A COMPARATIVE STUDY
OF
BEEF PRODUCTION SYSTEMS ON EASTERN OREGON RANCHES

by

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CHAPTER I

INTRODUCTION

Due to range permit restrictions and potential feed grains available from diverted wheat acres as well as the uncertainty of governmental policy, cattlemen in Eastern Oregon are asking for a re-examination of the relative advantages and disadvantages of beef cattle production systems. The purpose of this study is to estimate the relative profitability of three cattle production systems for Baker, Grant and Umatilla counties of Eastern Oregon. It is hoped this information will answer some of the questions ranchers are asking about the various systems.

Since the establishment of commercial agriculture in Eastern Oregon, beef cattle have been a major source of ranch income. This is particularly true of Baker and Grant counties. In the Umatilla area much more land is suitable for extensive cropping and cattle are relatively much less important.

Cattle are well suited for the physical terrain and scanty native forage resources that are so prominent in many parts of Eastern Oregon. Large sections of the country are not cropped. Factors causing this are the ruggedness of the land together with unadapted machinery and inadequate water for irrigation. Beef cattle provide a profitable opportunity to the rancher for utilization of this

rough country with its limited forage supplies.

Over the years ranchers in Eastern Oregon have had experience with many range cattle systems. In the early days when there were few fences, little available labor, and no restrictions on the use or management of the various types of ranges, marketable animals were often run until they were four or five years of age. Some ranchers have fed cattle to a market finish in the feed lot or on lush pastures. Traditionally, however, Eastern Oregon has produced feeder cattle. At first these feeders were two and three years of age. More recently they have switched to calves and yearlings.

At the present time cattle producers are reconsidering more seriously than usual their cattle production systems. Planning is always done to a certain extent from year to year, but a great many factors influencing the cattle industry are changing now, or have changed recently. Some of these factors are government policy pertaining to crops and price supports, changes in the policy of governmental agencies concerning increasing range permit restrictions, and changes in feed resource situations. Physical conditions such as weather, natural productivity of the land and forage, and increasing competition between commercial livestock, deer and elk for available feeds; institutional pressure groups such as sportsmen's organizations and livestock groups; and shifting personnel and policies of the federal government influence, and determine to a large extent, all the possible changes.

No cattle production system is entirely stable. Management decisions for the future cannot be made without constant review of the agricultural situation past and present. It is believed by ranchers that cattle production in Eastern Oregon will increase in importance in the near future due to increased feed grains available as a result of the diverted wheat acres. But it is not yet known which direction this increased production will take: (1) towards more stockers and feeders of the same or a better quality, or (2) towards more stock finished for market slaughter.

The Three Production Systems and the Area Studied

For the purposes of the study, the three production systems will be called basic cattle systems. These systems are considered basic in that each is a beef creating unit. Though each system produces a different type of beef for a different market, beef is nonetheless created in some form or other. All beef produced in the areas follows one of the three production patterns, or a modification of it, in getting to market. They comprise the first step in getting beef to market. It is a foundation on which to build.

One system is a cow-calf. It requires a herd of breeding cows and bulls. The calves are sold at weaning time directly from the cow at around 400-500 pounds. The second is a cow-yearling operation which again requires a cow herd and bulls. However, the calves are kept over the winter feeding period, put on range the following summer and sold as feeders from 500-700 pounds in the fall. The third is a

cow-feeder system where the calves from the cow herd are weaned directly into the feedlot, fed for maximum rate of gain, and marketed as slaughter animals at 800-1100 pounds.

There are countless variations of these cattle systems. Calves may be held a month or more after weaning. Yearlings may be wintered at high or low rates of gain, and sold either in the spring or fall. Feedlot cattle can be fed primarily for weight or grade gains with alternatives of marketing at less than slaughter finishes. There are also many variations possible in practices such as buying feeder stock, purchasing all feed used instead of producing it, or leasing additional range or pasture. These offer many possibilities as to the kind of animal bought, length of time fed, composition and quality of feeds used, timing of sale, and markets that are attainable.

All the possible variations of beef cattle production systems now in operation within the three areas studied can be classified into one of the three basic systems. Any variation is merely a modification of one of the three regardless of the weight, kind, or grade of animal considered. Some of the possible variations will be mentioned in the study, but no detailed analysis of them will be undertaken.

The specific areas studied are: (1) Baker county - principally the areas around Sumpter, Durkee, Baker, and North Powder. These areas have cattle, range, irrigation, and fairly diversified and flexible crop production systems. (2) Grant county - principally the

areas around John Day, Canyon City, and Mount Vernon. They include cattle, somewhat less productive range, less irrigation, and more limited and inflexible crop production systems than Baker county. (3) Umatilla county - principally the dry wheat summer-fallow area around Pendleton and Pilot Rock.

Objectives and Purpose of the Study

Basically the objectives of the study will be to determine the relative profitability of the three basic cattle production systems already mentioned. The cow-calf system will have no winter feeding of marketable animals as all the calves are sold in the fall before the winter feeding period begins. The cow-yearling system will winter feed marketable animals for a low rate of gain. The cow-feeder system illustrates winter feeding of marketable animals for maximum rate of gain. It is realized the cow-yearling system will involve many variations in rate of gain, but that the rate of gain most profitable will depend mainly on the relation of anticipated beef prices and current feed costs. These relationships are thought to be subject to considerable fluctuation and therefore only one rate of gain will be considered for the cow-yearling system.

Case ranches in the three counties were studied. One ranch in each area was budgeted for each of the three cattle production systems. The systems in each of the areas were then examined for the purpose of comparing the relative profitability of the three

systems. It is believed that by using these three basic cattle systems now in operation in these counties conclusions can be reached that will help the ranchers reappraise their cattle systems in light of current and anticipated changes of their physical resources and governmental policies.

CHAPTER 2

METHODOLOGY

Sources of Data

A farm survey of several ranches in each area was made to determine basic physical input-output data such as size, resources, and practices. Rates of gain and the prices used were obtained from secondary sources. All secondary sources are listed in the Bibliography and reference is made to these sources in the appropriate places.

Method of Analysis

Budgets were used to compare the profitability of the cattle systems. One budget was made for each of the three basic cattle systems in each of the three areas for the purpose of comparing net farm incomes. These budgets were based on the farm surveys and conferences with specialists in range management, farm crops, nutrition and farm management.

Throughout the entire study management, technology, and other social, biological, human and institutional factors were held constant by assumption. Only a few physical factors were permitted to vary in adjustment from system to system. It was also believed desireable to determine the relative profitability of the cattle production systems on the assumption that a rancher is in the cattle

business in a permanent manner. He does not buy in or out, or shift systems on the basis of shortlived beef price margins and feed costs.

Procedure

For the case studies a sample of ranchers to be interviewed was selected with the help of the county agent in each area. He attempted to choose typical or average ranch situations in each area with regard to resources, practices, and scale of operations. It was thought a typical ranch situation would be more meaningful than an average ranch, both from the standpoint of time involved in selecting the ranch and the conclusions reached. For example, an average ranch for each area may take months to determine. When found, it may be comprised of 30.69 calves, 46.32 cows, 1.96 bulls, 12.1 chickens, 106.75 acres, and have a labor force of 1.21 men above the age of 18 to work the organization. Clearly an average ranch is a physical impossibility to attain. A typical ranch situation, on the other hand, is physically possible. It is quickly determined. Though not an average ranch, it is similar to many ranches. It may not be exactly like any one of them, but the fact that it closely resembles them is the significant factor.

A schedule was taken to obtain detailed information on physical resources, and rancher's opinions on the three cattle production systems. The physical resources included land (range, irrigated acres, owned and leased acres, cropland, and other), buildings,

equipment, stock and feed. Practices included the handling of the stock at all times, dates of winter feeding, supplemental feeding at any time other than during the winter, haying, breeding, calving, marketing methods as well as weights of the animals sold, and labor spent on the various ranch operations. The rancher's opinions were those on his own production system as well as any anticipated changes of factors affecting his ranch organization that were relevant to the purposes of the study.

Three ranchers were interviewed in the Baker area, two in Grant, and two in Umatilla. In each case their neighbor's ranches were discussed as to size, composition, practicew, and anticipated changes of any kind.

Both the physical resource situation and current practices of a typical ranch situation in the Baker area were constructed from the pooled information received from the interviews and talks with the county agent in that area. The physical resources and current practices of a typical ranch situation in the Grant area were integrated from a review of the pooled information of the interviews, and talks with specialists in farm crops, range management, livestock extension, land economics, and soils. The physical resource situation of a typical ranch for the Umatilla area was adopted from Nairn (13). The practices obtained by the schedule interviews in that area were superimposed on it.

The Budgets

A basic budget showing net farm income for a cow-calf cattle production system was made for each area. This net farm income consisted of gross farm income minus direct and indirect cash costs. Two other budgets, one for each of the other two basic systems, were then made in each area showing an adjusted net farm income. The adjusted net farm income also consisted of gross farm income minus direct and indirect cash costs. The results of each of the nine budgets (one for each of the basic cattle production systems in each of the three areas) were finally examined and compared.

Gross farm incomes were defined as the combined income received from sales of cattle, grain, and hay. Other income such as gas tax refund was adjusted into the cost of the commodity, or else considered so small as to be insignificant.

Direct cash costs were the entire operating costs such as labor, equipment, stock and feed. Marketing costs were adjusted into the selling price per cwt. of marketed animals. Indirect costs were defined as taxes, depreciation and interest. No interest on investment was charged to the basic cow-calf system as it was assumed the rancher owned it completely. However, interest, taxes and depreciation were charged on marginal capital in the adjusted budgets. Interest, taxes and depreciation on marginal capital were the sums that would be charged to any capital additions, or subtractions, that would be required by an adjustment from one basic cattle system to

another. Interest rates of 5% on long term capital (15 years or more), and 7% on operating capital (under 15 years) were used.

Prices Used

Prices for 1954 were used. An accurate comparison will result if the relationship among prices is accurate. Therefore, the level of a particular price is relatively unimportant. However, a study of breakeven margins will supplement the budgets. Slaughter prices were averaged from 1954 Portland stockyard quotations for the months in which the cattle are considered to be sold. Feeder and stocker prices were obtained from the 1954 Ontario livestock auction reports also for the time of year the cattle would be marketed.

