Rural Poverty and the Problem of Increasing Food Production on Small Farms: The Case of Colombia

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It is increasingly recognized that "At the root of the world's food problems are serious imbalances in the availability of resources, the distribution of incomes, and the conditions under which food is produced and traded" [Walters, p. 530]. The root cause of the food problem in Colombia is not merely a serious imbalance in resource availability but an even more serious problem of widespread poverty among small farms and its ramifications.

This paper 1) surveys the extent of rural poverty in Colombia, 2) examines some of the poverty related problems standing in the way of raising food output on small farms, and 3) addresses these problems with some suggestions for decision-makers. A basic premise of this paper is that a more comprehensive understanding of the conditions of poverty at the farm level is of paramount importance in determining the relevance and potential success of strategies aimed at solving the causes of the food problem.

Widespread Rural Poverty

The majority in Colombia's agricultural sector is still living in a subsistence rural economy. However, a massive exodus of the rural population from agriculture to the cities reflects the desperate effort of many to escape the crushing poverty of their social and physical environment. Of great concern is the fact that the rural sector produces and sends to the cities less food than its potential and more migrants than can be employed.

Part of the problem of food supply is that the vast rural majority works in a context that inhibits the utilization of the work capacity. Cultivating as they do one-fourth of the farmland, the Colombian small farmers manage to produce two-thirds of all food output in the agricultural sector. And yet the gross income of the small farmer is between one-tenth and two percent of the gross returns of the average member of the Colombian rural elite and large landowners [Vallianatos, p. 80]. Concomitantly, the elite that owns most of the country's resources controls the employment of a large number of agricultural workers.

There is no uniquely correct way of measuring the extent of rural poverty, nor is there a standard way of measuring income. However, on the basis of a study by INCORA,[1] close to 6.5 million rural Colombians (out of 10 million), were living in poverty in 1970; nearly one-third of the country's entire population. To measure this, INCORA adopted an arbitrary standard that a family (which includes about 6 people on average) was in a state of absolute poverty when it had an annual income equivalent to 14,700 pesos (about US $550) or less in 1970. Accordingly, INCORA estimated that there were 935,000 poor families in rural Colombia in 1970. Of this total, 190,000 families were landless, 658,000 owned less than 5 hectares of land and had incomes less than 80 percent of the benchmark income, 37,000 were families with 5 to 10 hectares of land with incomes less than 60 percent of the benchmark, and 50,000 were tenant and sharecropper families working plots of less than 15 hectares. Comparing 1970 real income to that of 1962, INCORA's study pointed to a worsening situation.

Indicators of Poverty in Garcia Rovira

The province of Garcia Rovira mirrors in almost a classic fashion the nature of the problems of

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[1] INCORA is the National Agrarian Reform Institute.

rural poverty and food production. Located in northeast Colombia about eight hours away by jeep from Bogota, this province is typical of the Andean region; it is mountainous and insufficient in good quality land relative to its population. The province suffers not only from rapid growth in population but also from the destruction of its natural resources.

Because Garcia Rovira has some public service institutions and was also chosen for a regional project of "integrated rural development," a comprehensive benchmark survey was conducted in 1972 by the Instituto Colombiano Agropecuario [Rochin and Landoño].[2] It covered a random sample of 1,263 farm units drawn from the universe of 15,411 farms recorded in the 1970-71 Census of Agriculture. Altogether, the survey included 8.2 percent of the farm units and 11.8 percent of the area and yielded insights to many questions concerning the poor and the problems and possibilities of raising food production.

By adapting the measure developed by INCORA–that the threshold of absolute poverty per family was about Col. $14,700 in 1970–survey respondents were divided into two subgroups: 1) the "poor", who managed farm units with a gross production value of less than Col. $15,000 in 1971, and 2) the "rich", who managed farm units with gross production values equal to or greater than Col. $15,000. According to this division, the data indicate that about 83 percent of the farm families in Garcia Rovira are poor. Next, the mean values for several characteristics of the sample for each sub-group were compared for significant differences and analyzed. The results of those factors that were significantly different at the .01 probability level are summarized in table 1.

