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STATISTICAL DESCRIPTION AND ANALYSIS OF DATA BY ECONOMIC LAND USE CLASS AREAS

by

Arthur W. Peterson
State College of Washington

A previous paper has listed the uses of economic land use class maps. One important long-time use is as a research tool. This paper will give some of the results arrived at by farm management research workers and others when using land class maps for this purpose.

Review of Mapping Procedure

As previously indicated by Mr. Parrish, visible differences in accumulated capital per farm were observed and recorded. The rating based on this measure was the most important factor used to establish the land class level of various combinations of physical resources. Some people have questioned whether capital accumulation can be measured consistently and objectively per farm. We have tried various ways of checking our measurements, among them traveling certain areas with different field parties to check the consistency of the farm ratings by two parties. Time does not permit a full coverage of this important question but those of us who have used this method are convinced that farm ratings based largely on visible accumulated capital can be objectively made.

The measure of visible accumulated capital is most useful in areas where farms are family-sized and the family lives on the farm, and after two or three generations have left the marks of their experience on the area. However, differences in this factor can be observed very soon after an agricultural area starts to develop. It does not take three or four generations for a Land Class 1 or 2 area to provide a good level of living and show signs of large amounts of accumulated capital. For example, differences in wheat yields and farm incomes were measured by observing accumulated capital in sections of Saskatchewan, Canada, 25 years after they had first been broken by the plow.1/

Mr. Parrish has previously stated that after we have a measure of income established for a certain combination of physical resources, we outline those areas having similar combinations of resources as a certain land class without regard to the individual cases that rate either above or below the typical farms in the area. We move from a result, income, to a cause, combination of physical features, but base our area delineations on the cause, changes in those physical features. Past income experience of farmers through capital accumulation indicates the important physical factors influencing economic productivity (income per person).

Capital per Farm and Income per Person

The common denominator we are seeking to use as a measure for levels of land class areas, however, is not capital per farm but income per farm and per person. Total capital per farm is closely related to income per farm and per person. This

1/ Physical and Economic Factors Related to Land Use Classification in Southwest Central Saskatchewan, Department of Farm Management, University of Saskatchewan and Agricultural Economics Branch, Dominion Department of Agriculture, Publication 609, Technical Bulletin No. 15, March 1938, 52 pp.

is indicated by the high correlation observed from Census data between total capital per farm by states and income per person of the rural population. For each of the three Census periods, 1920, 1930, and 1940, the correlation coefficient was +.90 or higher. Census data for Washington by counties shows an equally high coefficient of correlation between capital per farm and income per person. Data from other states by counties show similar relationships.

A recent publication by Agricultural Experiment Stations in the midwest summarized the average investment per farm and net cash income per farm from 11 midwestern states for 26 studies in several types of farming areas.2/ The correlation coefficient between investment and net cash income based on these data was +.75.

Income per Farm and Land Class

In addition to the previous evidence cited showing a close relationship between capital per farm and income per farm and per person, many studies have been made by farm management workers to test the relationship between income per farm and land class. In these studies the first step was the preparation of economic land use class maps, and the second the procurement and analysis of farm survey records taken in each land class area.

The Division of Agricultural Economics at the State College of Washington in cooperation with the Research Division of the Farm Credit Administration at Spokane has taken more than 1,500 farm management records sampled by land class. Tyler at Cornell summarized and reported on about 6,000 farm management records by land class.3/ Other workers have summarized a smaller number of records by land class. Although the magnitude of the difference in income is influenced by price level and perhaps other conditions, the studies all show a similar direction in trend of income. The highest income per farm is obtained in those areas rated as having the highest economic productivity, and the lowest incomes are found in the least productive areas.

In 1944 immediately following the preparation of economic land use class maps, we summarized by land class some farm management records taken in 1939 in King and Snohomish counties, Washington. This material has been published in mimeographed form and should be available soon as a printed bulletin.4/ This study indicated that incomes per farm and per person decreased from Land Class 2 to Land Class 5. Family farm earnings varied from an average of $1,730 on Land Class 2 to $343 on Land Class 5.

