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ANALYSIS\* OF THE PROFITABILITY OF COMPLIANCE WITH THE  
1978 WHEAT FEED GRAIN SET-ASIDE PROGRAM

by Mike Harker, Dave Sell and Ray Prigge\*\*

Several factors should be carefully considered in making your decision on participation in the voluntary set-aside program provided under the Food and Agriculture Act of 1977. This is a presentation of a computer program developed to analyze several of the factors affecting that decision. The analysis evaluates only the income effects associated with set-aside, cropping changes and deficiency payments. It does not consider the advantages of having access to non-recourse loans and disaster payments. Analysis is based on data from a farmers own operation and on his own price expectations.

The following pages contain an input form and directions for properly completing each item requested. It is important to accurately and completely provide all of the information requested--as all are necessary to accurately evaluate the potential advantage of complying with the Wheat Feed Grain Program.

This computer program determines the added net revenue (or net loss) resulting from an individual farmer's compliance with the program. The program uses a partial budget approach to evaluate compliance i.e.

\*The computer program used in this analysis is a modification of a program developed by William Pietsch, Associate Extension Professor, Washington State University.

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$$IR = AR + RC - IC - RR, \text{ where}$$

IR = increased net returns from compliance

AR = added revenue from compliance (deficiency payments)

RC = reduced costs from compliance (variable costs saved on acres  
not planted to grain)

IC = increased costs from compliance (costs of clipping, etc. on set-aside)

RR = reduced revenues (from reduced grain production due to set-aside)

Since barley is the primary feed grain grown in Idaho, the instructions and input form refer to barley rather than feed grains. A farmer wanting to evaluate other feed grains - corn or sorghum - can also supply data on either of these crops in the spaces provided for barley on the input form.

Note, however, that wheat plus one feed grain is the maximum number of crops that can be included in one analysis.

This computer program is designed to provide farmers with additional information to be used in making their decisions about farm program participation. It is not to be interpreted as a recommended decision deemed to be "Best" for his enterprise but to provide a better understanding of the variables involved. It is only a tool in the decision process.



## INPUT INSTRUCTIONS

1. Normal Crop Acres (NCA)

This is the figure that producers will receive from their local ASCS office. It will be based on recent crop history for qualifying crops.

2. 1978 Wheat Acreage-Non-Compliance

Your 1978 wheat acreage if you decide NOT to participate in the set-aside program (i.e. acreage you would plant to wheat if you ignored the program).

3. 1978 Wheat Acreage-Compliance

Your 1978 wheat acreage if you decide TO participate in the set-aside program.

4. 1978 Barley Acreage-Non-Compliance

Similar to the non-compliance wheat acreage indicated above.

5. 1978 Barley Acreage-Compliance

This is the acreage intended for harvest in 1978 while meeting the requirements of the set-aside program.<sup>1/</sup>

6. Farm Established Wheat Yield

This is the program yield assigned to the farm by the ASCS and may be related to county average yields, or on proven historic yield for the individual farm.

7. Farm Established Barley Yield

This is either the county established average or the proven yield for an individual farm for program purposes for the feed grain being considered.

8. Expected Wheat Yield (on acres to be withdrawn from wheat production)

A farmer is free to divert his poorest acres to set-aside under the program. Therefore production foregone on set-aside acres is the appropriate yield to consider. Enter the yield you would expect on set-aside acres if they were seeded to wheat.

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<sup>1/</sup> Caution! Unless the 1978 wheat acres times 1.2 + the 1978 feed grain acres times 1.1 is less than or equal to Normal Crop Acres, the program can make no economic comparison, since the producer has failed to meet the basic compliance requirements.

9. Expected Barley Yield

Similar to Wheat Yield above, this indicates the yield one would expect to give up on acres not planted to feed grain in the event of program compliance.

10. Expected Wheat Price (National) 11. Expected Barley Price (National)

This is the producer's expectation of the national average wheat and barley prices received by farmers during the first 5 months of the marketing season (June through October).

12. Expected Cash Wheat Price (Local)

This is the price at which the producer would expect to be able to sell his 1978 wheat during his normal marketing season.

13. Expected Cash Barley Price (Local)

This is the price at which the producer would expect to be able to sell his 1978 feed grain crop during his normal marketing season.

14. Wheat Production Cost

All costs that would be incurred from today forward if those wheat acres to be set-aside were actually used for crop production--such as seed, fertilizer, chemicals, hired labor, interest, crop insurance, harvest expense, machinery operating expenses, etc.

