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Sources and Uses of Marketing Information by POTATO Growers in Southern California

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Marketing Economics Division

PREFACE

Marketing information is essential to farmers in planning their production and marketing. Much information of value is gained through experience and first-hand contact with other farmers and marketing agencies in the local community. Nonetheless, there is much relevant information that is not so readily available to farmers except as private or public agencies collect information from the large number of dealers in a market, summarize it, and disseminate it through various media.

A considerable part of the information helpful to growers in planning their production and marketing is collected by public agencies. Much of this information is disseminated through radio, newspapers, farm journals, and other media. Large quantities of statistics and analyses are published, yet little is known of the extent to which farmers and others receive and use this information, or of the extent to which they find the information accurate and adequate for their purposes. The Department of Agriculture is interested in the answers to these questions for at least two reasons: (1) Use or nonuse needs to be known so that items of little or no value can be eliminated and the Federal, State, and local governments that provide information can give more efficient service, and (2) adequacy of information provided is necessary to full efficiency of our production and marketing systems.

This study was undertaken as part of a program of research to measure the receipt and use of markting information (particularly day-to-day market news) by farmers and others. Other studies have been conducted in Iowa, Michigan, and other areas where farming and farmers exhibit characteristics quite different from those reflected in this report. (See Literature Cited, page 11. Copies of reference No. 3 may be obtained from Information Division, Agricultural Economics, U. S. Department of Agriculture, Washington 25, D. C. Others cited may still be available at the issuing agencies).

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Washington, D. C. June 1962

SUMMARY

The object of this study was to determine the kinds and amounts of marketing information obtained by Southern California potato growers, how they used it, and what they thought about its adequacy.

The data used in the study were obtained by interviewing 150 potato growers in Kern, San Bernardino, and Riverside Counties during August-October 1960. The growers were selected by statistical sampling methods.

About 30 percent of the potato growers in Southern California produced 140 or more acres of potatoes in 1960. About 10 percent owned or had access to teletype facilities for getting current information relevant to their marketing activities. About 25 percent reported talking with brokers and others about marketing and market conditions.

Only 14 percent of the growers were engaged directly in the marketing of their potatoes; the others turned this responsibility over to brokers or cooperative marketing associations. Nonetheless, the majority reported that they received and studied various publications on the short-run outlook for potatoes. About 80 percent received and studied Federal-State Market News Service daily reports for potatoes; many used such information for aftersale evaluation of prices obtained. (This is similar to the findings for general farmers in Michigan where 230 of the 375 interviewed farmers - about 60 percent - reported this "checking" to be a principal use of information.)

All of the Southern California potato growers reported receiving information from one or more sources, but there were some differences in the degree to which growers of different sizes obtained information from the various sources. For example, one-third of those growing 140 acres or more of potatoes in 1960 had access to teletype whereas none of those with fewer acres reported such facilities. Daily newspapers, radio, and general farm publications were reported as sources of information by relatively more growers having less than 140 acres than by those with more than 140 acres. Relatively more of the large growers mentioned special potato publications (for both short - and long-run information), teletype, and long distance phones than the small ones.

About 20 percent of the growers, regardless of the size of their acreage in potatoes, stated that they regarded marketing information to be inadequate in some respect. The two primary inadequacies mentioned were inaccuracy in the price information and late receipt of the information. Whether they regard such inadequacies as inherent in the information system or in the marketing system, or simply have misconceptions of the sources and purposes of such information was not determined.

As mentioned above, only 14 percent of the growers engaged directly in marketing their own potatoes to primary outlets in 1960. Some attempt was made to determine whether this was due to information deficiencies or to other causes. Three principal factors were found: (1) Whether or not growers had their own packing sheds; if not, they could not specify exact time of digging; (2) few storage facilities were available locally, and freshly dug potatoes are a perishable product that requires relatively rapid marketing; (3) brokers were considered to be specialists who could find and negotiate sales with distant buyers more efficiently than individual growers. Because California potatoes are marketed throughout the United States, growers have a great number of possible outlets. But finding the highest return outlet is so complex, apparently, that many growers decide to avoid the problem by utilizing brokers.

SOURCES AND USES OF MARKETING INFORMATION BY POTATO GROWERS IN SOUTHERN CALIFORNIA

By R. J. Jessen and Walter Miklius 1/

INTRODUCTION

The Federal-State Market News Service and other public and private agencies devote considerable resources to collection information on agricultural marketing and disseminating it through mass media and mimeographed daily and weekly reports. The purpose is to increase the general efficiency of this sector of the economy, encourage orderliness in the flow of goods from producer to consumer, and discourage unfair trade practices which otherwise may develop where marketing knowledge is meagre and poorly distributed.