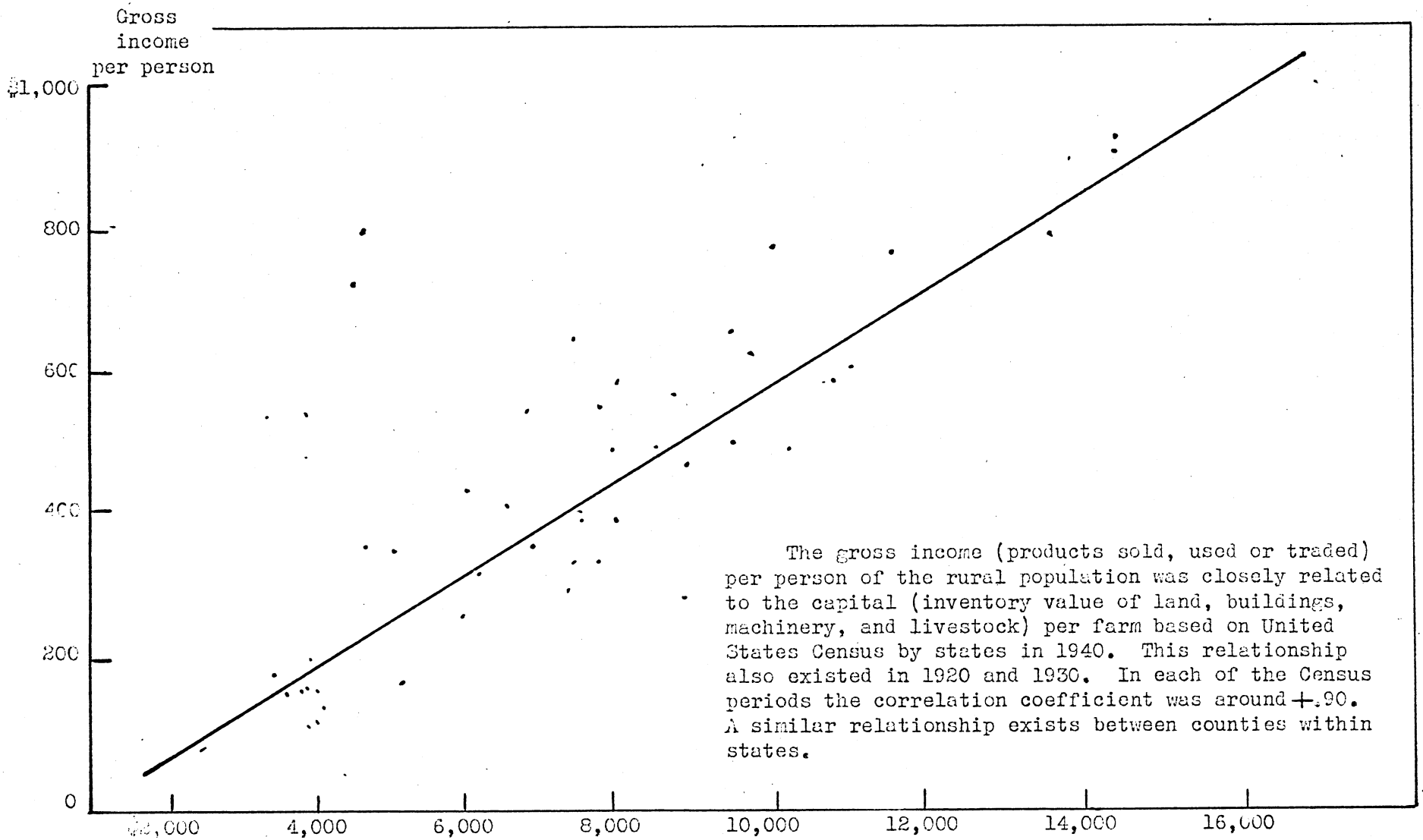
The average family farm earnings based on six widely separated studies, including the King and Snohomish County study, in 1938-39 varied from $3,750 per farm on Land Class 1 (or its equivalent if numbering systems were different) to

2/ Capital Needed to Farm in the Midwest, North Central Regional Publication No. 5, Agricultural Experiment Station, University of Minnesota, January 1946, p. 9.

3/ Tyler, H. S., Factors Affecting Labor Incomes on New York Farms, Cornell University Agricultural Experiment Station Bulletin 401, 1939.

4/ Peterson, Arthur W., Buchanan, M. T., and Parrish, B. D., Economic Land Classification in King and Snohomish Counties, Washington, and Its Influence on Full-Time Farm Returns, Division of Farm Management and Agricultural Economics, Agricultural Experiment Station, State College of Washington, A. E. 5, Mimeographed, December 1944, 29 pp. and tables.