15. Barley Production Cost

All costs that would be incurred from today forward if those feed grain acres to be set-aside were actually used for crop production--such as seed, fertilizer, chemicals, hired labor, interest, crop insurance, harvest expense, machinery operating expenses, etc.

16. Set-Aside Production Cost

This refers to the variable cost one would expect to incur in producing an acre of set-aside. Examples of these costs might be seeding, weed control, clipping, etc.

17. Net-Cash Returns on Non-Program Crops

The acres withdrawn from program crops will usually exceed the acres required as set-aside to accompany those crops. In this case the farmer will have the opportunity to seed non-program crops on the remaining acres. The net profit per acre on such non-program crops should be entered here.



18. Estimated Wheat Allocation Factor

In the event that the producer has complied with the set-aside requirements but has not reduced his acreage intended for harvest in 1978 from that of 1977 by at least 20%, his deficiency payment eligibility will be based on the allocation factor.

Within the program the allocation factor is only used when the producer has not assured himself 100% deficiency payment eligibility by reducing his 1978 production by at least 20% from his base wheat acreage. The factor will vary between .8 and 1.0. If you do not estimate the allocation factor, the program will use .8--the most pessimistic value in terms of payments to farmers.

19. Estimated Barley Allocation Factor

Conceptually identical to the wheat allocation factor.

20. The 1978 Wheat Target Price

Since this could either be \$3.00 or \$3.05 (if the 1978 wheat crop is less than 1.8 billion bushels) for 1978 depending upon the size of the wheat crop, either value can be entered in the program at the producer's option. We estimate the 1978 target price to be \$3.00.

21. 1978 Barley Target Price

Depending on the feed grain being considered, this figure is variable and needs to be entered into the program. The target price for barley is tentatively set at \$2.15 per bushel.

22. Wheat Set-Aside Requirement

As announced by the Secretary of Agriculture for 1978, this figure is .2 or 20%.

23. Barley Set-Aside Requirement

Set-aside is .1 or 10% for feed grain.

24. Maximum Wheat Acreage For 100% Coverage

This coefficient indicates the maximum ratio of 1978 to base wheat acres that maintains eligibility for 100% deficiency payment coverage on acres intended for harvest 1978. As an example of the use of this coefficient within the computer program, the 1978 wheat acres are divided by the base wheat acres. If the result exceeds .8, the estimated allocation factor for wheat is applied to the 1978 wheat acreage for the computation of total wheat deficiency payments.

25. Maximum Barley Acreage for 100% Coverage

Conceptually identical to that described above for wheat, but variable depending on the particular feed grain the producer is considering in the analysis. Presently it is .8 for barley.

26. 1978 Wheat Loan Level

The 1978 wheat loan level is tentatively set at \$2.35 but can be adjusted downward to a value no lower than \$2.12. If you do not enter a price, a price of \$2.25 will be used.

27. The 1978 Barley Loan Level

The feed grain loan level is tentatively set at \$1.63, subject to adjustments similar to wheat above.

28. Wheat Base Acreage

The 1977 acreage of wheat seeded for harvest.

29. Barley Base Acreage

The 1977 acreage of feed grain seeded for harvest.

NOTE: Eligibility for full deficiency payment on 100% of wheat acreage requires: 1) having reduced 1978 wheat planting by 20% from that seeded in 1977 and 2) having set-aside 2 acres for every 10 seeded to wheat in 1978. In the case of feed grains, the acreage reduction is tentatively set at 5% for sorgham and corn and 20% for barley. Set-aside on all feed grains is tentatively set at 1 acre for every 10.

Any changes in acreage reductions or set-aside provisions are to be announced prior to March 1, 1978. This computer program will be updated at that time if necessary to correct for any adjustments in the feed grain program.



## SET-ASIDE PROGRAM ANALYSIS INPUT FORM

Name \_\_\_\_\_

(Print carefully)

