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AN ANALYSIS OF FARMERS REASONS FOR FARMING:
AN APPLICATION OF DISCRIMINANT ANALYSIS

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In aiding farm family's decision making it is imperative to have insight into what broad factors affect that decision making process. Human behavior is goal oriented; therefore, we must understand the goals that the decision maker is attempting to satisfy. Because many goals are part of a multiple goal set, individuals (or organizations) seek to satisfy all goals at a minimum level as opposed to maximizing any particular goal. These goals may be motivated by economic, sociological, or psychological forces.

Much research by agricultural economists on firm level decision making has assumed that farm decision makers are profit maximizers. Objective functions or goals are assumed to be that of maximizing profit or possibly minimizing per unit production costs. These approaches are not new; they have been with us for some time. During the 1930's farm management research was characterized as aiding farm managers in maximizing the differences between the stream of inputs or costs and the stream of outputs or returns (22).

One of the initial efforts to study the decision making processes of farmers was conducted with midwestern farmers in the late 1950's (9). This study as discussed by Conklin and Hanson led to a better understanding of the interfacing of factors involved in the farm management decision-making process. Other more recent studies have also focused on farmers' goals and objectives in the decision making process (25, 3, 11). Goals are important in the decision making process and it is often argued that they vary substantially between farmers and farm types (13). In the study on risk attitudes, Dillon and Scandizzo found that subsistence farmers were, for the most part, risk averse in nature. In addition they concluded that farm owners were more risk averse than sharecroppers.

Utility analysis has been another approach used in evaluating farm decision tradeoffs. Lin, Dean, and Moore estimated producer utility functions under risk through personal interviews. Their conclusion was similar to that of Officer and Anderson who concluded that utility function models approximate actual behavior better than the profit maximization models; however, both models predicted more risky behavior than actually was observed.

Recently theoretical effects of risk and uncertainty on static competitive theory of the firm has received much attention (1, 21, 19, 10, 23). With these studies, the basic measure for comparison has been profit and/or production and uncertainties associated with them. These represent a needed improvement in static theory of the firm. However, they are limited to decision makers who are primarily influenced by profit, profit variability, or both. Individuals whose goals are influenced by factors other than profit and profit variability need decision models with further refinement.

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Most interest by rural sociologists in decision making has focused on the adoption of new technology and ideas. In their effort to understand the farmers' decision making process they, like economists, have placed most of their interest on understanding adoption in relationship to the income goal. If a group of farmers fails to adopt a new innovation which would increase their income, the group was considered irrational. Researchers have consistently overlooked the fact that farmers are also seeking to fulfill non-economic needs. The decision to adopt an innovation not only has implications for the fulfillment of the economic needs, but also for the fulfillment of non-economic needs. The limited research relative to the non-economic needs as motivators of decision making underscores the assumption that farm decisions are made solely on the basis of maximizing the economic benefits. Researchers have devoted much attention to understanding multiple goals and their relationship to functioning of complex organizations which are represented by industrial-type agricultural structures (27, 14); but little attention has focused on the multiple goals family farmers are attempting to fulfill.

Research most closely bridging the disciplines of economics, sociology, and psychology involves behavioral theory of the firm and goal analysis. Behavioral theory of the firm is based on the presumption that humans will seek a satisfactory decision set rather than an optimal set (26, 24, 4, 14). The decision is the best possible given the decision makers goals, information available, management capabilities and alternatives available. These satisfactory decision sets can be very similar to or quite different from the set that generates the economic optimum.

Several decades ago a psychologist in a book entitled Individual Motivation suggested that man seeks to fulfill five needs (16). They are physical, security, social, recognition, and self-actualization needs. In addition to suggesting that man seeks to fulfill these five needs, Maslow indicated a hierarchy of importance with the physical and security needs being the most important followed by social, recognition, and self actualization. He notes that each need must be fulfilled in ascending order before the next need level becomes potent. Maslow received criticism for this hierarchy and the prepotency concept. Because of the difficulty of determining when a need has been satisfied and when the next higher level need is potent, Maslow's concept has received little research attention. We prefer to omit the hierarchy aspect and just utilize the five needs which serve to motivate man. We should note, however, that Maslow's emphasis on the physical needs as most important lends support to the major emphasis placed on the economic criteria in the past. But fulfillment of the physical or economic need while most basic, is not the only motivating factor. In an increasingly affluent society, the role of the physical need declines relative to the other needs.