Figure 1. The Relationship Between Gross Income Per Person and Total Capital Per Farm, 1940
Source: U. S. Census. Prepared by Arthur W. Peterson, Associate Economist, Washington Agricultural Experiment Station, State College of Washington



$300 per farm on Land Class 5 (table 1). Labor earnings varied from an average of $1,500 to about $100.

As previously stated the Division of Agricultural Economics at the State College of Washington took about 1,500 survey records in 1945, sampled by land class, covering the farm business year 1944. Data from these 1,500 farm survey records have been only partially summarized. For this reason we have selected at random a preliminary sample of 50 full-time farm records from each land class group so that some of the data could be presented at this meeting. Based on this study family earnings per farm varied from an average of about $12,500 on Land Class 1 to an average of $2,000 on Land Class 5. Operators' labor earnings varied from $6,800 to $650 for the five land classes. Differences in average operators' labor earnings between each of the land classes were very significant when tested for statistical significance.

Other Farm Management Efficiency Factors and Land Class

Numerous economic and social factors show a relationship to economic land use classes (table 1). All the usual farm management factors such as size, rates of production, labor efficiency, and the like that have been used in the past to explain differences in income per person (and sometimes assumed to cause these differences) show strong relationship to land class.

For example, measures of size of farm business based on the 1944 Farm Management Study in Western Washington show a very high relationship to land class. The man equivalent on Land Class 1 averaged 2.5 compared to 1.2 on Land Class 5. Productive man work units varied from an average of 600 on Land Class 1 to 225 on Land Class 5. Differences in average total productive man work units between each of the land classes were very significant when tested for statistical significance.

Many studies have shown a high degree of interrelationship between land class and farm management efficiency factors. Personally I would hesitate to make a farm management study without being able to stratify the data by land class because of the high degree of interrelationship between farm management factors and land class.

Extension workers who base their recommendations on average relationships for a whole type of farming area may be seriously misleading the farmers on both the most and the least productive land classes. Farm management workers who build budgets on average relationships for a type of farming area are equally subject to error.

Personal and social adjustment factors were shown by recent studies in Spokane and Skagit counties, Washington, to be related to land class. These studies were made by Dr. Hazel M. Cushing.5/ She tested the personal and social adjustment of approximately 3,000 children, grade 4 through grade 8, in relation to the land class where they lived. In the June 1946 issue of Timely Economic Information for Washington Farmers, Dr. Cushing reported that, on the whole, children living on Land Classes 1 and 2 were better adjusted both personally and socially than those on Land Classes 4 and 5. The adjustment scores of those on Land

5/ Dr. Cushing was a member of the staff at the State College of Washington as a Family Life Specialist from January 1, 1945 to July 1, 1946.

Table 1. Description of Economic Land Use Classes Based on Statistical Data from Farm Management Studies, Various Sections in the United States, 1907 - 1944

Item	Land Class 1	2	3	4	5
Measures of Income					
Family earnings, Washington, 1944	$12,500	$ 7,000	$ 4,250	$ 3,000	$ 2,000
Operator's labor earnings, Washington, 1944	6,800	3,600	2,250	1,100	650
Family earnings, six studies, northern United States, 1938-39	3,750	2,125	1,250	625	300
Operator's labor earnings, United States, 1938-1939	1,500	700	550	350	100
Index of level of living, Land Class 3 = 100	200	150	100	75	50
Returns per worker	Decreases from 1 to 5, but retains constant relationship to total capital invested per farm.				
Measures of Size					
Total investment, Washington, 1944	$70,000	$40,000	$22,500	$12,500	$ 9,000
Total investment, six studies, northern United States, 1938-39	40,000	22,500	12,500	8,750	5,750
Total acres, same type of farming area	Approximately the same on all land classes				
Crop acres	Decreases rapidly from Land Class 1 to 5				
Total productive man work units (several studies)	600	450	350	275	225
Man equivalent	2.5	2.4	1.8	1.4	1.2
Measures of Rates of Production					
Index of rates of crop production, Land Class 3 = 100 (estimate based on several studies)	140	125	100	85	70
Butterfat production per cow, western Washington, 1944 (pounds)	325	310	290	260	240
Pounds of milk sold per cow, New York, 1907-36	6,262	5,723	5,329	4,740	4,511
Measures of Labor and Capital Efficiency					
Productive man work units per man	300	250	200	185	170
Receipts per $100 invested	Decreases from Land Class 1 to 5				
Measures of Intensity of Use					
Intensity of use (expense per acre) same type of farming area	Decreases from Land Class 1 to 5				
Machinery investment per acre	Decreases from Land Class 1 to 5				
Building investment per acre	Decreases from Land Class 1 to 5				
Man labor per acre	Decreases from Land Class 1 to 5				

Table 1 continued on next page.

