AN EMPIRICAL STUDY OF INCOME AND PERFORMANCE INCENTIVES ON A CUBAN SUGARCANE CPA

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This paper presents findings of a case study of a sugarcane-farming cooperative (*cooperativa de producción agropecuaria*, CPA) located in the province of Havana, Cuba. Although the internal dynamics of specific Cuban cooperative farms have been examined by Cuban researchers, the results of their studies are not readily available in the United States.[1] A principal purpose of this paper is therefore to provide, in a form accessible to the U.S. academic community, insights into certain aspects of the management of Cuban cooperative farms. Since the data on which the study is based was collected at a single sugarcane-producing cooperative, the conclusions should be only tentatively applied to Cuban sugarcane cooperatives in general, and even more cautiously related to cooperatives that specialize in other crops.

Data, or evidence, was collected from four main sources: (a) interviews with cooperative members, especially, but not exclusively, those on the board of directors; (b) examination of documents created by, or about the co-op; (c) review of cooperative archives such as member lists, maps, and receipts; and (d) direct observation of work, decision making, relations between members and leaders and other aspects of co-op life over a four-week period of study.

Beginning on August 6, 1995, the lead author's four weeks at the cooperative were divided among three of the farm's four major administrative areas.[2] The first week was spent alongside the board member in charge of overall production (*jefe de producción*), who was also the acting president, while the president himself was on vacation. The following week was dedicated to working with the agronomist, who directs operations specifically for sugar cane. The third week began at the co-op's machine repair shop, spending time with the member in charge of co-op machinery (*jefe de maquinaria*), the shop foreman and the mechanics. Towards the end of that week, and during the fourth week, the investigation moved into the cooperative administrative offices. There, open-ended interviews with the cooperative's economic officer alternated with copying of data from cooperative records. After leaving the cooperative, three days were spent at a training center for cooperative members, where a month-long course for the agronomists from nearly 100 cooperatives was in progress. This contact with members of cooperatives from all corners of Cuba provided an excellent opportunity to place the experiences at "Amistad Cuba-Laos" into a larger perspective. Finally, on a brief vis-

1. An exception is the ongoing work of Carmen Diana Deere et al (1992, 1994 and 1995).

2. The department not examined was "Procurement." While this function is vital, especially in times of input shortages, its operations are principally oriented outward, while the focus of this research was on cooperative internal dynamics. In any case, the procurement "jefe" was on vacation during the entire research period, as was also the cooperative president. It was known that August was a vacation month in Cuba, so the research trip was originally scheduled for June and July (when harvest was completed and co-op members would have time for meetings, discussions and interviews). However, in spire of applying months in advance for the necessary documents, both the Cuban visa and the U.S. Treasury Department travel license were delayed until mid-July.

it to Cuba in June of 1996, the lead author was able to spend a day visiting another sugarcane cooperative in Ciego de Avila province, and later, a few hours at the "Amistad Cuba-Laos" cooperative, clarifying some points and taking photographs.[3]

Overall, the "Amistad Cuba-Laos" farm was found to be a highly mechanized, well organized, on-going operation, with basic planning and accounting systems in place. The cooperative leadership appeared to be open to the adoption of new technologies, and sugarcane yields, which plummeted as a result of severe input shortages in the early 1990s, were recovering somewhat as inputs became more available. On the other hand, work quality and intensity appear to be below potential, in part due to an incentive system that had not evolved to meet the country's changing economic conditions. The authors hope that the analysis presented in this paper can ultimately contribute to an improved understanding of an extremely important Cuban institution: the agricultural production cooperative.

AGRICULTURAL PRODUCTION COOPERATIVES IN CUBA

What is an Agricultural Production Cooperative?

Edward Reed (1977:360) has described the agricultural production cooperative as a farm where,

> the land and major capital items are held in joint ownership by the farm workers themselves, the bulk of the land is collectively cultivated, and any profits of the enterprise are shared by the cooperative members. Ideally, as joint owners, members of production cooperatives participate in the decision-making process concerning all aspects of production, distribution and investment. Thus, this type of group farm is distinguished from the state farm, where workers are wage employees of the state, and forms of cooperation where farmers cultivate their individual plots while carrying out some operations jointly.