The present study was undertaken to examine in some detail the effectiveness of this service to potato growers in Southern California. Because the relationship of the structure of the business to the need for information was not very well known, attention was given to studying the organization of the industry, the economic channels by which the potatoes move, and who makes what decisions on marketing as well as identifying kinds of information received by growers, how they use it, and what they thought about its effectiveness.

California is the third largest potato producing State in the United States, and provides more than 10 percent of the total U. S. production. (5). 2/. Almost two-thirds of the production in California is located in three Southern California counties -- Kern, Riverside, and San Bernardino (4). Potato production is the fourth largest field crop enterprise in the State (1).

A list of 839 names of persons thought to be engaged in potato growing in these three counties of Southern California was compiled and classified according to estimates of their potato acreage. A sample of 389 names was chosen, and interviews were completed in the late summer and fall of 1960 with 150 of these (table 1). (See appendix for details of the universe and the sample.)

EXPOSURE TO MARKETING INFORMATION

In order to make the decisions described below, growers obtained marketing information from a variety of sources and by means of several media. These sources

1/ Mr. Jessen is project director, Mr. Miklius research assistant, C-E-I-R, Inc., Beverly Hills, Calif., under contract for this study with the U. S. Department of Agriculture. John O. Gerald, Economic Research Service, supervised the contract for the Department.

2/ Underscored numbers in parentheses refer to Literature Cited, page 11.

Table 1.--Growers in sample, by size of potato acreage and by counties, 1960

Potato acreage	Riverside	San Bernardino	Kern	Total 3 counties
	Growers	Growers	Growers	Growers
Large (more than 140 acres)	11	1	30	42
Medium (40-140 acres)	8	5	42	55
Small (less than 40 acres)	5	11	37	53
Total	24	17	109	150

of information can be classified according to the decisions to be made:

Short run marketing decisions, (prices in different markets, movement of cars, inventory, etc.)
- Teletype
- Long-distance telephone calls
- Brokers
- Market News Service by telephone
- Railroads

Check on prices received by broker
- Market News Service Bulletin
- Radio
- Newspapers
- Commercial services (Tabb's, The Packer, etc.)

Longer-run harvesting predictions
- Outlook and situation reports
- Commercial services (Tabb's, The Packer, etc.)
- Potato Growers' Association bulletins

Longer run planning
- USDA publications
- Trade journals
- Commercial papers
- Potato Growers' bulletins

Other news useful to the grower
- All sources

Former studies have shown that all media depend to a considerable degree on the Market News Service and other public information agencies for their information.

Fourteen of the growers had their own teletype or had access to such facilities. All these were large growers (table 2). One of the most frequently mentioned sources was the Federal-State Market News Service daily report; it was mentioned by 107 growers, (86 percent of the large, 84 percent of the medium, and 47 percent of the small growers received it). The most frequently mentioned source, however, was brokers and other growers, mentioned by 123 or 82 percent of the growers. Only five mentioned television as a media-source.

There appeared to be no scarcity of marketing information available to the growers and most of them seemed to be at least exposed to a fairly sizable amount of it. The average grower obtains information from 4.8 media-sources; the medium-sized grower had the largest number of sources (5.3) and the small growers the the fewest (4.3). Apparently the large growers preferred fewer but perhaps more specialized media-sources (such as teletype and special potato journals).

Table 2.--Number of times each media was mentioned as a source of marketing information, per 100 potato growers, by size of acreage, 1960 season

Media	Large	Medium	Small	All sizes
	Mentions	Mentions	Mentions	Mentions
Teletype	33	0	0	9
Radio	26	45	45	40
Television	2	2	6	3
Short-run potato outlook publications	119	104	57	92
Long-run potato outlook publications	26	11	4	12
Produce publications	10	18	8	12
General farm publications	36	73	68	61
Extension Service	12	18	17	16
Federal-State Market News reports	86	84	47	72
USDA production reports	7	9	13	10
Other USDA reports	12	7	12	10
Daily newspapers	24	61	64	52
General business publications	7	6	0	4
Brokers and other growers	84	76	87	82
Miscellaneous	10	9	4	7
All media	206	289	228	723
Media per grower	4.9	5.3	4.3	4.8
	Growers	Growers	Growers	Growers
Growers interviewed	42	55	53	150

Evaluation of Adequacy of Information

Each grower was asked the question: "Do you feel that information on prices and the general market situation on potatoes is adequate as far as you are concerned?" The replies, usually after some followup questioning, indicated that in general most growers felt that information was adequate. However, 31 of the 150 thought otherwise, as shown in the following tabulation:

