

*Alternatives for*

# **Using a Half Million Diverted Acres**

*in Columbia Basin Counties of Oregon*

**W. B. Back**

**J. Nairn**

**Agricultural Experiment Station  
Oregon State College  
Corvallis**

**Circular of Information 552**

**October 1955**

# *Alternatives for*

## **Using a Half Million Diverted Acres *in Columbia Basin Counties of Oregon*<sup>1</sup>**

W. B. Back and J. Nairn<sup>2</sup>

For the second time in a generation, wheat producers have problems in adjusting to a cutback in wheat acreages. Both in the 1930's and now, the problem was brought about by a larger supply of wheat than could be marketed at prices considered reasonable by producers. The current surplus wheat problem arises mainly from declining foreign markets, coupled with rising per acre wheat yields. The decline in domestic per capita consumption of wheat has contributed to the problem.

Wheat farmers were given the opportunity to choose, by vote, whether to accept or reject marketing quotas on the 1954-55 and 1955-56 wheat crops, and they voted to accept marketing quotas in each referendum. Compliance with acreage allotments means receipt of a support price on wheat within a range specified by law -- 82 1/2 to 90 per cent parity for 1954-55 crop, 75 to 90 per cent of parity for the 1955-56 crop. Farmers can choose not to comply with acreage allotments, but noncompliance means a penalty price to pay on all wheat marketed in excess of the quota. Generally, it is in the interest of individual wheat farmers to comply with allotted wheat acreages, even though compliance brings about the immediate problem of how to use land taken out of wheat production.

About a half million acres of land in the Columbia Basin counties of Oregon are potential diverted acres. This includes the fallow (if any) connected with crops replacing wheat as well as the acreage in the alternative crops.

The purpose of the study reported here was to evaluate the "practical" alternatives to wheat in the wheat-summer fallow area of Oregon. Farmers' thinking on the more promising alternatives to wheat and on problems of adjustment were obtained in an early interview survey. Data on resources were also obtained in the survey for use in estimating the changes in income, investment, labor requirements, and other factors associated with the different ways of using diverted acres. This report summarizes the information obtained in the study to date. /3

- 
- /1 This is a progress report summarizing the findings on a study of wheat adjustment problems in the Columbia Basin counties. The study was conducted jointly by the senior author in the Agricultural Economics Department, Oregon Agricultural Experiment Station and by Henry H. Stippler, Agricultural Economist, Production Economics Research Branch, Agricultural Research Service.
  - /2 Formerly Assistant Agricultural Economist and Research Assistant, respectively, Oregon Agricultural Experiment Station. The authors express their appreciation to D. C. Mumford and E. N. Castle of the Agricultural Economics Department for their review and suggestions made in reporting the results of this study.
  - /3 Detailed computations of production requirements, costs, and incomes are omitted from this report. Such information is available on request from the Department of Agricultural Economics. Some of the information contained in this report already has been released in the publication, Oregon's Agricultural Progress, winter issue. 1955.

## Crop Alternatives

The diverted acre problem in the wheat-summer fallow area is intensified because alternative crops produce much less income per acre than does wheat. In some wheat growing areas, alternative crops compete with wheat and were grown before wheat acreage allotments came about. But in the wheat-summer fallow area of Oregon, farms have specialized in wheat production. Because of this specialization, farmers have little experience with or knowledge of alternative crops, and consequently, major management problems accompany any production shift to other crops.

The possible alternatives to wheat in this area include:

- (1) Feed grains -- barley, oats, rye, corn, milo, etc.
- (2) Perennial forages -- grass, grass-alfalfa, alfalfa, etc.
- (3) Annual grain hay and grain pasture.
- (4) Miscellaneous cash crops -- safflower, grass seed, peas, etc.
- (5) No crop -- idle in stubble or double summer fallow.