Average prices based on historical data were not used because it is believed they are not accurate predictors of the future. Past prices have been influenced by factors that may never again occur. If they do occur their influence and timing cannot be anticipated in any systematic way. Another reason is that much of the available price data is inaccurate and not representative of the entire market area.

Market prices for feed were not charged to feeding costs because commercial feeds, except high protein concentrates, are rarely purchased within these areas. Surplus feed produced is sold from these counties to other areas. Therefore to charge market prices for feed would be unrealistic; and it would also bring up the question

of the advisability of owning a big ranch. Perhaps it would be far less of a managerial problem to own a few intensified acres of feed-lot and purchase all one's feed from a feed store, than own a large acreage and inherit all the production problems that accompany it. Therefore in the ranch budget the cost of the feed used was what it cost the rancher to produce it.

It is important in using price data to acknowledge that much of it is incomplete and inaccurate. The market selected for price information may not represent the true price picture due to lack of volume, poor price reporting, and many other reasons. Some people may not consider 1954 prices to be realistic for use in future year's planning, but in the absence of any method of accurately predicting price, current prices may be the best possible basis of making future plans. They show a certain set of price relationships that can be revised and modified at any future time. Also the relationships shown by 1954 prices were found to be fairly consistent for several years.

General Statements of the Use of Budgets

Budgets may not be used indiscriminately, nor is budgeting the best type of analysis for each farm problem. Their use must be based on reason and logic as much as any other form of analysis. When used, their limitations and characteristics should be understood. Below are some general principles that need to be considered in any use of the budgeting technique.

A budget is a plan not only for monetary incomes and

expenditures, but for physical input-output resources as well. Any agricultural operation carried on in physical terms should be shown with the results of the operation being described in terms of money. Budgets are composed of production and price data. The production data must include detailed information on the physical inputs and outputs of the ranch, while the price data shows their costs and prices. It is to be noted that production data are subject to extreme fluctuations due to disease, weather, and technology. However, price input data remains fairly constant and is more accurately determined. Therefore in budgeting it is to be expected that farm expense estimates are generally more dependable than farm income estimates.

It is easily seen, then, that budgets rather than being exact ranch income determinations are only estimates. The sums and conclusions arrived at are no better than the assumed physical and price data concerning the ranch budgeted. Budgets in many ways are open to biases of one kind of another, and are not always the cold, objective instruments of economics they attempt to be.

Budgeting procedure often presupposes maximizing one's income as the rational behaviour of an individual. However, in reality, there is a difference between "rationality" and maximizing income. The assumption that everyone is an "economic man" interested only in maximizing his personal income will not always be valid. "Rational" behaviour will vary with the situation that confronts the individual just as much as "common sense" will vary among

individuals. What is considered a rational, logical, common sense course of action by one may not be thought worthy of attention by another. Too often one forgets to consider the motives, values, preferences, and general psychological makeup of the individual or group for whom he is budgeting. The objective of the rancher, perhaps, is the crux of this controversy. If the objective of the rancher is to obtain as much oncome from his land as he can in the shortest possible period of time, it may be perfectly rational for him to exploit the land and move on. To a rancher whose objective considers income, conservation and a long time residence in the community, this may be an extremely eilogical pattern of action. While the rancher's objectives may not be to maximize income, he may not have any clear cut ideas of what to expect from alternatives. This is an extremely important point to remember when budgeting. All that budgets assume is that ranchers attach some importance to income. They cannot estimate how much importance. They merely present useful information to the rancher (assuming their estimates are correct) covering one part of the facts that must be considered by him in his decision making process. Therefore, the only assumption the researcher makes regarding the ends of the rancher is that he attaches some importance to income and that he is a rational individual who considers the consequences of alternative lines of action.

Ranchers must make decisions. This is a constant day to day process, rather than a once a year operation. They are concerned

with financial security as well as profit, and situations may arise where the two are competitive. There may be much question in the mind of the individual or group as to where the optimum combination of security and profit might lie in order to maximize his satisfaction. They must consider their financial plans and the welfare of their families, and make their decisions accordingly. Here again it is sometimes impossible to determine to what extent ranchers are governed by logic, habit, custom, rules of thumb, or "keeping up with the Jones's".

Ranch budgets sometimes imply a rigidity in farm operation that does not exist. Once a particular line of action is begun there is a great deal of flexibility that is possible in the rancher's production plans as the production period advances and additional information about prices or resources is obtained. Flexibility is the ability to shift in or out of various methods of production or practices. That is, once a method is selected and acted upon, its degree of flexibility is proportional to the degree which the method can be varied depending on the changing current situations. A feedlot operation is considered highly flexible if the animals can be sold at any time depending on the market or feed situation; if pasture can be substituted for grain in the ration; if different types of feeds can be fed in the ration; if the length of feeding period can be shortened or lengthened to take advantage of the market; if it is economical to substitute labor for machinery as wages or machinery costs change.

Diversification, on the other hand, implies that several, or more, production practices are engaged in at the same time. For example, a rancher may grow hay, grain and potatoes while running a cow herd, a feedlot, and poultry enterprise. He is operating several enterprises simultaneously. The flexibility of each part of his diversified production is thus dependent on the ability of each to be shifted and modified once it has been committed to action.

Even though budgets are based on assumed prices and production relationships, if the data are used consistently and are the most realistic and reliable that are available, they can help the rancher by providing information and expectations for some of the possible alternatives. The budget provides a pattern and a method for systematizing and ordering available information regarding alternatives. The budget, though quickly out of date due to changes in cost-price relationships, does provide a guide by which relationships can be modified and adjusted to current cost-price situations. By this method ranchers and others interested can obtain at any time current income relationships by substituting current cost-price data. Budgets, therefore, serve to assemble and systematize information that should permit more efficient decision making and thereby reduce the attached risk and uncertainty of decision making. As used in this study they report net returns from a particular resource combination, and are used as a means of ranking two or more alternatives on the single criterion of which offers the highest net income. These comparative farm income relationships are useful to the rancher

both in short and long run planning.

Another limitation of budgets is that they express only single-valued expectations. They take no account of any dispersion of product or factor prices, or in production coefficients. Each budget shows a single-valued expectation model where price and production information relevant to a specific resource situation have been condensed into a single income figure. In other words the distribution shown by the prices, incomes, and physical data has a zero variance. Where price and production data are certain and fixed this practice is convenient and useful. But when these expectations are not held constant the appropriateness of budgeting as a technique is questionable. Of what use is an average net income figure when there are many extremes at either end of the population distribution curve and none in the middle?

Thus some types of risk and uncertainty may be handled easily and well by the budgeting technique. One type is where the situation is one of pure risk, but one that has been shown to be consistently calculable over a long period of time. An example would be a consistant 90% calf crop, or in a certain area the need of two tons of hay per head for safe winter feeding. The regularity and uniformity of occurance of various outcomes may permit this calculation of actuarial values. Another example would be where the risk could be covered by insurance such as fire or theft, and the insurance premium set down as a direct cash cost. Here the rancher converts the

anticipation of uncertain large losses to known small ones. By experience ranchers may be able to predict accurately the loss, or gain, for a particular year and include this result in a budget to arrive at a single-valued income figure. However, it must be realized that the rancher's prediction may not be absolutely accurate for any particular year.

There are many situations of uncertainty in agriculture that cannot be insured against by ordinary premium arrangements, but which the rancher handles in a like manner. Labor may be hired on a full time basis to insure an adequate supply at peak work periods. An overinvestment of machinery may be indulged in to insure the job will be done on time. Vaccinating, irrigation, putting up a surplus of hay, hiring a range and fence rider are all methods of insurance.

But there are some uncertainties in agriculture that cannot be insured against at all, and some of these are the most important to the rancher. The accurate forecasting of future prices, for example, is relatively impossible. Also, there is the consideration of the uncertainty of the manner in which price and production coefficients relate not only between themselves, but to other possible alternatives. Prices received for output and paid for inputs may vary with the amount of production. The amount of variance of prices may cause another alternative to be more profitable than the first consideration.

Another limitation of using the budgeting technique is that of compounding probabilities. For example, if a mean yield of wheat is

30 bushels to the acre, but the confidence limits of using that estimate range from 20 to 40 bushels to the acre; and the mean price is $2.00 per bushel with confidence limits of from $1.50 to $2.50 per bushel, what would be a reasonable figure to put down as gross income from one acre of wheat? The ranges of error, or fiducial limits, cannot take into account year to year variations in production, or the technical coefficients (yields, rations, gains, etc.) used in the budgeting process. The errors for technical coefficients could include those arising from a variance due to experimental error if the coefficients were used directly as derived from experiments; estimates of individuals in adopting the resource or price data for use in new situations; or errors involved in the use of informed guesses. In deriving a satisfactory conclusion from a budget it must be decided whether the errors suggested above are additive, compounded, or some combination of each. Should estimates be based on the mean, upper or lower fiducial limits? Are the conclusions arrived at in the budget realistic or improbable? Much damage can be done if an improbable and unrealistic budget and conclusions are offered to a group of active ranchers who are asking for advice.

An assumption that is often made, and often questioned, is that degrees in ranch adjustment are linear functions. In calculating equipment cost per acre, amount of depreciation, cost per head in the feedlot, etc., a linear function is assumed, and regardless of

the number of acres, use of equipment, size of feedlot, etc., a cost figure is derived from this straight line relationship. In many cases this assumption is highly unrealistic and is subject to warranted criticism. However, in the great majority of situations not enough basic input research has been obtained to establish the certainty of a curve other than a straight line. It is suspected that most of the straight line relationships now used in budgeting are really curvilinear, but there have not been enough empirical data collected to substantiate this suspicion.

