SMALL FARM BUSINESSES: A TYPOLOGY OF FARM, OPERATOR, AND FAMILY CHARACTERISTICS WITH IMPLICATIONS FOR PUBLIC RESEARCH AND EXTENSION POLICY

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ABSTRACT

Data from a 1979 New York survey were analyzed to develop a systematic multivariate typology of small farmers (i.e., operators of small farm businesses) which would be useful in designing and targeting public programs. Farm business size, operator's age, and off-farm employment were the most important dimensions of variation. A typology was constructed by successive dichotomization of low and moderate sales volume farms; operators 49 years of age and under, and 50 and over; and families with and without off-farm income. Means for economic and social indicators were computed for each of the resulting eight categories. Low sales volume farm families with relatively old operators and without off-farm employment were found to experience very low total family incomes. Suggestions are made regarding how public extension and research programs may be developed and targeted with specific categories of the most needy small farmers in mind.

INTRODUCTION

During the 1970s, agricultural institutions at the federal, state, and local levels were roundly criticized for failing to respond adequately to the needs of the operators of small farm businesses (see, for example, Berry, 1977; Hightower, 1973; Goldschmidt, 1978). In part as a result of this pressure, "small farmer" issues have gained the attention of groups both inside and outside the agricultural establishment (see, for example, ESCS, 1979; Powers et al., 1978). In practice, however, advocates of small-farm causes have experienced considerable difficulty finding a convenient, unambiguous definition of "small farmer." One common solution has been to define farms with annual gross sales of less than $20,000 as small farms. This method facilitates the use of Census of Agriculture data to describe small farms but cannot, for example, easily account for the effects of inflation on the boundary between what is and is not a small farm business (or, hereafter, a "small farm").

It is widely recognized that any single criterion of "smallness"--inflation adjusted gross sales or net farm income, number of acres operated, etc.--is likely to be inadequate given the diversity of enterprises undertaken by farmers, the diverse agricultural regions in which they farm, and the wide differences in age, reasons for farming, total income, etc., that are found among operators of small farm businesses. Thus, there have been a number of attempts to define small farms by incorporating several characteristics of the operator and of his/her farm (see, for example, Marshall and Thompson, 1976, Carlin and Crecink, 1979). These definitions are less time- and space-bound than those relying simply on gross sales as a criterion, yet still allow the use of census data to monitor trends in the number and status of small farms (Lewis, 1978; Larson and Lewis, 1979).

One method used to deal with the diversity that small farmers exhibit has been to exclude altogether certain categories of families from the definition of small farms. Madden and Tischbein (1979) exclude persons with total family incomes above the national median, thus restricting their definition of small farmers to one which primarily includes persons with limited agricultural and total income resources (see also Carlin and Crecink, 1979). Such a strategy does not facilitate efforts to understand the full range of variation exhibited by farms which are relatively small by U.S. standards.

One of the most significant explorations of the existent diversity among small farms was carried out by Thompson and Hepp (1976). Their research in Michigan led them to identify four categories of small farmers. Full-time small farm operators were defined as persons under 65 years old, working less than 100 days per year in off-farm employment, and with annual farm sales of less than $20,000. The category senior citizen small farmers was applied to operators receiving social security or over 64 years of age, and who had less than $20,000 in annual gross farm sales. Part-time farmers were divided into two groups: rural residents and supplemental income farmers. Rural residents were defined as farmers under 65 years of age, working in excess of 100 days per year off the farm, and having annual farm sales of less than $2,500. The category of supplemental income farmers was assigned to farmers who had the characteristics of rural residents, except that they had annual farm sales of between $2,500 and $20,000. According to this schema, Thompson and Hepp found that 22 percent of Michigan's small farmers (i.e., those farmers with annual sales of less than $20,000) were full-time, 15 percent were senior citizens, 29 percent were rural residents, and 20 percent were supplemental income farmers. Full-time small farmers were found to be the most disadvantaged both in terms of mean per capita and total net family income (see Table 1).

While Thompson and Hepp's typology offers considerable advantage over approaches that

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Table 1. On- and Off-Farm Income by Farm Type, 1974 Michigan Survey.