Many crops can be immediately eliminated from consideration. For example, grain sorghum or milo require a climate with longer growing season and different rainfall distribution than occur in the Oregon wheat-summer fallow area. Therefore, only a limited number of production shifts warrant major study and consideration. These are: (1) production of feed grains and development of a livestock enterprise to utilize grain crops, (2) production of forages and development of a livestock enterprise to utilize forage crops, and (3) combination feed grain and forage production. Specialty cash crops such as peas, safflower, etc. so far have only limited possibilities in the area. When there is no restriction on the use of diverted acres, leaving the land idle is not a practical alternative.

### Feed Grains

Barley was ranked first as an alternative to wheat by the farmers surveyed. On the average they planted about 85 per cent of their diverted acres to barley in 1953-54 and again in 1954-55. The reasons for their preference were:

- (1) Price relationships -- barley price has been supported at 70 per cent of parity or higher since the allotment program on wheat started. Support price on the 1955 crop in the Columbia Basin counties was about \$1.05 per bushel.
- (2) Tillage practices are similar to those for wheat, and no change in machinery or equipment is needed to shift to barley.
- (3) Barley is less "risky" than other alternative grain crops.
- (4) Barley is better adapted to the climate and produces relatively higher yields than other grains.

Oats do well in some of the more moist sites and fit well with some livestock production systems. Oats, however, show up at a disadvantage when compared with barley as a cash grain.

Yields of corn generally are too low to return an income above production costs. For example, it takes a yield of 25 to 30 bushels of corn per acre to pay production expenses, whereas the average yield in Sherman experiments is only about 12 bushels. Many farmers in the area probably could beat this corn yield, but few could top 25 to 30 bushels per acre.

Rye has limited value as a feed or cash crop, and may become a weed in wheat fields.

### Perennial Forage Crops

Only those grasses and legumes which can withstand low rainfall conditions can be considered as practical alternatives to wheat in the area. This limits the forages to wheat grasses and alfalfa. In the lower rainfall portion of the area, farmers have had but limited success with alfalfa as a hay crop. Crested wheat grass has been grown successfully under rainfall conditions found throughout the area.

Farmers in the area thought well of grass and grass-alfalfa as a conservation measure but believed they were poor income producers. Farmers with cattle enterprises gave forages a more favorable rating than those without cattle. In nearly all cases, farmers did not favor a rotation of grass or grass-alfalfa with wheat. Instead, they would seed grass or grass-alfalfa on the less productive cropland adjacent to range or other pasture. This practice would, the farmers thought, result in higher wheat yields (on the better land), require less fencing, and entail lower costs of forage production and utilization, as compared with a rotation of grasses and legumes on the cropland.

### Grain for Hay and Pasture

Grain for hay or pasture on diverted acres would require no basic change in land use from the all-wheat production system. Only change would be in manner of harvesting a portion of the wheat crop. Grain hay or pasture is a successful alternative only when marketed through livestock. Grain for hay or pasture provides greater flexibility in the use of diverted acres than perennial forage crops. The amount of wheat harvested for hay or pastured can vary with year-to-year changes in allotments for wheat, and the poorest areas of wheat can be selected for these uses. Also, the farmer can readily shift back to an all-wheat system of production whenever the opportunity arises. The chief disadvantage of wheat pasture as an alternative is the need to move or construct fence around the area to be pastured each year. A temporary electric fence is sometimes used for this purpose.

### Leaving the Land Idle

An alternative for diverted acres sometimes overlooked is to leave the land idle, either in stubble or double summer fallow. There is no convincing evidence that two years of summer fallow or idle in stubble increases subsequent wheat yields above one year of fallow in this area. Thus, the main advantage of idle as an alternative for diverted acres is the low maintenance cost where cash crop production is restricted and the farm has no livestock to utilize farm-produced feeds. For this reason farmers interviewed preferred to leave their diverted acres idle. Income estimates were made for farms with diverted acres idle.

## **Livestock Alternatives**

Cattle and hogs are the two main livestock enterprises that can be expected to expand with the reduced emphasis on wheat production. Sheep is not an important enterprise in the area.