Table 1 (continued). Description of Economic Land Use Classes Based on Statistical Data from Farm Management Studies, Various Sections in the United States, 1907 - 1944

Item	Land Class				
	1	2	3	4	5
Measures of Social and Family Relationships					
Personal and social adjustment of children, Nebraska and Washington studies	Relative ratings decline from Land Class 1 to 5				
Intelligent quotient of children, grades 4 through 8, Skagit and Spokane counties, Washington	Approximately the same on all land classes				
Social participation of family members, several studies	Decreases from Land Class 1 to 5				
Percent of farmers who favor socialized medicine	Increases from Land Class 1 to 5				
Relief and old age payments, Washington	Increases from Land Class 1 to 5				
Formal education of operator	Decreases from Land Class 1 to 5				
Grade level at which children terminate schooling, Delaware studies	Decreases from Land Class 1 to 5.				
Percent of sons who return to farm	Decreases from Land Class 1 to 5				
Tenure status	Increasing percentage of land owned from Land Class 1 to 5 except following very severe depression				
Life insurance expenditure per family	$113	$ 76	$ 23	$ 6	$ 6
Other Factors					
Part-time farming	Increases greatly from Land Class 1 to 5, if distance to off-farm work constant				
Percent of farms acquired with approximately same percent loaned, based on market values, several studies	Less than 5	5-9	10-15	20-30	35 and more
Percent of acreage, tax delinquent, 2 years or more, western Washington, 1936	4	8	20	25	35
Road costs per vehicle mile of travel	Increases from Land Class 1 to 5				
Farm fire losses per $1,000 insurance, New York	$2	$3	$4	$5	$6
Electric consumption per farm, Washington, 1944	$130	$ 95	$ 60	$ 40	$ 25

Class 3 lay between these two groups. Children on Land Class 1 appeared to suffer less from shyness and nervousness than did those of other classes, but they scored lowest in self-reliance. In social adjustment Land Class 1 children scored higher in knowledge of social standards than did others, and were definitely superior in freedom of anti-social tendencies such as bullying, quarreling, and destructiveness. Few marked differences appeared in school and community relationships, but Land Class 1 children excelled in the matter of family relationships,. The study gives some basis for believing that economic factors in family living which affect the security of the parents influence adjustment of children.

Intelligence quotient tests were supervised also by Dr. Cushing for these children and the results of these tests summarized by land class. "It is evident," she reported, "that differences in intelligence among children from various land classes are comparatively small. In most cases, these differences probably are due to chance factors. The difference between the groupings are not statistically significant."6/ This latter conclusion is important because some people have thought that differences measured by land class were associated with differences in the intelligence and cultural patterns of the people rather than with the land. At least in this study differences in income and other factors by land classes were not related to measurable variations in the intelligence of the c children.

Educational achievement as measured by formal education of the operator or the grade level at which children terminate schooling, however, has been found to be related to land class with the highest level of education associated with the areas of highest economic productivity (table 1).

Tenancy as found in the northern part of the United States is highest on Land Class 1 and lowest on Land Class 5. A typical Land Class 1 farm produces enough to support both a landlord and tenant on a high level of living and usually leaves a surplus for the accumulation of additional capital. The full-time operator of a Land Class 5 farm, however, has to furnish almost all the labor from his own family and the entire investment if he is to have even a low level of living and maintain the farm capital. This is one reason why part-time farming is so prevalent on Land Classes 4 and 5. The alternative opportunities for employment are usually more profitable off of the farm than on the farm in these Land Classes.

The importance of land class differences to local government units and private and public business is indicated by such factors as the increased tax delinquency from Land Class 1 to 5, the decreased use of electricity from Land Class 1 to 5, the increased road costs per vehicle mile from Land Class 1 to 5, and the increased relief costs from 1 to 5 (table 1). The high social costs of settling and keeping Land Class 5 inhabited should be apparent to everyone who has studied the data available.

Size of Business and Its Relation to Income Within Each Land Class

It has been shown previously that size of business and many other farm management factors are related to land class. This has been cited as evidence of the

6/ Cushing, Hazel M., Intelligence of Rural Children by Economic Land Use Class, Timely Economic Information for Washington Farmers, February 1946, pp. 24-26.

need to stratify farm management data by land class before studying the effect of such a factor as size.

