



Alternatives for developing land on the Hardin Unit, Montana
by Robert L Sargent

A thesis submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of
DOCTOR OF PHILOSOPHY in Agricultural Economics
Montana State University
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Abstract:

The impounding of waters of the Big Horn River by the Yellowtail Dam in south-central Montana will make it possible to irrigate about 42,60,0 acres of land on what is known as the Hardin Unit.

This study had the three-fold purpose of (1) investigating farm sizes and enterprise combinations that would be appropriate on the Hardin Unit; (2) comparing conventional development and predevelopment as methods of preparing Unit lands for irrigation; and (3) determining the direct economic impact of the Unit on the surrounding area.

The study revealed that integrated farm units of approximately 320 acres of Class 2 land should prove adequate to provide living and operating expenses as well as to pay off debts incurred. The foregoing held true for four of the five enterprise combinations that were considered.

Predevelopment was found to have substantial advantages over conventional development as a method of bringing the lands under irrigation, such as: (1) approximately 1,700 acres more land would ultimately be irrigated; (2) land would be developed for irrigation more rapidly; (3) settlers would be more likely to prove successful because income would be greater during the early years of settlement and because they could concentrate their time and resources on production; and (4) reductions in development costs might be attained as a result of being able to submit large blocks of work to competitive bids.

A four-to-five fold increase in investment in land, buildings, machinery, and equipment was indicated for the Hardin Unit area if irrigation were adopted. The increase in annual gross income (about \$8 million) and annual gross expenses (about \$7 million) would be of greater importance to the surrounding area. Expansion of employment opportunities on the Hardin Unit area was estimated at about six times the present level.

Recommendations that are suggested by the study include: 1. A modification of Reclamation law to specify farms of a size sufficient to be economically sound, self-sustaining units.

2. An adaptation of institutional lenders' credit policies to more adequately meet the needs of new settlers.

3. The possible formation of more than one irrigation district.

4. The formation of a special office on the Reservation that would be responsible for carrying on development activities and the later settlement and leasing activities on the Crow portion of the Unit, 5. Farther research to investigate the adaptability of sprinkler irrigation to the Hardin Unit and to investigate enterprise combinations to maximize income.

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ON THE HARDIN UNIT, MONTANA

144

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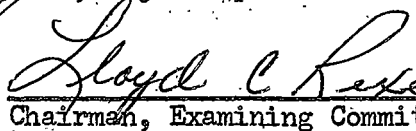
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Any errors or omissions in this study are the responsibility of the author.

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ABSTRACT

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This study had the three-fold purpose of (1) investigating farm sizes and enterprise combinations that would be appropriate on the Hardin Unit; (2) comparing conventional development and predevelopment as methods of preparing Unit lands for irrigation; and (3) determining the direct economic impact of the Unit on the surrounding area.

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Recommendations that are suggested by the study include:

1. A modification of Reclamation law to specify farms of a size sufficient to be economically sound, self-sustaining units.
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5. Further research to investigate the adaptability of sprinkler irrigation to the Hardin Unit and to investigate enterprise combinations to maximize income.

PART I

INTRODUCTION

Efforts have been made over a sixty year period to develop additional farming opportunities in the United States by furnishing irrigation waters for arid lands. These efforts and problems that have been encountered, particularly as they are related to the Hardin Unit, are discussed in the two following chapters.

CHAPTER I
IRRIGATION DEVELOPMENT AND THE HARDIN UNIT

Background

The history of the United States is steeped with legislation designed to promote family owner-operated farms of sufficient size to provide a suitable living environment for the farm family. The earliest efforts started with the first settlements and were directed at carving homesites out of the wilderness. However, by the end of the 19th century, with virtually all of the desirable new lands taken up, Congress passed the Reclamation Act of 1902 to bring irrigation waters to lands which were too dry to be farmed economically. This permitted not only the bringing of new lands into production but provided farming opportunities for additional farm families.

Settlers on the projects established by the Reclamation Act found themselves confronted with much the same type of situation as had pioneers who settled the wilderness areas a century or two earlier. They found sagebrush rather than the trees which had greeted their ancestors who settled the Mid-west. Water was delivered in a ditch to a high point on their farm unit, but from there they were responsible for getting it spread over the rest of the unit if they were to expect to reap its benefits.

These settlers immediately had the responsibility of providing a dwelling of some sort for their families. This plus the need for moving vast amounts of earth to prepare the farm for efficient irrigation often required more capital than early settlers could obtain. It led to what has

become a traditional saying in regard to these projects--"Two go broke before the third succeeds." Despite this experience, however, many irrigation projects continue to be developed in this same general manner.

The reclamation Act of 1902 provided for a limit of 160 acres per farm owner. Sixty years later this same limitation still applies, although the law has been interpreted to mean a husband could qualify for one unit of up to 160 acres and his wife could qualify for another unit. The problem of integrating the two separate units into a meaningful and efficient operation is left for the new settler to figure out. A further problem is involved if a man is single when he takes his original irrigated unit, but later marries and finds his wife is also eligible to buy a unit. The probability of finding one within reasonable distance is often quite remote. Furthermore, if one is taken up some distance away it certainly could not be operated as efficiently as adjoining units or a completely integrated unit of sufficient size to utilize economies of scale that are presently available and necessary for efficient farm operation.

During the 40 years 1920-1959 farm size in Montana has increased from an average of 608 acres per farm to 2,213 acres per farm. Value of land and buildings has increased from \$13,470 to \$71,220 after falling to a low of \$7,430 in 1935. Irrigated land in farms has increased from an average of 105 acres per farm in 1940 to 157 acres in 1959.¹ From the foregoing

¹United States Department of Commerce, Bureau of the Census, United States Census of Agriculture, 1959, p. 3.

it is very evident that farm size is increasing at a very rapid rate and farm value even more rapidly.