According to Cuban law,[4]

> the agricultural production cooperative is a voluntary association of small farmers who join forces in collective agricultural production, of a socialist nature, that is based on the pooling of their lands and other means of production. . . . The agricultural production cooperative is an economic and social organization, whose management enjoys autonomy from the state. Its activities are carried out in the interests of society as a whole, in accordance with internal cooperative democracy and the shared labor of its members, and in conformity with the Unified Plan of Socio-Economic Development.

First Period of Cooperative Formation

Since the Cuban revolution of 1959, there have been three periods during which the government has promoted the formation of agricultural production cooperatives. The first period, from 1959 through 1963, saw the formation of three types of cooperatives. The earliest, called simply "agricultural cooperatives," were established on large non-sugarcane farms or ranches, which had been expropriated during the first months of the revolution (Bianchi 1964:105). Between May 1959 and May 1960, 881 of these agricultural production cooperatives, mostly in the size range of 200 to 300 hectares, were organized. This first co-op experience was short-lived, however. In January of 1961 these cooperatives were merged into the centrally managed network of state farms. Meanwhile, in June of 1960 similar cooperatives were established on the "administration lands" of large sugarcane plantations.[5] Within two months over 600 of these "sugarcane cooperatives" were established, and in May 1961, 622 cooperatives, with a total of 122,000 members controlled 809,000 hectares of land (Bianchi 1964:108).

Like the "agricultural cooperatives," the "sugarcane cooperatives" were to be a brief institutional interlude on the road to a centrally managed agriculture.

3. In addition, since the summer of 1994, the co-authors have visited a number of cane and non-cane UBPCs and CPAs, including "Amistad Cuba-Laos."

4. Chapter 1, Articles 4 and 5 of Ley 36, July 22, 1982 (Asamblea Nacional del Poder Popular 1982). Reaffirmed by Decree 159, September 20, 1990 (Consejo de Ministros 1990).

5. Administration lands are those fields managed directly by the sugarcane mill administration, as opposed to those lands leased to, or owned by, independent cane farmers.

After only two harvests, in August 1962, the National Congress of Sugarcane Cooperatives voted almost unanimously to transform their cooperatives into state farms (Domínguez 1978:448; Dumont 1970:48; Bianchi 1964:107-108). The National Association of Small Farmers (Asociación Nacional de Agricultores Pequeños, ANAP) in 1961 initiated a somewhat more enduring effort at cooperative agricultural production.[6] Between May of that year and May 1962, ANAP organized 229 "agrarian societies." These cooperatives differed from those previously discussed in three major ways. First, they were composed of small farmers who pooled their land in order to work it collectively, sharing draft animals and implements (Martín Barrios 1987:53). Second, they were much smaller than either the agricultural or sugarcane cooperatives: the average size of the 345 agrarian societies reported in August 1963 was 137 hectares, with an average membership just under 13 farmers.[7] Finally, the agrarian societies were more democratic, with members electing their own authorities, whereas the government appointed managers to the agricultural and sugarcane cooperatives (Bianchi 1964:106, 127). Although over 500 agrarian societies were organized in 1962 and 1963, these cooperatives failed to generate much interest among the small farmers (Regalado 1979:197). By late 1967 only 126 remained, and four years later, the count had dropped to 41 (Domínguez 1978:449; Martín Barrios 1987:74).

Second Period of Cooperative Formation

The second period of cooperative formation spanned the years 1977 through 1983. The "agricultural production cooperatives" (cooperativas de producción agropecuaria or CPA) organized during this period were fundamentally very similar to the earlier agrarian societies, though usually larger.[8] Since the cooperative selected for this case study is a CPA, this period will receive a more thorough treatment than the other two.

As a result of the agrarian reform law of 1959, small, independent farmers came to own about 30 percent of Cuba's farmland (Zimbalist and Eckstein 1987:8). Throughout the late 60s and early 70s, the Cuban government utilized various pressures and incentives to integrate these private farmers into the state's agricultural planning, production and distribution system, which was a centerpiece of the planned economy (Zimbalist and Eckstein 1987:9). As a result, during this period many peasant farms were either leased or sold to the state.[9] Beginning in 1975, however, the government began changing official policy towards peasant farmers. The new policy led to a gradual, voluntary process of attracting farmers into agricultural production cooperatives of their own making, rather than into state owned farms (Deere et al. 1992:120; Zimbalist and Eckstein 1987:13).