The Maslow scheme is most useful when contrasting the family farm structure to larger non-family structures. While the same needs are experienced by managers of large complex organizations represented by corporate agriculture and although complex organizations also have multiple needs, they are manifested differently than are the needs of a family farmer. Conceptually we can separate farmer's personal needs from needs of the farm firm. On the other hand, one can be quite sure that the personal needs or goals experienced by the farmer undoubtedly influence his farm decisions. In a complex organization the individual's goals interact and are instrumental in shaping the

operational goals of the collectivity, but this is quite different than a family farm in which only one person's or family's goals are instrumental. Also, it should be stressed that increased income, a basic concern, need not only fulfill the physical need but may fulfill security, social, recognition, and perhaps even self-actualization needs as well. But increased farm income is not the only means of fulfilling these needs and the farmer may select methods which place less emphasis on increasing farm income. Nevertheless, even if farmers do receive fulfillment of many needs through farming, the farm firm must survive economically if the farmer is to continue in farming.

Several years ago a graduate student, who was an administrative dietitian, asked why some food service workers continued to work when, in fact, they could receive as much (or more) family income if they stayed home and collected government payment for which they would qualify (21). The conclusion of the study was that most full-time food service workers place more emphasis on the non-economic benefits of the job. A second study of part-time food service workers using a different methodology (a methodology similar to that employed in the current farm study) concluded that both economic and non-economic benefits were important for part-time workers (6). In both studies it is important to note that the non-economic benefits did not replace the physical need. It is a case of multiple goals, one need in addition to another.

In November 1977, prior to the study of part-time food service workers, all of the buyers and sellers at Missouri's All Breed Performance Tested Bull Sale were interviewed. One of the major concerns was the benefits the producers received from raising beef cattle. The results indicated that the major benefit was being their own boss and making decisions. Few researchers would question the findings that goals of purebred beef breeders are not all income-related. The present study using cash grain farmers who are members of the Missouri Record Association would appear to represent a segment of farmers motivated by income. Thus the current study allows a replication of the original study using a different population and a slightly modified measurement technique.

Survey Procedure

The purpose of this study is to develop measures of benefits which farmers feel they receive from farming and to determine relationships between these benefits and selected managerial decisions and ratio comparisons.

To gain insight into factors influencing the farmers decision-making process, thirty cash grain farmers were surveyed via telephone. Cash grain farmers were defined as those receiving 50 percent or more of their farm income from cash grain sales. Farmers selected were Missouri Mail-In-Record (MIR) cooperators and cash grain farms for the years 1973-1977 inclusively. As participants in the MIR program for the five year period information such as asset structure, farm size, enterprise specialization, technology changes, land ownership pattern, and profitability measures are readily available and standardized. The interviews were conducted by the director of the MIR Program.

The farmers were asked what benefits they received from farming. A perceived benefit from farming does not necessarily indicate the fulfillment of a need, but it does suggest that the farm is contributing to something the farmer values. Unfortunately a low score does not allow us to know whether the respondent perceived the farm as contributing little to the benefit. This is not, however, a major problem for our present concern. Past perceived benefits become guides for expecting the achievement of future goals. We need measures of both the perceived importance of the goal and how much the farm might assist the respondent in achieving the goal.

This procedure does allow us to begin to tap the respondents' value system in terms of what is important to them. One advantage of measuring values as opposed to attitudes is that values tend to be much more enduring. Both attitudes and values, however, pose problems for decision making research since farmers' behavior results from their values and attitudes plus the impact of a host of other social, economic, and psychological factors all interacting at a given time. The question at any given time is determining which are the most important factors impinging on the individual when a decision is to be made. Thus, we realize that determining the farmers' perceived benefit as a proxy for goals the farmer hopes to achieve from farming and the importance of the goals to him will not explain all of his behavior. Nevertheless our proposition is that over a long time span such a measure will be highly related to some managerial decisions. Five years is not a long time frame, but it does assist in controlling for some of the other economic and social variables which would influence the managerial decision.

