



Extension implications of budgets in decision-making as illustrated by dryland alternatives for diverted wheat acreage  
by Thomas S Rackham

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Master of Science in Agricultural Economics at Montana State College  
Montana State University  
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**Abstract:**

This thesis is an exploratory study in the extension-farm management problem area. It is based on the diverted wheat acreage problem in Montana. Wheat\_acreage allocations generate enterprise selection and combination problems for specialized wheat farmers. Extension agencies may be involved in educating these farmers in how best to seek a solution to their current problems.

It is thought that farmers faced with problems of this kind can best prepare themselves for decision-making relative to their individual circumstances by using a budgeting method of analyzing the alternatives which lie before them. The objective of this study is to lay out a budgeting method which can serve this end as well as provide a vehicle for extension demonstration of how on-the-farm choices between alternatives may be made. A series of illustrative budgets for a synthesized case farm is used as a model.

Analysis of this array of budgets indicates some of the short-comings of the method yet demonstrates the potential effectiveness of budgeting in compelling the budgeter to make a critical study of his business operation and an explicit selection of assumptions relevant to the problem.

The comparisons made bring the budgeter into decision-making areas of thought relative to purely monetary considerations. However the budgets fail to take explicit account of the non-monetary aspects involved in the farmer's considerations, which nevertheless have far-reaching effects on his economic decisions.

Some thought is directed towards the development of a formalized consideration of these non-monetary objectives of the farmer. Also considered is the possibility of improvement in the kind and sources of data basic to farm budgeting. Further research in these two problem fields is indicated.

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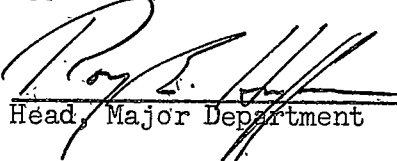
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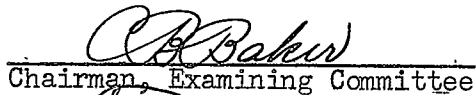
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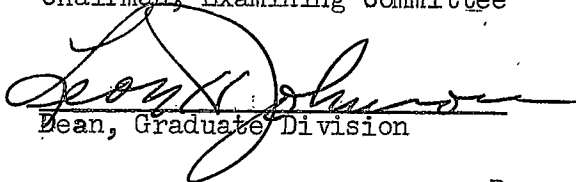
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ABSTRACT

This thesis is an exploratory study in the extension-farm management problem area. It is based on the diverted wheat acreage problem in Montana. Wheat acreage allocations generate enterprise selection and combination problems for specialized wheat farmers. Extension agencies may be involved in educating these farmers in how best to seek a solution to their current problems.

It is thought that farmers faced with problems of this kind can best prepare themselves for decision-making relative to their individual circumstances by using a budgeting method of analyzing the alternatives which lie before them. The objective of this study is to lay out a budgeting method which can serve this end as well as provide a vehicle for extension demonstration of how on-the-farm choices between alternatives may be made. A series of illustrative budgets for a synthesized case farm is used as a model.

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PART I

INTRODUCTION

Extension-Economics Problem Area

"What a man hears he may doubt; what he sees, he may doubt; but what he himself does, he cannot doubt." 1/ This statement illuminates one of the basic means of achieving the objective of agricultural extension, the effective transformation of ideas into practice. It is particularly apropos in revealing a weakness in the field of extension farm management. Heretofore widespread efforts in telling and showing farmers the value of farm management as a conscious activity seem to have met with rather limited acceptance, even in the elementary phase of keeping adequate farm records. 2/ What lies behind this slow adoption of a worthwhile practice in an environment calling for increasingly urgent farm adaptability?

Background to extension-farm management problem.--Two of the more obvious characteristics of the agricultural industry are its magnitude and wide

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1/ Anonymous statement appearing in Saskatchewan Farm Science, Ext. Dept. College of Agriculture, Univ. of Saskatchewan, Vol. 1, No. 1, (February, 1954) p. 2.