At the Western Farm Economics meetings last year, Dr. Buchanan reported on some of the results we obtained by first grouping some western Washington records taken in 1939 by land class and then studying the effect of changes in size of business on labor earnings.7/ The data he presented showed that size of business has a positive correlation with income on Land Classes 2 and 3, practically a zero correlation with income on Land Class 4 and a negative relationship with income on Land Class 5.

In 1940 the Department of Rural Economics at the University of Nebraska and the Research Division of the Farm Credit Administration at Omaha cooperated on a farm management and economic land use class study. After making a map of Lancaster County, Nebraska, we took approximately 100 records on each land class represented. In summarizing the study we first stratified the records by land class. On Land Class 2 as the man equivalent increased from 1.0 to an average of 2.3 all measures of income increased (table 2). On Land Classes 3 and 4 all means of income increased from the group of smallest farms with 1.0 man equivalent to the middle sized group with 1.1 to 1.4 man equivalents. As man equivalent increased above 1.5, income decreased on both Land Classes 3 and 4 with the greatest decrease on Land Class 4.

Tyler had previously found a similar relationship between size of business (as measured by man equivalent) and income when he grouped over 6,000 farm records by land class and subsorted by size (table 3). Size showed a positive relationship to income on Land Class 1 up to three man equivalents or more. On Land Class 2 the increase was in the same direction but with less slope. On Land Class 3 size showed little relationship with income up to about 2.0 man equivalents and then a decrease in labor income with further increases in size. On Land Classes 4 and 5 the larger the farm the lower the labor income.

Tyler also found that the effect of size of income by land class was influenced by the General Price Level. During the low price level period of the early 30's only farms on Land Class 1 showed a positive relationship to size.

We have made a preliminary study of the effect of size as measured by man equivalent on labor earnings by land classes using the western Washington farm records gathered in 1945. These data show that size had a positive correlation with a steep slope as related to income on Land Class 1 (figure 2). The positive relationship held in Land Classes 2 and 3 with the slope of the line decreasing from Land Class 2 to 3. Increasing man equivalents showed practically no relationship to income on Land Class 4 and a negative one on Land Class 5.

The foregoing relationships between size and income is evidence of the need to group farm management data by land class. This relationship has far-reaching implications in the field of farm management research. For example, it leads one to question the assumption made by many land use planners that the main problem on land of low economic productivity is one of inadequate

7/ Buchanan, M. T., Studies in Land Use Classification and in Labor Efficiency, Reprinted from Western Farm Economics Association, 1945.

Table 2. Relation of Various Factors to Man Equivalent Per Farm by Economic Land Use Class Areas, Lancaster County, Nebraska, 1939.*

Man Equivalent		Number of	Total Capital	Total Acres	Income per Farm		
Range	Average	Records	per Farm	per Farm	Farm	Labor	Percent Earned
			Land Class 2				
1.0 and under	1.0	24	$11,488	170	$ 649	$319	1.7
1.1 to 1.4	1.2	36	16,211	209	900	252	2.6
1.5 and over	2.3	33	29,403	344	1,550	374	3.6
			Land Class 3				
1.0 and under	1.0	48	10,173	158	494	87	0.1
1.1 to 1.4	1.2	40	11,172	188	685	238	1.8
1.5 and over	1.9	32	14,159	240	631	65	1.1
			Land Class 4				
1.0 and under	1.0	44	7,643	168	368	63	-1.4
1.1 to 1.4	1.2	31	11,376	218	614	159	1.2
1.5 and over	1.9	11	13,477	246	-86	-625	-4.2