One measure of determining the benefits the farmers received from farming was developed by attempting to operationalize the needs suggested by Maslow. The farmers were asked to distribute 100 points among the five items listed in Table 1 based on the benefits they received from farming.

A second measure of multiple benefits a farmer receives from farming was developed from literature focusing on sociology of work and agrarian ideology (8, 7, 9). Research concerning benefits industrial workers and bureaucrats receive from their work (18) and the increased emphasis being placed on participative management, democratic management, job enlargement, and other related managerial practices suggests the relative importance of economic and non-income benefits in job performance and turnover.

Again the respondent was asked to assign points to items based on how important the benefit was to him. This time the respondent was asked to compare each of 10 items with the base item "provides opportunity to be my own boss." The base item was assigned 100 points. If the benefit was twice as important as the base item, the respondent was to give 200 points. If the benefit was only half as important, it received 50 points. Data in Table 2 lists the items and the mean points assigned to the item.

Discriminant analysis was utilized to test whether or not the farmers' responses can be used to classify them into select groups. If response values for selected groups were significantly different, then decision making models should be structured to account for the differences. A different modeling approach may be needed for each group of decision makers. If response values are not significantly different, then one modeling approach would be sufficient for all decision makers irrespective of the group. Discriminant analysis was completed using grouping classifications (farm firm comparisons) such as level

TABLE 1: ITEMS, VARIABLE NUMBER, \bar{X} VALUES AND RANK ORDER FOR FIVE ITEM MEASURE OF BENEFITS RECEIVED FROM FARMING

Item	Value	Rank Order
Be Own Boss X_{16}	37.2	1
Receive Recognition X_{17}	9.5	5
Develop Friendships X_{18}	10.9	4
Increase Security X_{19}	21.2	2-3
Increase Income X_{20}	21.2	2-3

TABLE 2: ITEMS, VARIABLE NUMBERS, \bar{X} VALUES AND RANK ORDER FOR THE ELEVEN ITEM MEASURE OF BENEFITS RECEIVED FROM FARMING

Item	All Ages Combined	
	Value	Rank Order
Be Own Boss (Base Issue)	100.0	2
Work Outdoors X_{21}	92.5	6
Can Express Myself X_{22}	86.5	7
Family Tradition X_{23}	51.2	9
Identified as Grain Producer X_{24}	43.2	11
Provides Good Income X_{25}	97.7	3
Doing Something Worthwhile X_{26}	118.7	1
Sence of Security X_{27}	93.5	5
Receive Recognition X_{28}	48.8	10
Meet Fellow Grain Producers X_{29}	59.0	8
Selling Through Free Market X_{30}	95.7	4

of fixed assets, average acres of cropland, percent growth in total assets, changes in crop technology, total acres owned, total acres rented, and total acres in operation.

Results

Survey Response Values

Data in Table 1 indicate that farmers did distribute points to each of the five benefits they received from farming. The benefit receiving most points was "opportunity to be my own boss and make decisions;" an average 37 points were assigned to this item. "Increased income" and "increased security" both received 21 points while both "develop friendships" and "received recognition as being successful" received about 10 points.

Response values for the ten item analysis of benefits farmers receive from farming is shown in Table 2. The only item receiving more than 100 points was "gives me a feeling that I'm doing something worthwhile" (119 points). The "opportunity to be my own boss" being the base item received 100 points. The item receiving the third highest level of points was "provides good income" with 98 points. The items "security", "enjoy selling through the free market", "gives me a chance to work outdoors" received over 90 points. "Allows me to express myself" received 86 points while "opportunity to meet fellow grain producers", "family tradition", "recognition received from others" and "liking to be identified as a grain producer" received only about half as many points as opportunity to be own boss.

Regardless of the measure used, the data suggest that the opportunity to make decisions, indicated by "opportunities to be my own boss", "enjoy selling through the free market system" and perhaps "allows me to express myself", receives a very high priority by farmers. The two measures were also consistent in suggesting that income and security received about equal weight and they were about twice as important as social and recognition items.