Even in the light of all the objections and faults mentioned, budgets still serve the purpose of aiding managerial decision making. As decision making is a continuous process for ranchers, any information that might influence decisions should be presented. By combining resource, income, and expense information in a budget it is possible to relate it to rancher decisions. Although one cannot be sure of the results with as much confidence as if one had a controlled experiment, the gains from a possible reorganization may be sufficiently great to warrant advancing the results. The rancher must make his own decision. No one else can make it for him. However, they can help him to make it. By collecting, systematizing, and arranging available basic information, an estimate of some of the important features of the income expectation distribution will be presented by the budgets. The amount of confidence the rancher is justified in placing in budgeting results should be based on the accuracy of the basic input-output data. Help can be obtained from

local agencies to determine these basic relationships, and in making up a budget. But the final decision rests with the rancher. He is the manager and it should be he, after first obtaining all the information available, who decides the future course of his agricultural enterprise.

Despite all the limitations of budgets that have been mentioned, it must be recognized they are the only means available of analyzing a complex problem such as the one at hand. In making a decision regarding production alternatives a rancher must, in effect, make judgements on all the factors mentioned. It is believed a more accurate judgement can be made by first analyzing the relevant variables and then combining them to make the necessary estimates for the problem at hand. The budget method therefore makes use of both analysis and synthesis although it is sometimes called the synthetic method.

It is recognized there are probably not three ranches whose resource situations exactly duplicate those illustrated in the budgets in Chapter 4. It is believed there are a great many ranches similar to those used in the budgets. Also, the individual can superimpose his own particular system into the pattern supplied by them and thereby arrive at his own totals and conclusions. A detailed discussion of the three areas studied follows, illustrating the resources, conditions, and practices from which the three ranches were selected.

CHAPTER 3

GENERAL DESCRIPTION OF THE THREE AREAS STUDIED

Physical Resources

The land in the Umatilla area is flat to rolling. In some parts deep gullies and canyons occur, but the majority of productive land is moderately level. Much worthless scab land, or low rock outcroppings, is scattered throughout the area. Physically Grant and Baker counties are much alike. Each has mountain range, desert, forest, and an abundance of small, highly productive valleys. Baker and Grant are both higher in elevation than Umatilla.

All three areas are cold in the winter and comparatively dry, Baker having more temperature variation than the other two. Summer temperatures of all three are fairly warm, but humidity is low. The growing season is approximately 5 to 6 months in all areas, but due to the great variation of altitudes frost can be expected at almost any time.

Baker has the greatest amount of precipitation while Umatilla has the smallest. Snow is a major source of irrigation water and is utilized as it melts in the mountains and comes down the streams. All areas have a large variation in rainfall ranging from 8 or 9 to 22 or 23 inches.

Capital Resources

The investment in buildings and equipment varies tremendously within areas as well as between them. Buildings are, for the most part, entirely useable, but are old, weathered, and in many cases not worth remodeling to meet the requirements of modern ranching. Generally the living quarters are well built and of good quality. The barns are ranked next. The majority of them were built years ago, and due to the favorable climate are about as sound as when they were built. The investment in sheds, granaries, and corrals is roughly proportionate to the amount of use they receive and the utility they return the ranch. The machine shed generally has a concrete floor on which to make repairs, heat for winter use, and is well lighted and ventilated. The granary is vermin tight, usually up to date and well kept. Other sheds used only for storage of machinery and shelter of livestock have depreciated considerably from their original state but are still serviceable.

Investment in equipment varies directly with the amount of field work done on the ranch. In the Umatilla area where large tracts of land are farmed, the equipment investment is large. But on a purely grass-cattle operation like the Grant area, machinery is at a minimum. Baker has an intermediate amount due to the fact that more land is farmed commercially than in Grant, but there is not as much of it nor is it farmed as extensively as in the Umatilla area.

Feed Production Resources

All three areas raise hay, grain, and have access to range. However, there are great variations in the objectives of the ranchers in raising grain, the marketability of the hay raised, and the quality of the range. Baker and Grant counties produce considerable alfalfa, seeded grass and native grass hay. Grant county usually consumes most of its production while Baker sometimes sell its surplus. Umatilla utilizes the grain chaff left from harvesting. There is almost no market for the chaff though it is sometimes of fairly good quality and practically unlimited in supply.

Wheat, barley, and oats are produced in all three areas. The wheat is sold mainly for human consumption, and is under strict acreage and price controls. Barley and oats are produced as feed grains. Both are controlled to some extent by price supports. Yields of grains are approximately the same in all three areas, but there is wide variation within each area due to the differences in topography and soil fertility. Scale of operation, size of field, rainfall, and temperature are highly influential factors governing the choice of grain produced.

There is extreme variation in condition and quality of range in all areas. Range is privately owned, privately leased, or obtained from the Bureau of Land Management (Taylor Grazing) and Forest Service permits. Carrying capacity of the range will vary from a very few acres to a great many per head. There are many little meadows that

will take one head to the acre, while other sparser regions require 90 or more acres to the head. In Umatilla public range is fairly limited. The majority of ranchers must plan on grazing their stubble and summer-fallow land intensively, recognizing that even with range a supplemental early summer feeding program may have to be engaged in. In the Baker and Grant areas there is generally no need for supplemental summer feeding. The range in these areas is supplied largely from public domain land regulated by governmental agencies, and some privately owned acreage. The animals are turned out in the spring and often not seen again until fall roundup.

There is a lack of uniformity in the minds of the ranchers in Eastern Oregon about the use of the word pasture. In Umatilla this term is synonomous with range, while in Baker and Grant it may be connected only with irrigated fields. Technically there are both irrigated and non-irrigated pastures in all three areas. Most of them are non-irrigated. The present ranch systems, unless highly intensified, usually do not use pastures except for hay stubble fields that are utilized after haying, or for a small number of stock kept within fence near the buildings to watch, milk, or ride.

All three areas are capable of making and using silage, either grass or from some commercial waste product such as peavines. But in these areas there has not been much experience either in making or using silage. Because of this relative newness of feeding and making silage it is not considered in the budgets of any of the

systems in Chapter 4. Though its use is expanding and undoubtedly will expand further in the future, it is thought to be more desirable, considering the objectives already stated, to use conventional kinds of feed for the area and not confound the results by variations in feeds and feeding practices.

Ranching Practices

Ranching practices in the areas vary with individual managers. No two men operate in exactly the same way even though both are working the same type of cattle system. However, there are some management practices that can be generalized for the areas studied.

Haying practices will vary according to the use made of the hay. If hay is going to be fed on the home place around loose stacks, sold for shipment elsewhere, or merely attempted to be utilized if possible through cattle are questions the rancher must decide prior to harvest time. In Baker and Grant the great majority of hay actually fed is put up in loose stacks. Hay is generally baled only if it is going to be sold. This includes all kinds of hay. In the Umatilla area the grain chaff is used for hay. During the wheat harvest the combines dump small piles of chaff as they thresh the grain, and during the winter cattle feed on these piles. What is left of these chaff piles is merely plowed under during the next grain production period. Many ranchers use binders to harvest the opening swath of each grain field for grain hay. The bundles are then hauled into the main set of buildings and corrals and fed out

there. There is relatively little irrigated hay of any kind in the Umatilla area, but practically all hay land is watered in Baker and Grant.

Public range turnout and roundup dates are of great significance to ranchers in all three areas, particularly so in Grant and Baker. The length of grazing season decided upon by the Bureau of Land Management and Forest Service help determine to a large extent the amount of feed it is necessary to put up for winter feeding. It also helps determine the amount of time that must be spent range riding, maintaining fence, carrying salt for the cattle, and other miscellaneous duties. Thus the distribution of much of the labor requirements is in part determined by the dates decided upon for summer range. The dates and length of grazing season may vary from year to year depending on the weather, forage supply of the range, and the number of head that will graze on it.

Winter feeding dates vary greatly both within and between areas. In Umatilla more extensive use is made of fall range, summer-fallow, and stubble fields. There is a large acreage available per head and cattle may do well with little additional feed for a long period. In Baker and Grant counties the cattle are generally put on aftermath in the hay fields prior to feeding winter hay. The winter feeding period begins either when the aftermath is used or snow covers the ground.

Feeds used during winter feeding are practically always produced on the ranch as freight rates in the areas on any quantity

of feed bought would be a prohibitive cost. The hay is fed in long trails on the ground and snow in Baker and Grant. In Umatilla, due to the hay being hauled into the barn, it is generally fed in racks in the barn. Any grain that is fed in the areas is usually placed in troughs near the main set of buildings in order to minimize labor effort.

Calving occurs during the latter half of the winter feeding period. Calf crop percentage is approximately the same in all areas, although this will vary with the individual management, shelter and feed provided, and other factors. Calving percentages range from 45% to 90% in all the areas. Calving usually covers a three month period beginning in January or February and continuing until the cows are turned out on spring range or pasture. This is due to management practices, condition of the breeding herd, and size of the breeding herd, as well as topography of the early spring and late winter range.

As can be expected from the relative amounts of cattle income in the three counties, there is generally much more active interest in breed improvement, management practices, and cattle marketing situations in Baker and Grant counties than in Umatilla. Cattle in the Umatilla wheat summer-fallow area are more often supplementary to the main crop income. They are an incidental part of the ranching enterprise, and must not interfere with the labor requirements of the more important and profitable cash crop operation. They are generally considered to be such a small part of gross farm income as to be insignificant, and are kept only to utilize by-products of

of harvest, excess resources, or to even out and utilize more efficiently the labor load of the ranch.

Institutional Factors

Institutional factors account for some of the differences in attraction of cattle systems in or among the areas. Tenancy is quite prominent in the wheat country of Umatilla. Because of impermanent tenure or limited capital or a personality problem that may exist, the tenant may hesitate to get into anything so expensive or long termed as a cow herd. The majority of ranches in the other two areas are usually managed by the owners.

Public range permits, both Taylor grazing and Forest Service, are based either on commensurability (the ability to provide feed etc., for one's cattle during the remainder of the year not spent on public summer range), priority, or grazing capacity. The latter two are of least consideration as a larger area is simply allotted to insure adequate forage for the permit number. The scarcity of range in the wheat summer-fallow area, due to the land having a more profitable alternative use, and the relative abundance of it in the other two areas account for much of the dispersion of cattle numbers among the three areas.