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1. Normal Crop Acres	_____	acres
2. 1978 Wheat Acres Non-Compliance	_____	acres
3. 1978 Wheat Acres Compliance	_____	acres
4. 1978 Barley Acres Non-Compliance	_____	acres
5. 1978 Barley Acres Compliance	_____	acres
6. Farm Established Wheat Yield	_____	bu./ac.
7. Farm Established Barley Yield	_____	bu./ac.
8. Expected Wheat Yield	_____	bu./ac.
9. Expected Barley Yield	_____	bu./ac.
10. Expected Wheat Price (National)	_____	\$/bu.
11. Expected Barley Price (National)	_____	\$/bu.
12. Expected Cash Wheat Price (Local)	_____	\$/bu.
13. Expected Cash Barley Price (Local)	_____	\$/bu.
14. Wheat Production Cost	_____	\$/ac.
15. Barley Production Cost	_____	\$/ac.
16. Set-Aside Production Cost	_____	\$/ac.
17. Net Cash Returns On Non-Program Crops	_____	\$/ac.
18. Estimated Wheat Allocation Factor	_____	(.80) <sup>a/</sup>
19. Estimated Barley Allocation Factor	_____	(.80) <sup>a/</sup>
20. 1978 Wheat Target Price	_____	\$/bu. (\$3.00) <sup>b/</sup>
21. 1978 Barley Target Price	_____	\$/bu. (\$2.15) <sup>b/</sup>
22. Wheat Set-Aside Requirement	0.20	
23. Barley Set-Aside Requirement	0.10	
24. Maximum Wheat Acreage for 100% Cov.	0.80	
25. Maximum Barley Acreage for 100% Cov.	0.80	
26. 1978 Wheat Loan Level	_____	\$/bu. (\$2.25) <sup>b/</sup>
27. 1978 Barley Loan Level	_____	\$/bu. (\$1.63) <sup>b/</sup>
28. Wheat Base Acreage	_____	acres
29. Barley Base Acreage	_____	acres

CAUTION: Multiply line 3 by 1.2 and line 5 by 1.1; if the sum exceeds the total on line 1, the requirements for compliance have not been met and this analysis cannot be performed.

<sup>a/</sup> If no allocation factor is provided, .8 will be used.

<sup>b/</sup> This value will be used unless you specify otherwise.

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Moscow, Id. 83843





INTERPRETATION OF RESULTS--COMPUTER ANALYSIS OF COMPLIANCE WITH THE  
1978 WHEAT FEED GRAIN SET-ASIDE PROGRAM

The computer printout you receive should consist of two attached pages of information. We suggest that you study and understand the first page before examining page 2.

Page 1 lists the input data for your farm and should be identical to the information you submitted on your input form. Check the input data first to make sure it is accurate.

Just below the input data listing\* is the statement "Increased Returns From Set-Aside Compliance \$ \_\_\_\_." This figure lists the increased (or if negative, the decreased returns) returns you can expect by complying with the program. Remember, however, that this value and all other values listed on the bottom of this page hold true only for the exact set of input data listed at the top of the page.

The statement "Compliance vs Non-Compliance Breakeven Local Cash Wheat Price \$ \_\_\_\_./Bushel" shows the local wheat price at which net revenue from compliance is equal to net revenue from not complying. Again this breakeven price holds true only for the exact set of data which is listed at the top of the page.

The table at the bottom of the page varies local wheat prices and wheat yields (3 lower and 3 higher yields and prices) from those values inputted by the farmer. Each value in the table corresponds to the net increased returns resulting from that particular combination of your local wheat price and your local wheat yield.

Page 2 is interpreted in the same way except that input variables other than local wheat yields and prices are forced to vary. Page 2 provides you additional information to answer such questions as, "What if my estimate of the National Wheat Price (or local barley price or yield, etc.) was too high (or too low)?"

If you have questions with the interpretation of these results, see your local county agent or call Dr. Prigge or Mr. Harker at (208)-885-6262.

\*If the \$40,000 payment limitation has been exceeded, a notification is listed here.

If acres other than wheat or barley acreage are being diverted to set-aside, this computer program assumes those acres are being diverted from the non-program crop on which you based your estimate of net returns per acre.







~~\*\*\*\*\*~~

[illegible]

\* NATIONAL WHEAT PRICE = \$2.35 \*

[illegible]

\* NATIONAL WHEAT PRICE = \$2.50 \*

BARLEY	40	2232C.	21240.	20160.	19080.	18690.	17610.	16530.	15450.	14340.	13260.	12180.	11100.
YIELD	50	18360.	17010.	15660.	14310.	14730.	13380.	12030.	10680.	10380.	9030.	7680.	6330.
50	60	14400.	12780.	11160.	9540.	10770.	9150.	7530.	5910.	6420.	4800.	3180.	1560.
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
BARLEY	40	2072C.	19640.	18560.	17480.	16940.	15860.	14780.	13700.	12440.	11360.	10280.	9200.
YIELD	50	15760.	15410.	14060.	12710.	12980.	11630.	10280.	8930.	8480.	7130.	5780.	4430.
60	60	12800.	11180.	9560.	7940.	9020.	7400.	5780.	4160.	4520.	2900.	1280.	-340.
*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
BARLEY	40	19120.	18040.	16960.	15880.	15190.	14110.	13030.	11950.	10540.	9460.	8380.	7300.
YIELD	50	15160.	13810.	12460.	11110.	11230.	9880.	8530.	7180.	6580.	5230.	3880.	2530.
70	60	11200.	9580.	7960.	6340.	7270.	5650.	4030.	2410.	2620.	1000.	-620.	-2240.