	Growers			
	Large	Medium	Small	All
Yes, adequate	35	43	41	119
No, inadequate	7	12	12	31
Total	42	55	53	150

The 31 growers who complained of the inadequacy of information available gave the following reasons:

	Mentions
Lack of accuracy on prices	14
Information arrives too late to be useful	10
Prices quoted are too high	4
Too great tolerance of grade and maturity standards makes price information useless	2
Predictions are not accurate	2
Lack of accuracy in reports of acreages and inventories	2
Terminology too complicated	1
Total mentions	35

Information Inadequacies Due to Market Imperfections

In general, lack of information is not a major problem -- or at least respondents were not aware of it as a problem. When given a chance they instead directed their attention during the interview to problems of marketing in general. In Riverside County the problem of determining the credit rating of brokers or shipper-agents was acute because in the last few years a couple of brokers went into bankruptcy, causing heavy losses to some growers. In Kern County several growers complained that grade standards were too rigidly enforced, yet consumers did not get the product according to specific grade. They said that retailers mixed Number 1 and Number 2 potatoes and sold to consumers at Number 1 prices. They felt that growers were penalized by too rigid specifications. These specifications were locally decided upon by the Potato Growers Association of California and Arizona.

All growers complained of wide fluctuations in prices of potatoes. Some growers also complained of having to "roll" (ship) potatoes unsold.

Potatoes from California move to markets throughout the United States. This movement requires up to a week or more for the more distant markets. If prices in eastern markets are expected to be stable or to rise over this period, buyers of California potatoes may be willing to buy immediately all potatoes offered, at f.o.b. market price less freight. But if prices in eastern markets are uncertain or are expected to decline, buyers for delivery to distant markets are willing to buy f.o.b. California only if offered considerable discounts. The absence of an efficient system in the local California market for arriving at a realistic and uniformly offered discount on f.o.b. sales to distant buyers seems to cause sellers to prefer direct billing for sale on arrival at market over the offering of individually decided discounts that would be required to equate f.o.b. demand for California potatoes to the f.o.b. supply. On the other hand, some growers may roll unsold cars at times when prices in eastern markets are expected to rise, although the stated expectation of "lower" prices on all "rollers" seems to imply that demand for potatoes is adequate to take all supplies on f.o.b. California basis at such periods.

With perfect knowledge, supply and demand would determine a single f.o.b. Southern California price which would clear the market; that is, quantity demanded would equal quantity supplied in each production period. However, eight growers in our sample stated that they rolled potatoes unsold during the 1960 season and many carlots were sold by brokers on consignment. This would constitute a rational behavior on the part of these sellers if they had expected to receive a price higher than the price prevailing in the f.o.b. market. But this is not the case. All growers stated that once potatoes are "rolled" or sold on consignment they expect a lower price and that they have to resort to this type of sale because there is no f.o.b. demand at the established price for their potatoes. This explanation leads to the conclusion that the f.o.b. price established is not an equilibrium price.

It is very likely that because of lack of knowledge neither the "feel" of the market nor the crude methods used by sellers in gaging f.o.b. demand are very reliable; the prices usually received in the f.o.b. local market may be merely reflections of f.o.b. market prices less freight when price levels are stable or rising. This contention is supported by the fact that the main complaint about market information was lack of price accuracy. Although growers and other sellers are contacted by Market News Service reporters, most of the growers stated that the prices quoted by Market News were too high. One grower stated:

> The buyers never pay the price quoted by Market News. The way the Market News is compiled is inaccurate. They ask the brokers about the price and the broker, for sake of prestige to keep market high, will quote a higher than true price. They should try to see an order to compile the Market News.

Another grower said:

> The Market News Service is usually given the highest price obtained during the day, even if it is not representative or sometimes even a fictitious price higher than the one obtained. This is because buyers will also read this information and sellers are trying to keep the market high.

These complaints probably arise from the situation involving potatoes below the average for their grade and the potatoes sold on consignment.

The grower also has to decide to whom to sell. In making this choice, price offered and credit rating seemed to be the most important factors. In order to maximize his revenues the grower has to have information on prices at different terminal markets, shipments from various production areas and into various terminal markets, inventories in different storage areas, short-run weather reports, and other factors. This type of information has to be immediately available and usually is obtained from teletype and long-distance telephone calls to different terminal markets.

In addition to prices received, the credit rating seems to be one of the major considerations in deciding to whom to sell. The credit information is obtained from the "Blue Book" and from previous experience with the buyer. The Perishable Agricultural Commodities Act has presumably made such credit-rating information more readily available than in earlier years and much more valid.