The same major markets, terminal, auction, and country buyer, are available to all the areas. There are minor differences and comparative advantages and disadvantages in respect to the smaller local markets. In Baker a five year old county wide cattle

improvement campaign has served to raise cattle prices above the average at several widely advertised fall and winter auction sales.

Cattle Production Possibilities for the Three Areas

All three areas show a definite potential for producing cattle finished for market slaughter. This is particularly true of the Umatilla area where production of feed grains has increased due to the diverted wheat acres. But because of the limited number of cows in the area it would necessitate a feeder or stocker buying program that would require a great deal of operating capital. Besides the increased quantity of feed grains in the area, grain prices are currently low with prospects of them sinking even lower as a saturation of the feed grain market occurs.

More feedlot operations in Baker county may be profitable because of the fairly flexible crop production systems present in the area. There is a large amount of potential feed grain production here. As there are a large number of cattle raised in the area annually it is possible that if feed grain prices drop more cattle will be fed out rather than sold as feeders. The practice of feeding out one's own stock offers a further advantage in that the rancher after years of working with his cow herd knows approximately how to get the most out of his stock. He knows the individuals, their breeding and characteristics. He may also discover new ways to improve the quality and value of his cow herd.

It was thought that finishing cattle in Grant county may be

profitable because the ranchers, without impinging much on their winter hay supply, can produce grain cheaply enough to make a cow-feeder enterprise feasible. This area is not as flexible in its crop production as the Baker area.

Even with a low input cost, however, the production of a large amount of finished beef may cause the market price to fall to the point where a feedlot operation would no longer be profitable. Though this is the logical result of an increase in the production of slaughter beef, it is highly doubtful whether there would be this surplus. Though in general it may be profitable to feed out animals, in many instances the particular resource situation may dictate a comparative advantage for some other cattle production system. Also, if demand is increased for feeders, say in the Umatilla area, the price for them will rise in other areas that are capable of producing them and a new equilibrium between supply and demand will be reached that may call for a new analysis.

The budgets constructed from the case farm studies will now be analyzed for each basic cattle production system within each of the three areas.

CHAPTER 4

BUDGETS

Baker

The limiting factor in the Baker budgets is the range permit for 135 head during the summer range season. It is easily seen from Table 1 that the ranch situation selected is by no means operated at full capacity. The budget shown is typical of the ranches in this area. They are limited in the amount of stock they can carry by the amount of range on which they can summer their cattle. Through proper intensification (more fertilizer, better irrigation, better grasses and more legumes) the carrying capacity of ranches in this area can be increased. But it would require additional capital investment to initiate the proper practices, and more labor to follow them through. Therefore all three budgets for this area were constructed for 135 head of cattle. In all three areas the letters A, B, and C will refer to the budgets for the cow-calf, cow-yearling, and cow-feeder cattle systems respectively.

Resources

In budget A the cows are turned out with the bulls, the yearling heifers are kept close on irrigated pasture. No additional fencing is needed as no yearlings will be marketed and therefore no separation of heifers from bulls is required. The two steers shown in

Table 1

Baker County Budgets

Item	Unit	A Number	B Number	C Number
Land Use				
Rangeland: owned	Ac.	1,500	1,500	1,500
leased	Ac.	3,000	3,000	3,000
Hay: irrigated	Ac.	225	225	225
non-irrigated	Ac.	-	-	-
Pasture: irrigated	Ac.	220	220	220
non-irrigated	Ac.	600	600	390
Other cropland: non-irrigated				
Barley	Ac.	100	100	200
Oats	Ac.	-	-	110
Wheat	Ac.	-	-	-
Other (idle, waste, homestead)	Ac.	20	20	20
Total Number of Acres	Ac.	5,665	5,665	5,665
Buildings				
Sheds	No.	2	2	4
Fencing	Mi.	24	30	24
Feeding Facilities	Dol.	-	-	2,000
Livestock				
Beef Cows	No.	130	80	130
" Calves	No.	118	72	118
" Yearling Steers	No.	2	36	59
" Yearling Heifers	No.	25	36	59
" Bulls	No.	5	3	5
Miscellaneous (horses, cows)	No.	7	7	7
Total Number of Animals	No.	287	234	378
Labor 1/				
Hired	Hrs.	3,564	3,564	3,996
Operator	Hrs.	2,700	2,700	2,700
Total Labor	Hrs.	6,264	6,264	6,696
Machinery 2/				
Present Value	Dol.	8,653.66	8,653.66	9,613.66
Production				
Hay 3/	Tons	715	715	772
Grain 4/				
Barley	Bu.	1,550	1,550	3,100
Oats	Bu.	-	-	1,870
Wheat	Bu.	-	-	-
Beef	Lbs.	50,150	48,600	103,250

Item	Unit	A Number	B Number	C Number
Sales				
Hay 6/	Dol.	6,300	6,400	2,400
Grain 7/	Dol.	999	999	675
Beef 8/				
Cull Cows	Dol.	3,168	2,592	3,168
Calves	Dol.	7,312.59	-	-
Yearling Steers	Dol.	-	4,536	12,789
Yearling Heifers	Dol.	-	1,768	7,080.50
Bulls	Dol.	504	252	504
Gross Farm Income	Dol.	18,283.59	16,547.00	26,616.50
Direct Expenses				
Hired Labor	Dol.	3,180	3,180	3,420
Equipment Operations 9/	Dol.	1,043.03	1,046.13	1,678.81
Veterinary 10/	Dol.	287	234	378
Feed:				
Salt, Minerals	Dol.	25	20	75
Grain 6/	Dol.	50	30	1,300
Livestock 11/				
Bulls	Dol.	1,000	500	1,000
Constant Cast Costs 12/	Dol.	1,893	1,893	1,893
Total Direct Expense	Dol.	7,478.03	6,903.13	9,744.81
Indirect Expenses				
Taxes	Dol.	1,000	995	1,060
Depreciation 13/	Dol.	3,604.85	3,309.01	3,769.85
Interest:				
Feed	Dol.	-	+1.75	91
Livestock	Dol.	-	+70	-
Machinery	Dol.	-	-	50
Buildings	Dol.	-	75	250
Total Indirect Expense	Dol.	4,604.85	4,307.26	5,220.85
Total Expenses	Dol.	12,082.88	11,210.39	14,965.66
Comparative Net Farm Income	Dol.	6,200.71	5,336.61	11,650.84

For footnotes see following page.

Table 2

Baker County Ranch Summary Comparisons

Item	Unit	Total Investment 14/ A Number	B Number	C Number	Changes in Investment from A B Number	C Number
Land 15/	Ac.	5,665	5,665	5,665	0	0
Buildings, fences, feeding facilities	Dol.	30,000	31,500	35,000	1,500	1,500
Machinery	Dol.	8,653.66	8,653.66	9,613.66	0	960
Livestock 16/	Dol.	21,620	18,140	29,185	-3,480	7,565
	No.	287	234	378	-53	91
	A.U.	161	135	216	-26	55
	Lbs.	50,150	48,600	103,250	-1,550	53,100
Feed:						
Hay	Tons	715	715	772	0	57
Barley	Bu.	1,550	1,550	3,100	0	1,500
Oats	Bu.	-	-	1,870	-	1,870
Wheat	Bu.	-	-	-	-	-
Supplies 17/	Dol.	1,450	1,450	1,870	-	420
Labor	Hrs.	6,264	6,264	6,696	0	432
Net Farm Income	Dol.	6,200.71	5,336.61	11,650.84	-864.10	5,450.13

Footnotes to the budgets and summaries (Tables 1-6)

1/ Source: Interviews in the areas.
Hours: 9 hr. day, 6 day week, 50 week year.
Men: Operator, full time hired, seasonal hired.
Cost: Full time - $225.00 per month plus board and room.
Seasonal - $10.00 per day plus board and room.

2/ See Appendix 1, Table 1.

3/ Source: Farm survey, consultations.
Baker and Grant: Irrigated - 2 tons/acre.
Irrigated pasture, non-irrigated - 3/4 tons/acre.
Umatilla: Non-irrigated - 3/4 tons/acre.
Wheat hay and chaff - 3/4 tons/acre.

4/ Source: (13), (24).

Baker and Grant:	Yield of	barley	is	31	bu./acre.
	" "	oats	"	34	" "
Umatilla:	" "	barley	"	24	" "
	" "	oats	"	40	" "
	" "	wheat	"	20	" "

5/ Production is based on estimated saleable beef.

6/ Hay is valued at $20.00 per ton.

7/ Barley is valued at $45.00 per ton; wheat at $1.90 per bu.; and cottonseed cake at $100.00 per ton.

8/ Sources: (16, 19, 20). See Appendix 1, Table 2.

9/ Sources: (1, 6, 12, 18, 22, 23). See Appendix 1, Equipment Operations.

10/ A flat rate of $1.00 per head is charged.

11/ Based on current registered bull prices: @ $500.00.

12/ See Appendix 1, Table 3.

13/ Sources: (5, 13, 17, 18, 21). See Appendix 1, Table 4.

14/ Investment at the beginning of the feeding period.

15/ Land is expressed in acres and not dollars for the following reasons. The range permits belonging to a ranch are usually capitalized into the value of the ranch and thereby present an unclear value as to the productivity of the owned acres. Many ranches have a market value far above their capitalization value which would be unrealistic to use. Also, it is difficult to obtain the market value of these ranches since so few of them are changing hands.

16/ Livestock prices assumed for inventory purposes at beginning of the feeding period will be an average of 1954 prices paid as reported by the ranchers in the areas during the marketing months.

a.

cows	$125.00	per	head
yr. st.	85.00	"	"
yr. hf.	80.00	"	"
bulls	500.00	"	"
misc.	100.00	"	"

b. Source: Bureau of Land Management, Forest Service.

A.U.'s computed on:	cow-calf	equal	1.0 A.U.
	Yrlg.	"	.6 "
	bull	"	1.25 "
	misc.	"	1.0 "

17/ It is assumed that all fertilizer needed will be bought and stored on the ranch. Gas and other items will merely be estimates of the quantities on hand at the beginning of the winter feeding period.

the budget are to be used as ranch meat.