	Rural resident	Supplemental income	Senior citizen	Full-time	Total small farm
Net cash farm	$ 50	$3,080	$1,930	$4,750	$ 2,299
Transfer payments	144	1	2,933	249	594
Investments	394	155	1,373	176	444
Other income pensions	--	12	771	216	181
Wages	10,878	8,861	1,353	1,166	6,631
Net family income	11,466	12,109	8,360	6,557	10,149
Per capita	2,874	2,667	3,981	1,946	2,721
Percent reporting income between:					
0 to $2,500	1	3	12	17	7
$2,501 - $5,000	4	3	19	30	11
$5,001 - $7,500	16	11	19	15	15
$7,501 - $10,000	17	15	16	19	17
$10,000 or more	61	68	35	19	50

SOURCE: Thompson and Hepp (1976:13).

assume similarity in the nature of small farm operations, several objections to their schema can be raised. First, the categories where chosen somewhat arbitrarily and were not derived from an empirical analysis. Second, the typology identified only two types of part-time farmers. There is a substantial literature that indicates variability among part-time small farmers which cannot be captured by division of these farmers into supplemental income farmers and rural residents (see, for example, Kada, 1980). Third, Thompson and Hepp's dichotomization of farmers with less than 100 days of off-farm work into full-time and senior citizen farmers neglected farm business size as an aspect of variability. The financial situation of a small farm family with little or no off-farm employment obviously depends greatly on the size of the farm operation.

OBJECTIVES AND METHODS

The present paper has several interrelated objectives. It builds on Thompson and Hepp's work, using factor analysis as an exploratory procedure for delineating categories of small farms. The intention is to develop a more systematic picture of the range of variation among small farm operations. This information, it is hoped, will be useful in targeting the neediest among different categories of small farmers and in designing public programs responsive to these needs. Although no attempt will be made to outline such programs systematically, the results of this analysis will be used to suggest some possible responses on the part of Cooperative Extension and other public agencies concerned with agricultural and rural development.

Thompson and Hepp's typology suggested several significant areas of differentiation among small farmers: size or scale of the farm business, age of the operator, off-farm employment. Measures of these three dimensions, as well as other potential aspects of variation among small farmers were studied using a varimax (orthogonally-rotated) factor analysis procedure. The most salient dimensions identified by this analysis were used to develop a systematic multivariate typology of small farmers. The categories derived from use of this procedure were then further analyzed by computing means within each category for variables relating to farm income, off-farm employment, structure of farm enterprises, and other characteristics.

Data for this study came from a 1979 sample survey of farm operators in New York State. The sample was randomly drawn from lists of farm operators maintained by the New York Crop Reporting Service. Mail questionnaires were used, basically following the Dillman (1978) method. Of 849 respondents eligible to participate in the study, 561 returned questionnaires, for a response rate of 67.6 percent. Of the 554 farm operators providing information on gross farm sales, 158 or 28.5 percent reported a gross farm income in 1978 of less than $20,000, and 396 or 71.4 percent reported a gross farm income of less than $40,000.

For all variables with missing data, missing data cases were excluded from the analysis at both stages, i.e., the factor analysis and the comparison of means of farm structural character-

istics across the derived categories of small farmers. As a result of following this procedure, the number of farm families with gross annual sales of less than $20,000 was reduced to 84, and the number of cases of farm families with gross annual sales of less than $40,000 was reduced to 150. (For details, see Buttel, 1981.)

Two definitions of "small farmers" were employed for the factor analyses, both of which are based on gross annual farm sales. The first includes farmers with sales of less than $20,000 in 1978. The second definition includes farmers with gross sales of less than $40,000 in 1978. The rationale for the second definition, which clearly is not a conventional one in the existing literature on small farms, is two-fold. First, because of inflation in the U.S. economy, $40,000 of gross sales in 1978 is roughly equivalent to $20,000 of gross sales in 1969--a census year from which small farm data have frequently been drawn. Second, as shown below, including farms with annual sales of $20,000-39,999 does not dramatically affect the conclusions one would draw regarding the parameters for a typology of small farmers. Moreover, including farms with gross annual sales of $20,000-39,999 increases the number of cases in the categories of the typology and renders the empirical analysis more reliable.