MARKETING AND OTHER DECISIONS USING INFORMATION

It is logical to assume that utilization of marketing information by potato growers is related to their participation in marketing decisions. Growers may market potatoes directly to local or distant buyers, or they may engage a broker or shipper-agent to sell for them. Further, preparing potatoes for market in their own sheds may increase growers' participation in the marketing process. According to some growers, economies of scale in packing potatoes are such that at least 400 acres of potatoes are necessary to reduce cost per unit to a reasonable level. On the other hand, the lack of a packing shed more or less deprives the grower of control over his time of digging and over outlet because most commercial packing plants require scheduling of digging operations and provide brokerage services.

Selling Through Brokers

For the majority of growers the decision to pack potatoes in commercial packing sheds involves also a decision to use a broker for sales. The packing shed usually has its own sales organization to sell all potatoes packed by the shed, or it may engage a broker.

Some growers who pack their own potatoes in their own sheds prefer to engage a broker for sales. It may be that economies of scale of a sales organization require an even greater volume that those of a packing shed. Some of the reasons growers give for prefering to use a broker rather than maintain their own sales organization are: (1) The high cost of maintaining a sales organization, (2) short harvesting period, (3) importance of good sales contacts which are usually built up through years of operation, and (4) a relatively low commission charge (10 cents per cwt.).

The choice of broker is governed by a variety of reasons. Some growers select brokers on the assumption that they will try to get the highest possible price. Others emphasize other economic factors such as fast payment or selling on firm orders. Still others will choose according to noneconomic factors such as reputation, honesty, and knowing a broker socially. Reasons given for choosing a broker, by the 129 growers who sell through brokers, are listed below:

Stated Reasons For Choice of Broker	Growers
Economic:	
Highest price	32
Good sales connections	8
Fast collections	11
Sells on firm orders only	3
Best management or equipment	6
Total	60
Noneconomic:	
Loyalty	18
Knows broker socially	14
Honesty, reputation, integrity, etc.	23
Other business relations with broker	19
Member of cooperative	4
Relative of broker	3

Stated Reasons For Choice of Broker		Growers
Noneconomic: (Con.)		
Convenience of location		1
No reason		15
Total		97
	Mentions	
Total	157	129
Mentions per grower	1.22	

In general, growers mentioned noneconomic factors more frequently than economic (97 noneconomic factors and 60 economic). The most frequently mentioned economic factor was highest price (32 growers). On the average, growers mentioned 1.22 factors; 104 growers gave 1 reason, 21 gave 2, and 4 growers mentioned 3.

An important and frequently expressed use of the Federal-State Market News Service daily reports was that of judging the performance of the broker. Many growers said they checked the sales prices they received against those reported the next day in the Market News reports. This was also observed in the Michigan study (3).

The growers who try to maximize price change brokers often, usually depending on the performance of the broker in the last season. However, most of these growers maintained that prices are determined by the market, that is, each broker is faced with the infinitely elastic demand. Consequently, all brokers are alleged to get approximately the same price in the long run.

It seems that the growers who market through brokers but who do not try to maximize price, chose brokers essentially at random despite the variety of reasons given. And if a broker seems to perform satisfactorily the grower seems disinclined to change. However, when a change is desired, growers reported that they usually obtained information about brokers by talking with other growers.

Some marketing decisions for potato growers are eliminated or somewhat restricted because of the nature of the business. For example, if a grower decides to use a packer to process his potatoes and a broker (of his own or the packer's choice) to sell them, he retains little control of marketing. The packer has considerable control over the time of harvest since production-run plans for his potato sheds are made in advance of the harvesting season in order to best utilize the capacity of the sheds. Each grower is allocated certain days for harvesting his potatoes, and once harvested and packed, potatoes must be sold within a few days because storage is not generally available or economical. Adequate selling arrangements must be available to move this perishable product quickly; and perhaps this is why the majority of growers sell through brokers.

In making selling decisions, the broker will usually get in touch with the grower only if he intends to sell on consignment or to roll the potatoes unsold. Since he often has no marketing decisions to make after selecting a broker, the grower uses price information only to compare the prices or offers received by his broker with those of the market. This is the most frequently stated use of the daily Market News Service Bulletin by growers. 3/ Although it arrives by mail with a one- or two-day lag, it is satisfactory for this purpose. This information is supplemented by contacts among growers and with other brokers.

3/ This use was of very frequent occurrence for Michigan farmers also. (3 , page 11.)