The main advantage of cattle or hog enterprises is to market feeds produced on the farm. In some cases, farm-produced feeds cannot be marketed except through livestock. In others, it is more profitable to utilize livestock as marketing agents even though a cash market does exist. Cattle are likely to be kept on farms for utilizing otherwise unmarketable feeds such as stubble aftermath, range pasture, and other roughages produced on wheat farms. Hogs are

likely to be kept to utilize farm-produced grains, although cattle feeding enterprises may be developed for this purpose.

Several different livestock production systems have possibilities of utilizing increased forage and feed grain production. The main ones appear to be (1) cow-calf enterprise, (2) cow-cattle feeding system, (3) cattle feeding enterprise, (4) hogs, and (5) combination of hogs with any of the cattle systems. In this study only the cow-calf system was budgeted. Possibilities of cattle feeding and hog enterprises have been covered in other experiment station studies. Some information contained in a hog enterprise study will be presented later in this report.

## Income of Alternatives Compared

Income estimates for different alternative production systems were made for two farms which represent typical farming situations in the area. The first farm contained 1,280 acres, of which 1,170 acres is cropland and 110 acres noncropland. This farm does not have livestock nor the facilities for a cattle enterprise. The second farm has the same amount of cropland (1,170 acres), but also has 1,500 acres of noncropland of which about two-thirds (1,000 acres) is good rangeland. This farm does have the necessary facilities (water, buildings, etc.) for a cattle enterprise. The two farms were chosen to represent two different resource situations: (1) farms without rangeland or facilities for cattle, and (2) farms with rangeland and facilities for cattle.

For the farm presently without facilities for cattle, farm income estimates were made for:

- (1) All-wheat (assuming no acreage allotments and no diversion, but with a support price on wheat),  
and with 35% of the cropland diverted to: /1
- (2) Barley (cash crop).
- (3) Idle in stubble or double summer fallow.
- (4) Grass, not utilized.
- (5) Grass with cattle enterprise (cow-calf).

The first alternative, all wheat, of course is not a realistic alternative. It was budgeted to show the effect that the surplus wheat problem and the consequent acreage allotment program has had on net farm incomes. The fifth alternative requires new investment in livestock facilities.

For the farm with livestock facilities and a going cattle enterprise, estimates were made of farm income for:

- (1) All wheat (assuming no acreage allotments and no diversions, but with a support price on wheat),  
and with 35% of the cropland diverted to:
- (2) Barley (cash crop).
- (3) Grass marketed through livestock.
- (4) Grain for hay and pasture.

---

/1 35% was selected as being the approximate percentage of cropland that has been taken out of production by the government program.

Average machinery investment, and other production requirements and input rates for the area were used in estimating the different incomes for each farm. Some specific yields and prices used in making the estimates were as follows:

| <u>Use</u>          | <u>Yield per acre</u> | <u>Price</u>       |
|---------------------|-----------------------|--------------------|
| Wheat               | 20 bushels            | \$ 1.80 per bushel |
| Barley              | 24 bushels            | .95 per bushel     |
| Grain hay           | 1 ton                 | --                 |
| Grain pasture       | 1 animal unit         | --                 |
| Crested wheat grass | .78 animal unit       | --                 |
| Cattle              | --                    | \$15.00 per cwt.   |

These yields were estimated area averages, except for the higher rainfall localities of northern Sherman and parts of Wasco and Umatilla Counties. Costs were based on 1954 prices paid by wheat farmers for items used in production. The income estimates derived for each alternative represent returns to capital investment, management and risk taking, and operator's labor. /1

Following are estimated net incomes associated with various alternative uses of diverted acres:

| <u>Use of<br/>diverted acres</u> | <u>Farm without facilities<br/>for cattle</u> |                          | <u>Farm with facilities for<br/>cattle and cattle enterprise</u> |                          |
|----------------------------------|---|--------------------------|--|--------------------------|
|                                  |   | <u>Per cent in wheat</u> |  | <u>Per cent in wheat</u> |
| All-wheat                        | \$14,119                                      | 100                      | \$15,196   | 100                      |
| Barley (cash crop)               | 11,328  | 80                       | 12,405   | 82                       |
| Idle                             | 7,462   | 53                       | --   | --                       |
| Grass, not utilized              | 7,408   | 52                       | --   | --                       |
| Grass, cattle                    | 7,169*  | 51                       | 10,298   | 68                       |
| Grain hay and pasture            | --  | --                       | 9,385  | 62                       |

\* This income estimate is smaller than that for grass, not utilized, because of the high cost of getting facilities needed for cattle on farms without these facilities.