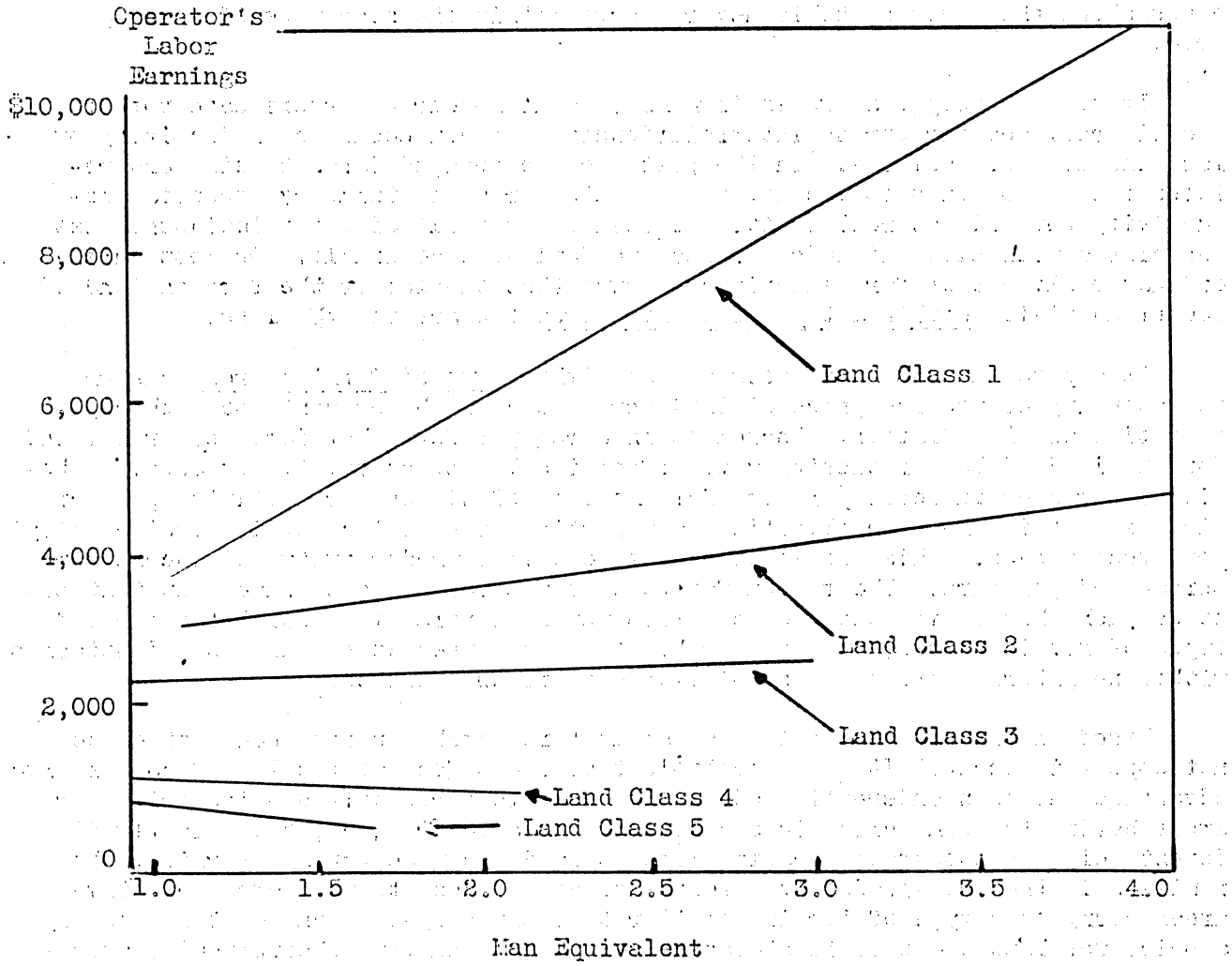
*Land Class IV as numbered on the Lancaster County Land Class Map was considered as equivalent to Land Class 2 in Washington, Land Class III as equivalent to 3, and Land Class II as equivalent to 4.

Table 3. Relation of Man Equivalent to Labor Income by Land Class, 6,119 Farms, New York State, 1907 to 1936.*

Man Equivalent	Labor Income Land Class			
	1	2	3	4 and 5
Less than 1.5	$327	$221	$203	$176
1.5 to 1.9	562	210	167	78
2.0 to 2.4	577	122	62	- 9
2.5 or more	970	344	136	- 85

*Adapted from thesis by H. S. Tyler, Cornell University, Ithaca, New York, p. 204. Land Classes V and VI as numbered on New York Land Class Maps have been considered equivalent to Land Class 1 in Washington. Land Class IV the equivalent of 2, Land Class III the equivalent of 3, Land Classes I and II the equivalent of 4 and 5.

Figure 2. Relationship Between Man Equivalent Per Farm and Operator's Labor Earnings; 250 Full-Time Farms, Western Washington, 1944



Operator's labor earnings show a different relationship with size of business as measured by man equivalent on each economic land use class. The slope of the line of relationship was determined by the method of least squares. The beginning and end points of each line were determined by averaging the smallest and largest one-fourth of the cases in each land class.