Selling Direct

For growers selling through their own sales organization, marketing decisions and information required are very different from those of growers selling through brokers. These sellers must locate potential outlets and negotiate sales. Again this group can be roughly divided into, (1) those who will follow market prices and (2) those who will try to establish them.

In the first group, the growers will simply call brokers, other growers, or the Market News Service to get the market price and will then quote it to their buyers. By this scheme the grower avoids the risk of not getting at least the market price. Immediate price information is needed by this group, both for quoting to their buyers and for billing.

For the second group, price determination is of major importance. The most common answer to questions about price determination was: "Supply and demand determines a market price." But when asked how they knew about the strength or weakness of demand (supply infinitely inelastic for very short period -- one day) they were vague and sometimes said, "feel of the market." Some growers, however, used a variety of methods to estimate the strength of demand and thus the price.

One grower calls the railroads and asks how many cars were shipped and how many cars are on hand without bills of lading (not sold). This, he feels, provides a good indication of the strength of the market. For another grower, the previous day's price serves as a base. He waits for telephone calls from potato buyers, and for each call received he adds 5 or 10 cents to yesterday's price. Some growers try to determine strength of demand by bargaining with potato buyers. Some set their price on the basis of Chicago price minus freight.

The determination of market price is a crucial factor in efficient distribution. It seems that because of the lack of a single concentrated commodity market and because of crude methods used to estimate f.o.b. prices, the quilibrium f.o.b. price is only approximated and is subject to adjustment during the day.

The decision on when to sell is usually determined by the maturity of crops. Within the harvesting season, however, if the grower packs potatoes for others his production plans have to be made in advance, and harvesting dates will be predetermined. Because of lack of storage facilities or high cost of refrigerated storage (where such facilities are available) the grower will have little leeway in either when to harvest or when to sell. On the other hand, if he uses his packing shed only to pack his own crops, he can determine harvesting time within certain limits by, in fact, storing potatoes in the soil if price is expected to rise and vice versa.

Early in the harvesting season new potatoes usually command a higher price than potatoes later in the season. However, new potatoes are small and the protective peel is easily damaged. The grower has to decide whether to harvest small perishable potatoes to sell at a high price or wait for them to mature and perhaps sell the larger but later potatoes at a lower price. In order to make a rational decision he needs the following information: Prices of potatoes out of storage, inventories, prices of new potatoes, and prices expected later in the harvesting season. If he is first and no prices on new potatoes are established he may test the market by setting an arbitrary price above prices of potatoes out of storage.

Production Planning

In addition to making marketing decisions, each grower must also decide how many acres of potatoes to plant. The majority of growers stated that they do not vary acreage according to price predictions. Acreage of potatoes is determined by the farm's crop rotation plan, or in some cases by the residual of the cotton allotment. Besides, they feel the predictions of prices are not accurate enough to warrant any acreage variation.

The growers (mostly large) who did vary acreage used a variety of yardsticks. Some used USDA predictions on prices and varied acreage accordingly. Others used last crop year's price and reduced acreage if price was high and vice versa. Still others used the prices of seed potatoes. If seed potato prices were high, reduction in acreage was in order. However, the great majority thought that due to fluctuations in prices of potatoes, the grower in the long run is better off if he maintains the same acreage year after year than if he tries to maximize revenues by varying acreage according to price expectations.

Participation in Marketing and Participation in Information Gathering

Potato growers differ considerably from each other in the degree to which they participate in the job of marketing their product. Some delegate the entire problem to their handler or broker and do little to even check on him. Others will take on the entire responsibility of deciding on the whens, the wheres, the whos and the how muches of marketing. One would expect the grower who turns his potatoes over to a broker to have less need for marketing information than one who finds his own buyer and negotiates terms himself. We should expect therefore, that the kind and amount of marketing information obtained by growers will depend on their need for it -- that there should be a positive relationship between participation in marketing and participation in information gathering. In order to test this assertion, simple measures of these two types of participation were developed.

To measure participation in marketing, the following three criteria, which presumably rank growers from low to high marketing activity, were used:

Group 1. Grower sells through broker. Accepts market price unconditionally. Chooses broker on account of noneconomic factors.

Group 2. Grower sells potatoes at market price or chooses broker with the objective of getting best price.

Group 3. Grower is himself engaged in selling potatoes. Actively participates in establishing price.

To measure participation in information gathering, five criteria, which presumably rank growers from low to high in obtaining information, were used:

Group 1. Grower gets marketing information from general farm magazines (for example, Farm Journal) and general newspapers, or is not interested in marketing information because he is growing potatoes on a contract (Kennebeck producers).