The practical task of organizing the CPAs was carried out by the small producer association, ANAP. Beginning in the early 60s, ANAP's membership was gradually organized into mutual aid groups and "credit and service cooperatives" (cooperativas de crédito y servicios or CCS).[10] This organized, small farmer base proved to be fertile ground for the creation of production cooperatives, over 1000 of which were constituted between 1977 and 1980 (Martín Barrios 1987:154). A good deal of the long-term success of this effort seems to have been due to the emphasis

6. Since 1961 the ANAP has been the officially sanctioned representative of Cuba's private agricultural producers.

7. The totals reported in Martín Barrios (1987:53) are 4,429 members and 47,319 hectares (3,526 *caballerías*). It is not stated whether this is total land area, or agricultural lands only. In 1965, Sergio Aranda reported 270 agrarian societies encompassing 40,193 hectares (2,995 *caballerías*) and just over 3,200 farmers (Aranda 1958:158).

8. It may be confusing that the specific name given to the co-ops, "agricultural production cooperatives," is the same as the generic name. To reduce the possibility of confusion, we will use the Spanish acronym "CPA."

9. Even leaders of ANAP, the small farmer organization, apparently felt that their membership would gradually disappear, as peasants opted out of private farming. Interview with Mavis Alvares (July 1995), founding member of ANAP, and presently Director of Development Projects of that organization.

10. "The Credit and Service Cooperatives … enable the sharing of irrigation and other installations, services and productive means, as well as collective arrangements for credit, even though the land, tools and production of each farm remain private" (Comité Estatal de Estadísticas 1989:178).

placed on persuasion, rather than coercion. By pooling their lands, and working collectively, each farmer would no longer be tied to a particular, often isolated, plot of ground. Cooperatives would bring member families together, often closer to towns or villages, and permit access to electricity, improved housing, schools, and medical care. This new form of production would be based on machinery, to lighten the farmer's burden, and to increase productivity. Cooperatives provided for paid vacations and retirement pensions, benefits which small farmers had never known. And in any case, those who entered the cooperatives could, to some extent, "have their cake, and eat it too," since each member would be gradually paid off by the cooperative for the land he or she "contributed" (Deere et al 1992:121; Ghai et al 1988:70-83).

During the late 1970s in Cuba, new departures in the economic, political, and even technological spheres seemed to bode well for these relatively autonomous, democratic, profit-making cooperatives. Coincident with the launching of the CPAs, a new system of economic planning known as the SDPE (Sistema de Dirección y Planificación de la Economía) was being implemented throughout Cuba. In contrast to official economic practice since the early 1960s, the new system emphasized the need for cost calculations, self-financing, profit sharing and enterprise autonomy (Fuller 1992:97; Zimbalist and Brundenius 1989:127). Meanwhile, the political space available to the citizenry was expanded somewhat through the incorporation of secret balloting into the local elections known as "poder popular" or people's power (Pérez-Stable 1993:123). Finally, in 1977, the same year in which the first CPAs were formed, the first Cuban sugarcane combine-harvester factory began production (Sims et al. 1993: 68). Together with the ubiquitous Soviet tractors, these harvesters came to represent the advantages of the large-scale operations permitted by production cooperatives (Edquist 1985:133).

Throughout the first few years of CPA development, a typical cooperative would comprise less than 30, socially homogeneous members. Thereafter, due to the entry of new members, and to a tendency to amalgamate smaller cooperatives into fewer, larger units, the average membership size grew to around 50, where it has remained (Deere et al 1992: 123,133).[11] The social origins of the membership also became more diverse, with new members increasingly from the ranks of landless agricultural laborers, skilled workers (mechanics, welders) and professionals (accountants, agronomists). Although the presence of a core of former small farmers and their family members remains a very important characteristic of the CPAs today, the tendency appears to be for the cooperatives to become numerically dominated by the other groups mentioned.

