

The Small Grain Record Book



Each club member is required to keep a business-like record of the projects carried out each year. It is **good business** to keep **complete** and **accurate** records. The purpose of this record book is to let you know how you stand in dollars and cents after completing the year's work. It is an important part of your club project. Be sure to take good care of it and keep it up-to-date. It will help others know what you have done in your club work and how well you have succeeded.

Keep your record book current. As soon as an activity is completed, such as selecting land, fertilizer, or other materials, enter it in the proper space in your record book. When you finish any project-related work, make an entry in your book. This is the best way to keep an accurate record of your activities. Your record will be not be useful unless it is accurate.

Be sure to read the instructions on each page. Make sure you understand them, and know how to make proper entries in the book. Your parents or your local leader can help you get started.

When your record book is complete, turn it over to your local 4-H leader. He or she will check it for accuracy, sign it, and forward it to your county extension educator.

Save all pictures and newspaper clippings relating to your project. If your record is selected to represent the county in some project or other club activity, you will have all of the material needed to show what you have done. Ask your local leader or county extension educator to explain the awards.

Year 20_____

Name _____ Age _____ Birthdate ____/____/____
Month /Day/Year

Mailing address _____

School grade complete _____ Years in 4-H/FFA _____ Years in 4-H/FFA Small Grain Project _____

4-H Club/chapter _____

Office(s) held _____

Committee(s) served on _____

Member's signature _____

Parent's/Guardian's signature _____

Leader's signature _____

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Financial Performance Over Time

Receipts

	Year ____		Year ____		Year ____	
	Member	Landlord	Member	Landlord	Member	Landlord
(a) Total value of grain sold, and/or in storage (\$)						
(b) Project size (acres)						
(c) Yield (units per acre)						

Expenses per acre (\$)

	Year ____		Year ____		Year ____	
	Member	Landlord	Member	Landlord	Member	Landlord
Seed						
Equipment use						
Labor						
Fertilizer						
Chemicals						
Other operating expenses						
(d) Total expenses (\$)						
Avg. cost per unit (cwt) (d)/(c)						
Avg. cost per acre (d)/(b)						
PROFIT OR LOSS (a)-(d)						

Average Values per Acre*, Years ____ thru ____

Avg. expenses per acre (\$)'	Member	Landlord
Seed		
Equipment use		
Labor		
Fertilizer		
Chemicals		
Other operating expenses		
(e) Total expenses (\$)		
(f) Average revenue from (a) above		
(g) Average project size		
(h) Average yield		
Average cost per unit (cwt) (e) / (h)		
Average cost per acre (e) / (g)		
PROFIT OR LOSS (f) - (e)		

*Determine the average values per acre by adding the total expenses or receipts per acre in each row in the table above and divide by the number of years in your project.



Small Grain Budget

(TO BE FILLED OUT AT BEGINNING OF PROJECT YEAR)

Number of acres _____

ESTIMATED INCOME PER ACRE (\$)

	Member	Landlord	Total
1. Estimated yield per acre (cwt)			
2. Estimated price per unit (cwt)			
3. Estimated gross income per acre (\$) (line 1 / line 2)			

ESTIMATED EXPENSES PER ACRE (\$)

	Member	Landlord	Total
4. Cash rent			
5. Land cost			
6. Water & pump cost (if separate from land cost)			
7. Machinery and equipment			
8. Harvest & hauling			
9. Fertilizer			
10. Seed			
11. Chemicals			
12. Labor			
13. Miscellaneous expenses			
14. Total estimated expenses per acre (Total for line 4 through 13)			
15. Estimated net income per acre (line 3 minus line 14)			



Cash Flow Worksheet

Item	March	April	May	June	July	August	Total
Income							
(1) Contracted grain							
(2) Uncontracted grain							
(3) Straw							
(4) Other							
(5) Total Income							
Expenses							
(6) Land							
(7) Water							
(8) Equipment							
(9) Harvesting							
(10) Hauling							
(11) Fertilizer							
(12) Seed							
(13) Chemicals							
(14) Labor							
(15) Insurance							
(16) Other							
(17) Other							
(18) Total Expenses							
(19) Profit							
(20) Net Cash Flow							

Profit (19) = Total Income (5) minus Total Expenses (18)

Net Cash Flow = month-by-month tally of the profit figure (sum the profit figures from the previous months)

Profit (19) and Net Cash Flow (20) will be negative until revenue is received in August.



General Information About Small Grain Project at Start of Year

Small Grain Project for year _____

Why did you choose a small grain project this year?

What do you expect to gain, accomplish, or demonstrate from your project this year?