Group 2. Receives some trade or commercial literature but relies for marketing information chiefly on other growers.

Group 3. Receives trade and commercial literature, uses Market News price data to check prices received, gets information from other growers and brokers.

Group 4. Receives trade and commercial literature, listens to radio, uses Market News price data obtained by phone for decisions in marketing or planning.

Group 5. Has access to teletype facilities or engages in daily long-distance telephone calls to different market areas to obtain marketing information.

The results are presented in table 3. Note that a positive relation does appear -- that growers engaged in marketing decisions are also those who obtain a lot of marketing information and vice versa. Only 19 of the 150 growers were classified as high-level marketing participants and 12 of these turned out to be most active in obtaining information. Over half of the growers are regarded as low in marketing participation and these seem only midly involved in obtaining information. They, of course, expect their agents or their brokers to be well informed.

Table 3.--Potato growers classified by degree of participation in marketing and in gathering information

Participation in gathering information	Participation in marketing			All groups
	Low	Medium	Active	
Active	0	4	12	16
Fairly active	7	9	6	22
Medium	30	17	0	47
Fairly low ..	38	19	1	58
Low	6	1	0	7
All groups.	81	50	19	150

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APPENDIX

Background

California is the third largest potato producing State in the United States, following closely behind Maine and Idaho, and provides about 11-1/2 percent of U. S. production. The leading potato-producing States and the average production of each during the period 1949 to 1957 were (4):

Rank of States	Production	
	1,000 cwt.	Percent
1 - Maine	35,390	15.4
2 - Idaho	29,234	12.7
3 - California	26,534	11.5
4 - New York	18,593	8.1
Remainder of United States	120,078	52.3
Total, United States	229,829	100.0

In California, the bulk of potato production, about 63 percent, is located in the three counties selected for this study -- Kern, Riverside, and San Bernardino Counties -- which rank first, second, and eighth in the State's production. The leading counties and acreage in the 1957 season were as follows (4):

Rank of Counties	Acreage harvested	
	Acres	Percent
1 - Kern	44,900	46.7
2 - Riverside	12,950	13.5
3 - San Joaquin	5,600	5.8
4 - Modoc	5,000	5.2
5 - Siskiyou	4,900	5.1
6 - Tulare	4,300	4.5
7 - Monterey	4,050	4.2
8 - San Bernardino	2,915	3.0
9 - Santa Barbara	2,300	2.4
Remainder of State	9,285	9.6
Total, California	96,200	100.0

The position of potatoes relative to other California field crops is quite important; it ranks fourth in value, following cotton, hay, and barley and is responsible for about 8-1/2 percent of the State's entire field crop output. The State's leading field crops and their 1946-55 average value were as follows (1):

Rank of Crops	Value	
	Million dollars	Percent
1 - Cotton, lint and seed	242.6	33.0
2 - Hay, all kinds	149.0	20.3
3 - Barley	71.8	9.8
4 - Potatoes, all 1/	61.6	8.4
5 - Rice	48.7	6.6
Other field crops	160.5	21.9
Total, field crops	734.2	100.0

1/ 1949-55 average.

However, when we consider all categories of agricultural production within the State, the relative importance of potatoes shrinks markedly since field crops represent about 30 percent of the total value; potatoes account for only about 2-1/2 percent of the State's agricultural output. The average figures by category for the period 1946-55 were (1):

	Value	
	$1,000	Percent
Field crops	734,157	29.2
Fruits and nuts	490,464	19.6
Vegetables	337,254	13.5
Livestock, poultry and products	870,880	34.8
Government payments	17,846	.7
Forest, nursery, greenhouse, etc.	53,962	2.2
Total	2,504,563	100.0

In the three counties included in the study, returns to growers from sales of potatoes accounted for the following percentages of total 1957 agricultural income: Kern 10.2 percent, Riverside 4.2 percent, San Bernardino 1.0 percent.

The Sample

Sampling Frame

The mailing list of the Potato Growers Association provided the main source of potato growers in the 3-county universe consisting of Kern, San Bernardino, and

Riverside Counties of Southern California. Supplemental lists of growers in Riverside and San Bernardino Counties were obtained from agricultural commissioners in these counties. The combined list was checked by agricultural inspectors for their respective areas; omitted growers were added, and nongrowers were deleted if they had left farming altogether or had discontinued growing potatoes.

The final list contained 839 names; 713 in Kern, 68 in Riverside, and 58 in San Bernardino. The 839 were classified according to their estimated acreage in potatoes into four classes: Large (more than 140 acres), medium (40 to 140 acres), small (less than 40 acres), and acreage unknown. The size was either actual acreage or was estimated by experts such as county agents and Grower Association staff members. There were 135 large, 140 medium, 141 small, and 423 growers of unknown size. (See table 4).