In 1983, there were 1,474 CPAs, with an average of 637 hectares, and 51 members, per cooperative (Deere et al 1992:123). By 1995, there were 1160 CPAs, averaging 641 hectares and 54 members. This total of 62,257 members farmed 743,000 agricultural hectares, or about 11 percent of Cuba's agricultural lands (Oficina Nacional de Estadísticas 1996). In spite of the gradual decline in numbers, the CPA has proved to be a much more successful model for cooperatives than were any of the previous attempts.

Third Period of Cooperative Formation

The most recent period of cooperative formation, from September 1993 through early 1995, constitutes a reversal of the early 1960s policies that converted the agricultural and sugarcane cooperatives to state farms. By the early 1990's, the large, inefficient state managed farms had become increasingly untenable, and soon the relatively more efficient CPA would provide the organizational model for an extensive agrarian reform (Deere 1995:14; Figueroa 1995:14, 15). This process of transformation of state farms into cooperatives, called "basic units of cooperative production" (unidades básicas de producción

11. The specific importance of the sugarcane combine-harvesters in convincing members of small cooperatives to merge into larger cooperatives was confirmed by the lead author's interviews with founding members of the "Antonio Maceo" CPA and the "Amistad Cuba-Laos" CPA of Havana province in August of 1985, and of the "Revolución de Etiopía" CPA in Ciego de Avila province, in June of 1996.

cooperativa or UBPCs), began in September of 1993, and unfolded very rapidly during the following year and a half. By the end of 1995, there were a total of 2807 UBPCs, 1288 in sugarcane, and 1519 in other crops and livestock. These farms, with a total membership of 271,810, occupied 3,151,500 hectares, or approximately 47 percent of Cuba's agricultural lands (Oficina Nacional de Estadísticas 1996).

While the UBPCs were patterned after the CPA model, they differ in a number of important ways. For example, while the CPAs were formed by small farmers pooling their lands, the UBPCs were established on lands still owned by the state with open-ended, rent-free usufruct granted to the cooperative and with membership comprised of former state farm workers (Deere 1995:14). Also, while CPA members are enrolled in the National Association of Small Farmers, the UBPC members remain in the Agricultural, Livestock and Forestry Workers' Syndicate. Finally, because of the connection between the former state farms and the CAI (Complejo Agro-Industrial), UBPCs typically have less autonomy than CPAs (Alvarez and Messina 1996).

THE "AMISTAD CUBA-LAOS" COOPERATIVE

According to a document developed by the Cuban Ministry of Sugar (MINAZ-ANAP 1983), the "Amistad Cuba-Laos" CPA was formally founded on December 9, 1980, with 134 hectares (10 *caballerías*) of land, and 18 members. On April 15, 1983, the original "Amistad Cuba-Laos" merged with the nearby "Antonio Maceo Grajales" CPA. That same year, the cooperative reached 809 hectares (60.3 *caballerías*) and 71 members. At the time of the study in August 1995, the cooperative possessed a total of 1188 hectares (88.5 *caballerías*), with the following distribution:

- 876 hectares (65.3 *caballerías*) in sugarcane;
- 39 hectares (2.9 *caballerías*) food crops for members;
- 39 hectares (2.9 *caballerías*) livestock, mostly milk cows for member consumption;
- 234 hectares (17.4 *caballerías*) area not useable for agriculture (areas for houses, buildings, access roads, drainage ditches and especially hillsides).

There were 88 members in August 1995 and 96 in June of 1996. The cooperative is highly mechanized, with the following machinery:

- 28 wheel tractors (MTZ-80 and JUMZ);
- 4 track-type tractors (DT-75);
- 4 sugarcane combine-harvesters (KTP-2); and
- 2 medium-duty trucks.