RAY PRIGGE, AGECON DEPT UI, MOSCOW, ID 83843

# SAMPLE OUTPUT

X1	NORMAL CROP ACRES	1400.
X2	1978 WHEAT ACRES NON-COMPLIANCE	900.
X3	1978 WHEAT ACRES COMPLIANCE	720.
X4	1978 BARLEY ACRES NON-COMPLIANCE	500.
X5	1978 BARLEY ACRES COMPLIANCE	400.
X6	FARM ESTABLISHED WHEAT YIELD	50.
X7	FARM ESTABLISHED BARLEY YIELD	50.
X8	EXPECTED WHEAT YIELD	60.
X9	EXPECTED BARLEY YIELD	60.
X10	EXPECTED WHEAT PRICE (NATIONAL)	2.35
X11	EXPECTED BARLEY PRICE (NATIONAL)	1.75
X12	EXPECTED CASH WHEAT PRICE (LOCAL)	2.35
X13	EXPECTED CASH BARLEY PRICE (LOCAL)	1.75
X14	WHEAT PRODUCTION COST	30.00
X15	BARLEY PRODUCTION COST	40.00
X16	SET-ASIDE PRODUCTION COST	5.00
X17	NET CASH RETURNS ON NON-PROGRAM CROPS	30.00
X18	ESTIMATED WHEAT ALLOCATION FACTOR	0.92
X19	ESTIMATED BARLEY ALLOCATION FACTOR	0.90
X20	1978 WHEAT TARGET PRICE	3.00
X21	1978 BARLEY TARGET PRICE	2.33
X22	WHEAT SET-ASIDE REQUIREMENT	0.20
X23	BARLEY SET-ASIDE REQUIREMENT	0.10
X24	WHEAT REDUCTION FOR 100% COV.	0.80
X25	BARLEY REDUCTION FOR 100% COV.	0.80
X26	1978 WHEAT LOAN LEVEL	2.25
X27	1978 BARLEY LOAN LEVEL	1.63
X28	1977 WHEAT ACREAGE	900.
X29	1977 BARLEY ACREAGE	500.

INCREASED RETURNS FROM SET-ASIDE COMPLIANCE \$ 17030.

COMPLIANCE VS NON-COMPLIANCE BREAK-EVEN LOCAL CASH WHEAT PRICE \$4.24/BUSHEL

COMPLIANCE VS NON-COMPLIANCE BREAK-EVEN LOCAL CASH BARLEY PRICE \$4.59/BUSHEL

(HOLDING OTHER INPUTS CONSTANT AT  
LEVELS SPECIFIED ABOVE)

INCREASED RETURNS FROM SET-ASIDE PARTICIPATION AT ALTERNATE YIELDS AND LOCAL CASH PRICES

EXP WHEAT YIELD BU.	\$ 1.60	\$ 1.85	\$ 2.10	\$ 2.35	\$ 2.60	\$ 2.85	\$ 3.10
------------------------	---------	---------	---------	---------	---------	---------	---------

35	28100.	26525.	24950.	23375.	21800.	20225.	18650.	*****
40	26660.	24860.	23060.	21260.	19460.	17660.	15860.	*
45	25220.	23195.	21170.	19145.	17120.	15095.	13070.	* BASED ON DEFICIENCY PAYMENTS *
50	23780.	21530.	19280.	17030.	14780.	12530.	10280.	* CALCULATED FROM YOUR *
55	22340.	19865.	17390.	14915.	12440.	9965.	7490.	* \$2.35/BU. EXPECTED NATIONAL WHEAT PRICE *
60	20900.	18200.	15500.	12800.	10100.	7400.	4700.	* & \$1.75/BU. EXPECTED NATIONAL BARLEY PRICE *
65	19460.	16535.	13610.	10685.	7760.	4835.	1910.	*****