Although there were 839 names on the list, it was not known how many would turn out to be growers, nor how difficult it would be, first, to investigate whether each person listed was a grower and, second, if he was, to obtain a record on his operation. The first sample consisted of the selection of 1 in 5 of listings in each of the 12 size and county classes. (If all persons listed were growers and all growers were interviewed a total of 168 reports would have been obtained.) Before this sample was completed it became apparent that much higher rates of sampling were needed for the sized classes and that a lower rate would be adequate for the groups of unknowns. Because of different sampling rates, different ratios of growers to listings, and different completion rates, the final or effective sampling rates varied somewhat among the 12 classes (table 4). The average effective sampling rate for the whole list was 18 percent (150 $\div$ 839) and for growers 41 percent (150 $\div$ 363).

Those who turned out to be nongrowers (81, or 57 percent of those contacted) were former growers or persons having an interest in the potato business, such as packers, salesmen, merchants, and teachers.

It was quite difficult to contact the persons listed, many of whom were some distance away, on the first call. Also, many of the addresses were difficult to find from the information available and many stops for additional information were required. Ultimately, 389 listings were selected for the survey, of which 241 or 62 percent were interviewed in person. Of those interviewed, 160 turned out to be growers; 150 provided completed reports.

Validity of the Sample

Assuming the basic lists were complete although they contained a number of extraneous elements, the survey provided a basis for estimating the actual number of growers as well as the total acreage in potatoes. Table 5 presents the basic data for estimating the number of growers and the standard errors of those estimates. It is estimated that the 3-county area contained a total of 363 $\pm$ 22 growers, with a potato acreage of 53,701 $\pm$ 7,000. According to the Federal-State Crop Reporting Service the acreage was 60,765. Hence, the estimate from the sample is about 11 percent low which could be ascribed to sampling variation which is 13 percent. It is also possible that the results are biased because the list did not include all growers and that the persons who were not contacted differed from those who were.

Table 4.--Potato growers in universe and in sample, by counties and by size of potato acreage

Estimated size of potato acreage, and county	Universe list 1/	Listed growers sampled				
		Total	Unable to contact	Not a grower	Refused	Interview completed
	(1)	(2)	(3)	(4)	(5)	(6)
Large:						
Kern	114	91	43	7	1	40
San Bernardino	5	3	2	--	--	1
Riverside	16	15	2	--	--	13
Total	135	109	47	7	1	54
Medium:						
Kern	110	91	38	12	8	33
San Bernardino	16	14	6	3	--	5
Riverside	14	12	7	--	--	5
Total	140	117	51	15	8	43
Small:						
Kern	98	72	31	5	1	35
San Bernardino	32	22	7	5	--	10
Riverside	11	11	3	3	--	5
Total	141	105	41	13	1	50
Unknown:						
Kern	391	47	3	43	--	1
San Bernardino	5	3	2	--	--	1
Riverside	27	8	4	3	--	1
Total	423	58	9	46	0	3
All sizes:						
Kern	713	301	115	67	10	109
San Bernardino	58	42	17	8	0	17
Riverside	68	46	16	6	0	24
Total	839	389	148	81	10	150

1/ Persons believed to have grown potatoes in 1960.

General Characteristics of the Growers

For many of the analyses, growers in the sample were classified according to acreage in potatoes as determined by interview rather than estimated acreage. This resulted in 42 large, 55 medium, and 53 small growers. Distribution according to actual size in the three counties is shown in table 1. For most purposes it is believed the unweighted results using this breakdown will be satisfactory.

All but three of the sample growers derive their principal income from agriculture. For 36 growers, production of potatoes was the principal agricultural activity. Since large potato growers tend to concentrate on production of one commercial crop, potatoes were the principal crop for half of the large growers. Small growers tend to diversify their production, and potatoes were the principal crop for only two small growers (table 6).

