MARGINAL FARMS – A MICRO DEVELOPMENT OPPORTUNITY*

K. C. Schneeberger and J. G. West

Practically all major speeches on the agenda of farm policy issues have listed the problems of non-commercial farmers as a major item [5, 7, 9]. Operators of non-commercial, or marginal, farms are a very heterogeneous group. They include: (1) operators of medium sized, undercapitalized farms, (2) farm operators who work part-time off-farm to supplement farm income, (3) operators of small, inefficient farms who, because of age, education or handicap, have limited prospects of becoming fully self-supporting either in farming or non-farm occupations, and (4) rural residents who own farms which provide some income; the owner works full-time off-farm.Farmers in this group generally gross less than $10,000 from agricultural production. This is normally considered inadequate for providing an acceptable level of living.[1]

Marginal farms are numerically and economically significant in many areas in the South. They account for nearly 70 percent of total farms, control about 35 percent of the land assets, but produce only 20 percent of farm products. In some rural counties, nearly all farms are marginal farms. Wayne County, Missouri, is an example. Of 509 farms in Wayne County, 454 had gross farm incomes below $10,000 in 1969 [12].

IMPROVED NET EARNINGS – A GOAL

This paper focuses on one aspect of rural development – programs that have the objective of helping marginal farm operators realize higher net earning from resources managed through extension-type programs using paraprofessionals[2] [10, 13, 14].

Three propositions regarding common characteristics of marginal farms, and their operators, have been previously suggested [6, 8, 11].

1. Underemployment or inefficient use of land and labor resources exist on marginal farms.
2. Operators of marginal farms actively seek to improve net earnings from their farm resources unless they perceive their operations in the decline phase of the firm cycle.
3. Without competent technical and economic advise, marginal farmers are likely to make changes which have substantial opportunity costs.

These propositions influenced our perception of development problems of marginal farmers and potential solutions to those problems.

Findings of a recent survey of 897 small farmers in two Missouri counties were consistent with the above mentioned propositions [13].For example, nearly 80 percent of the marginal farmers under 50 years of age had plans to expand production in the next three to five years. Yet, a high proportion of the planned changes were not ones that appreciably increase farm income (e.g. the addition of five to ten beef cows will not improve net farm earnings much).

K. C. Schneeberger is associate professor and J. G. West is professor of agricultural economics at the University of Missouri.

*Missouri Agr. Exp. Sta. Journal Series No. 6299.

[1] Use of the term marginal farmers is not meant to imply that all families who operate non-commercial farms are low-income families. Many farmers are farmers by census definition only. Over 60 percent of operators of marginal farms have off-farm income. A Missouri survey indicated 25 percent of the families on marginal farms had off-farm incomes greater than $5,000 [8].

[2] The term paraprofessional, nonprofessional or program aide has been widely used in educational programs. Its use is somewhat misleading because the term applies more to formal levels of educational attainment than to ability or knowledge in a particular subject matter area.

USE OF PARAPROFESSIONALS

A brief review of the number of marginal farms suggests it will be impossible for professional agriculture workers (extension agents, vo-ag adult teachers, soil conservation specialists) to service the educational needs of the group. Further, some sociological research has suggested many farmers falling in the marginal category are unwilling to seek the advise of agricultural professionals. Thus, programs using paraprofessionals have been initiated to educate marginal farmers, particularly low income farmers, to income opportunities which can have an impact on net earnings.

Several pilot projects using paraprofessionals with farmers have been funded in recent years.[3] Few have been critically evaluated. Most programs, that have evaluated the effect of paraprofessionals have not operated long enough to have more than tentative conclusions drawn [4].

TECHNICAL ASSISTANCE FOR LOW INCOME FARMERS

Missouri, like other states, has had experience with Office of Economic Opportunity (OEO) projects that focused on a particular problem like education or nutrition. There have also been special technical assistance programs for low-income farmers. Such programs have tended to emphasize a particular enterprise that has above average profit potential for small farming units. In Missouri, the enterprises have been feeder pigs and dairying.

The OEO approach has been one of using paraprofessionals as much as supervision and money would allow. The program operated with regular on-farm visits by the paraprofessionals. The paraprofessionals were trained to deal with normal operational situations encountered in his specialty. Certain difficult technical and organizational problems were referred to appropriate professionals.