Because of the 16 heifers, in B, that will be marketed as feeders, it is assumed 6 miles of additional fencing will be required to seperate the yearlings from the rest of the breeding herd. This additional fencing may also be utilized as a drift fence, and range divider so that a type of pasture rotation may be practiced. This concentration of breeding herd in the early days of the breeding period will also result in a shorter calving period.

In C no more fencing is required than in A. No seperation is made necessary. The replacement heifers will be taken from the best heifers in the feedlot. There is more additional capital expenditure in C than A in the form of two sheds for shelter and lounging, and $2,000.00 worth of feeding facilities. These facilities include adequate water, feed bunks, salt licks, lice scratchers, chutes and pens. This additional expenditure results in a more intensified organization. However, no additional land is required or taken from other productive use as the idle land, included in the budget under "Land Use" as "Other", is merely brought actively into the system.

Hay and grain production in A and B are the same. In C more of both is produced to provide enough feed for the increased number of cattle fed. This is reflected in the amount of marketable beef produced. In A and B the amount produced is approximately the same. But in C the amount of saleable beef is more than doubled.

Labor hours in A and B are the same, but increase in C. The increase is due only to the extra labor necessary to harvest the

increased production necessary for a feedlot operation. An intensified cattle system such as C will require more labor for feeding than either A or B. This labor will be needed in a period when field work is at a minimum, and when livestock are essentially the only enterprise needing attention. There are some winter duties that would demand some labor such as machinery and building repair, but these would not seriously interfere with cattle feeding. On a ranch of this size one man in addition to the operator is usually hired. In other words a cattle feeding operation will better utilize labor available over the winter feeding period than if a feedlot was not part of the ranch organization.

Land use is constant in A and B, but slightly more intensified in C where more production is necessary. In all cases the cropland in grain is farmed on a summer-fallow basis. Machinery needs are consistent with the use of the land. The present value of machinery is the same for both A and B, but is slightly greater for C. The additional machinery investment, however, is not due to the increased crop production, but to intensified livestock production. It was thought that from a managerial standpoint, though not absolutely necessary, a livestock scale would be an immense help in the decision making invloved in the ration and marketing practices of a feedlot operation.

Income and Expenses

In all three operations hay and grain are sold. Slightly more

hay is sold in B due to a lesser amount actually fed and kept for hold-over. In C roughly only half as much is sold as either A or B. This is because the feeder cattle have a higher feed consumption.

Cattle incomes vary among the three beef systems. The amount of income derived from beef sales is directly associated with the total number of animals on the ranch. C has twice as much income as either A or B, and has almost twice as many cattle. A has slightly more cattle than B, and has a slightly greater income from beef sales.

Direct cash costs are likewise roughly proportional to the total number of animals. This is to be expected as the direct cash costs as used are the variable costs of the operations. The direct expenses of C are a great deal higher than either A or B. This can be explained in part because of the greater volume of the ranch production, and in part by the fact that greater specialization in the feeding phase of livestock production demands a larger investment.

Indirect expenses follow the same proportionate pattern among the systems as direct expenses. Total expenses and comparative net farm incomes also follow the same path. The summary table for this county shows a complete breakdown of inventory and investment changes using A as the basic system for comparison with the others. This procedure is likewise followed in presenting the summary tables of the budgets for the other two areas.

Grant

The limiting factor for the ranch situation adopted for this area is a range permit for 250 head of cattle during the summer range season. This is a much larger ranch operation than is used for the Baker area, and is more strictly a beef enterprise. It is a much more inflexible and specialized operation than the Baker organizations because income for all three systems is derived almost entirely from cattle. Only in B is there any significant amount of income brought in from crops of any kind.

Resources

Land use in A and B are the same. Hay and grain production, hours of available and required labor, and machinery values are also the same for the two systems. However, in C an additional 168 acres of land are rented to produce adequate grain for the feedlot operation. The land was continuously cropped rather than being summer-fallowed as this is more consistent with the practices in the area.

Due to the scale of operation in C more time must be spent with the stock. This additional time is required not only for feeding but also for checking closely for disease and other miscellaneous duties that require considerable time. For this reason an additional man is hired on a half time basis. This may not be for one continuous six month period, but may be apportioned between the winter feeding and summer crop production periods as the manager sees

Table 3

Grant County Budgets

Item	Unit	A Number	B Number	C Number
Land Use				
Rangeland: owned	Ac.	1,000	1,000	1,000
leased	Ac.	7,500	7,500	7,500
Hay: irrigated	Ac.	400	400	400
non-irrigated	Ac.	-	-	-
Pasture: irrigated	Ac.	100	100	100
non-irrigated	Ac.	-	-	-
Other cropland: non-irrigated				
Barley	Ac.	50	50	132
Oats	Ac.	-	-	86
Wheat	Ac.	-	-	-
Other (idle, waste, homestead)	Ac.	20	20	20
Total Number of Acres	Ac.	9,170	9,170	9,338
Buildings				
Sheds	No.	3	3	7
Fencing	Mi.	40	46	40
Feeding Facilities	Dol.	-	-	3,000
Livestock				
Beef Cows	No.	238	128	238
" Calves	No.	215	115	215
" Yearling Steers	No.	2	57	108
" Yearling Heifers	No.	40	58	107
" Bulls	No.	12	7	12
Miscellaneous Horses, milk cows)	No.	7	7	7
Total Number of Animals	No.	514	372	687
Labor 1/				
Hired	Hrs.	3,672	3,672	4,698
Operator	Hrs.	2,700	2,700	2,700
Total Labor	Hrs.	6,372	6,372	7,398
Machinery 2/				
Present Value	Dol.	11,386.16	11,386.16	12,346.16
Production				
Hay 3/	Tons	800	800	875
Grain 4/				
Barley	Bu.	1,500	1,500	4,092
Oats	Bu.	-	-	2,924
Wheat	Bu.	-	-	-
Beef 5/	Lbs.	91,375	77,625	188,125

Item	Unit	A Number	B Number	C Number
Sales				
Hay 6/	Dol.	-	4,740	-
Grain 7/	Dol.	675	-	-
Beef 8/				
Cull Cows	Dol.	6,048	3,312	6,048
Calves	Dol.	13,131.21	-	-
Yearling Steers	Dol.	-	7,056	23,593.50
Yearling Heifers	Dol.	-	3,536	12,286.75
Bulls	Dol.	1,008	504	1,008
Gross Farm Income	Dol.	19,710.21	19,148.00	42,936.25
Direct Expenses				
Hired Labor	Dol.	3,780	3,780	4,770
Equipment Operations 9/	Dol.	763.57	763.57	2,132.96
Veterinary 10/	Dol.	299	257	472
Feed:				
Salt, Minerals	Dol.	75	64	118
Grain 6/	Dol.	100	75	2,400
Livestock 11/				
Bulls	Dol.	2,000	1,000	2,000
Constant Cash Costs 12/	Dol.	2,904	2,904	3,744
Total Direct Expenses	Dol.	9,921.57	8,843.57	15,636.96
Indirect Expenses				
Taxes	Dol.	1,500	1,475	1,900
Depreciation 13/	Dol.	5,496.54	4,700.69	5,736.54
Interest:				
Feed	Dol.	-	+ 2.52	164.01
Livestock	Dol.	-	+175	-
Machinery	Dol.	-	-	50
Buildings	Dol.	-	75	400
Total Indirect Expense	Dol.	6,996.54	6,073.17	8,250.55
Total Expenses	Dol.	16,918.11	14,916.74	23,887.51
Comparative Net Farm Income	Dol.	2,792.10	4,231.26	19,048.74

For footnotes see footnotes of Table 1, Chapter 4.

Table 4

Grant County Ranch Summary Comparisons

Item	Unit	Total Investment 14/ A Number	B Number	C Number	Changes in Investment from A B Number	C Number
Land 15/	Ac.	9,170	9,170	9,338	0	168
Buildings, fencing, feeding facilities	Dol.	53,000	54,500	61,000	1,500	8,000
Machinery	Dol.	11,386.16	11,386.16	12,346.16	0	960
Livestock 16/	Dol.	39,820	29,685	54,190	-10,135	14,370
	No.	514	372	687	-142	173
	A.U.	286	214	390	-72	104
	Lbs.	91,375	77,625	188,125	-13,750	96,750
Feed:						
Hay	Tons	800	800	875	0	75
Barley	Bu.	1,550	1,550	4,092	0	2,542
Oats	Bu.	-	-	2,924	-	2,924
Wheat	Bu.	-	-	-	-	-
Supplies 17/	Dol.	1,700	1,700	2,372	0	672
Labor	Hrs.	6,372	6,372	7,398	0	1,026
Net Farm Income	Dol.	2,792.10	4,231.26	19,048.74	1,439.16	16,256.64

fit. Besides this half time man, additional seasonal help will be hired at peak labor periods.

As in the Baker area, more fence is needed for B as compared with the other two. In A the replacement heifers are again kept on the home ranch in order to breed them seperately. An increase of $8,000.00 in additional investment was necessary for four extra sheds and feeding facilities. A scales is again added to the machinery inventory, as it is considered essential to the success of a feedlot operation of this size.

The livestock operation follows much the same pattern of the Baker area. Less pounds of saleable beef are produced in B than A, and double the amount of either A or B is produced in C.

Income and Expenses

Hay income is obtained only from B; income from grain sales only from A; and C relies wholly on the cattle enterprise for its income. Direct and indirect expenses are again roughly proportional to the total number of cattle on the ranch.

In comparing the comparative net farm incomes in an organization where almost all income is brought in from cattle, several interesting facts come to light. Most obvious is that a feedlot setup is by far the most profitable even though both indirect and direct expenses are considerably higher than for either of the other two systems. Another is that if income had not been derived from hay and grain sales in B, there would have been a net loss instead of a fairly

reasonable net profit. However, in A, if one were to remove the income derived from hay and grain, there would still be a net profit. The ranking of relative profitability of the three systems in this area, then, follows the general pattern discovered in the Baker area: C is the most profitable, B the least, and A intermediate.