2/ According to Bradford and Johnson, management is an intangible part of production seen only through observing the decision-making process and its results. A good manager must have the self-discipline to:  
"Direct thinking toward opportunity for attainment.  
Attack problems preventing attainment of his objectives.  
Extract the optimum information from his environment.  
Carry analysis for each decision to a favorable degree.  
Take prompt action on his decisions.  
Accept the consequences of his actions."  
Bradford, Lawrence A., and Johnson, Glenn L., Farm Management Analysis, John Wiley & Sons, Inc., New York, (1953).

dispersion. Both of these features tend to obstruct rapid dissemination of information because the industry depends not on easily reached, large scale, centralized, and co-ordinated areas of activity, but on the individual efforts of numerous independent and virtually isolated one-man firms. In non-agricultural industry progress depends on the skillful and personal competitive managerial capacity of relatively small and well trained administrative groups. Progress in agriculture depends less on concentrated management and more on an infiltration of ideas (or else outright regulation) throughout the industry-wide distribution of the single-celled farm entities which comprise a country's agricultural base.

All manner of means may be used in the presentation of these ideas but the consummation of progress will not be complete until an idea is accepted, assimilated, and put into action by each and every farmer concerned. Each one, by the very nature of his independence, will be stimulated at a different time, by a different means, and to a different degree of activity than his neighbor.

There was a time when decision-making on the farm revolved around the production of personal household requirements of subsistence. Changes came slowly enough that consequences of mistakes could almost be ignored, and if they became too oppressive for the farmer to bear, he could move on and make a new start on the frontier.

Farm management decisions now revolve around those enterprises which ultimately produce marketable goods from which the greatest return possible may be derived from the resources applied to their production. For the

individual contemporary farmer a faulty decision resulting in poor timing, inadequate use or availability of resources, or a mis-estimate of marketing conditions, may be so critical to the well-being of his farm as to spell the difference between success and failure.

Year by year the consequences of mistakes in farm management have become increasingly damaging to individual well-being. Intelligent decision-making on the part of all farmers is thereby becoming of paramount importance to the well-being of the industry. The alternatives indicated are either agricultural chaos and hardship, or an all-embracing administrative regulation which replaces a large part of the individual responsibility for correct decision at the farm level.

Extension functions in farm management.--Every year there are fewer farmers in the United States. Farm firms are larger. Production is higher than ever. Faced with buoyant costs and subsiding product prices, these business firms are more dependent than ever before on efficiency for success. There is less and less room for management errors. There is more and more room for management techniques designed to overcome difficulties in fitting production systems to farm resource patterns and marketing outlooks. Extension programs need to provide means for more intelligible interpretation of information relevant to immediate problems and to create vehicles capable of drawing farmers into active and conscious participation in decision-making processes. The aim should be to break down any inertia present in farmers' attitudes towards farm management problems, stimulate recognition of problem.

situations, stimulate anticipation of forthcoming shifts in economic environment, and stimulate logical step by step reaction to these situations. To sum up, extension should seek to lead the farmer into practicing systematic farm management decision-making procedures.

This calls for further study of any peculiar economic characteristics of the farm firm from which stem obstacles to the application of ordinary business management procedures. There are other obstacles with sociological roots, particularly in the innate character of man withdrawn into the security of his own domain. Every farm has elements of a minute independent principality which leads to a lack of uniformity as well as an economic and social disunity not commonly found elsewhere in society. Such attitudes of independence and self-sufficiency associated with farming are vestiges of past stages in social development which are not in keeping with the organization of contemporary society. Yet "wishful thinking" of this order is probably the main reason farmers cling to their farms, even though they may be better off economically in other occupations.

Extension has to breach these barriers with farm management ideas which impose on the prerogative of the farmer who may say "I know how to run my own business" or "Nobody can tell me what to do on my farm." These feelings go a long way in explaining non-receptive attitudes encountered on many farms. However these same farmers admit their need of farm management help by the all too common retort, "You don't need to tell me how, I already know more than I can put into practice." This is

the crux of the extension problem in farm management, to achieve an effective demonstration of how to get from where you are to where you would like to be in conclusive terms.