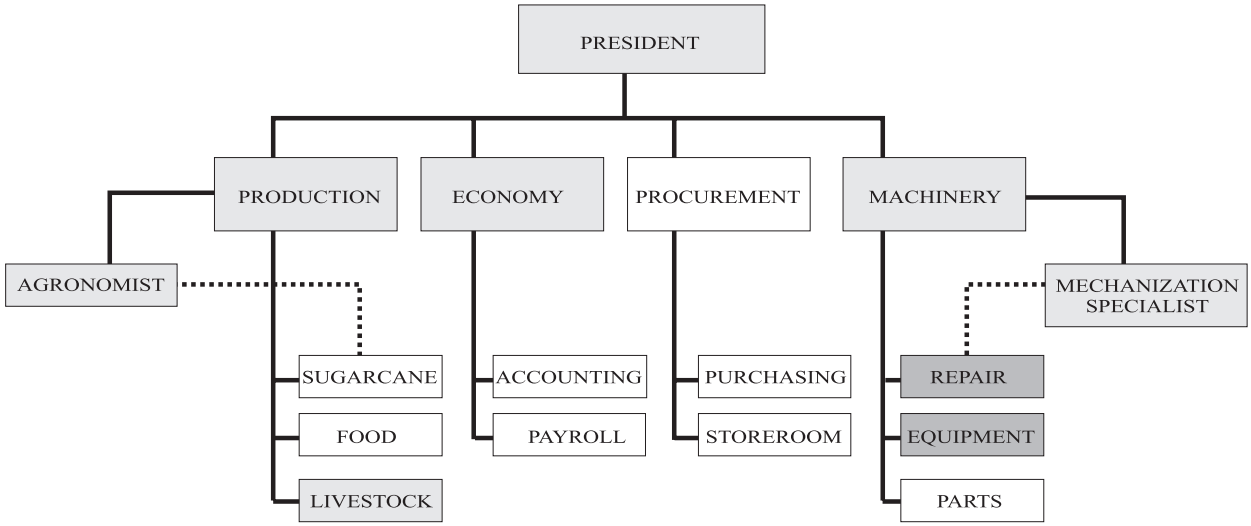
Figure 1 illustrates the organization of authority within the cooperative. Each of the four "departments" is presided over by an officer called a "jefe." The shaded boxes indicate the position held by each of the nine members of the executive council, which includes two "staff" positions: agronomist ("ingeniero agrónomo") and mechanization expert ("ingeniero mecanizador"). Each of these staff individuals has functional authority over a vital activity, as shown by the dotted lines.

Sugarcane Production at the CPA "Amistad Cuba-Laos"

During the "Special Period in Peacetime" the "Amistad Cuba-Laos" cooperative has seen substantial decreases in sugarcane production (see Table 1), accompanied by increases in costs of production (an issue outside the scope of this paper). Taken together, these trends have resulted in lower member incomes, and reduced opportunities for investments by the cooperative.

An interesting trend in Table 1, is the cooperative's reduction of harvested area over the past 10 years. Most of that reduction in area occurred before the initiation of the Special Period in 1990. At the same time, co-op agricultural yields increased substantially into the first year of the Special Period, enabling the co-op to achieve in 1990-91 the largest harvest of its history. These trends are in contrast to the trends in Cuba as a whole, where the land area harvested was maintained, as average yields fell from 1989 onward. All of this suggests an intensification of sugarcane cultivation by the cooperative from the late 1980s,

Figure 1. "Amistad Cuba-Laos" CPA Organizational Diagram



until well into the Special Period. Higher yields, accompanied by a large drop in area harvested, may indicate that the intensification rested in large measure upon longer growing cycles. However, as the economic problems associated with the Special Period progressed, the cooperative's production plummeted, with results paralleling the national average in 1992-93. In that year, cane production for the cooperative and the nation fell by 37 percent and 34 percent respectively, compared to the previous year's harvest.[12]

Member Incomes

Members received a variety of material benefits as a result of their affiliation with the cooperative. Each of these, whether received in cash or in-kind, is considered here as a type of income.

Advance: Although the advance (*adelanto*) received by a cooperative member every two weeks is apparently similar in amount to the wage received by a hired worker, it is important to recognize that they are not synonymous. A wage is paid by an owner to a worker; since the members are all owners, they share profits or surplus rather than wages. However, since the farm's surplus can only be determined after the annual harvest, an advance is provided for members to live on between harvests.