Survey Response Values Comparison by Age

Being their own boss was the major benefit received from farming by all age groups (Table 3). They hold a high regard for this independence in decision making. Security was the second most important benefit received from farming for the younger age group. However, its value in points was only half that assigned to being their own boss. For the middle age group security was not as important as income. For this group benefit from income was only slightly less than the benefit received from being their own boss. Surprisingly, income benefits were the lowest for the youngest age group. Based on these results profit maximization or cost minimization decision-making approaches would apply best to the middle age group. Security models would be more meaningful to the younger age group.

For all age groups, factors providing the least benefits were "developing friendships" and "receiving recognition." Comparisons between age groups show that the older age group placed slightly higher value on both items.

Similar results are shown by comparing the ten benefits received from farming against the base issue of being their own boss (Table 4). Again the two older groups placed income ahead of security while the younger group placed security ahead of income. An element in farming more important than being your

TABLE 3: COMPARISON OF BENEFITS RECEIVED FROM FARMING BY AGE OF OPERATOR

Item	Age		Age		Age	
	40 or Less ^a		40 to 50 ^a		Over 50 ^a	
	Value	Rank Order	Value	Rank Order	Value	Rank Order
Be Own Boss X ₁₆	42.7	1	34.3	1	32.2	1
Increase Security X ₁₉	22.7	2	17.1	3	22.0	3
Increase Income X ₂₀	15.1	3	30.0	2	23.0	2
Develop Friendships X ₁₈	9.3	5	11.9	4	12.3	4
Receive Recognition X ₁₂	9.8	4	7.4	5	10.5	5

^aThere were ten respondents in each category.

TABLE 4: A COMPARISON OF BENEFITS RECEIVED FROM FARMING BY AGE OF OPERATOR

Item	Age 40 or Less ^a		Age 40 to 50 ^a		Age Over 50 ^a	
	Value	Rank Order	Value	Rank Order	Value	Rank Order
Doing Something Worthwhile X ₂₆	121.9	1	120.0	1	113.5	1
Be Own Boss (Base Issue)	100.0	4	100.0	2	100.0	2
Provides Good Income X ₂₅	97.7	5	94.3	3	99.5	4
Selling Through a Free Market X ₃₀	108.8	2	90.0	4	82.5	7
Sense of Security X ₂₇	100.4	3	86.4	5	89.5	5
Work Outdoors X ₂₁	87.7	7	82.1	6-7	105.0	3
Can Express Myself X ₂₂	91.1	6	82.1	6-7	83.5	6
Meet Fellow Grain Producers X ₂₉	62.7	8	50.0	8	60.5	9
Family Tradition X ₂₃	52.3	9	32.1	9	63.0	8
Receive Recognition X ₂₈	51.9	10	31.4	10	57.0	10
Identified as Grain Producer X ₂₄	48.8	11	21.4	11	51.0	11

^aThere were ten respondents in each category.

own boss is that of feeling you are doing something worthwhile. This was the most important reason for farming given by all age groups. A reason quite important for the older age group was being able to work outdoors. Selling through the free market was an important reason for the younger age group. Family tradition was rated low by all age groups. Comparing between age groups reveals that family tradition, receiving recognition, and being identified as a grain producer were less important for the middle age group than for the other two age groups.

Respondents were much more gratified that they were doing something they felt was worthwhile than the fact they were grain producers. It doesn't appear that the particular enterprise is an important reason for farming. It appears as though the respondents would switch enterprises depending upon demand and supply conditions. They do not feel compelled to be grain producers.

Economic factors (provides good income, selling through the free market, and a sense of security) were all important benefits received from farming. Farmers seem to hold in high esteem the relatively free market for their products. Younger farmers felt especially strong about this. This quite possibly goes in hand with their strong preference for being their own boss.

Survey Response Value Comparison by Technological Change

Farmers that changed technology assigned a much higher value to being their own boss while simultaneously assigning a lower value to increase in security as compared to those that didn't change technology (Table 5). They have evidently assigned an increase in risk to the new technology. They possibly visualize adjustment problems, cash flow problems, etc. that lead to this increase in risk.