Certainly no panacea is expected to be found which will solve this problem of "getting across" to farmers with farm management techniques. The great heterogeneity of the agricultural industry denies that any overall detailed method is likely to be developed. Rather if each segment is taken separately, the weak spots may be ascertained and the problem attacked according to the individual characteristics of that segment. The wheat producers of the United States constitute such a segment of the agricultural industry. A weak spot offering one possible area vulnerable to extension attack is the diversion of acreage from wheat production resulting from the surplus wheat situation.

#### The Nature of the Surplus Wheat Problem

In the United States there are large agricultural areas in which wheat has characteristics of adaptation which make it easier to grow than competing crops. Because it is more dependable than other cash crops, it may be grown in preference to other kinds of grain whether wheat prices are favorable or not. There is also a high degree of uncertainty from one year to another as to the eventual out-turn of each succeeding crop. In the face of these conditions an oversupply situation is little deterrent to production. Historically, as well, the reaction of single-enterprise wheat farmers to depressed price levels has been an effort to produce more of their product, thus accentuating any existing surplus difficulties. In the

short-run, therefore, wheat production in this country responds slowly to unfavorable market conditions, and uncertain though it may be, tends to exceed national needs.

The world market for United States wheat is equally changeable, thereby increasing the problems of surplus disposal. For instance the post-war return of off-shore countries to greater self-sufficiency in wheat production tends to dry up United States export trade in wheat. In the remaining free markets United States wheat may sometimes be at a disadvantage due to exchange and quality considerations. At the same time the home market, rather than expanding with the current population increase, remains relatively static due to a declining trend in per capita consumption of bread.<sup>3/</sup>

Thus commercial wheat producers as a group have occupied an inherently unstable position in the national economy. In an effort to stabilize the position of these wheat producers but somewhat in contradiction to the import of the above circumstances, national agricultural policy in the past several years has encouraged a continuing full-scale production of wheat.

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<sup>3/</sup> Gray, Sorensen, and Cochrane cite M. K. Bennett as the original author and then proceed to elaborate on the relationship between wheat and potato consumption expressed as a national "cereal-potato ratio" which is primarily associated with the level of economic development of a country. The advancing economic development of the United States has resulted in a trend towards an increasingly varied diet which in turn has led to declines in both potato and wheat per capita consumption. Other factors leading to continuing adjustments may emerge. For further details see Roger W. Gray, Vernon R. Sorenson and Willard W. Cochrane, The Impact of Government Programs on the Potato Industry, Univ. of Minn., Agric. Exp. Sta., Tech. Bull. 211, (June, 1954), pp. 15-21.



This has been effected by guaranteeing a relatively favorable (by comparison with other agricultural products) and for most conditions a profitable price level for wheat. 4/ This high minimum price level has had the subsidiary effect of still further restricting the market for wheat by shutting off its effective competition with other products for use as live-stock feed or for industrial non-food processes. Add to this situation the effects of a run of good years combined with technological advances in agricultural production which together have resulted in wheat crops considerably above expectations based on past experience.

Altogether, many natural and economic phenomena have led to the accumulation of ample reserve stocks and an actually burdensome surplus of many classes of wheat in the United States. The growth of this surplus is illustrated by Table I.

Table I.--Wheat supply and disappearance, United States, 1950-54. a/

Year Beginning July 1.	Supply			Disappearance			
	Carry-over	Production	Total b/	Processed for Food	Other Uses and Disposal	Exports c/	Total
	- 1,000,000 bushels -			- 1,000,000 bushels -			
1950	424.7	1019.4	1456.0	489.8	235.5	334.5	1059.8
1951	396.2	980.8	1408.7	481.5	201.2	470.3	1153.0
1952	255.7	1299.0	1576.2	474.2	223.8	315.7	1013.7
1953	562.5	1169.5	1737.5	473.8	146.6	215.2	835.6
1954 d/	901.9	969.8	(1874.7)	-----	-----	-----	-----

a/ Compiled from the Wheat Situation, U.S.D.A. Agricultural Marketing Service, (February 28, 1955).

b/ Includes small imports; not a direct summation of carryover and production.

c/ U. S. procurement for export.

d/ Preliminary.

