACTOR REPAIR	ACRE	3.45	1.00	3.45	_____
TRACTOR FUEL/LUBE	ACRE	3.37	1.00	3.37	_____
MACHINERY REPAIRS	ACRE	.20	1.00	.20	_____
MACHINE FUEL/LUBE	ACRE	.00	1.00	.00	_____
LABOR (TRAC/MACH)	HOURL	12.50	.67	8.43	_____
OVERHEAD	ACRE	1.41	1.00	1.41	_____
INTEREST ON OP. CAP.	ACRE	.91	1.00	.91	_____
				-----	
TOTAL VARIABLE COST				28.27	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	4.94	1.00	4.94	_____
TRACTOR INTEREST	ACRE	5.94	1.00	5.94	_____
TRACTOR INSURANCE	ACRE	.48	1.00	.48	_____
TRACTOR TAXES	ACRE	1.43	1.00	1.43	_____
TRACTOR HOUSING	ACRE	.49	1.00	.49	_____
MACHINE DEPRECIATION*	ACRE	.68	1.00	.68	_____
MACHINE INTEREST*	ACRE	1.80	1.00	1.80	_____
MACHINE INSURANCE*	ACRE	.14	1.00	.14	_____
MACHINE TAXES*	ACRE	.43	1.00	.43	_____
MACHINE HOUSING*	ACRE	.24	1.00	.24	_____
SUMMER FALLOW + INT.	ACRE	59.06	1.00	59.06	_____
INSURANCE	ACRE	.50	1.00	.50	_____
CROP INSURANCE	ACRE	1.20	1.00	1.20	_____
LAND TAX	ACRE	3.75	1.00	3.75	_____
LAND RENT**	ACRE	54.96	1.00	54.96	_____
				-----	
TOTAL FIXED COST				136.03	_____
TOTAL COST				164.30	_____
-----					

\* INCLUDES BUILDINGS, TOOLS AND TANKS.

\*\* 1/3 WHEAT CROP - 1/3 FERTILIZER COST - 1/3 CROP INSURANCE -  
2 YEARS OF LAND TAXES.

WHEAT YIELD ASSUMED TO BE 61.98 BUSHEL.

PRICE OF WHEAT TO PRODUCER ASSUMED TO BE \$3.36/BUSHEL.

TABLE 18SSWW. SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR SURVEYED SOFT WHITE WINTER WHEAT AFTER FALLOW, RITZVILLE, WA.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	MACH LABOR	SERVICE MATER.	INTER.			
COIL PACKER	JD 150HP, 70' COIL PACKER	AUG	1999	.05	.06	\$ 3.50	\$ .64	\$ .70	\$ .00	\$ .00	\$ .00	\$ 1.34	\$ 4.85
DRILL SEED	250 HP JD, 48'H2JD DEEP FURROW	SEP	1999	.07	.08	2.25	1.11	.94	.00	5.60 (1)	.53	8.17	10.42
SPRAY BROADLEAF	150 HP JD, 80' SPRAYER	APR	2000	.02	.02	.49	.23	.24	.00	4.90 (2)	.13	5.50	5.99
HARVEST	JD 9600 26' COMBINE	AUG	2000	.08	.09	2.22	1.46	1.16	.00	.00	.00	2.62	4.84
HAUL TO CO-OP	1974 INT. SEMI. TRUCK	AUG	2000	.12	.11	.72	1.02	1.40	.00	.00	.00	2.42	3.14
SUMMER FALLOW	SUMMER FALLOW COST + INTEREST	ANN	2000	.00	.00	59.06	.00	.00	.00	.00	.00	.00	59.06
INSURANCE	INSURANCE	ANN	2000	.00	.00	.50	.00	.00	.00	.00	.00	.00	.50
CROP INS.	CROP INSURANCE	ANN	2000	.00	.00	1.20	.00	.00	.00	.00	.00	.00	1.20
OVERHEAD	OVERHEAD (5% VARIABLE COSTS)	ANN	2000	.00	.00	.00	.00	.00	1.41 (3)	.00	.00	1.41	1.41
MISC. USE	FUEL & MISCELLANEOUS TANKS	ANN	2000	.00	.00	.86	.04	.00	.00	.00	.00	.04	.91
MISC. USE	SHOP TOOLS	ANN	2000	.00	.00	1.44	.21	.00	.00	.00	.01	.22	1.66
MISC. USE	FARM BUILDINGS	ANN	2000	.00	.00	2.79	.42	.00	.00	.00	.02	.43	3.22
MISC. USE	4-WHEEL ATV	ANN	2000	.06	.07	.16	.09	.84	.00	.00	.03	.96	1.12
MISC. USE	1-TON SERVICE TRUCK	ANN	2000	.08	.08	.93	.32	1.05	.00	.00	.05	1.43	2.35
MISC. USE	C-60 TRUCK 30000 GVW	ANN	2000	.05	.06	.53	.33	.70	.00	.00	.04	1.07	1.59
MISC. USE	1-TON PICKUP TRUCK	ANN	2000	.10	.11	.68	1.16	1.40	.00	.00	.10	2.66	3.33
LAND RENT	LAND RENT (OPPORTUNITY COST)	ANN	2000	.00	.00	54.96	.00	.00	.00	.00	.00	.00	54.96
LAND TAX	LAND TAXES	ANN	2000	.00	.00	3.75	.00	.00	.00	.00	.00	.00	3.75
TOTAL PER ACRE				.62	.67	136.03	7.02	8.43	.00	10.50	.91	28.27	164.30