Management Agreement

Describe any agreements you have made concerning land, water, equipment, seed, fertilizer, chemicals, labor, planting, cultivation, harvesting, marketing, etc.

SIGNATURES

Member: _____

Date: _____

Landlord: _____

Date: _____

Leader: _____

Date: _____



Soil Information

Soil type _____ Soil depth _____ Soil texture _____
 Drainage _____ Percent Slope _____%

What was the crop rotation over the past three years?

Last year _____ Two years ago _____ Three years ago _____

How much fertilizer was applied to the previous crop?

Nitrogen (N) _____ Phosphate (P) _____ Potash (K) _____

Other nutrients and amounts _____

When was manure last applied to soil? _____

Soil Test Results (REQUIRED):

Soil pH _____ Phosphorus (ppm P) _____ Potassium (ppm K) _____
 Soil organic matter _____ %

Nitrogen			
Soil depth (inches)	Nitrate nitrogen (ppm N)	Multiply by 4	Available N (lb per acre*)
0 - 12	_____	x 4 =	_____
12 - 24	_____	x 4 =	_____
Total	_____	Total	_____

* ppm multiplied by 4 equals available N in lb per acre

Attach Soil Test to Record Book Here



Field Map

Show the location of your small grain project in relation to the rest of the farm. Indicate the number of acres in your project on the map. Show how the irrigation system is laid out for your project, including details such as head ditches, field ditches, wheel lines, sprinklers, etc.

Growth Stages in Grain

Growth stage	Date	Comments
Germination		
Seedling growth		
Tillering		
Stem elongation		
Booting		
Inflorescence emergence		
Anthesis		
Milk development		
Dough development		
Ripening		



Calculating Water Applied By Revolution or Set

Step 1:

Determine the water depth in 24-hour inches for each irrigation set or cycle from Table 1 (see p. 10), using the appropriate water flow for your system. The head size may be measured in cubic feet per second, Idaho Miner's inches, or gallons per minute.

Step 2:

Select an appropriate irrigation system efficiency from Table 2 on page 10. Select lower values for 24-hour sets, larger spacings, or windy conditions.

Step 3:

Calculate the application depth using either equation 1 or equation 2, depending upon the irrigation system type.

Equation 1: Water application depth per revolution for center pivot, or per pass for linear-move irrigation systems or partial center pivot system:

$$\text{Inches of water applied per revolution of a center pivot} = \frac{(\text{Table 1 answer}) \times (\text{Table 2 answer}) \times \text{number of days per set}}{\text{acres} \times 100}$$

Example: 130 acre pivot, with flow equal to 900 gpm, efficiency rating (from Table 2) = 85%, 2.5 days per revolution

$$\text{Depth of water applied per revolution} = \frac{[47.60 \times 85 \times 2.5]}{[130 \times 100]} = 0.778 \text{ inch}$$

Equation 2: Water application per set for set-move sprinklers or gravity systems:

$$\text{Inches of water applied per acre for non-center pivot systems} = \frac{(\text{Table 1 answer}) \times (\text{Table 2 answer}) \times \text{hours per set}}{\text{acres} \times 24 \times 100}$$

Example: 6 acres, border irrigation, flow equal to 50 Idaho Miner's inches, efficiency rating (from Table 2) = 50%, 12-hour set depth = $\frac{[23.8 \times 50 \times 12]}{[6 \times 24 \times 100]} = 0.99 \text{ inch}$



Table 1. Calculation of water depth (24-hour inches) applied by head size

Cubic Feet per second	Water flow (Head size)		24-hour inches per acre
	Idaho Miner's inches	Gallon per minute	
0.20	10	90	4.75
0.40	20	180	9.52
0.60	30	270	14.28
0.80	40	360	19.04
1.00	50	450	23.80
1.20	60	540	28.56
1.40	70	630	33.32
1.60	80	720	38.08
1.80	90	810	42.84
2.00	100	900	47.60
2.20	110	990	52.36
2.40	120	1080	57.12
2.60	130	1170	61.88
2.80	140	1260	66.64

Table 2. Typical irrigation system application efficiencies.

System Type	Irrigation System Efficiency* (%)
Surface Systems	
Furrow	35-65
Surge	50-55
Cablegation	50-55
Sprinkler Systems*	
Set-move	60-75
Solid-set	60-85
High pressure center-pivot	65-80
Low pressure center-pivot	75-85
Linear-move	80-87
Microirrigation	
Drip	90-95

* Use lower efficiencies with larger spacing and windy conditions.