Producers that changed technology placed high values on doing something worthwhile, providing good income, and expressing themselves (Table 7). They evidently associated the different technology not only with income but with being able to express themselves. Those that didn't change technology had a substantially lower value on expressing themselves. They placed higher values on security and selling through the free market.

Producers who viewed technology changes as reducing risk were more security conscious than those that viewed technological changes as an income increasing phenomenon (Table 8). Those that changed technology to increase income placed a higher value on selling through the free market. Those wanting to reduce risk placed a greater value on working outdoors.

Discriminant Analysis

Discriminant analysis is used to test if the farmer responses are significantly different enough to be utilized in categorizing farmers. Categories in Tables 9 and 10 are listed from the smallest to the largest for each variable. For example when categorizing farms by "fixed assets in 1977" category "C₁", represents those nine farms with the lowest level of fixed assets. Category "C₃", represents those ten farms with the highest level of fixed assets in 1977. Values in the "% of category correctly specified" represent the percentages of farms correctly categorized into the preselected groups. For example, using fixed assets in 1977, 41.4 percent of all farms were correctly categorized. Category 1 had 33.3 percent, category 2 had 50 percent and category 3 had 40

TABLE 5: COMPARISON OF BENEFITS RECEIVED FROM FARMING BY CHANGE IN TECHNOLOGICAL PRACTICES

Item	Tillage Practices			
	Change ^a		No Change ^b	
	Value	Rank Order	Value	Rank Order
Be Own Boss X ₁₆	41.3	1	29.0	1
Increase Security X ₁₉	19.0	3	25.5	2
Increase Income X ₂₀	21.2	2	21.2	3
Develop Friendships X ₁₈	10.2	4	12.3	4
Receive Recognition X ₁₇	8.5	5	11.5	5

^aN=20 ^bN=10

TABLE 6: COMPARISON OF BENEFITS RECEIVED FROM FARMING BY REASON WHY CHANGED TILLAGE PRACTICES

Item	Why Changed Tillage Practices			
	Reduced Risk ^a		Increase Income ^a	
	Value	Rank Order	Value	Rank Order
Be Own Boss X ₁₆	42.0	1	32.9	1
Increase Security X ₁₉	19.0	3	24.1	2
Increase Income X ₂₀	23.4	2	22.7	3
Develop Friendships X ₁₈	9.3	4	11.5	4
Receive Recognition X ₁₇	5.8	5	8.8	5

^aThere are ten respondents in each category

TABLE 7: A COMPARISON OF BENEFITS RECEIVED FROM FARMING BY CHANGE IN TILLAGE PRACTICES

Item	Tillage Practices			
	Changed ^a		No Change ^b	
	Value	Rank	Value	Rank
Doing Something Worthwhile (X ₂₆)	121.8	1	112.5	1
Provides Good Income (X ₂₅)	96.8	2	99.5	4
Selling Through Free Market (X ₃₀)	88.3	5-6	110.5	2
Sense of Security (X ₂₇)	88.3	5-6	104.0	3
Work Outdoors (X ₂₁)	89.0	4	98.5	5
Can Express Myself (X ₂₂)	92.3	3	75.0	6
Meet Fellow Grain Producers (X ₂₉)	54.8	7	67.5	8
Family Tradition (X ₂₃)	46.3	8	61.0	9
Receive Recognition (X ₂₃)	46.0	9	54.5	10
Identified as Grain Producer (X ₂₄)	29.3	10	71.0	7

^aN = 20^bN = 10

TABLE 8: A COMPARISON OF BENEFITS RECEIVED FROM FARMING BY CHANGED TILLAGE PRACTICES

Item	Why Changed Tillage Practice			
	Reduce Risk ^a		Increase Income ^a	
	Value	Rank	Value	Rank
Doing Something Worthwhile (X ₂₆)	120.0	1	121.8	1
Provides Good Income (X ₂₅)	100.5	3	96.8	2
Selling Through Free Market (X ₃₀)	81.0	6	94.5	3
Sense of Security (X ₂₇)	103.0	2	80.5	5
Work Outdoors (X ₂₁)	99.0	4	79.5	6
Can Express Myself (X ₂₂)	84.0	5	86.4	4
Meet Fellow Grain Producers (X ₂₉)	50.5	8	52.7	7
Family Tradition (X ₂₃)	47.5	9	43.1	8
Receive Recognition (X ₂₈)	51.0	7	40.5	9
Identified As Grain Producer (X ₂₄)	34.5	10	34.5	10