MATERIALS:

1. 40 LB. SWS SEED (\$5.60)
2. 8 OZ. 2,4D (\$1.60), .25 OZ. HARMONY (\$3.30)
3. OVERHEAD = 5% OF TOTAL VARIABLE COST

TABLE 19. HOURLY MACHINERY COSTS AND PER ACRE BUILDING, TOOL AND TANK COST

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-----									
JD8650 1985 4WD	45,000.00	10	350	7.14	6.96	.56	1.67	.93	17.26	5.71	10.40	16.11	33.37
JD8650 1985 4WD	45,000.00	10	350	7.14	6.96	.56	1.67	.93	17.26	5.71	7.80	13.51	30.78
JD4630 1975 2WD	26,000.00	10	150	8.33	9.88	.79	2.37	1.32	22.69	6.67	3.90	10.57	33.25
FLEXICOIL 6000	120,000.00	12	100	58.33	63.75	5.10	15.30	8.50	150.98	10.00	.00	10.00	160.98
JD82 616 DRILL	8,000.00	15	60	.22	9.88	.79	2.37	1.32	14.57	1.67	.00	1.67	16.24
HOMEBUILT SPRAYR	3,000.00	10	100	.50	2.06	.17	.50	.28	3.50	1.50	.00	1.50	5.00
IH55 CHISEL PLOW	2,500.00	20	70	1.07	1.88	.15	.45	.25	3.80	1.86	.00	1.86	5.65
JD500 RODWEEDER	1,625.00	15	40	1.88	1.99	.16	.48	.27	4.77	5.00	.00	5.00	9.77
CALKING SKEWTRED	8,000.00	7	30	35.71	10.63	.85	2.55	1.42	51.16	3.33	.00	3.33	54.49
COIL PACKER	17,000.00	20	40	13.13	22.03	1.76	5.29	2.94	45.14	1.25	.00	1.25	46.39
UNDERCUTTER	15,000.00	20	180	3.96	3.28	.26	.79	.44	8.73	11.11	.00	11.11	19.84
JD8820 COMBINE	20,000.00	7	300	.24	4.94	.40	1.19	.66	7.41	15.00	7.80	22.80	30.21
JD9600 COMBINE	75,000.00	10	350	7.14	13.39	1.07	3.21	1.79	26.61	7.14	10.40	17.54	44.15
GMC 1-TON TRUCK	4,000.00	15	70	2.86	2.68	.21	.64	.36	6.75	7.14	4.46	11.60	18.35
CHEVC60 30000GVW	10,000.00	20	100	3.75	4.69	.38	1.13	.63	10.56	2.00	4.55	6.55	17.11
GMC 1-TON PU TRK	20,000.00	20	170	5.44	4.74	.38	1.14	.63	12.33	1.47	2.86	4.33	16.66
IH4200 SEMI TRK	10,000.00	6	190	.44	3.85	.31	.92	.51	6.03	2.63	5.85	8.48	14.51
4-WHEEL ATV	6,000.00	15	250	1.20	1.13	.09	.27	.00	2.69	.60	.89	1.49	4.18
			ACRES COVERED	-----COST PER HOUR-----									
	\$												
FARM BUILDING	80,000.00	30	2400	1.06	1.31	.11	.32	.00	2.79	.42	.00	.42	3.20
SHOP TOOLS	30,000.00	15	2400	.79	.49	.04	.12	.00	1.44	.21	.00	.21	1.65
FUEL&MISC TANKS	25,000.00	30	2400	.35	.39	.03	.09	.00	.86	.04	.00	.04	.90

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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