4/ Some indication of the possible effects of price supports on the wheat industry may be drawn from the study of Gray, Sorenson, and Cochrane, op. cit. pp. 86-87.

This, then constitutes the current national problem relative to wheat production. How may the surplus be reduced or held to manageable size without throwing the affected segment of agricultural industry into chaos or disrupting the currently accepted international economic relationships? To handle the problem within the United States constraint of off-farm sales of wheat has been suggested. This merely places the onus of storage upon the farmer. Although there may be more waste the surplus problem remains since there is no strong force to limit production as long as price maintenance remains an integral part of agricultural policy. The United States government has chosen to institute a direct means of production control through wheat acreage reduction, with a supported wheat price only directly available to the production from the allocated acreage. At this point the national problem generates a problem of direct concern to the wheat farmer in that he must decide how he will adjust his farm operation to comply with the new constraints.

#### Diverted Acreage Research In Montana

This problem of what to do with acreage diverted from wheat production has been the subject of a study first initiated at Montana State College in 1948. Briefly stated, the objective of the study at that time was to find out the feasibility and cost of shifting wheat land out of wheat production into alternative uses. The reason for starting the investigation then was the prospect that a mounting surplus of wheat would either necessitate an acreage control program or cause a decline in wheat prices.

Progress up to 1954.--O. L. Mimms lists a number of possible alternatives in the use of diverted wheat land.<sup>5/</sup> He also discusses the obstacles which lie in the way of satisfactory use of diverted acreage. First, he says, farmers' "lack of information" impedes decision-making relative to acreage reduction because they suffer uncertainty as to price levels and the direction of government policy. Secondly, wheat farmers lack experience with other crops and livestock enterprises. Thirdly, many wheat farms lack the water and pasture resources imperative for stock production. Fourth, these farmers face financial obstacles in the form of the investment costs required for establishing new enterprises. Fifth, some areas lack adequate community facilities, such as schools, to permit year round residence on the farm. Sixth many farms are too small, a vital factor, perhaps under-rated. Mimms describes the critical factor here as being that even without acreage reduction many wheat farms are so small that "pressure for survival is great."<sup>6/</sup> Even a substantial resource diversion on these farms provides inadequate land or other resources to support a worthwhile alternative enterprise. The seventh and last obstacle listed is the prevalence of tenancy. This creates obstacles to efficient use of diverted acreage because owner-operator agreements are rigid and the contracting parties

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<sup>5/</sup> Mimms, O. L. "Diverted Acres in the West. - Some Farm Organization and Other Problems," Proceedings, Western Farm Economics Association, (1950).

<sup>6/</sup> For further details see Rainer Schickele, "Farmers Adaptations to Income Uncertainty," Journal of Farm Economics, Vol. 32, (Aug., 1950) pp. 363-374.

resist change, while the location and size of rented tracts relative to the operator's head-quarters are frequently unhandy.

Research up to 1950, reported by Mimms, indicated that increases of summerfallow (with some exceptions) to take up the diverted acreage constituted one of the best alternatives, assuming that crop yields responded as expected. Other alternatives had obstacles such as probable administrative controls for barley and feed wheat, price and yield uncertainties for crested wheat grass seed, significant added investment for cattle or hogs. He indicated that considerable refinement of standards used in setting up budgets was necessary and that continuing research on the problem would yield returns in more perfect knowledge.

However, interest in the problem remained relatively dormant during the Korean hostilities, and the project was sidetracked. In 1953 Baker re-opened active consideration of the research when he revised Mimms' budgets in line with then current prices.<sup>7/</sup> He pointed out that a 25 percent reduction in wheat acreage would, if no adjustment were made to other uses of the resources, reduce net income on dryland farms by about 35 percent. The feasibility of the possible alternatives, relative to Mimms' results, remained much the same income-wise except that the cow-calf enterprise assumed a lower position due to decline in cattle prices. For all alternatives the level of income had declined since 1950 because product prices

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<sup>7/</sup> Baker, C. B., "What Are Alternatives for Reduced Wheat Acres?", Montana Farmer-Stockman, (July 15, 1953).

had remained stable or fallen off, while costs had reached higher levels. Baker's work indicated that enterprise replacement possibilities are largely limited to those which can minimize but not wholly replace the loss of income resulting from wheat acreage reduction.