The Upper Midwest Research and Development Council investigated changes that have occurred in income. Numbers of farms in Montana have declined from 37,800 farms in 1949 to 34,000 in 1959, but during this same period farms receiving an annual gross income of more than \$10,000 (Group I) have increased from 8,532 to 13,539.² The residual to management of Group I farms was \$6,608 in contrast to -\$1,552 for farms grossing \$2,500 to \$9,999.³ The importance of units being of sufficient size to yield positive returns to management cannot be over-emphasized.

Two important reasons for these vast changes have been the price-cost squeeze with which farmers have been faced in recent years and the rapid technological advances that have been made. Both of these factors have important implications for the future.

In a report on trends in Montana price indexes over recent years, Taylor found that present trends indicate a continuation, indeed a broadening, of the price-cost squeeze faced by farmers (Figure 1).⁴

²Knudtson, Arvid C., and Cox, Rex W., Upper Midwest Agriculture: Structure and Problems, pp. 14-16.

³Ibid., p. 31.

⁴Taylor, Maurice C., Trends in the Montana Farm Price Indexes 1948-62, Cover page.

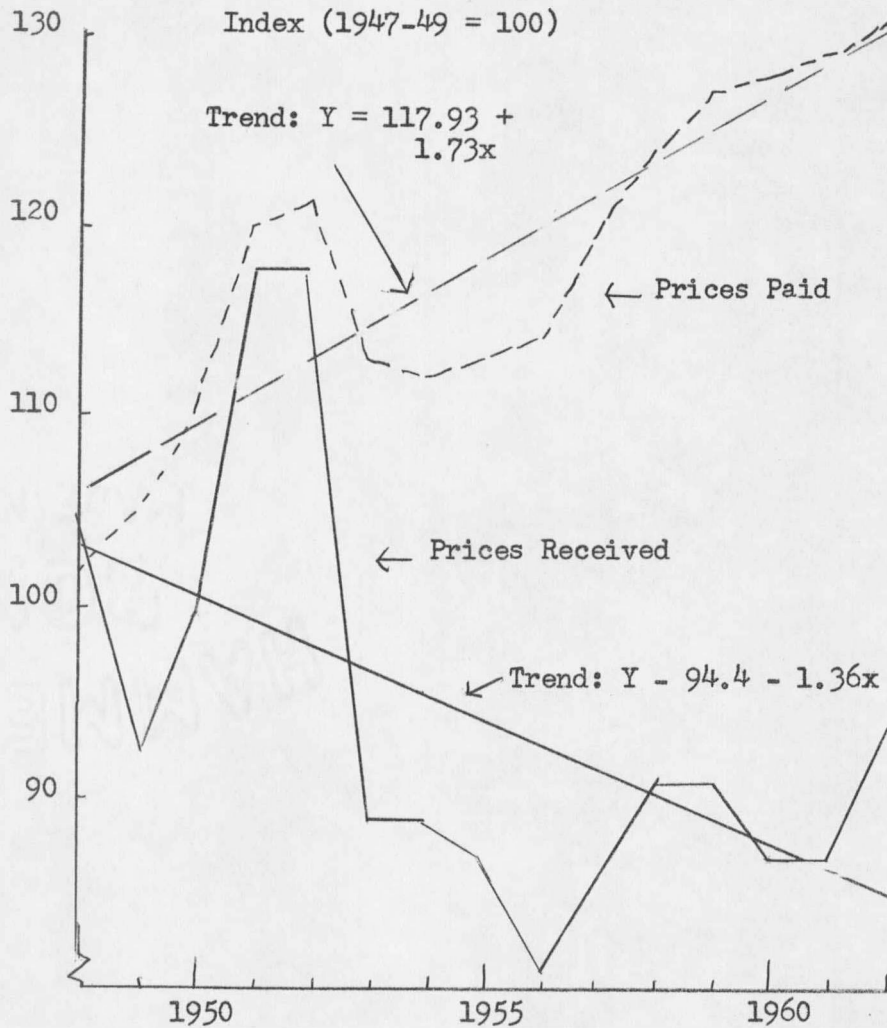


Figure 1. Index of Prices Received and of Prices Paid for Commodities Used in Production by Montana Farmers and Ranchers, 1948-62, Including Trends*

*Source: Taylor, Maurice C., Trends in the Montana Farm Price Indexes, 1948-62, Cover page.

Taylor found that the prices farmers pay for non-farm produced inputs have been rising steadily and could be expected to continue to do so.

"Most of the departure from trend in the overall index between 1948 and 1962 was due to price variation in the farm produced items."⁵ The trend of prices received has been generally downward, though there appears to be some leveling off during the period 1953-62.

The technological advances have tended to be labor saving, but capital using. As a consequence, farmers have not only been able to handle more with a given amount of labor but have also been forced to do so in order to take advantage of the new technologies. The usual method of adjusting to this situation has been to increase land holdings, although it must be recognized that some of the advance has been in the direction of producing more on given land base--fertilizer is an example. Much of the technological advance, however, has been in the direction of larger, more efficient, more expensive farm machinery.

The above considerations certainly indicate that continued adherence to a limitation of sixty years ago is a fallacious policy today. When acreage is used as the principal criterion, only limited consideration can be given to such important factors as soils, adaptable crops, growing seasons, topography and field sizes, and availability of adequate credit. These latter factors are, however, of utmost importance to the establishment of a maximum number of economically sound, self-sustaining farming

⁵Ibid., p. 8.