The slope and relationship change from a steep positive for Land Class 1 to a slight positive for Land Class 3, a slight negative for Land Class 4 and a steeper negative for Land Class 5. The smallest one-fourth of the farms on Land Classes 1 and 2 were slightly larger than the smallest one-fourth on Land Classes 4 and 5. The largest one-fourth of the farms on Land Classes 1 and 2 were more than twice as large as the largest one-fourth on Land Classes 4 and 5. The smallest one-fourth and largest one-fourth on Land Class 3 fell in between Land Classes 1 and 2 and Land Classes 4 and 5.

size. By increasing size of farm in acres and decreasing intensity of use per acre, many farm management workers have assumed that the net income available to the farm family would be increased. Farm management data summarized by land class shows that this probably never occurs within the same type of farming area.

It seems likely that we as farm management research workers have not previously realized the strong interrelationship between economic productivity of land and size of business. In the past when we grouped farms by size and related these groupings to income, we were also grouping farms by economic productivity but did not realize it. We assumed that all of the relationship was associated with size and made our recommendations accordingly. We most surely did not realize that farm experience showed that the larger the farm on land of low productivity within a type of farming area the greater the loss.

It apparently has been assumed that within type of farming areas changes in intensity of use and price of land per acre could be brought about through education and legislation. Increases in acres per farm therefore were recommended for the land of low productivity to offset its low productivity per acre. Likewise, decreases in acres per farm for the land of highest productivity per acre (located within the same climatic and marketing area as land of low productivity) were recommended. This was an attempt to equalize productivity and income per person and per farm. The reason for this assumption seems to have been that because such changes in land use and price per acre normally occur between broad types of farming areas, it was possible to make compensating land use adjustments within neighboring areas having similar climate and markets.

Based on the results of farm management research studies such changes do not appear to occur. It seems probable that the effect of the law of comparative advantage has been underestimated. This economic force drives neighboring farm areas having the same climatic and marketing characteristics, but slightly different soil and topography combinations, toward the same type of farming. Farm families in the less productive areas located adjacent to the more productive areas carry on a type of farming similar to their neighbors and continue to pay a price for land and buildings above that which economists theoretically assume they should pay. They do this by accepting a lower income per family than the charge commonly made for the operator's and his family's labor in calculating returns on investment (or economic rent). Instead of being approximately equal between areas, incomes vary in proportion to the amount produced per person which is always highest on the most productive land within a type of farming area.

Only when the soil and topography combinations change drastically (and in reasonably broad areas) do sufficient changes in intensity per acre and acres per farm occur to result in equivalent incomes per farm in neighboring areas that have similar marketing and climatic features. Such changes occur between the Palouse area and the scabland range areas in Washington, between the hard lands and sand hills of Nebraska, and between dryland and irrigated farming areas. Usually, however, within the same type of farming area (an area having similar climatic and marketing characteristics) only enough change occurs in land use so that farmers on the less productive land operate about as many total acres per farm as their neighbors on the more productive land. Inhibiting factors like rolling topography, or shallow, poorly drained soil usually handicap the farm operator in the area of low productivity to such an extent that they prevent him from covering as many crop acres per man as his neighbor in the areas of high productivity, who has more level topography and deeper, better drained soils. Only by increasing his non-crop acres of pasture or woods does the usual operator

on the land of low economic productivity reach equal total acres per farm compared with his neighbor on land of high productivity.

If the highest social gain comes from the highest productivity per person, we should hesitate to force by legislative means reduction in size of farm in areas of high productivity or an increase in size of farm in areas of low productivity beyond that which would occur through competitive forces. Farm management studies show that by so doing the productivity per person is reduced in both types of areas.

Relationship of Rates of Production to Income Within Economic Land Use Classes

Land Class has been shown to be inter-related with crop yields. Farm management data analyzed by land class show that much of the relationship between income and yeilds is eliminated when farm records are thus grouped. After grouping by land class the relationship between yields and income usually is positive on all land classes. As the Land Class changes from 1 to 5, yields are not pushed as far and the absolute dollar increase is not as great with changes from low to high crop indexes (table 4).

A similar statement can be made for rates of animal production except for eggs per hen which rate probably is not related to land class. In New York, Tyler found that as pounds of milk sold per cow increased the labor income per farm increased on all land classes (table 5). The absolute advantage in dollars from low rates of production to high rates of production increased from Land Class 5 to 1.

When the Washington farm management records taken in 1945 were grouped by land class and productive man work units per man, a measure of labor efficiency, earnings increased in all land classes (table 6). The absolute dollar increase associated with increasing labor efficiency was largest on Land Class 1 and smallest on Land Class 5.