In this connection there is another course of action for which the possibilities have been described by M. C. Taylor in a recent article.<sup>8/</sup> He develops instances of economic situations some of which would favor compliance and others non-compliance with the acreage allotment program, as it exists for the current 1955 season. So long as the control legislation remains permissive, as it is now, a farmer in his own interest (this however may not be in the national interest) may decide that his best alternative could be non-compliance rather than compliance. Currently this decision would rest on the amount of over-seeding and the farmer's anticipated wheat yield relative to "normal" yield for his farm, as well as anticipations regarding relative yield and price of barley in respect to wheat. A contingent factor would be availability of storage for any excess wheat that might be produced.

Implications of research already published. -- There is a rather general idea that possible alternatives for specialized wheat farmers are quite restricted. This may result from the long-time dominant position of wheat which has tended to obscure recognition and acceptance of the alternatives

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<sup>8/</sup> Taylor, M. C. "Wheat Acreage Allotments -- Compliance or Non-compliance," Montana Farmer-Stockman, (March 15, 1955).

which are available. However examples of successful development of enterprises other than wheat can be found in wheat producing areas.<sup>9/</sup>

A review of the work already done establishes the fact that there are many relatively unexplored alternatives which may temporarily relieve the financial stress imposed by acreage restriction. In addition an extension publication provides information and suggests uses for diverted acreage, aimed not only at maintenance of income, but at indirect benefits such as conservation and weed control.<sup>10/</sup> However in the light of the obstacles listed by Mimms all the alternatives which may be proposed cannot be considered by all farmers faced with acreage reduction. In fact it appears that many will not succeed in finding a suitable alternative at all.

It can be seen that the number of possible alternatives are not so restricted, but the opportunities for developing them are. The implication is that public and private research should be aimed at uncovering not only all the possibilities that are presented but also means of circumventing the obstacles to their development. This further implies that extension services should be prepared to demonstrate how those concerned can develop their individual opportunities for adjustment to new situations.

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<sup>9/</sup> The combination sheep and wheat or cattle and wheat ranch appears on all sides. The writer has observed a 5,000 acre wheat farm near Taber, Alberta, from which turkeys have been marketed since 1946, reaching a volume of 12,000 birds in 1953.

<sup>10/</sup> Diverted Acres, Ext. Pub. Ag. - 26 (Revised), Extension Service, Montana State College, (September, 1953).

Orientation of Current Study

Wheat acreage diversion implications for extension.--The application of wheat acreage allotments forces changes to be made on wheat farms. The extensive adjustments which have to be made may be best illustrated by the remarks of O. L. Mimms when introducing a 1950 report on his study dealing with the situation. He said:

"Under wartime pressures and later incentives wheat farmers in parts of the Great Plains and other areas extended their acreage to the limit. Some continued good practices and kept near the optimum amount of fallow. But others stubbled in a lot of wheat. Several million acres of grassland were broken and seeded to wheat. In total the increase was 30 million acres --from 53,000,000 in 1942 to 84,900,000 in 1949. While I doubt that we either shall or should cut back to the 1942 acreage, some cut is inevitable and desirable. We may need 20 to 23 million fewer acres in wheat. The 1950 acreage is about 12 million below 1949. Specifically where the cuts will be is one thing and where they should be may be quite another. But we may be quite sure that the big portion of any major cut, acreage and production wise, will be in the wheat country. The Great Plains and the Pacific Northwest had about 80 percent of the 1949 acreage. Most of the wartime and later increases were here also--84 percent of the 30 million.