THE FACTOR ANALYSES

The results of factor analyses of farm(er)s with gross annual farm sales of less than $20,000 and of less than $40,000 are given in Tables 2 and 3. Sixteen items were included in each factor analysis. The items represent the scale, age, and off-farm income dimensions suggested by the research of Thompson and Hepp (1976), plus other selected aspects of farm or farm family structure (e.g., farm/nonfarm origins) suggested by research on part-time farming (Kada, 1980). Results from the two factor analyses were strikingly consistent. Business size, age, and off-farm employment were, respectively, the first, second, and third most important factors. The composition of items with factor loading in excess of an absolute value of 0.400 was also identical.

Business size was a consistent feature of internal variation among small farm(er)s (see Tables 2 and 3). This suggests that there are

Table 2. Orthogonally Rotated Factor Matrix for Farms with Gross Annual Sales of Less than $20,000, New York, 1979.*

	Orthogonally rotated factors			
Items	1 (size of farm)	2 (age)	3 (off-farm employment)	h^2
Gross farm sales	(.400)	.001	-.003	.497
Net farm income	.081	-.257	-.073	.305
Total family income	.162	-.047	(.710)	.610
Total assets	(.469)	-.253	.235	.429
Debt	.245	(-.752)	.058	.684
Number of acres farmed	(.792)	-.147	-.118	.818
Size of largest tractor	(.809)	-.307	-.005	.861
Age	-.133	(.732)	-.222	.758
Number of years in farming	.007	(.645)	-.099	.586
Education	.080	-.164	.327	.510
Off-farm employment	-.075	-.143	(.775)	.732
White-collar employment	-.093	-.088	(.505)	.338
Previous nonfarm employment	-.286	-.082	.165	.222
Father was farmer (husband)	.061	.158	-.019	.123
Father was farmer (wife)	-.009	.151	-.048	.109
Partnership	(.485)	.036	-.010	.440
Eigenvalues	2.971	2.579	1.289	--

*Varimax rotation. Only factors with eigenvalues in excess of 1.0 were computed. Loadings greater than an absolute value of .400 are shown in parentheses.

Table 3. Orthogonally Rotated Factor Matrix for Farms with Gross Annual Sales of Less than $40,000, New York, 1979.*

	Orthogonally rotated factors			
Items	1 (size of farm)	2 (age)	3 (off-farm employment)	h^2
Gross farm sales	(.621)	-.023	-.201	.507
Net farm income	(.426)	.316	-.122	.351
Total family income	.271	-.016	(.645)	.564
Total assets	(.578)	.106	.239	.428
Debt	.303	(-.697)	-.039	.612
Number of acres farmed	(.711)	-.126	-.082	.848
Size of largest tractor	(.730)	-.286	-.003	.648
Age	-.052	(.809)	-.129	.688
Number of years in farming	.115	(.624)	-.081	.477
Education	-.116	-.333	.366	.211
Off-farm employment	-.137	-.022	(.778)	.694
White-collar employment	-.104	-.126	(.490)	.312
Previous nonfarm employment	-.282	-.058	.132	.142
Father was farmer (husband)	.035	.300	.011	.137
Father was farmer (wife)	.058	.163	.061	.161
Partnership	(.456)	.005	.002	.211
Eigenvalues	2.777	2.382	1.343	--

*Varimax rotation. Only factors with eigenvalues in excess of 1.0 were computed. Loadings greater than an absolute value of .400 are shown in parentheses.

significant differences between small farm operations which are relatively large and those which are relatively small. As can be noted in factor 1, gross farm sales, assets, number of acres farmed, and the degree of mechanization reflect the business size of small farms. Age, the second most important factor which explains an important part of variation among small farmers, was strongly associated with number of years in farming and the level of debt. The data indicated a strong inverse association between age and level of debt, while age and number of years in farming were, as would be expected, positively interrelated. Off-farm employment proved to be a third significant factor. As suggested by Thompson and Hepp's study (Table 1), total family income of small farmers had a strong relationship with the degree to which these farm families could acquire off-farm employment--particularly well-remunerated white-collar employment.