It should be noted that for the farm without facilities for cattle, the cattle enterprise enters into the farm organization just once -- with grass on diverted acres. However, a cattle enterprise is present in each organization on the farm with facilities for cattle. The size of the cattle enterprise was not fixed, but was adjusted to the feed supply -- it varied from 26 cows for the grass-cattle alternative on the farm without facilities for cattle to 59 cows on the farm with facilities for cattle and with grass on diverted acres.

## Interpretation of Income Estimates

The above income estimates serve to demonstrate the following significant things about the adjustment problem of wheat farmers:

- (1) Those wheat farmers with facilities for cattle and going cattle enterprises have a distinct income advantage in adjusting to acreage allotments over those farmers presently without such facilities.

---

/1 More precisely, the return on capital investment in the income estimates is a return on the original capital for each farm before adjustment. An interest rate of 5 per cent on an investment needed to adjust to other systems of farming was deducted.

- (2) Cost of acquisition of facilities for cattle may prohibit the introduction of this enterprise on wheat farms which do not already have rangeland fields fenced, buildings for feed and cattle shelter, and stock water.
- (3) Production costs of wheat do not decrease in proportion to cutbacks in wheat acres when the diverted acres are left idle or seeded down for conservation purposes.
- (4) Barley as a cash crop will take first choice over other alternative uses of diverted acres, even with a much lower barley price than at present.

About two-thirds of the wheat farms in the area studied have going cattle enterprises. However, some of these are not as favorably situated in respect to rangeland and cattle production facilities as on the farm budgeted. These enterprises are small, mostly 15 to 30 cows. Use of diverted acres for feed production on these farms cannot compete with barley as a cash crop under present price conditions. Barley could drop in price about 40 cents per bushel (to 55 cents) with cattle at \$15 per cwt. and other prices and costs as assumed, before forage production and enlarged cattle enterprises (cow-calf) could profitably replace the barley (cash crop) as a use of diverted acres. For 95-cent barley, cattle prices of \$22 per cwt. would be needed for forage and enlarged cattle enterprise (cow-calf) to replace barley on diverted acres. Barley yield, as well as price, also affects the break-even or marginal point for a shift in use of diverted acres between barley and grass with an enlarged cattle enterprise. The following table is an estimate of the break-even cattle prices, barley yields, and barley prices for farmers with rangeland and other facilities for cattle.

| Barley yields,<br>bushels per acre | Barley prices per bushel            |         |         |         |         |         |
|------------------------------------|-------------------------------------|---------|---------|---------|---------|---------|
|                                    | \$1.05                              | \$.95   | \$.85   | \$.75   | \$.65   | \$.55   |
|                                    | "Break-even" cattle prices per cwt. |         |         |         |         |         |
| 24                                 | \$23.85                             | \$22.13 | \$20.41 | \$18.69 | \$16.96 | \$15.24 |
| 22                                 | 22.35                               | 20.62   | 18.90   | 17.19   | 15.46   | 13.73   |
| 20                                 | 20.84                               | 19.12   | 17.40   | 15.68   | 13.95   | 12.23   |
| 18                                 | 19.34                               | 17.61   | 15.89   | 14.18   | 12.45   | 10.72   |
| 16                                 | 17.83                               | 16.10   | 14.39   | 12.67   | 10.94   | 9.22    |
| 14                                 | 16.33                               | 14.60   | 12.88   | 11.17   | 9.44    | 7.71    |