Although the findings comparing "rich" and "poor" could be subjected to more rigorous analysis, they tend to indicate that rural poverty (and at the opposite end of the spectrum–rural wealth) is a direct reflection of numerous factors; e.g., the maldistribution of productive land, disparity of education, tenancy (in which land ownership predominates in the high income strata), and a dual structure of production (in which a high proportion of the resources suitable to the low income farms is dedicated to corn, bean, pea, wheat, and poultry production, in contrast with a greater percentage allocated to tobacco, potato, and dairy activities within the farms with higher income levels). Moreover, as expected, the use of institutional credit and outlays for biological inputs are consistently higher within the high income farm group which allows them to reap relatively greater harvests from production. For the most part, the rural poor are epitomized by an inadequate supply of productive land and capital (relative to farm size) and low investments in education.

Against these background data, the magnitude of rural poverty is highlighted by the fact that 56 percent of the farmers interviewed did not want their children to be farmers. Reasons for desiring nonfarming futures include: 1) "city life is better" (40.6 percent), 2) they want something better for their children than farming (20.8 percent), 3) agriculture does not provide sufficient income (17 percent), 4) they want a better education for their children (17 percent), and 5) there is not enough land to cultivate (15.2 percent).[3]

Poverty Dimensions of the Food Problem

In the midst of widespread rural poverty, there are a number of constraints obstructing ready solution of the food problem among small farms, including 1) the intensive use of marginal land, 2) the limited time of the poor themselves and how they organize their work load, 3) the cropping patterns specific to the poor, and 4) their dependence on supplementary off-farm income.

According to the sample, 93.6 percent of the farms are less than 50 hectares in size, 70.1 are less than 10 hectares, and 32.7 are less than four. Farm units under 10 hectares in size cover only 18.9 percent of the area, whereas holdings larger than 50 hectares (6.4 percent of the sample), account for 52.7 percent of the area; indicating a serious maldistribution of land. However, not all land is suitable for food production. On farms less than 10 hectares, only 55 percent of the

[2] The author monitored a grant from the Ford Foundation that provided funds for the survey and he spent several days in the region working with the *Instituto's* project of "integrated rural development."

[3] Because of multiple responses, the percentage figures sum to 109.

Table 1. Indicators of Poverty in Garcia Rovira, Colombia, 1972

Variable	Sample Means* "Rich" ≥15,000 pesos (N = 161)	"Poor" <15,000 pesos (N = 1,023)
Family Characteristics		
Number of productive members	3.6	2.9
Level of education: productive members	3.2	2.3
Level of education: head of family	2.3	1.8
Land Tenure		
Hectares under ownership	40.6	7.1
Hectares under sharecropping	2.7	1.7
Farm Size (Hectares)	48.4	10.7
Cropping land	9.2	2.9
Pasture land	19.6	3.9
Production Structure – Hectares Dedicated to:		
Tobacco	1.0	.2
Potato	2.5	.4
Capital Invested in (Pesos)		
Dairy	18,472.0	5,167.7
Sheep	2,558.0	407.0
Total Value of Farm Inventory (Pesos)	25,950.7	10,028.8
Biological Input Expenses (Pesos) per Hectare of:		
Tobacco	1,248.2	681.5
Potato	2,200.9	1,220.9
All crops	823.4	465.5
Biological Input Expenses (Pesos) for:		
Dairy	1,495.7	633.7
All livestock	2,617.2	1,340.3
Gross Value of Production (Pesos) from:		
All activities	36,744.5	5,058.8
All crops	26,214.9	3,073.3
All livestock	10,529.4	1,985.4
Tobacco	8,420.3	558.0
Potato	9,802.1	672.0
Dairy	8,006.1	177.9

*Mean values are significantly different at a probability level of .01.