DEVELOPMENT AND VERIFICATION OF A TYPOLOGY OF SMALL FARMERS

Results of the factor analyses suggested that farm business size, operator's age, and off-farm employment should be principal building blocks of a typology of small farmers. The procedure used in the subsequent analysis was as follows. First, the annual value of gross farm income was taken as an indicator of business size. Even though gross farm sales did not have the highest loading on the business size dimension in the factor analyses, gross farm sales is probably a more widely applicable measure than attributes such as size of largest tractor or number of acres (see also Trant and Brinkman, 1979; and Tweeten, et al., 1980). These latter characteristics vary a great deal across regions and enterprise types in the U.S. Gross farm sales volume was dichotomized at less than $10,000, and $10,000 to $39,000 of annual sales, a point which was relatively close to the median. Second, relatively small (or low sales volume) and relatively large (or moderate sales volume) farms were dichotomized according to whether the operator was less than 50, or 50 or more years of age. Age was used as a criterion variable in the typology because of its high loadings on factor 2 in both factor analyses. While the exact point of dichotomization was arbitrary, the age of 50 was close to the mean age of farm operators in the sample (roughly 52 years) and was chosen to approximate best the distinction between early and late career stages of farming. Off-farm employment was the final criterion variable for the development of the typology and was chosen because of its consistently high loadings on factor

Table 4. Preliminary Structure of Categories for a Typology of Small Farmers.

	Sales Volume (Gross Farm Income)							
	Low (less than $10,000)				Moderate ($10,000 - $39,999)			
	Young (49 years or less)		Old (50 years or older)		Young (49 years or less)		Old (50 years or older)	
	Full-time[a]	Part-time[b]	Full-time	Part-time	Full-time	Part-time	Full-time	Part-time
Category[c]	Homesteader	Hobby farmer	Limited-resource/ poverty farmer	Retirement/ U-turn farmer	Full-time small farmer	Early-career/ supplemental-income farmer	Disengaging farmer	Persistent supplemental-income farmer

[a] Full-time farmers are defined as those farm families in which no family member has any off-farm wage or salary income.

[b] Part-time farmers are defined as those farm families in which one or more family members has off-farm wage or salary income.

[c] See Table 5 for the number of cases in each category of small farmers. The rationale for each category is given in the text.

3 in Tables 2 and 3.[1] As noted in Table 4, this procedure yielded eight groups of small farmers. Because of the similarities between the factor matrices in Tables 2 and 3, the more inclusive definition of small farm businesses (i.e., gross annual sales volume of less than $40,000) was adopted for the balance of the analysis.

To verify the distinctiveness and practicality of these eight categories, they were examined in the light of a number of "validation" characteristics of farms and farm families. Four kinds of background characteristics were selected: (1) socioeconomic background, (2) income and wealth, (3) aspects of structure of the farm operation, and (4) off-farm employment (see Table 5). The first objective was to determine the extent to which the eight preliminary categories depicted in Table 4 revealed consistent patterns of variation according to the four groups of validation or criterion characteristics just discussed. The second purpose, building on the results of the above analysis, was to develop labels for the small farmer categories which were more meaningful than "low sales volume/under 50/full-time farmer," "high sales volume/50 or more years/part-time farmer," etc.

The characteristics of low sales volume/under 50/full-time farmers revealed in Table 5 lead one to refer to these farmers as homesteaders. These characteristics include: (1) a high prevalence of a nonfarm or urban background, (2) high levels of education, (3) small number of years engaged in farming, (4) low net farm income and total family income, (5) low net worth, and (6) little inclination to expand the size of the farm operation. It should be noted that these data regarding homesteader-type small farmers should be interpreted very cautiously; because of missing data, there were only six such farmers in the sample. Nevertheless, data on the characteristics of low sales volume/under 50/full-time small farmers are consistent with an interpretation that these farmers tend to be persons of urban origin and relatively high education level who have pursued full-time agricultural work on a relatively small farm.