Table 5.--Potato acreage per grower, and estimates of number of growers and of total potato acreage, by acreage size groups, 3 California counties, 1960

Estimated size of potato acreage, and county	Estimated number of growers 1/	Estimated total acreage	Average acreage per grower
Large:			
Kern	97	26,365	271.5
San Bernardino	5	2,250	450.0
Riverside	16	8,424	526.5
Total	118	37,039	313.9
Medium:			
Kern	85	8,823	103.8
San Bernardino	10	420	42.0
Riverside	14	882	63.0
Total	109	10,125	92.9
Small:			
Kern	86	4,661	54.2
San Bernardino	21	412	19.6
Riverside	7	364	52.0
Total	114	5,437	47.7
Unknown:			
Kern	8	880	110.0
San Bernardino	5	50	10.0
Riverside	9	170	18.9
Total	22	1,100	50.0
All:			
Kern	276	40,729	147.6
San Bernardino	41	3,132	76.4
Riverside	46	9,840	213.9
Total	363	53,701	147.9
Estimated Standard error	±22	±7,000	±20.6

1/ Estimated from table 4; columns (1) x [(5) + (6)] ÷ [(2) - (3)] for each county within each size of acreage.

Form of Business Organization

In the majority of potato growing operations, the ownership was held by one person only (93 of the 150 sample growers). Partnership was the second largest group (49 growers), the remaining 8 growers were corporations. As one would expect, single proprietorships were dominant in small and medium size farms, whereas partnership was the prevailing form of business organization with large growers (table 7).

Table 6.--Growers classified by relative importance of farming and potato growing, by size of potato acreage

Characteristics of farm	Large	Medium	Small	All sizes
Is agriculture main source of income?				
Yes	41	53	53	147
No	1	2	0	3
Total	42	55	53	150
Are potatoes the principal crop?				
Yes	21	13	2	36
No	21	42	51	114
Total	42	55	53	150

Table 7.--Potato growers classified by kind of business organization and land ownership, by size of potato acreage

Characteristics of farm	Large	Medium	Small	All sizes
Business organization:				
Single proprietorship	13	37	43	93
Partnership	24	15	10	49
Corporation	5	3	0	8
Totals	42	55	53	150
Land ownership:				
Business owns all	4	11	27	42
Business leases all	7	9	4	20
Business owns and leases	31	35	22	88
Totals	42	55	53	150

Land Ownership

The majority of sample growers (88) farm a combination of leased and owned land. This is particularly true with respect to large and medium growers; a larger proportion of small growers owned their land. Distribution of the land ownership pattern by size groups is shown in table 7.

Marketing

About 40 of the 150 sample growers pack their potatoes (table 8). The remainder use the services of commercial packing sheds or belong to some group arrangement such as cooperatives. All these growers and some of those who pack their potatoes sell either through a broker or cooperative.

Only 21 of the 150 sample growers participated actively in selling their potatoes (table 8). Of these, 1 sold his potatoes in the field, 1 sold to a cash buyer, 1 retailed his to the public, and the remaining 18 growers sold through their own arrangements.

The 21 marketing growers sold to a number of different buyers during the harvesting season (table 9). Many have been in business for a long time and have built up stable trade connections. Of the six main types of buyers dealt with by the 21 marketing growers, no one type seems to be dominant even for a given size class. Most of these growers sold to several types of buyers during the season.

During the 1960 crop year, eight growers rolled potatoes unsold. In all these cases billing was "direct" rather than "circuitous" or "storage in transit."

Table 8.--Growers who pack and who sell their own potatoes, by size of potato acreage

Characteristic	Large	Medium	Small	All sizes
Pack own potatoes:				
Yes	30	9	1	40
No	12	46	52	110
Total	42	35	53	150
Sell own potatoes:				
Yes	16	4	1	21
No	26	51	52	129
Total	42	55	53	150

Table 9.--Marketing practices of the 21 growers who sold their own potatoes, by size of potato acreage 1/

Question and replies	Large	Medium	Small	All sizes
	Growers	Growers	Growers	Growers
"Do you usually sell your potatoes to the same or different buyers during the year?"				
Same	16	3	0	19
Different	2	0	0	2
Totals	18	3	0	21
"Ordinarily, to what types of buyers do you sell your potatoes?"				
Chain stores	11	2	0	13
Carlot distributors	11	1	0	12
Wholesale distributors	6	2	0	8
Wholesalers	10	0	0	10
Jobbers	6	1	0	7
Contractors	1	0	1	2
Others	4	3	0	7
No special types	1	0	0	1
Totals	50	9	1	60
"During the crop year July 1, 1959, to June 30, 1960, what ways did you sell your potatoes?"				
Daily f.o.b.	15	3	0	18
Daily delivered	5	2	0	7
Consignment	3	0	0	3
Price arrival	3	1	0	4
Field sale	1	0	1	2
Preseason f.o.b.	4	0	0	4
Totals	31	6	1	38
"During the crop year July 1, 1959, to June 30, 1960, did you 'roll any potatoes unsold'?"				
Yes	6	2	0	8
No	12	1	0	13
Totals	18	3	0	21

1/ Totals exceed number of growers where multiple answers are given.