The advance was nearly always expressed in an amount "per day." In activities with defined work standards, or norms (normas de trabajo), the daily amount received by a specific member could vary with the degree of completion of the norm. In general, norms existed for both manual and mechanized field work, but not for machine maintenance or office work.[13]

Where they existed, the norms could be applied in a variety of ways. For example, manual fieldwork usually was performed by groups and the norm determined how much area the group should complete during the course of the work day. The foreman (who supervised and worked alongside the others) made sure the pace was adequate to finish the job. The presence of a supervisor, combined with the fact that the work of each was apparent to all, seemed to

12. During visits in 1994, 1995 and 1996, the authors observed that the "Amistad Cuba-Laos" co-op always had standing cane after the harvest. This is in contrast to most Cuban cane UBPCs, which during the "special period" often cut all their cane (including immature cane) each year.

13. The range of advance-based earning differences among the members is not large. In August of 1995, tractor drivers earned 8 pesos per day, and field hands earned 7 to 7.5. The nine members of the co-op executive council are each paid an amount equal to the average of the five highest paid members for each period.

Table 1. Indicators of Sugarcane Production: CPA "Amistad Cuba-Laos" and Cuba

	Area Harvested		Can Produced		Yield	
	Co-op hectares	Cuba 1000 ha	Co-op 1000 mt	Cuba million mt	Co-op metric tons per hectare	Cuba metric tons per hectare
1986-87	837.4	1366.0	52.6	70.7	63.8	48.0
1987-88	735.4	1305.0	35.9	67.5	50.2	51.7
1988-89	671.0	1355.0	46.0	73.9	68.5	54.5
1989-90	591.8	1427.0	47.9	74.4	80.9	52.0
1990-91	612.0	1443.0	55.0	71.1	89.7	49.1
1991-92	556.9	1461.0	47.1	65.4	84.7	44.7
1992-93	519.4	1219.0	29.8	42.9	57.4	35.3
1993-94	522.0	1283.6	22.7	43.0	43.7	33.5
1994-95	476.4	1177.3	25.4	33.2	53.4	28.2
1995-96	520.7	1276.9	30.8	41.5	59.2	32.5

Source: Cuba, Alvarez and Peña 1995: 29, 81 and various sources based on data from Ministry of Sugar (MINAZ), Havana. Cooperative through 1995, cooperative records; co-op figures for 1995-96 estimated by co-op agronomist. Figures are as reported in records, and may vary slightly from calculated values

Table 2. Per Member Annual Advance and Surplus, from Sample (Pesos)

	Year Ending July											
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Mean Advance	1835	2174	2372	2439	2365	2498	2747	2726	2765	2647	2669	2525
Mean Surplus	1516	1525	1726	1740	981	1824	2747	3372	2049	646	366	1350
Surplus as % of Advance	83%	70%	73%	71%	41%	73%	100%	124%	74%	24%	14%	53%

Source: "Registro de Utilidades Amistad Cuba-Laos." Sample of 8 members randomly selected from among current members who had joined the co-op prior to 1983-84 fiscal year.

minimize outright slacking. Under this "collective" application of norms, each group member received the same pay. As an alternative, the foreman had the option of keeping track of each individual's output for the day. Here, the advance would vary from member to member within the same work group. Although both systems were used, the latter requires more complicated record keeping and was less frequently applied, at least to manual field labor. Individual output was more often the measure for mechanized tasks, particularly for the harvest, as described later in this paper. Evidently, a link exists between the work performed and the advance, although the strength of that link can vary considerably.

Surplus: Each year, after the harvest is sold, the cooperative allocates 50 percent of surplus (*excedente*) to be divided among the membership. The portion of surplus assigned to each member was based solely on days worked during the year, without regard to either the nature or quality of the work. A day spent hoeing out weeds earned precisely the same amount of surplus as a day directing the sugarcane harvest. For most members, in most years, the income from surplus distributed has been smaller, and sometimes much smaller, than the income from advances (Table 2).

The distribution of surplus created a direct connection between the efficiency of the collective, and the income of each member. Furthermore, the criterion for distribution rewarded those who work, or at least were present during working hours. There was, however, a less tangible connection between surplus income, and the quality and intensity of work, than was the case with advance income, which varied according to the fulfillment of work norms.