The pattern of characteristics for low sales volume/under 50/part-time farmers suggests that this aggregate can be termed hobby farmers. The predominant characteristics of hobby farmers are as follows: (1) a relatively high prevalence of holding a nonfarm job before entering farming, (2) relatively high educational backgrounds, (3) high total family incomes, (4) relatively high debt, especially given the small size of the farm operation, (5) relatively low intensity of farming, as evidenced by the high frequency with which cash grain and beef are the principal farm enterprises as contrasted with more intensive enterprises such as dairy or vegetables, (6) a very strong tendency for the husband to earn significant off-farm income, and (7) a very high prevalence of one or more members of the family holding white-collar off-farm jobs. Hobby farmers thus appear to have three major attributes. First, hobby farmers are characterized by a mod-

[1] Households which had a member engaged in off-farm work for wage remuneration were considered to be part-time farming families. Full-time farming families were those in which no family member engaged in such off-farm employment.

erate to high level of human resources, especially in terms of education and potential to earn off-farm income. Second, these farmers tend to avoid labor- and capital-intensive enterprises such as dairy and horticultural production. Third, hobby farmers tend to exhibit a relatively low level of self-sufficiency of the farm business, i.e., as revealed by high debt levels and, inferentially, by the subsidization of the farm business by off-farm income.

Low sales volume/50 years or older/full-time farmers in this New York sample tend to represent a category of limited resource/poverty farmers. Limited resource/poverty farmers have two predominant characteristics: low net farm income and lack of significant off-farm income, thus leading the family to have an extremely unfavorable level of living. Other major characteristics are: (1) high incidence of the farmer's parents having been farmers, (2) low educational levels, (3) large number of years engaged in farming, (4) very low levels of debt, (5) relatively high tendency to rent out land, presumably because of ill-health or other disabilities, and (6) very little hiring of labor. Limited resource/poverty farmers are a type of small farmers frequently emphasized by small farm advocates. The analysis reveals that virtually all of these farm families must survive on less than $10,000 per year in total family income. Despite the fact that the majority of limited resource/poverty farmers have in excess of $40,000 of net worth, the overarching attribute of this small farm category is low income earning power. Low levels of education (and, by inference, disabilities associated with advancing age) prevent access to off-farm employment. In addition, the fact that none of the 15 such farmers in our sample had as much as $10,000 of debt load implies possible difficulties in securing access to credit and in expanding the farm business. The advancing age of limited resource/poverty farmers also tends to rule out greater intensification of production as a viable strategy for improving returns from farming.

The category of retirement or U-turn farmers is suggested by the data for low sales volume/50 years or older/part-time farmers. A high proportion of these farmers (86 percent) held a nonfarm job prior to entering agriculture. These farmers are also characterized by: (1) relatively high levels of education (by comparison with the other groups of farmers over 50 years of age), (2) considerable experience in farming, but fewer years than the three other categories of farmers over 50 years of age, (3) intermediate levels of total family income, (4) relatively high net worth and low debt, (5) a relatively low intensity of farming (68 percent being engaged primarily in beef and cash grain), (6) a relatively high tendency to rent out land, (7) a low tendency to hire labor, and (8) high prevalence of full-time off-farm employment by the husband in blue-collar work. These farmers thus appear to be combining farm and nonfarm income either as a long-term option or as part of a transition toward retirement. A surprisingly high number of retirement/U-turn farmers (18 percent) plan to expand their operations, a pattern that distinguishes them from the three other categories of older farmers. Nevertheless, the predominant pattern among relatively low volume, older, part-time farming families is that they have adopted a strategy for transition into retirement which includes part-time farming and off-farm employment (primarily on the part of the husband) or that they entered agriculture after initially pursuing a nonfarm career.

The characteristics of moderate sales volume/under 50/full-time farmers suggest the retention of one of Thompson and Hepp's (1976) categories--full-time small farmers. These families are aggressively pursuing farming on a full-time basis, and are hoping to expand operations. The principal attributes of this group are: (1) relatively low level of education, especially by comparison with the three other groups of relatively young farmers, (2) a large number of years engaged in farming relative to their young farmer counterparts, (3) relatively high levels of debt, (4) a high intensity of farming, as evidenced by 91 percent of this group engaging in either dairy or vegetable farming, (5) a very low tendency to rent out land, (6) a relatively frequent intent to expand the size of farm operations, and (7) a high propensity to hire labor to perform farm tasks. While this group is committed to farming and is planning to remain in agriculture, nearly 64 percent of these families have total incomes of less than $10,000 per year. This is indicative of the financial vulnerability of many small farm operations, especially where the farmer lacks advanced education that might facilitate off-farm employment. Full-time small farm families are thus another group of farmers that small farm advocates, with good reason, identify as being in need of public policy changes that would increase the viability of their operations.