This table shows those cattle prices (average of feeder calves and cull cows) needed to make grass and expanded cattle production equally as profitable as barley (cash crop) on diverted acres. For example, if a farmer figures prices he will receive for cattle will average about \$17, he could profitably shift diverted acres from barley to grass with the following barley yield and price combinations: 14 bushels @ \$1.05, 16 bushels @ \$.95, 18 bushels @ \$.85, or 20 bushels @ \$.75. The above table of "break-even" cattle prices with different barley yields and prices is not applicable to farms currently without cattle enterprises or facilities for cattle. Neither is it applicable to all cattle systems. Research underway on a different project indicates a cattle feeding system may be more profitable in this area than a cow-calf system.

About one-third of the farms in the area do not have cattle enterprises. Their adjustment problem is more serious than those having a going cattle enterprise. Cost of acquiring the facilities needed for cattle enterprises on these farms may prohibit their establishment. For example, an estimated \$6,000 would be needed to build 12 miles of fence, drill a well and install a pump for livestock water, and make the necessary improvements to handle a cattle enterprise on the farm without these facilities. If the initial investment, or other considerations, prohibits a cattle enterprise on a wheat farm, then its alternative uses of diverted acres for income purposes are limited to cash crops, other than the possibility of a hog enterprise, which will be discussed below.

Nonuse of diverted acres produces income cutbacks greater than the cutback in wheat acreage, because cost per unit does not decrease proportionally with wheat acreage. An example of such a cost is machinery depreciation. This cost characteristic affects all the income estimates given previously except those for the barley alternative. When barley is grown on diverted acres, the machinery and equipment are used about the same amount as would be the case with all-wheat. Thus, per acre grain costs have not changed. But any cutback in grain acreage, as would be the case if some forage production was substituted for some barley, would result in a smaller reduction in grain production costs than the acreage cutback. This is why farmers without cattle enterprises and with about 24 bushel barley yields can afford to grow barley on diverted acres for about 30 cents per bushel, rather than leave the land idle. For the same reason, farmers with cattle still cannot substitute grass for barley on the diverted acres unless barley drops to about 55 cents per bushel (24 bushel yields) or cattle prices rise to about \$22 per cwt. (\$.95 per bushel barley and 24 bushel per acre yield).

On the basis of cost figures reported for 23 hog enterprises in eastern Oregon in 1950 and 1951, the following are "break-even" feed grain and hog prices: /1

| <u>Feed grain per ton</u> | <u>Hog prices per cwt.</u> |
|---------------------------|----------------------------|
| \$35                      | \$13.79                    |
| 40                        | 14.80                      |
| 45                        | 15.83                      |
| 50                        | 16.85                      |
| 55                        | 17.88                      |

These figures mean that, if a wheat grower can duplicate the success of the 23 hog producers from whom the records were taken, he would be indifferent whether to feed hogs or sell grain at the above price combinations. Any higher hog prices than those given, with feed prices remaining unchanged, would make hog feeding profitable. Conversely, any lower hog prices, feed prices the same, would make hog feeding unprofitable. These figures may be based on a degree of success with hogs which the average wheat farmer could not hope to attain without considerable experience. The average number of sows for the 23 eastern Oregon producers in the survey was 7.8, with 7.2 pigs per litter, and with each sow averaging 1.8 litters per year.

## Other Considerations

Discussion of alternative uses of diverted acres would be incomplete without emphasizing that income is not the sole criterion. Flexibility, mentioned in the discussion of grain hay and pasture, is an important consideration in deciding on an alternative when future production opportunities are uncertain. Soil conservation is another important factor to consider in deciding how to use diverted acres. For example, grass would have the highest value as a conservation crop, but the least value as an immediate income producer. Labor requirements may also be a factor since many farmers value their leisure and place a price on additional labor required. How much emphasis to give to income potential, how much to additional labor required, or how much to flexibility features of the various alternatives are questions individual farmers must decide when choosing enterprises to use resources removed from wheat production.

---

/1 G. E. Blanch. Unpublished data of Oregon Agricultural Experiment Station.