^a10 respondents in each category

percent correctly categorized. Discriminant variables are listed in a step-wise order with the most important discriminating variable listed first. Discriminant variables selected would be those best classifying farmers into particular groups. Factors having "no discriminating variables" basically indicate that the response values for the benefits received from farming were not sufficiently different to enable categorization of respondents. For example, farmers' responses in category groups for "mean percent return to capital and management" were the same for the three categories. Farmers that had a high mean percent return to capital and management had the same benefit from farming values as those that had a low percent return to capital and management (Table 9).

When using the five benefit item analysis shown in Table 9 the variable most prevalent in discriminating between categories for selected factors was "receiving recognition of being successful" (X_{17}). It was important for most land factor categories and some asset categories. It was a discriminating variable for average acres of cropland, percent growth in total assets, percent fixed assets to total assets 1977, percent total acres rented, and total acres in operation. Receiving recognition was given the lowest value of the five benefits received from farming. However, the values presented here were significantly different so as to discriminate between groups.

Increasing income (X_{20}) was the next most important discriminating variable. It was especially important whenever categories were formed through asset calculations such as fixed assets 1977, percent growth in total assets, and percent fixed assets to total assets. It along with being your own boss was also a discriminating variable for changes in crop technology. Increase in security (X_{19}) was never a discriminating variable. Basically this leads to the conclusion that increase in security was equally strong for all categories of the factors selected. Increase in security is important but one increase in security model may serve the needs of most farmers.

In a similar view be your own boss (X_{16}) was a discriminating variable for only one factor--farmers who did and did not change crop technology. Developing friendships (X_{18}) only entered as a discriminating variable when comparing why farmers changed technology. For the other factors those benefits were equally strong and important between the categories. Thus model differentiation between these variables would not be necessary as all respondents placed similar values on those benefits.

As expected the ten benefits from farming provided a better classification through discriminant analysis. For some factors the accuracy of categorization increased rather dramatically. The variables allow me to express myself (X_{22}) and gives me a sense of security (X_{27}) were important discriminating variables. Previously it was suggested that increase in security was not a discriminating variable when comparing the five benefits from farming. Here we suggest that a sense of security is quite important as a discriminating variable. It appears that cash gain farmers have differing values on sense of security but have little variation on their feeling towards increased security. There may be some threshold security level that farmers perceive. It would be interesting to compare this sense of security response with relative debt load. However, debt load is not presently available. Decision making models appear to need threshold security levels that may vary between producers.

Other variables that entered the ten variable discriminant analysis quite often were: like to be identified as a grain producer (X_{24}), provides good income (X_{25}), and the opportunity to meet fellow grain producers (X_{29}). Income was also a discriminating variable.

Summary and Conclusions

Farmers basically have a strong feeling toward being their own boss and doing something worthwhile. They have a high regard for that feeling of accomplishment. Next in line of importance are economic considerations of security, income, and the free market.

To be effective government programs must keep decision-making power vested in farmers' hands. If not, they will most likely decide against the program. However, this conclusion is not that clear-cut. For example, security and free markets are also important, especially for younger producers. Government programs may increase security while simultaneously divesting some decision-making freedom. For example, acres of a crop may be limited.

Individuals working closely with farmers must realize the benefits farmers receive from being their own boss, and doing something worthwhile. Consultants and extension people alike can aid in the decision process as far as data gathering, discussing ideas, etc., but the farmer wants the feeling that he is his own boss. To be successful consultants will need to be skillful in advising the farmer while not extracting that power of making decisions.

Discriminant analysis shows that all cash grain farmers give similar values to being their own boss, increasing security, and developing friendships. These variables are important in the decision making process, but it points out that one modeling procedure which encompasses those factors sufficiently replicates the decision making process.