Source: Londoño, D. (Table XLIV, p. 127).

land can be devoted to crops and livestock, indicating that the productive potential of "small farms" is much more restricted than evident. Despite the inadequacy of productive land, and the fact that rapid population growth is increasingly forcing more marginal land into production, the poor are desperately doing the best they can to increase output.[4] For instance, the survey indicates that farms of less than 10 hectares produce nearly twice as much corn, potatoes, and tobacco per hectare than larger farms. This productivity can be attributed mainly to the labor intensiveness of operations and the degree to which the poor seem to work exceptionally hard to make a living. But in their efforts to produce more, small farmers are destroying productive land by reducing watershed and adding to the process of erosion. Indeed, the Colombian Geographic Institute–Agustin Codazzi–estimates that 65 percent of the land in the region "would be better employed in reforestation programs to stop the process of erosion resulting from inappropriate land uses." [Londoño, p. 65]. Even with the labor intensive-

[4] Londono has analyzed the efficiency of resource use across farms in Garcia Rovira with Cobb-Douglas production functions and notes that "the estimated marginal products suggests possible gains from reallocation of resources but they are not expected to be large enough to affect, in a significant way, a development process that seems to depend more on those variables identified as directly related to poverty." [Londoño, thesis abstract, unnumbered].

ness of operations, crop yields in Garcia Rovira are relatively low by national standards.

Overall, the above might suggest that the appropriate strategy to take to raise food output would be to get widespread diffusion and adoption of new technology on small farms [Schertz]. This view is, however, a naive assumption considering the intricate nature of resource ownership and how the poor landholders manage their time and their farms. In 1972, the survey indicated that farmers in Garcia Rovira were aware of better agricultural technologies. According to the survey data, biological technologies were used by at least 22 percent of the farmers, especially those concerned with tobacco and potatoes. But, in general, the use of new technologies and production inputs was notably the luxury of a few cash crop farmers.

With regard to the labor input, farms of less than 4 hectares use approximately 154 equivalent man-days of labor per hectare on average, compared to about 31 man-days/hectare on farms larger than 10 hectares. Furthermore, well over 55 percent of the labor employed by the smaller farms is "exchange labor" in which neighbors help one another for major farming operations. However, while there are social and economic benefits from the labor exchange system, the practice has the disadvantage of tying some of the operations and labor of the individual farmer to a group. For situations involving supplementary enterprises or operations with flexible time schedules, this interdependence may not create major difficulties. But for some food crops in which the timing of operations is a crucial factor from the standpoint of quality and quantity of production, individual families must synchronize their operations carefully with the other parties in their work group. Thus in certain situations these social and economic linkages may adversely affect the potential impact of new production technologies by retarding the interests of some groups to try them. Furthermore, there is considerable reason to believe that in many instances labor may be the more immediate constraint of innovation. Efforts to get farmers to plant earlier, for instance, may result in failure because of a shortage of manpower at the recommended time and no provisions made to introduce implements to relieve labor bottlenecks.

The rural poverty predicament poses other dimensions affecting food production increase. For example, far from being monocultural enterprises, the sample of farms grow a total of 29 different crops, some of which are sown in mixtures rather than in sole stands. Single crops were cultivated on only 53.7 percent of the holdings; 31.5 percent had at least two mixed crops and the rest (14.8 percent) had more variety. In addition, mixed cropping accounts for 12.9 percent of the area sown, with a corn-bean mixture being the most important. The crop mixtures found, however, give a good example of a cropping practice which tends to be inconsistent with the generally accepted notion that improved biological technology should be introduced in the form of sole stands. Despite this belief, mixed cropping is popular (and rational?) among the poorest farmers. On the one hand, the corn-bean combination allows a joint production of food and, on the other hand, the stocks and greens are used as feed for animals; animals which, in turn, are either sources of power or sources of food for farm families.[5]

Another dimension of rural poverty is that it forces potentially good farmers to leave the region. In their own struggle against poverty, the survey indicates the about 8.3 percent of the men and 6.1 percent of the women migrate for employment during seasons each year, usually to work in agriculture in Venezuela; over two-thirds are between 15-34 years of age and represent 13 percent of the population of their age group. Compared to those who remain in Garcia Rovira, the survey data indicate that those who migrate have higher levels of educational achievement.