"The big increase in wheat acreage is relatively recent but many farm organizations are geared to the high level. A cut back of 15 or 20 or 25 percent would not be simple, farm by farm, and it would add up to one of the greatest land use problems faced since the dust bowl and depression 1930's."<sup>11/</sup>

Even without intervention by the government the surplus wheat situation would have necessitated eventual widespread adjustments among wheat farmers. The remarks above hint at other mal-adjustments such as land abuse. The need for adjustment of farm practice is reason enough to expect

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<sup>11/</sup> Mimms, O. L., op. cit.

the involvement of extension services in the problem areas. These circumstances suggest that there could be wide-spread opportunities for worthwhile communication between farmer and extension agent.

In this situation adjustment problems are seen mainly as those of enterprise combination and organization. Decisions have to be made one way or another. This should provide a target for extension work in farm management, since wheat farmers may be susceptible to management suggestions when failure to respond to the acreage reduction program spells a loss of income. Here perhaps progress could be made in introducing improved techniques for resolving problems of enterprise combination on the farm.

Projection into objectives of current study.--The problem of surplus wheat production may long be with us. Consequently wheat farmers are more and more likely to be found wrestling with problems concerning enterprise alternatives. If they can approach their problems in a systematic manner and draw on any local features or individual circumstances which give them an advantage, the resultant decisions should place them in the most favorable position possible. Certainly the variation from farm to farm, in possibilities for the use of resources diverted from wheat production, is great enough that the solution can more easily be found on an individual basis than on a group basis. Further it may be anticipated that other problems will develop from acreage diversion. Perhaps there will result from this a need to provide single enterprise wheat farmers with additional training in how best to cope with problems of enterprise combination. This thesis attempts to anticipate this need and suggest ways in which extension services may go about the job.



The work of this thesis becomes, therefore, not an effort to find suitable alternatives, but a projection into the field of extension. The enterprises suggested by this study are likely to be useful to relatively few farmers from the point of view of putting them into actual practice. However, the work is developed only in part to be used as a guide for those who may be best situated for adopting the alternatives considered. Beyond this point the methodology is designed to be helpful to a larger group as an illustration of a method of comparing enterprise alternatives of any kind that might be of interest to them. The main objective will be to demonstrate how a selection may be made from among the known alternatives, thus providing a tool which the extension workers may use in their contacts with wheat farmers.

Locale of study.--Alternatives may be expected to vary greatly over a widely dispersed group of wheat farmers such as would be found in the state of Montana. Previous work on this project has related to two main "dryland" farming areas. These differed markedly in environment so that considerable difference in response to acreage reduction might be expected. Consequently the area of consideration for this study has been confined to the "Triangle" area. In order to reduce the scope of study still further the ensuing budgets apply primarily to a relatively homogeneous group of winter wheat farms concentrated in the inverted apex of the so-called triangle. It is within this environment that the reactions and needs of the farmer will be examined as a base for extension work.

Description of study area.--<sup>12/</sup>The area referred to occupies a large part of the north central crop reporting district and the northern portion of the central district. Specifically the counties receiving consideration for comparative purposes are: Judith Basin, Fergus, Cascade, Choteau, Teton, Pondera, Glacier, Toole, Liberty, and Hill.

In the main, dry farm land in this central and north central part of Montana varies from level to gently rolling. The chestnut and brown plains soils are relatively deep and generally of loam to clay loam textures. Altitudes range from below 3000 feet in the northeast part of the area and in excess of 4000 feet in the western and southern portions. At the higher altitudes the frost-free season averages as little as 105 days, although for the major part of the area the season will extend to 120 frost free days or more. The winters are shortened and moderated by virtue of being in the Chinook belt, but the same winds for the balance of the year are detrimental since they are very drying and their turbulence tends to lift the soil readily. Precipitation is most favorable adjacent to the Rocky Mountains in the northwest and particularly in the apex of the triangle north of the Little Belt Mountains, where the average annual precipitation is in the fifteen to twenty inch zone. By contrast, the northern base of the triangle adjoining Canada is in the ten to thirteen inch zone.

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<sup>12/</sup> Bolster, H. A. and Stucky, H. R., Montana's Agriculture, Montana Agric. Ext. Service Bulletin 228, (May, 1945).





















































































































































































































