Umatilla

This area is entirely different from either of the two areas discussed previously. Cattle income comprises only a small amount of total ranch income. There is a relatively small amount of available summer range obtainable on the same basis as in the other two areas. There is a decided comparative advantage of grain production over cattle, and generally speaking, a managerial preference toward grain rather than livestock. The livestock feeds available here are not of the same quality as in the other areas. This is due partly to lack of rainfall for hay-land irrigation; in part because the topography of the land is not suitable for hay-land irrigation by flooding; and partly through lack of a desire to take the necessary acres out of grain production and devote them to growing hay. There is a considerably larger investment in machinery on a ranch situation in this area, and relatively little of it is devoted to the livestock part of the enterprise.

Table 5

Umatilla County Budgets

Item	Unit	A Number	B Number	C Number
Land Use				
Rangeland: owned	Ac.	1,500	1,500	1,500
leased	Ac.	-	-	-
Hay: irrigated	Ac.	-	-	-
non-irrigated	Ac.	44	44	44
Pasture: irrigated	Ac.	-	-	-
non-irrigated	Ac.	-	-	-
Other cropland: non-irrigated				
Barley	Ac.	424	424	404
Oats	Ac.	-	-	20
Wheat	Ac.	702	702	702
Other (idle, waste, homestead)	Ac.	110	110	110
Total Number of Acres	Ac.	2,780	2,780	2,780
Buildings				
Sheds	No.	4	4	5
Fencing	Mi.	20	20	20
Feeding Facilities	Dol.	-	-	1,000
Livestock				
Beef Cows	No.	29	22	29
" Calves	No.	26	20	26
" Yearling Steers	No.	-	10	13
" Yearling Heifers	No.	6	10	13
" Bulls	No.	1	1	1
Miscellaneous (horses, milk cows)	No.	4	4	4
Total Number of Animals	No.	66	67	86
Labor 1/				
Hired	Hrs.	1,782	1,782	1,782
Operator	Hrs.	2,700	2,700	2,700
Total Labor	Hrs.	4,482	4,482	4,482
Machinery 2/				
Present Value	Dol.	12,685.64	12,685.64	12,685.64
Production				
Hay 3/	Tons	58	64	86
Grain 4/				
Barley	Bu.	5,088	5,088	4,848
Oats	Bu.	-	-	400
Wheat	Bu.	7,020	7,020	7,020
Beef 5/	Lbs.	9,500	10,200	17,650

Item	Unit	A Number	B Number	C Number
Sales				
Hay 6/	Dol.	-	-	-
Grain 7/	Dol.	17,270.84	17,243.40	16,240.86
Beef 8/				
Cull Cows	Dol.	720	576	720
Calves	Dol.	1,572.60	-	-
Yearling Steers	Dol.	-	1,260	2,866.50
Yearling Heifers	Dol.	-	552	1,457.75
Bulls	Dol.	-	-	-
Gross Farm Income	Dol.	19,563.44	19,631.90	21,285.11
Direct Expenses				
Hired Labor	Dol.	1,830	1,830	1,830
Equipment Operations 9/	Dol.	7,295.33	7,302.13	7,334.22
Veterinary 10/	Dol.	66	67	86
Feed:				
Salt, Minerals	Dol.	20	25	40
Grain 6/	Dol.	100	100	400
Livestock 11/				
Bulls	Dol.	-	-	-
Constant Cash Costs 12/	Dol.	2,114.82	2,114.82	2,114.82
Total Direct Expenses	Dol.	11,426.15	11,438.95	11,805.04
Indirect Expenses				
Taxes	Dol.	1,390	1,390	1,400
Depreciation 13/	Dol.	3,280.84	3,280.84	3,344.34
Interest:				
Feed	Dol.	-	.35	16
Livestock	Dol.	-	-	-
Machinery	Dol.	-	-	-
Buildings	Dol.	-	-	75
Total Indirect Expense	Dol.	4,670.84	4,671.19	4,835.34
Total Expenses	Dol.	16,087.99	16,101.14	16,740.38
Comparative Net Farm Income	Dol.	3,465.45	3,520.76	4,644.73

For footnotes see footnotes Table 1, Chapter 4.

Table 6

Umatilla County Ranch Summary Comparisons

Item	Unit	Total Investment 14/ A Number	B Number	C Number	Changes in Investment from A B Number	C Number
Land 15/	Ac.	2,780	2,780	2,780	0	0
Buildings, fencing, feeding facilities	Dol.	24,500	24,500	24,500	0	0
Machinery	Dol.	12,685.64	12,685.64	12,685.64	0	0
Livestock 16/	Dol.	5,005	5,300	6,670	295	1,665
	No.	66	67	86	1	20
	A.U.	39	38	50	-1	11
	Lbs.	9,500	10,200	17,650	700	8,150
Feed:						
Hay	Tons	58	64	86	6	28
Barley	Bu.	5,088	5,088	4,848	0	-240
Oats	Bu.	-	-	400	-	400
Wheat	Bu.	7,020	7,020	7,020	0	0
Supplies 17/	Dol.	5,472.50	5,472.50	5,472.50	0	0
Labor	Hrs.	4,482	4,482	4,482	0	0
Net Farm Income	Dol.	3,465.45	3,520.76	4,644.73	55.31	1,116.29

Resources

The productive land is devoted almost entirely to crop production. The range and scab-land is infertile and incapable of being farmed. Throughout all three systems the total acres in each land use remains the same except in C. Here 20 acres are switched from barley to oat production to provide a more balanced ration for the feedlot cattle. 500 acres of the range is scab-land and considered worthless. All cropland is farmed on a summer-fallow basis.

Only $1,500.00 worth of sheds and feeding facilities are added to the capital investment as the scale of feeding operations does not warrant a greater investment. Labor remains the same throughout the three systems as it will take only a few minutes more each day to feed the 26 feeders, and does not require additional hired help.

Cattle numbers increase slightly through A and B to C. However, the cattle enterprise is subsidiary to the grain enterprise, and the labor requirements of the livestock operation do not interfere with or infringe on those of the grain operation.

Machinery investment remains the same throughout the three systems as a scale is not necessary for so small a feeding operation. Hay production increases as the number of cattle increase. Grain production is constant except for the 20 acre change noted above.

Direct and indirect expenses are practically the same for A and B; and are only slightly higher for C. Comparative net farm incomes do not follow the same pattern as before. C is again the

most profitable. But A is now the least profitable, and B the intermediate. The reason for this change is seen immediately from the amount of beef production: C produces more beef than either A or B; B produces more than A.

General Budget Comparisons

In the three areas there was not much difference in income between A and B. Though B was slightly more profitable than A in the Grant and Umatilla areas, it was slightly less profitable in the Baker area. It was shown also that hay sales, not beef sales, made B more profitable than A in one case. Therefore a small variation in the price of calves and feeders would make a large difference in the relative profitabilities of the two systems. C, on the other hand, was consistently more profitable in all of the areas. With the resource situation as assumed, even if feeders were bought at the weights and prices used (700 pounds at $18.00 per cwt.), the breakeven margin would be a minus $.25. In other words a 900 pound animal bought at $18.00 per cwt. could be marketed at $17.75 per cwt. without losing money. The beef price on C could drop $6.75 per cwt. and the operation still break even. In A and B, a drop in beef price by this amount would result in a tremendous loss.

The obvious profitability of the feedlot operation in all areas may be due in part to a greater specialization and intensification of enterprise. Specialization is a definitely established trend in

agriculture today. By combining a small intensified feedlot with an extensive cow herd operation, income is approximately doubled over just the cow herd income alone. The benefits of specialization are a better utilization of labor, of feed produced, of stock available and opportunity to intensify further. The cheapest beef in any of the three systems is consistently produced by the cow-feeder system. It produces more poundage of saleable beef of a higher quality at a smaller cost than either of the other two systems. It is true that both direct and indirect expenses are higher for C, but the higher price received for the greater total beef poundage produced more than offsets this.

It is interesting to note how the hay and grain sales supplement the cattle income depending on the system presented. Generally speaking, if cattle sales are down, hay and grain income is up; and if cattle sales are up, hay and grain income is down or stable. In some instances, as in C, this may mean more hay and grain is marketed in the form of beef. It is, then a managerial decision whether hay and grain should be marketed _per se_ or in the form of beef; whether hay and grain in the form of beef should be substituted for hay and grain as such in the income program of the organization. In all areas the three beef production systems follow a general resource pattern. In investment each area demands additional fencing for B, and additional buildings and feeding facilities for C. There is an increase in labor needed for C. Total crop production remains fairly stable, but the produce is

disposed of by different methods: sometimes it is sold in the form in which it was harvested, sometimes in the form of beef. Machinery investment tends to remain stable, a weigh scale being the only capital added in cases where the use of it would economically aid managerial decision making.

On the income and expense side, all areas follow similar, but not identical, patterns. Some hay, grain, and beef are sold; the amount dependent upon the needs of the cattle organization as well as the amount of production. Cattle income varies almost directly with the total cattle numbers on the ranch. Comparative net farm incomes rank C as the most profitable, with some variance between A and B for second and third place.

Additional Considerations

As was mentioned in Chapter 2, there are many factors that enter into a ranch manager's decision to follow a particular line of production. We have seen that the cow-feeder cattle system is the most profitable from a monetary standpoint (at certain assumed levels of price and production). However, the manager may decide that the risk and uncertainty involved in cattle feeding are too great for the profit that may be obtained. In such a system there is a certain amount of necessary price forecasting, the importance of which varies directly with the length of feeding period and scale of operations. If only a few head are involved, and the manager is not dependent on

cattle income for his living, he may feed some cattle out regardless of any price forecast made simply because it is not vitally important to him what happens in the cattle market. The length of time period may involve not only one winter feeding, but several, as capital investment for the future may also be considered. Thus both the short and long run criteria must be examined. In the short run immediate money income may be the main criterion for decision making, but in the long run many other factors, as mentioned previously, may enter.