The category of early-career/supplemental-income farmers is indicated by the data for moderate sales volume/under 50/part-time farmers. The major characteristics of early-career/supplemental-income farmers indicate that these farm families are aggressively pursuing dual careers --both farm and nonfarm--with a considerable degree of financial success. Their major attributes, as revealed in Table 5, include: (1) relatively high educational backgrounds, (2) a high percentage of families with total income in excess of $20,000, (3) very high debt loads, (4) a large number of rented acres, (5) a low intensity of farming relative to other moderate sales volume farmers in the sample (though 61 percent have dairy as a principal enterprise), (6) a strong desire to expand their farms in the future, (7) a low tendency, relative to other moderate sales volume farmers, to hire labor, and (8) a moderately high level of off-farm labor force participation on the part of both the husband and the wife. Early-career/supplemental-income farmers thus combine a moderate to high level of human resources (especially education and off-farm income) with farming enterprises that have a relatively low degree of self-sufficiency (i.e., a substantial debt load and, presumably, a strong tendency to use off-farm income to finance farm expansion). Contrary to some stereotypes of part-time farmers, early-career/supplemental-in-

Table 5. Relationships Between Small Farmer Categories and Selected Variables (Category Means), New York, 1979.

Variables	Low sales volume[a]				Moderate sales volume			
	Young		Old		Young		Old	
	Full-Time (N=6)[b]	Part-Time (N=26)	Full-Time (N=15)	Part-Time (N=22)	Full-Time (N=23)	Part-Time (N=28)	Full-Time (N=46)	Part-Time (N=36)
Socioeconomic Background Characteristics								
% husband's father was farmer	50.0	65.4	80.0	63.6	65.2	71.4	89.1	80.6
No. acres farmed by father	35.0	86.7	121.3	59.0	124.4	143.5	113.5	113.9
% holding nonfarm job before farming	66.7	59.7	46.6	86.4	43.5	50.0	17.4	50.0
% inherited 100 or more acres	0.0	3.9	6.7	4.6	8.7	10.7	17.4	11.1
Husband education	12.2	12.6	10.4	11.5	10.9	12.9	10.5	10.9
# years in farming	8.2	12.0	32.9	24.5	18.6	13.5	28.9	26.6
Income and Wealth Characteristics								
% $2,500 or more net farm income	0.0	4.0	6.7	4.5	54.5	29.6	64.4	67.6
% $10,000 or less total fam. income	50.0	8.3	93.3	33.3	63.6	26.9	57.5	23.5
% $20,000 or more total fam. income	0.0	45.8	6.7	19.1	22.7	53.9	12.5	41.2
% $40,000 or more total net worth	50.0	58.3	84.6	95.0	78.3	80.8	85.7	97.1
% $10,000 or more debt	16.7	41.7	0.0	9.1	59.1	70.4	15.6	16.7
Structure of the Farm Operation								
Total acres farmed	201.2	112.2	145.9	121.6	252.5	256.4	231.7	205.0
# acres owned	108.4	97.5	136.3	110.6	218.0	179.6	201.1	201.2
# acres rented	110.8	14.7	18.7	11.0	53.4	86.9	33.3	14.9
% beef	50.0	46.2	40.0	45.5	0.0	14.3	4.4	8.3
% cash grain	0.0	19.2	13.3	22.7	8.7	25.0	6.5	5.6
% dairy	50.0	23.1	40.0	45.5	82.6	60.7	82.6	86.1
% vegetables	0.0	7.7	0.0	9.1	8.7	7.1	8.7	0.0
% partnerships	0.0	3.9	20.0	18.2	21.7	25.0	28.3	11.1
% rent out land	16.7	3.9	13.3	13.6	0.0	7.1	2.2	8.3
% plan to expand	0.0	19.2	0.0	18.2	30.4	42.9	4.4	5.6
% hire labor	16.7	7.7	0.0	0.0	30.4	7.1	23.9	41.7
Off-Farm Employment Characteristics								
% $5,000 or more of off-farm income from husband	0.0	73.1	0.0	50.0	0.0	39.3	0.0	16.7
% $5,000 or more of off-farm income from wife	0.0	30.8	0.0	4.6	0.0	28.6	0.0	30.6
% families with white collar off-farm job	0.0	46.2	0.0	13.6	0.0	25.0	0.0	36.1

[a]See Table 4 for more detailed information on the division of small farmers into the eight categories.