Food Crop Allotment: During 1995, the "Amistad Cuba-Laos" cooperative dedicated 39 hectares (2.9 *caballerías*) to the production of food crops, and another area of similar size to grazing animals, mainly milk cows. The production from this 8 percent of the farm's agriculturally productive lands was mostly destined for consumption by the cooperative membership (*autoconsumo*).[14] Food crop production, and the livestock operation were each organized as stable work groups. The supervisors of each of these areas were individuals with particular expertise, and those who work in these areas did not generally work in sugarcane, with the occasional exception of participating in the harvest.

Production from the food crop area represented a very important part of the income received by each cooperative member. Each week during the 1994-95 fiscal year an average allotment of 25 pounds of root crops, 12 pounds of rice and 22 pounds of vegetables was supplied to each member, apparently regardless of family size. For the majority of members who resided close to the cooperative, the food is delivered door-to-door. This is an important detail, since most members lived some distance from the local market where similar items could be purchased and transportation to and from shopping would be a problem. The milk herd provided 1.5 liters of milk per day per member.[15] The members paid a nominal fee for this food, which was only rarely as high as 10 percent of the free market value (without considering home delivery!). The only requirement for receiving a full allotment was membership in the cooperative; the amount of food received bore no relation to days worked, much less to work norms.[16]

Individual Family Plots: The 1994-95 fiscal year was the second year that the "Amistad Cuba-Laos" cooperative had assigned land to each member for family rice production. This rice was produced in rotation with sugarcane, in a field chosen because of its poor drainage. The co-op planted the rice area as a unit, by machine, and each member was assigned a specific "strip," 14 rows wide, of the 525-meter long field. The rows were 30 cm apart, so the standard area was 4.2 meters by 525 meters, or 0.22 hectares. Once planted and assigned, the rice plot was the responsibility of the individual member. Work (i.e. weeding and harvesting) on the plot was allowed only during one's free time. Of course the co-op member's family may have had more time to work the plot, although the distance from residential areas (several kilometers) was a limitation. Members sometimes organized after-work trips from the co-op staging area, to the rice field, with a co-op tractor and trailer. The previous year, a number of members with contiguous plots arranged among themselves to rent a rice harvester (which the "Amistad Cuba-Laos" cooperative did not own).

According to the agronomist, a well tended, fertilized plot should yield about 2000 pounds of rice, or perhaps 1300 pounds without fertilizer.[17] Fertilizer was quite scarce, and the cooperative does not have a fertilizer allotment for this purpose, so little was applied. The harvested rice was "hulled" using co-op machinery, at no charge to the individual. The final product belonged exclusively to the individual member, and the co-op did not retain any portion in exchange for the use of land, or machinery used in land preparation, planting, and transportation.

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14. The details of *autoconsumo* distribution are arranged within the co-op, and had nothing to do with whatever quota of food ws also available through the state-issued ration book.

15. One interviewee claimed that the original contributors of land received 2 liters per day. This was the only evidence of an overt perquisite for the "landed founders" noted, although there may well be others.

16. For comparison, the residents of the City of La Habana only receive five pounds of rice per person per month through the ration system and must purchase additional quantities at relatively high prices in the agricultural markets. Furthermore, only those on special diets and children under seven years of age can obtain milk in the City of La Habana, with an allotment of one liter per day (when it is available).

17. Production could be considerably less, depending on the effort invested. One member contacted after the harvest said that she had done little or no weeding, and harvested 490 pounds of rice, before hulling.

The individual plots were one way of channeling family labor towards direct improvement of the family standard of living. Interestingly, a visit to the individual rice area found over half the plots nearly overrun with weeds. Although some were meticulously attended, overall, these family plots appeared considerably less well cared for than the collective food-producing areas of the co-op. The co-op leadership seemed to look upon this as a learning experience, to be continued, modified or abandoned, depending on member response and results.

Backyard Pig Raising: Prior to the collapse of the Cuba's eastern bloc trading partners, the cooperative was able to purchase sufficient feed for animals to regularly provide members with pork and chicken from its own production. At the time of this research, feed was no longer available in sufficient quantities to maintain livestock operations on the previous scale, so at that time the cooperative was breeding pigs in order to provide each member with a piglet, at about nine-month intervals. The member then raised the pig in a backyard pen, using table scraps, residue from banana plants, or other sources of food. Although the implications of this "take home" policy on neighborhood sanitation were problematic, as a solution to the animal feed shortage, it worked well. As with the individual rice plots, a suitable combination of collective and individual activities and inputs appeared to be evolving, in response to changing economic conditions.