In Missouri, there have been difficulties of maintaining an effective, on-going program given annual budget uncertainties and "people problems" of working with a different clientele than professional agricultural workers are accustomed. However, there has been improvement in net farm income on some of the small farms. Further, as a by-product of the programs, some paraprofessionals have moved from lower paying to higher paying jobs. The degree of program success seems to be associated with (1) the commitment of professionals to working with operators of marginal farms, (2) the ability and effort of individual paraprofessionals, (3) the desire of individual program participants to improve farm income, and (4) the quantity of basic resources available on farms. An evaluation to two programs that have used paraprofessionals follows.

THE FEEDER PIG PROGRAM

Families involved in the feeder pig program were representative of a prevalent group in the Ozark region. More than half had completed less than 8 years of school; two-thirds were over 46 years old; few had a net worth exceeding $10,000; and over half lived on farms of less than 50 acres [9].

Families had to meet OEO guidelines to participate in the feeder pig program.[4] At the time it was evaluated, the program had operated four years and had involved over 80 participants per year. There had been no nonwhite participants. An economic opportunity loan (at 4.25 percent interest) was obtained from the Farmers Home Administration (FHA) for a majority of the participants when they entered the program.[5]

The feeder pig program operated in eight counties out of one central office. There was one professional agriculture worker, an extension agent, who was the program supervisor. There were five to six paraprofessionals. Each paraprofessional worked with 12 to 20 low-income farmers.

The feeder pig program evaluated has been an OEO showpiece. It has been observed by professionals in the rural poverty business and hailed as a major success. Given the economic base and age of many of the participants, the $490 average annual increase in net farm earnings (a 20 percent average increase) probably represents a success.

Both benefit-cost analysis (B/C) and internal rate of return analysis (IRR) were used to develop measures of program performance. A 10-year planning horizon was used in estimating benefits and costs. Benefits included increased net earnings from feeder pig production, increased net worth directly

[3] The office of Economic Opportunity and Federal Extension Service, U.S.D.A. have both funded pilot projects in Missouri, Texas, Alabama and Mississippi.

[4] The OEO guideline was based upon gross family income. A family of four earning less than $3,200 was eligible.

[5] The FHA economic opportunity loan program was for low income farm and non-farm rural families who were unable to acquire credit from other sources. The loan maximum was $3,500.

resulting from feeder pig production and increased net salary improvements of paraprofessionals.[6] Costs included: (1) public expenditures for salaries, supplies, transportation and loan subsidies and (2) private labor and capital opportunity costs.

The internal rate of return approach to program evaluation assumed small farmers had surplus labor to manage a ten sow feeder pig enterprise, thus no opportunity charge was made for labor on farms with ten or less sows. The resulting IRR was 30 percent.

The 30 percent IRR corresponds to a benefit-cost ratio of 2.0:1. The use of subsidized feeder pig production as a method of income redistribution generated $2.00 (in present value) for each $1 invested.

It appeared that the performance of paraprofessionals in the feeder pig program was associated with the attitude and commitment of the professional under whom they worked. The program has had two very different professionals in charge. The number of farmers regularly contacted and the measurable financial gains made by farmers with whom the parafessionals worked were noticeably different under the two professionals. This impression is admittedly very tentative and the subject of continuing research.

THE DAIRY MANAGEMENT PROJECT

This technical assistance program was aimed at small dairy farmers [1]. To participate, these families also had to meet OEO guidelines. More than 300 dairy farmers participated over a 5-year period. Farmers were generally younger than participants in the feeder pig program; the median age was 38 years. The education level was generally eighth grade education or better. The average farm had 30 cows, so the resource base of the dairy participants was substantially above that of feeder pig participants.

Dairy paraprofessionals possessed special competencies in ration formulation and feeding, sanitation and disease, and production testing. Each paraprofessional worked with up to 20 farmers and made regular (at least twice per month) visits to each farm.

Assessment of the dairy program was limited to a sample from 135 dairymen who participated in a DHIA owner-sampler program as part of their participation in the dairy management project [11]. Thus, the sample was from a select group of low-income farmers. The group could be characterized as more highly motivated than the average low-income dairy farmer.

Again, the internal rate of return approach was used to analyze program effectiveness. The stream of discounted costs and benefits was limited to ten years. This may have been too short since half of the participants were less than 38 years old. Increase in net milk sales was the only benefit quantified.