[b]The Ns given in parentheses represent the maximum number of cases in each cell. The actual N from which computations are based may be lower than the figure in parentheses because of missing data for the socio-economic, income and wealth, farm structure, and off-farm employment characteristics.

come farmers are the most likely of all eight groups to be aggressively investing and to be planning to expand farming operations further. As implied earlier, off-farm income appears to play a major role in these plans.

The characteristics of moderate sales volume/50 years or older/full-time farmers suggest the label late career/disengaging farmers. Though many are farming intensively and successfully, most farmers in this group appear to be slowly disengaging from active participation in farming in a number of ways. First, relative to other moderate sales volume farmers in this sample, they have very low levels of debt. This suggests that they are completely self-financed but also that they may have reduced their entrepreneurial orientation toward farming. Second, only 4.4 percent of late career/disengaging farmers reported plans to expand farm operations. Third, this group of farmers has the highest incidence of partnerships (28 percent), presumably with one or more close relatives who will eventually take over the farm. Other relevant characteristics of late career/disengaging farmers include: (1) a very high tendency to have been the son of a farmer and to have never held a nonfarm job before entering agriculture, and (2) a relatively low level of formal education. Despite the fact that late career/disengaging farmers enjoy relatively favorable net worth and net farm income situations and have moderately large farms, nearly 60 percent reported total family incomes of $10,000 of less in 1978. Per capita incomes for such older families may not be as unfavorable as this implies, however, since household size also tends to be low (see the Thompson and Hepp data in Table 1).

The final category of our typology-- persistent supplemental-income farmers--is suggested by the data in Table 5 pertaining to moderate sales volume/50 years or older/part-time small farmers. This group has considerable off-farm labor market participation by both husband and wife, combined with relatively high net income from farming operations, high net worth, little debt, and limited plans for farm expansion. Other characteristics of persistent supplemental income farmers are: (1) a high tendency to have come from a farm background, (2) favorable total family income levels, (3) a high intensity of farming as evidenced by a high percentage of dairy farms, and (4) a high tendency to hire labor. In light of the relatively low incidence of partnerships and the high incidence of hiring labor, it would appear that relatively few persistent supplemental income farmers will have one of their children assume the operation of their farm upon retirement or death of the principal farm operator.

POLICY IMPLICATIONS

The foregoing analysis should not be interpreted as suggesting that all small farms fit neatly under one or another of the eight categories that have been described. The purpose of the analysis was to encourage more systematic thought about the range of variability among small farm operations and to develop clearer rationales for public programs to meet the needs of small farmers, rather than merely to divide small farmers into distinct groups.

The results presented in Table 5 strongly suggest that from the standpoint of total family income, farm families with off-farm income are in a considerably better situation than full-time farming families. This confirms observations made by many other researchers. In each of the four categories of part-time farmers-- hobby, retirement/U-turn, early-career/supplemental income, and persistent supplemental-income farmers --no more than a third of the families had total family incomes of less than $10,000 in 1978. Conversely, half or more of the families in the full-time farmer categories--homesteaders, limited resource/poverty, full-time, and late career/-disengaging farmer--had less than $10,000 in total family income. Overall, 64.5 percent of the full-time small farmers in the sample had a total family income of less than $10,000, while only 22.8 percent of the part-time small farmers in the sample had less than $10,000 in total family income. With the exception of relatively highly educated homesteaders who may voluntarily forego off-farm work, one explanation for the observed income variations among small farmers is access to off-farm employment.