We might ask to what extent agriculture vis-a-vis off-farm employment is unimportant to poor farmers? There is the inference that on-farm employment is only a marginal or residual use of labor time on the smallest of all farms. In cases where this is true, the potential impact of food production campaigns on the poorest of farms may actually be nil. Even though more data and analysis are needed on income by source and employment and labor productivity by activity before such inferences can be tested, the important

[5] For a region of predominantly small farms, it may be surprising to learn that close to 90 percent of the farms had cattle in 1972. Most cattle are used for draft power and meat; approximately 29 percent are used for milk. In 1972, fully 50 percent of the cattle were not sold in the market place but used in home consumption.

point is that poverty among the smallest farms may challenge measures to increase productivity, if into a vicious circle of nonfarm employment.

Without a doubt, the most disadvantaged farmers are sharecroppers. However, sharecroppers produce more per unit of land than those farmers who are owners or renters. Although more analysis is necessary, the apparent superior productivity may be explained by the following factors: a) a more commercial oriented production attitude by sharecroppers, whose main crop is tobacco, b) sharecroppers have relatively more good quality land and use better inputs, c) given the relative surplus of sharecroppers, fear of eviction forces sharecroppers to maintain high levels of productivity, hence, they work harder, and d) the input-output provisions are such that sharecroppers have to achieve fairly high levels of productivity just to obtain a subsistence income. In general, they receive (from the landlord) up to 75 percent of the value of seed and fertilizer and in exchange for as much as 50 percent of the value of production. Given the minimal residual output, sharecroppers are on average the poorest farmers in Garcia Rovira.

These findings pose a difficult dilemma: 1) to focus food production projects on sharecroppers would be an indirect way of increasing the income of their landlords, and 2) to bypass sharecroppers would be to neglect a productive, yet poor hard-working segment of the farm population. The just solution, which is seldom included in food campaign goals, should be to confer title of ownership on these tenants. However, policy-makers do not like to deal with this tenure problem.

Suggestions for Decision-Makers

Decison-makers in developing countries do not have to be convinced of the prevalence of rural poverty and the food problem. Important questions include: why these problems exist, how they are interrelated, can they be reduced and eventually eliminated?

The primary reason for the food problem is the lack of effective policies to combat rural poverty. This is due in part to a lack of basic information and understanding of the complex nature of rural poverty and its derivatives. Without a doubt the fact that the small farmer has not been touched by better technology partially explains his low levels of living. But the roots of the food problem and rural poverty, as this study suggests, are inbedded not merely in the technological but in the social, institutional, and vicious circles of poverty evident in Garcia Rovira. The Garcia Rovira study is insightful because it strongly suggests that to be more than palliatives, efforts to raise food production must consider and/or change multiple sets of conditions affecting the poor, e.g., education, land tenure relationships, the distribution and allocation of resources, off-farm employment, the time available to labor, and the labor sharing arrangements governing the effective use of new, high-yielding technology. An important rule is that, devising effective projects to raise food output on small farms, calls first for identification and study of the interrelationships in the system of those conditions which epitomize the rural poor.[6] Research is needed on the complexities of crop production systems (e.g., corn-bean combination), the seasonal and intrafamilial allocation of human time, and the social and economic significance of various constraints on the poor. A good start in this direction is the recent study of Carlos Benito.

From the above it should not be inferred that food production plans should ignore the small farmer. On the contrary, the study indicates that food output can be increased by thousands of farmers if they are not bound to the constraints of poverty. Finally, it should also be clear that the problems of rural poverty and food production cannot be treated in isolation. They require comprehensive measures beyond the farm level too. A case in point is that a shortage of renumerative work opportunities off the farm during the slack season may greatly harm the many whose holdings are too small to provide an adequate livelihood.

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[6]There are many attempts to explain the causes of rural poverty in the developing countries. They can all be classified into four general categories: 1) socio-cultural backwardness of the people, 2) efficient farmers but with low-productivity technology, 3) extreme population pressure in limited land, and 4) dependency relations and neo-colonialism developed historically over time [de Janvry]. Understanding rural poverty calls for tests of hypotheses derived from these explanations.

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