Water Usage

Rainfall:

Inches of rainfall received for the following months:

March _____

April _____

May _____

June _____

July _____

Total Rainfall _____ (inches)

Irrigation:

How was water applied? _____

Date of irrigation	Hours per set	Head size	Inches of water applied per acre
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Total inches of water applied for season: _____

The Project

Soil Preparation:

How was the soil prepared? _____

Planting:

Date of planting _____ Seeding rate (lb/acre) _____

Depth of planting _____ Row width _____

Did the seed receive any treatment? _____ If so, what type? _____

Seed variety _____

Where was seed obtained? _____

Rating of Grain Stand:

Excellent _____ Good _____ Medium _____ Poor _____

What were the reasons for this condition? _____

Seed Cost

Seeding rate _____ (lb per acre)

multiplied by seed cost _____ (\$ per lb)

multiplied by total acreage _____ (acres) equals

(I): TOTAL SEED COST _____



Machinery & Equipment Costs

Farming operation	Rate (\$ per acre)	Member cost (\$ per acre)	Landlord cost (\$ per acre)	Total cost (\$ per acre)
Total cost per acre				
(2) TOTAL MACHINERY & EQUIP. COST (total cost per acre X number of acres)				

Fertilizer Costs

Fertilizer nutrient(s)	Date	Method*	Rate (units per acre)	Member cost (\$ per acre)	Landlord cost (\$ per acre)	Total cost per acre (\$ per acre)
Fertilizer cost per acre \$						
(3) TOTAL FERTILIZER COST (cost per acre X number of acres) \$						

*Choose the letter representing the method of fertilizing from below:

(a) broadcast on surface; (b) side-dressed; (c) through irrigation system; (d) banded (near row); (e) preplant injection; (f) foliar; (g) other - please state

Chemical Costs

Chemical	Date	Rate (units per acre)	Reason for use	Member cost (\$ per acre)	Landlord cost (\$ per acre)	Total cost per acre (\$ per acre)
Chemical cost per acre \$						
(4) TOTAL CHEMICAL COST (cost per acre X number of acres) \$						

Labor Record

Each time you work on your project, make a record of it below.
 Use one line for each kind of work. Make the record the day the work is done.

Your project should give a good return for your labor.

Date	Kind of work	Acres	Labor hours		Rate	Costs per acre		
			Self labor	Hired labor		Member	Landlord	Total
(5) TOTAL LABOR COST PER ACRE \$								



Other Operating Expenses

Include all other items for which cash was expended except seed, labor, fertilizer, and chemicals, which are reported in the preceding pages.

Item	Member cost per acre	Landlord cost per acre	Total cost per acre
Land charge, if cash rent is used*			
Water rent, if not included with land			
Machinery & equipment hire			
Consultant			
Storage			
Insurance			
Interest on borrowed money			
Harvesting (cost per cwt X yield)			
Miscellaneous (list)			
Total cost per acre \$			
(6) TOTAL EXPENSES (Cost per acre X no. of acres) \$			

*Land charges include sprinkling system, depreciation and repair, water, and taxes.

Record of Yield and Crop Revenue for Member, Landlord, and Total

Date harvested	Yield (cwt/acre)	Revenue (\$/cwt)	Member revenue (\$/acre)	Landlord revenue (\$/acre)	Total revenue (\$/acre)
(7) TOTAL REVENUE FROM GRAIN (revenue per acre X acres) \$					

Financial Summary

Transfer total costs to this page, not per acre costs.

Receipts

	Member	Landlord	Total
Total value of grain sold, and/or in storage (see (7), p. 15)			
TOTAL RECEIPTS \$			

Expenses

	Member	Landlord	Total
Seed (see (1) p. 12)			
Equipment use (see (2) p. 13)			
Fertilizer (see (3) p. 13)			
Chemicals (see (4) p. 13)			
Labor (see (5) p. 14)			
Other operating expenses (see (6) p. 15)			
Total Expenses \$			
Average cost per unit (cwt) (divide total expenses by total yield)			
Average cost per acre (divide total expenses by acres)			
PROFIT or LOSS \$ (total receipts minus total expenses)			

This profit (loss) figure represents your income for labor, management, and money invested.

General Information About Your Small Grain Project

State how your small grain project was affected by:

Climate _____

Insects _____

Diseases _____

Weeds _____

Other _____

What control methods did you use to protect your small grain crop from:

Insects _____

Diseases _____

Weeds _____

How did your field compare with the average in the community and on your farm?

How did you determine your yields? _____

What soil conservation practices did you use this year? _____

Do you plan to continue this project again next year? Why or why not? _____

If you were to continue this project for another year, explain what management or farming practices you would do differently.

The
Small Grain
Record Book



University of Idaho
Extension

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