However, the policy implications of such an analysis--to increase employment opportunities in rural areas and to develop adult education programs to help less educated farm family members to qualify for these jobs--have a number of limitations. First, in an economy plagued by stagflation, and in an atmosphere of fiscal austerity prevalent at both federal and state levels, it is unlikely that public programs to stimulate employment in rural areas will have any significant chance for implementation or success. Second, rural employment creation will by no means guarantee that members of small farm families will obtain these jobs. Third, expanded funding for adult education programs also seems unlikely at the present time. It can thus be argued that public policies to assist small farm families will likely need to focus primarily on specific problems that face various groups of small farmers, rather than relying on general rural development programs gradually to improve the condition of the small farm population as a whole.

The typology developed above suggests that four of the eight groups have particularly pressing needs that should be addressed through public policy. These groups, all of which are "full-time" small farmers (with no significant off-farm employment), are homesteaders, limited resource/poverty farmers, full-time small farmers, and late career/disengaging farmers.

With low sales volume relative to the number of acres they farm, homesteaders appear to be in need of greater technical assistance from Cooperative Extension and other public agencies. Many homesteaders have recently entered farming from a nonfarm background and from previous nonfarm employment and may be isolated from traditional sources of agricultural information. Given their very low net worth situation and limited access to credit, publicly funded research into input-minimizing agricultural practices such as organic farming may be especially important for home-

steaders. Although most homesteaders appear to avoid high debt loads, subsidized credit programs for small farmers might enable them to intensify their farm operations. Although the data on homesteaders must be interpreted cautiously because of small sample size, this group of New York State farmers would appear to be farming marginal lands with a significant number of acres in forest. Extension programs assisting in woodlot management might improve the long-run income situation of homesteaders, as well as other small farmers.

The situation of limited resource/poverty farmers is serious. Farming small acreages, they are relatively old (and may have physical and other disabilities), and have relatively low educational levels which hinder acquisition of off-farm employment. The most useful immediate policy response would be to make efforts to inform these farm families about public programs such as medicare, social security, etc. Estate planning information might be helpful to this group of farmers but should be provided as part of a larger package of Cooperative Extension programming which includes strategies to improve the limited-resource/poverty small farm business.

With relatively low levels of education, full-time small farmers are unlikely to compete effectively for the better-paying nonfarm jobs, and many of these families prefer to remain in full-time farming given the choice. In light of the strong commitment of full-time small farmers to remaining in agriculture, public programs that improve access to credit and provide information about management practices are crucial.

Late career/disengaging farmers tend not to be interested in expansion and may have most use for assistance in planning successful disengagement from the vantage point of both the immediate family and the families of sons and daughters. As noted previously, there appears to be a considerable tendency for late career/disengaging farmers to be involved in a transition of ownership from the disengaging family to the families of children. Extension programs to provide estate planning and tax advice regarding intergenerational transfer of farm property may, of course, be of interest to other small farmers as well.

Emphasis here on the needs of small operators farming full-time does not imply that the "part-time" categories of small farmers have no significant problems that should be addressed through public policy. There are needy families in all of the categories, and within-group variation is important to consider. Many part-time farmers are struggling against impressive odds to build a farm business and are working double-time to do it. Others are using part-time farming as a permanent part of a plan for securing a livelihood and a dignified existence, and their efforts too, are worthy of support.

One of the objectives of this analysis has been to take some steps toward more accurate targeting of the most pressing needs of small farmers. This reflects an awareness that small farmers with the greatest needs are not necessarily those who are most articulate in presenting their concerns to state legislatures, land grant college officials, and other public policy-makers. If the movement for greater attention to small farmer problems is to bear fruit, its advocates must be specific and accurate in identifying the socioeconomic condition of different categories of small farmers and must present convincing arguments that public programs can address the most pressing problems in effective ways.

While it is hoped that the typology presented herein facilitates clearer conceptualization of small farm issues and problems, it should be regarded as only a first approximation. The data on which the typology is based come from a relatively small sample of farmers in one state. The typology must therefore be subjected to empirical verification with more sophisticated research designs and measurement in other regions of the country. As well, the few policy implications and program suggestions offered here can serve only illustrative purposes. The possibilities for creative public roles in building rural economies that meet the divergent needs of the various small farmer and other groups that live there have, of course, only been scratched. Recent evidence of numerical persistence--if not growing numbers--of low sales volume farms in the Northeast and in the U.S. as a whole (U.S. Department of Commerce, 1980) suggests that these concerns are timely and may be of even greater importance in the future.

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