The diversification and flexibility of the ranch must be considered by the manager and a decision made whether he should intensify. This would involve a decision to specialize in one type of product for one particular market, as in a feedlot, or to farm several crops while running cattle. Specialization tends to produce a greater total income, but diversification then tends to produce a more stable one. Implicit in all these decisions is the amount of risk and uncertainty the manager is willing to assume. The impact of incorrect assumptions or predictions on the part of the manager regarding weather, disease, gain during the feeding period, percent calf-crop, and price on the different basic cattle production systems are all reflected immediately in his income figures. How much risk he may want to submit his income to is a highly personal decision. It will vary with each manager in every situation.

A manager, on the basis of this information, might desire to specialize even more than the cow-feeder organization. He might

decide to have just a feedlot. He would be close to the feed supply and the feeder calves. Such an organization would have some disadvantages not present if he were to produce both the calves and the feed. Since he would be entirely dependent upon the feedlot operation his business would be less stable. Also, unless he could feed cattle during the summer his resources probably would not be fully utilized. However, a farmer or rancher in the Umatilla area might be in a better position to buy feeders than raise them. If he had feed available he could provide winter employment in this way. In addition such an enterprise would be highly flexible in that he could decide to feed on the basis of market conditions in a particular year. If he should decide not to feed he could either carry his feed over a year or sell the feed. Such a program would add diversity to his farm organization in addition to the flexibility mentioned.

It is possible that if size had been increased by doubling the size of herd the cow-calf and cow-yearling operations would have been as profitable as the cow-feeder. But this is not possible since most ranchers are limited by their range land. Therefore, the cow-feeder operation is a feasible method of increasing size of business.

Personal preference is an important factor in decision making on ranches. If the rancher is prejudiced against a particular method of crop or livestock production, the chances are great that it will never be practiced. Money income tends to temper and

influence preferences. But on most agricultural operations there is a certain amount of inertia on the part of the managers, and a type of backward looking tendency that will have to be overcome if money is to be the main influence. Besides personal likes and dislikes, managerial ability ranks high as a factor in decision making. If a manager is not a good wheat man, cattle feeder, or cow man, there is a very good chance that he will not attempt any of these on a sufficient scale to hurt his income greatly if he fails. Ranchers usually like what they are good at and procede along those more pleasant lines of production.

It must be remembered that C requires considerable more management ability than either A or B. This is in part due to the increased scale of operation, and in part to the increased intensity to which his cattle system is now subjected. Perhaps the most important conclusion that can be reached from these budgets is that the cow-feeder operation provides a very attractive means of increasing the size of business for most ranchers in the area. Since size can be increased this means additional capital and management will be required. The ability to meet these requirements will vary from ranch to ranch. However, if these requirements can be met, size can be increased by better utilizing certain fixed resources such as land, buildings, labor and machinery. This can be accomplished without adding an entirely different enterprise. Rather the existing enterprise is operated more intensively.

Capital investment needed for C can usually be obtained from

local banks, or from federal government loan agencies such as the Production Credit Association, or Federal Land Bank.

Marketing is another important factor in decision making. Though it may not be given the attention it deserves by the rancher, it often influences what line of production the rancher engages in. There will be comparative advantages among certain areas regarding access to markets both for sale and purchase. Charges on certain kinds of supplies shipped into an area may be influential, as may be the charges on any produce he wants to ship out.

It is to be emphasized again, then, that managerial decision making is not based on figures alone. There are many other factors that enter into this process. These may be personal, institutional, geographical or a host of others. Money income alone is not the only criterion by which to judge the desireability of beef systems. An understanding of what the systems represent to the ranchers themselves in their particular resource situations is absolutely necessary before any advice can or ought to be given on the subject.

CHAPTER 5

SUMMARY AND CONCLUSIONS

Eastern Oregon cattlemen are asking for a re-examination of the relative profitability of beef cattle production systems. Their main reasons are range permit restrictions, and potential feed grain available from the diverted wheat acres. Because of this feed potential, ranchers think cattle production will increase in Eastern Oregon. But it is not yet known which direction the increase will take: toward more and better feeders, or to more beef finished for the slaughter market.

The purpose of this study is to compare the profitability of three commercial beef cattle production systems: (A) cow-calf, (B) cow-yearling, (C) cow-feeder, in three counties: Baker, Grant, and Umatilla. These cattle systems are currently practiced in all three areas. The areas provide a range from Grant, where cattle are the main source of income, to Umatilla where wheat is the main source of income and cattle are relatively insignificant. In this respect Baker is in an intermediate position having some diversification of field and livestock production.

The budgeting technique was thought adaptable for this study. One advantage of budgets is that they systematize, arrange, and combine available basic information. This gives the rancher an estimate of the income that may be expected from alternatives.

Therefore, it enables him to make a more considered judgement among alternatives and production practices.

Some of the limitations of budgets are that they consider only monetary values. By their very nature they cannot consider the value of human emotions and personal preferences simply because no monetary value can be placed on them. Budgets are estimates. They are also open to personal biases. They tend to express all items as single-valued expectations. Neither is there any consideration of any dispersion of product or factor prices, or production coefficients. A zero variance is assumed in the distribution of prices, incomes, and physical data. This may result in a compounding of error that reduces the value of the budgets. Linear functions are also assumed in the budgeting technique even though it is suspected that many of these functions are curvilinear. Careful consideration of this technique made more evident its limitations as well as its strength. However, it is believed this method is best adapted to the solution of this particular problem.

Farm surveys were made of several ranches in each area to obtain basic physical input-output data and actual resource situations. Secondary sources were used when necessary. The three areas were compared and described in regard to physical, capital, and feed production resources, current ranching practices, institutional factors, and cattle production possibilities. Budgets were prepared in order to compare the net farm incomes from each of the three cattle systems in each of the three areas.

Budgets were made showing the use of resources, gross and net farm income, direct and indirect expenses. 1954 prices were used for both livestock and equipment operations in the budgets. Interest was charged at current rates of 5% on long term capital (15 years or longer) and 7% on short term capital (under 15 years).

In all areas the budgets showed a considerable income advantage in favor of the cow-feeder cattle system. Though expenses and capital investment were increased the income derived from sales of slaughter finished animals more than compensated for it. It was pointed out that the cow-feeder system increased the size of farm business over both the cow-calf and cow-yearling systems. It is perhaps the easiest and most attractive way for a rancher to expand his farm business. Expansion results not from the addition of an entirely new enterprise, but from the intensification of his fixed resources. It is shown one cannot seperate an increase in the size of farm business, in the case of the cow-feeder, from the operation itself. By its very nature the system causes an increase in the size of farm business. The cow-calf and cow-yearling cattle systems showed very little difference as far as income is concerned. A small price variation in calves or feeders would have a great influence on the profitability of either system.

Though a cow-feeder cattle production system is shown to be the most profitable by the budgets, a particular manager may not like to feed, may not possess the ability to feed, may not have access to additional capital, or hesitate to expose his family and income

to the risk and uncertainty of a feeder enterprise. Many factors enter into his decision making process other than money income. Personal biases, institutions, technological deficiencies and many other factors all influence his decision. Thus, even though cattle feeding for market slaughter is shown to be more profitable than either of the other two systems in the three areas, it will not necessarily be the system followed by all. Comparative advantages and disadvantages, as well as the psychological makeup of the individual will enter into the decision of which cattle production system is most profitable for a particular rancher.

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APPENDIX I

TABLE 1

Equipment inventory, cost, and depreciation for the budgeted ranches by areas.

For Baker County

Kind	No.	Cost new	Date Bought	Years of Live	Present Value	Amount Dep. per year
a. Truck	1	$5,000.00	1950	8	$1,875.00	$625.00
b. Pickup	1	2,200.00	1953	8	1,650.00	275.00
c. Tractor	1	2,300.00	1950	8	862.50	287.50
d. "	1	1,700.00	1949	8	425.00	212.50
e. Mower	1	300.00	1950	10	150.00	30.00
f. Plow	1	225.00	1949	15	135.00	15.00
g. Disc	1	300.00	1948	20	195.00	15.00
h. Combine	1	1,800.00	1945	15	600.00	120.00
i. Baler	1	2,000.00	1951	8	1,000.00	250.00
j. Buckrake	1	750.00	1954	15	700.00	50.00
k. Squeeze Chute	1	290.00	1951	15	212.64	19.34
l. Sprayer	1	400.00	1952	15	321.02	26.66
m. Harrow	4	80.00	1945	20	40.00	4.00
n. Wagon	1	80.00	1945	20	40.00	4.00
o. Grain Drill	1	600.00	1944	20	260.00	30.00
p. Fertilizer Spr.	1.	375.00	1950	10	187.50	37.50
q. Manure Spr.	1	300.00	1948	15	195.00	15.00
r. Scales	1	1,000.00	1954	25	960.00	40.00

For Grant County

In addition to b,c, f,g,h,k,l,m,n,o,p,q, and r above, e and j will be doubled. Additional equipment will be:

a. Truck	1	6,000.00	1952	8	3,750.00	750.00
b. Tractor	1	3,300.00	1950	8	1,237.50	412.50

Table 1 (cont.)

For Umatilla County

In addition to b,c,e, and q in Baker County, o, and p are tripled. Additions include:

Kind	No.	Cost New	Date Bought	Years of Life	Present Value	Amount Dep. per year
a. Tractor	1	$3,300.00	1950	8	$1,237.50	$412.50
b. Truck	1	4,000.00	1950	8	1,500.00	500.00
c. Disc Plow	1	1,200.00	1949	10	480.00	120.00
d. Binder	1	2,000.00	1944	20	900.00	100.00
e. Combine	1	6,000.00	1950	15	4,000.00	400.00
f. Spring Tooth	30'	335.00	1949	10	234.00	33.50
g. Rod Weeder	36'	600.00	1950	10	300.00	60.00
h. Sprayer	35'	1,000.00	1947	15	466.64	66.67
i. Misc.					500.00	

Note to Table 2

In assuming a 2.25 lb. gain/head/day in the feedlot it is recognized that though the nutrients are present for such a gain in the ration, good management practices must be followed (regarding mud, shelter, water, worming, etc.) to make such gains consistently. No consideration is given to the use of hormones or synthetics of any kind. The fattening ration consists of 60% roughage of good quality hay raised on the ranch; and 40% grain. The grain consists of barley (2 parts), oats (1 part), and 44% cottonseed meal (½ part). This ration composition was selected from data obtained from calf feeding experiments at the Union Experiment Station, and Dr. W.B. Back's unpublished work on dry lot cattle feeding in Oregon.