These data are further evidence of the need to stratify farm management data by land class. Recommendations made to farmers and standards of accomplishment for budgeting should all be established through data summarized by land class.

Conclusions

1. The factors most closely related to income per farm are economic productivity of land as measured by economic land use class maps and changes in the general price level.

2. Many other farm characteristics are so highly interrelated with land class that their association with income can only be measured by first stratifying farm management and other economic data by land class.

3. Land class is not necessarily related to type of farming but transcends type of farming changes. It always shows a close relationship to income while type of farming does not.

4. In taking United States Farm Census or other farm management data, land class is the most important factor to use in sampling if the object is to study causes for variations in farm income. It is a more important sampling factor than size or type of farming.

Table 4. Relation of Crop Index to Total Capital, Total Receipts, and Labor Income, by Land Class, 4,605 Farms, New York State, 1907 - 1936.*

Crop Index	Number of Farms	Total Capital	Total Receipts	Labor Income
		Land Class 1		
Low third	377	$14,818	$3,564	$349
Middle third	378	15,918	4,024	681
High third	379	16,916	4,707	966
		Land Class 2		
Low third	490	11,039	2,213	74
Middle third	489	13,078	2,816	307
High third	491	12,900	3,131	548
		Land Class 3		
Low third	498	7,552	1,682	34
Middle third	500	9,238	2,221	209
High third	500	10,164	2,606	373
		Land Classes 4 and 5		
Low third	168	4,337	1,102	22
Middle third	167	5,491	1,397	165
High third	168	6,499	1,784	232

*Adapted from thesis by H. S. Tyler, Cornell University, Ithaca, New York p. 218. Land Classes V and VI as numbered on New York Land Class Maps have been considered equivalent to Land Class 1, Land Class IV the equivalent of 2, Land Class III the equivalent of 3, Land Classes I and II the equivalent of 4 and 5.

Table 5. Relation of Pounds of Milk Sold per Cow to Labor Income by Land Class, 3,367 Dairy Farms, New York State, 1907 - 1936.*

Pounds of Milk Sold per Cow	1	2	3	4 and 5
Less than 3,950	$ -688	$ -210	$ -233	$ -60
3,950 to 4,949	259	57	- 41	118
4,950 to 5,949	523	237	138	162
5,950 to 6,949	869	412	383	144
6,950 or more	1,279	694	569	412

*Adapted from thesis by H. S. Tyler, Cornell University, Ithaca, New York, p. 224. Land Classes V and VI as numbered on New York Land Class Maps have been considered equivalent to Land Class 1, Land Class IV the equivalent of 2, Land Class III the equivalent of 3, Land Classes I and II the equivalent of 4 and 5.

Table 6. Average Operator's Labor Earnings and Farm Earnings Grouped by Productive Man Work Units per Man Equivalent and Economic Land Use Classes for 250 Farms, Washington, 1944

Group	Number of Records	Average P.M.W.U. per M.E.	Operator's Labor Earnings	Farm Earnings
		Land Class 1		
Low third	18	197.0	$14,197	$15,806
Middle third	16	295.0	17,756	20,581
High third	16	401.3	18,875	21,644
All farms	50	293.8	16,838	19,208
		Land Class 2		
Low third	17	181.8	2,247	3,765
Middle third	16	266.9	3,900	5,506
High third	17	371.8	4,453	6,324
All farms	50	273.6	3,526	5,192
		Land Class 3		
Low third	18	154.1	1,429	2,147
Middle third	16	236.5	2,141	3,276
High third	16	360.6	3,262	4,375
All farms	50	248.2	2,258	3,244
		Land Class 4		
Low third	15	122.0	293	827
Middle third	18	183.9	1,183	1,950
High third	17	286.5	1,759	2,529
All farms	50	200.2	1,112	1,810
		Land Class 5		
Low third	17	93.5	106	553
Middle third	17	151.8	394	847
High third	16	250.6	1,388	2,050
All farms	50	163.6	614	1,132

5. Land class is a basic factor, difficult and probably impossible for the individual farmer to change. Farm management practice recommendations, therefore, must be made in relation to land class if they are to be practical.

6. It is difficult and probably impossible to overcome to any great extent by legislation differences in the effect of economic land use classes on production per person and, therefore, income per person. If legislation is successful in reducing the differences in production per person, it will probably also reduce the average income per person and level of living for the area.