Comparing results of the five variable (benefit) and ten variable (benefit) response values shows that "sense of security" is a strong discriminating variable. Thus, it appears that threshold security levels vary between cash grain farmers. Above those levels, farmers place similar values on increasing security. Farm decision-making models should have differing threshold security levels above which a similar model would suffice. Income is a strong variable for both the five and ten variable (benefit) responses. Thus, one income model would not suffice for all cash grain respondents.

TABLE 9: DISCRIMINANT ANALYSIS FOR BENEFITS RECEIVED FROM FARMING

# In Category			Factor	Discriminant Variables	% of Category Correctly Specified			
C ₁	C ₂	C ₃			C ₁	C ₂	C ₃	Total
9	10	10	Fixed Assets 1977	X ₂₀	33.3	50	40	41.40
9	10	10	Average Acres Crop-land	X ₁₇	66.7	30	40	40.20
9	10	10	% Growth in Total Assets	X ₁₇ , X ₂₀	77.8	50	22.2	62.07
9	10	10	Mean % Return to Capital and Management	No Discriminating Variables				
9	12	8	% Fixed Assets to Total Assets 1977	X ₂₀ , X ₁₇	66.7	41.7	50	51.70
9	10	10	Total Acres Owned	No Discriminating Variables				
9	12	8	% Total Acreed Rented	X ₁₇	22	66.7	37.5	44.80
9	10	10	Total Acres in Operation	X ₁₇	22	60	50	64.80
20 ^a	10	--	Crop Technology	X ₁₆ , X ₂₀	50	80	--	60.00
10 ^b	11	--	Why Changed Technology	X ₁₈	90	27.3	--	57.00

^aCategory C₁ represents those that changed technology and C₂ those that did not change.

^bCategory C₁ represents those that changed technology to reduce risk and C₂ those that did so to increase income.

TABLE 10: DISCRIMINANT ANALYSIS FOR BENEFITS RECEIVED FROM FARMING

# In Category			Factors	Discriminant Variables	Percent of Group Correctly Specified			
C ₁	C ₂	C ₃			C ₁	C ₂	C ₃	Total
9	10	10	Fixed Assets 1977	X ₂₉ ,X ₂₇ ,X ₂₈ ,X ₃₀ ,X ₂₄ ,X ₂₂ ,X ₂₅	88.9	80	70	79.30
9	10	10	Average Acres Cropland	No Discriminating Variables	0	0	0	0
9	10	10	% Growth In Total Assets	X ₂₆ ,X ₂₇ ,X ₂₅ ,X ₂₂ ,X ₂₉ ,X ₂₄ ,X ₂₁	88.9	70	60	72.40
10	11	8	Mean % Return to Capital and Management	X ₂₅ ,X ₂₂ ,X ₂₇	50.0	72.7	75	65.50
9	12	8	% Fixed Assets to Total Assets 1977	X ₂₉ ,X ₂₇ ,X ₂₄ ,X ₃₀ ,X ₂₈ ,X ₂₂	88.9	75	50	72.40
9	10	10	Total Acres Owned	X ₂₉ ,X ₂₄ ,X ₂₇ ,X ₂₈ ,X ₃₀ ,X ₂₅ ,X ₂₂ ,X ₂₃	66.7	58.3	75	65.50
9	12	8	% Total Acres Rented	X ₂₄ ,X ₂₇ ,X ₂₆ ,X ₂₂ ,X ₂₅	66.7	90	60	72.40
9	12	8	Total Acres in Operation	X ₂₂ ,X ₂₇ ,X ₂₈ ,X ₂₆	44.4	80	70	65.50
20 ^a	10	-	Crop Technology	X ₂₄ ,X ₂₃	80.0	100	--	86.60
10 ^b	11	-	Why Changed Technology	X ₃₀ ,X ₂₇	60.0	81.8	--	71.40

^aCategory C₁ represents those that changed technology and C₂ those that didn't change.

^bCategory C₁ represents those that changed to reduce risk and C₂ those that did so to increase income.

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