TABLE 2

Livestock Sales by (1) Cattle Production Systems and (2) Counties.

	Kind	No. Sold	Weight	Price/cwt.
		For Baker County		
A.	cows	22	1000 lbs.	$14.40
	calves	93	425	18.50
	bulls	2	1800	14.00
B.	cows	18	1000	14.40
	yr. st.	36	700	18.00
	yr. hf.	16	650	17.00
	bulls	1	1800	14.00
C.	cows	22	1000	14.40
	yr. st.	58	900	24.50
	yr. hf.	34	850	24.50
	bulls	2	1800	14.00
		For Grant County		
A.	cows	42	1000	14.40
	calves	167	425	18.50
	bulls	4	1800	14.00
B.	cows	23	1000	14.40
	yr. st.	56	700	18.00
	yr. hf.	32	650	17.00
	bulls	2	1800	14.00
C.	cows	42	1000	14.40
	yr. st.	107	900	24.50
	yr. hf.	59	850	24.50
	bulls	4	1800	14.00
		For Umatilla County		
A.	cows	5	1000	14.40
	calves	20	425	18.50
B.	cows	4	1000	14.40
	yr. st.	10	700	18.00
	yr. hf.	5	650	17.00
C.	cows	5	1000	14.40
	yr. st.	13	900	24.50
	yr. hf.	7	850	24.50

TABLE 3

Constant Cash Costs per Year by Area

Item	Baker amt.	Grant amt.	Umatilla amt.
Insurance	$350.00	$500.00	$841.82
Small equipment and tools	300.00	360.00	300.00
Phone, electricity	198.00	264.00	198.00
Additional gas, oil, grease, etc.	250.00	500.00	250.00
Licenses, fees, subscriptions, etc.	25.00	30.00	25.00
Rent for land		840.00	
Rent for range permit	270.00	500.00	
Miscellaneous	500.00	750.00	500.00
Totals	$1,893.00	$3,744.00	$2,114.82

TABLE 4 - Source: 5,13,17,18,21

Total Depreciation by Cattle Production System Within Areas

For Baker

	Item		Value	Depreciation
A.	Equipment			$2,021.50
	Buildings, fencing:	24 mi. fence @ $250.00	$6,000.00	
		2 barns @ $6,300.00	12,600.00	
		2 sheds @ $1,500.00	3,000.00	
		Granary	3,000.00	
		Garage	2,000.00	
		Various sheds, pumphouse, etc.	1,000.00	
		Gates, chutes, corrals, etc.	2,400.00	
			$30,000.00	750.00
	5 bulls @ $500.00, 3 yr. life			833.35
				$3,604.85
B.	6 mi. more fencing @ $250.00		1,500.00	37.50
	2 less bulls			plus 333.34
				$3,541.01
C.	Additional buildings, feeding facilities		5,000.00	125.00
	Additional equipment		1,000.00	40.00
				$4,001.85

Table 4 (cont.)

For Grant

	Item		Value	Depreciation
A.	Equipment			$2,171.50
	Buildings, fencing:	40 mi. fence @ $250.00	$10,000.00	
		2 barns @ $12,000.00	24,000.00	
		1 barn @ $6,300.00	6,300.00	
		3 sheds @ $1,500.00	4,500.00	
		Granary	3,000.00	
		Garage	2,000.00	
		Various sheds, pumphouse, etc.	1,000.00	
		Gates, chutes, corrals, etc.	2,200.00	
			$53,000.00	1,325.00
	12 bulls @ $500.00			2,000.04
				$5,496.54
B.	6 mi. more fencing @ $250.00		1,500.00	37.50
	5 less bulls			plus 833.35
				$4,700.69
C.	Additional buildings, feeding facilities		8,000.00	200.00
	Additional equipment		1,000.00	40.00
				$5,736.54

Table 4 (cont.)

For Umatilla

	Item		Value	Depreciation
A.	Equipment			$2,090.17
	Buildings, fencing:	20 mi. fence @ $250.00	$5,000.00	
		1 barn @ $6,300.00	6,300.00	
		4 sheds @ $1,500.00	6,000.00	
		Granary	4,000.00	
		Garage	1,000.00	
		Various sheds, pumphouse, etc.	1,000.00	
		Gates, chutes, corrals, etc.	1,200.00	
			$24,500.00	612.50
	1 bull @ $500.00			166.67
				$2,869.34
B.	Same as A. above			
C.	Additional sheds and feeding facilities		1,500.00	62.50
				$2,931.84

Equipment Operations

Do not include charges for depreciation, interest, shelter, insurance, or labor.

For the Baker and Grant areas:

Tractor: $.60 per hour

Based on yearly expense of a 2 plow, 20 h.p., wheeled, gas, rubber tired tractor working 80 days per year at 9 hours per day.

Fuel	$322.56
Cylinder oil	28.00
Other oil and grease	4.00
Repairs	57.00
Servicing	19.00
	$430.56 Total Cost

Haying: loose $.95 per acre, baled $2.50 per acre.

Based on a 7' mower, a 9 hour day in which 22.5 acres are cut.

Loose stacks: (mowing, raking, bunching-stacking)

Operation	Tractor		Implement		Total Cost
	hrs./acre	cost/hr.	cost/hr.	cost/acre	cost/acre
Mowing	.40	$.60	$.02	$.01	$.25
Raking (side delivery)	.40	.60	.02	.01	.25
Bunching-stacking	.50	.60	.30	.15	.45
					$.95

Baling: (mowing, raking, baling, hauling and stacking)

Based on baling 30 tons per day at a productivity of 2 tons per acre; twine at $.50 per ton; and hauling rate of 3 mi. per acre at $.12 per mile.

Operation	Tractor		Implement		Total Cost
	hrs./acre	cost/hr.	cost/hr.	cost/acre	cost/acre
Mowing	.40	$.60	$.02	$.01	$.25
Raking	.40	.60	.02	.01	.25
Baling	.60	.60	.47	.28	.64
Twine					1.00
Haul-stack					.36
					$2.50

Equipment operations (cont.)

Grain: $7.18 per acre.

Based on using a 2 bottom 14" plow at 6 acres per day; discing at the rate of 16 acres per day; harrowing, drilling, and fertilizing at 27 acres per day, with the operator furnishing the seed, and hauling at a rate of 6 miles per acre at $.12 per mile.

Seeding:

Operation	Tractor		Implement		Total Cost
	hrs./acre	cost/hr.	cost/hr.	cost/acre	cost/acre
Plowing	1.34	$.60	$.04	$.06	$.87
Discing	.56	.60	.05	.03	.37
Fertilizing	3.00	.60	.02	.01	.21
Drilling)	3.00	.60	.05	.02	.22
Harrowing)			.02	.01	.01
Fertilizer					4.00
Clean and treat seed					.32
Harvesting:					
Combine	.50	.60	.32	.16	.46
Haul					.72
					$7.18

Manure hauling and spreading: $1.52 per acre.

Assuming 2 tons per load, 3 loads per hour loaded and spread. Calves produce .4 tons of manure per month.

Tractor	Loader	Spreader	Total cost per hour
$.60/hr.	$.30/hr.	$.01/hr.	$.91/hr.

At $8.19 per 9 hour day, at a rate of 5.4 acres per day - $1.52/acre.

Equipment operations (cont.)

For the Umatilla area

Grain: $12.83 per acre.

Operation	Tractor		Implement		Total Cost
	hrs./acre	cost/hr.	cost/hr.	cost/acre	cost/acre
Disc Plow (13')	.22	$1.30	$.18	$.04	$.33
Spring tooth harrow (33')	.12	1.30	.33	.04	.20
Rod weed, 3 times (36')	.09	1.30	.66	.06	.54
Drilling (30')	.11	1.30	.15	.02	.20
Fertilize (30')	.11	1.30	.06	.01	.17
Spray 50% of acreage (35')	.08	.66	.53	.04	.06
Spray					.51
Clean and treat seed					.20
Fertilizer					7.50
Combine (17')	.23	1.30	3.57	.82	1.12
Truck haul					2.00
					$12.83

Haying:

Based on using a 8' binder, 9 hour day covering 21 acres. At $1.60 per day it costs $.18 per hour. Twine costs $.50 per ton of hay. And the hay is hauled in one and ½ ton loads. Each load costs $.75.

Total Equipment Expenses by Operation and Area

Baker

A.	158 acres baled hay @ $2.50	———	$ 395.00
	287 " loose " @ .95	———	272.65
	50 " grain @ 7.18	———	359.00
	2 days manure hauling @ 8.19	———	16.38
			$1,043.03
B.	160 acres baled hay @ $2.50	———	$ 400.00
	285 " loose " @ .95	———	270.75
	50 " grain @ 7.18	———	359.00
	2 days manure hauling @ 8.19	———	16.38
			$1,046.13
C.	60 acres baled hay @ $2.50	———	$ 150.00
	385 " loose " @ .95	———	365.75
	155 " grain @ 7.18	———	1,112.90
	33 " manure hauling @ 1.52	———	50.16
			$1,678.81

Grant

A.	400 acres loose hay @ $.95	———	$ 380.00
	50 " grain @ 7.18	———	359.00
	3 days manure hauling @ 8.19	———	24.57
			$ 763.57
B.	Same as A.		
C.	500 acres loose hay @ $.95	———	$ 475.00
	218 " grain @ 7.18	———	$1,565.24
	61 " manure hauling @ 1.52	———	92.72
			$2,132.96

Umatilla

A.	Grain	———	$7,223.29
	Hay	———	63.85
	Manure hauling	———	8.19
			$7,295.53
B.	Grain	———	$7,223.29
	Hay	———	70.65
	Manure hauling	———	8.19
			$7,302.13
C.	Grain	———	$7,223.29
	Hay	———	94.55
	Manure hauling	———	16.38
			$7,334.22