A 10-year milk production pattern that assumed average annual milk production increased from 7,300 lbs. per cow in year one to 11,700 lbs. in year ten and no growth in herd size gave an IRR of 12 percent (Table 1). An alternative analysis that assumed the

Table 1 RATE OF RETURN ANALYSIS; TWO MISSOURI TECHNICAL ASSISTANCE PROGRAMS FOR MARGINAL FARMERS

Internal Rate of Return	Benefit/Cost Ratio[a]
FEEDER PIG	
30%	2.0
DAIRY - NO GROWTH	
12	1.3
DAIRY - 3% ANNUAL GROWTH	
23	2.2

[a]Discount rate: 5%

[6]Net salary improvements were estimated by computing average annual earnings of the paraprofessional prior to their employment in the feeder pig program and subtracting prior earnings from average earning during employment as a paraprofessional. No salary projections were made beyond the termination of employment as a paraprofessional.

above improvement in production efficiency plus a three percent herd growth rate gave an IRR of 23 percent. Although herd improvement is a normal practice on dairy farms, it is our opinion that the 12 percent rate is conservative for marginal dairy farmers who are serious enough about net earnings to participate in the DHIA program. Use of the 10-year period for estimating benefits and costs probably underestimated the expected rate of return.

IMPLICATIONS

Development has been broadly characterized as an overall upgrading of economic and related social opportunities in an area. Technical assistance programs similar to the ones described above have potential for upgrading economic opportunities of marginal farmers. Within limits, an educational model that emphasizes (1) enterprises which give high capital turnover from available resources and (2) use of technically competent paraprofessionals can generate rates of return which compare favorably with other public investments in rural development.

The two programs evaluated suggest some basis for accepting the hypothesis that paraprofessionals can be used effectively with farmers whose goal is improved earnings as long as the paraprofessionals are competent. The relative effectiveness of a paraprofessional agriculturalist as compared to a professional is unknown, although studies of the effectiveness of paraprofessionals in the fields of public health and nutrition have suggested paraprofessionals working with low income families are more effective. The use of paraprofessionals does increase the number of personal contacts which are possible per educational dollar and frees a professional for working with more difficult problems.

The on-farm technical assistance approach takes an additional significance given (1) recent policy directions with respect to providing viable economic opportunities for rural residence as a means of stemming the rural to urban migration and (2) the resistance of some marginal farmers to migrate to higher income opportunities.

REFERENCES

[1] Bird, Allan R., "Needs and Potential for Research in Rural Development," *Western Agricultural Economics Proceedings 1971,* May 1972.

[2] Carroll, A. B., "Education for Reduction of Rural Poverty," *Papers on Rural Poverty,* Agr. Policy Institute Report 37, Raleigh, 1969.

[3] Hines, Fred K., "Propensities to Invest in Schooling in the South and Non-South," *American Journal of Agricultural Economics* 51: 1561-64, Dec. 1969.

[4] Ladewig, H. W. and V. W. Edmonson, "An Interim Evaluation of the Effectiveness of Nonprofessionals in Cooperative Extension Education for Low Income Farmers," Paper presented at the Annual Meeting of Assn. of So. Agr. Workers, Richmond, Feb. 1972.

[5] Maddox, James G., "Emerging Agricultural Problems for the Decade Ahead," *Southern Journal of Agricultural Economics,* 2:11-14, Dec. 1970.

[6] Morris, W. H. M., *Part-Time Farming in the Midwest,* Agr. Econ. Dept. Publ., Purdue University, 1969.

[7] Paarlberg, Don, "Farm Policy Requirements as Seen from the Perspective of Government," *Southern Journal of Agricultural Economics,* 2:15-18, Dec. 1970.

[8] Reinsel, Edward I., "Off-Farm Income of Rural People Involved in Farming," *Southern Journal of Agricultural Economics,*2: 115-119, Dec., 1970.

[9] Schaller, W. Neill and R. J. Hildreth, "Toward Farm Policy Requirements for the 1970's to Improve the Well-being of Rural America," *Southern Journal of Agricultural Economics* 2:19-22, Dec, 1970.

[10] Schneeberger, K. C., et.al., *Upgrading the Earning Potential of Rural People - A Pilot Study in the Ozarks,* Agr. Econ. Paper AE 1971-8, University of Missouri, 1971.

[11] Tweeten, L. G. and Dean Schreiner, "Economic Impact of Public Policy and Technology on Marginal Farms and on the Nonfarm Rural Population," In *Benefits and Burdens of Rural Development,* Iowa State University Press, Ames, Iowa, 1970.

[12] U. S. Department of Commerce, Bureau of Census, *Census of Agriculture, Missouri, 1969.* Washington: Gov. Printing Office, 1970.

[13] Williams, Michael, "Socio-Economic Characteristics and Attitudes Toward Change of Small Farmers in Polk and Wayne Counties, Missouri," unpublished paper, Department of Agricultural Economics, March 1972.

[14] Williamson, H., "Economic Impact of the Ozark Dairy Component," Unpublished M.S. thesis, University of Missouri, 1971.