Quantitative Comparison of Income Sources

One way of comparing these various non-monetary portions of family income is to express each using the common denominator of market value. Most of the in-kind items were available at the near-by Bauta agricultural market and the lowest estimated or observed market prices were used to generate conservative values for comparison.[18]

Table 3 summarizes and compares the relative magnitude of each income component already described, for an average cooperative member. Even using a conservative methodology for estimating the value of food provided, the cash income received by the average member, 3,507 pesos (from advances and distribution of surplus at the end of the year), was only a quarter of the estimated 14,282 peso value of all (cash plus non-cash) income.

Table 3. Per Member Income Equivalent in Pesos, July 1994 - June 1995 Period

Income Component	Amount	Percentage of Total
Advance on Profits	2,236	16%
End of Year Profits	1,271	9%
Food Crops Allotment	6,075	43%
Individual Plot Production	2,000	14%
Patio Pigs	2,700	19%
Total	14,282	100%

Source: Royce 1996: 162.

It is not unreasonable to assume that this apparently unbalanced situation is largely the result of two factors: 1) low prices paid by the State for sugar; and 2) the relative scarcity of food during the Special Period. As the amount of food available through the rationing system decreased in the 1990's, the price of food available through market (including black-market) channels increased and hence the value of food crop allotments and other similar programs to CPA members increased correspondingly. The value of monetary income was probably further diminished by the reduced availability of inexpensive consumer goods

18. It is widely recognized that prices at the Cuban agricultural markets during this period were not fixed in any way by the government (Pastor and Zimbalist 1995:18; Deere 1995:16-17). There was a tax of 5 percent in La Habana, 15 percen elsewhere (Pérez and Torres 1996). The government did attempt to exert some downward pressure on market prices by either directly selling products below the going rate, or by encouraging co-ops to do so. This appears to have been the case at "Amistad Cuba-Laos," which according to those responsible for selling a small amount of co-op production at the market, regularly prices its offerings about 20 percent below the general price. Since no study of prices at the Bauta market was available, the lead author collected prices during a visist to the market. The cooperative members who handled sales at the market also provided their estimates, and finally, prices were compared to those appearing in a survey done in La Habana markets (Deere et al 1997).

from Soviet or Eastern European origin, and their replacement by more costly items, often for sale only in U.S. Dollars.

Income as a Work Incentive

Each of these five income sources bears a specific relation to work motivation for cooperative members.

- "Advance" was usually based strictly on days worked, and to a lesser extent, on comparing work completed to work norms. It was the only income category tied (at least sometimes) to the quality and intensity of work within the cooperative.
- "End of Year Surplus" was the only category directly related to the farm's profitability. Since surplus was distributed according to days worked, no element of work quality or intensity entered into the calculation of each member's share.
- "Food Crop Allotment," the largest single category of income received by members, was distributed solely on the basis of membership, regardless of the level of responsibility, quality, intensity or any other aspect of the work performed.
- "Individual Plot Production" depended on the quality and intensity of work, but work within the family, and not within the cooperative. All co-op members were eligible for plots.
- "Backyard Pig Raising" depended on the piglets supplied by the co-op, for which the criterion was simply cooperative membership.

Only in the case of the "advance" was there any direct relation between work quality, and income, and only "end of year surplus" varied directly with farm profitability. All other income sources depended solely on membership. Strictly speaking, a member need not even have shown up for work, yet would have remained eligible for these benefits. Additionally, this in-kind, membership-based incentive system severely limited income differentiation, or rewards, within the cooperative according to either the nature and requirements of a particular job, or job performance.

In order for these non-monetary, yet very substantial portions of income to serve any direct motivational purpose, the condition of membership itself needed to be strictly linked to some minimal indicator of productive activity. At the very least, this implied a credible threat of expulsion for work absenteeism.

The cooperative records indicated the date of entry of each new member, and the date of exit for those leaving. A reason for leaving was also generally included, although the level of detail included was inconsistent. Even assuming some errors or omissions, Table 4 indicates a clear trend.

The pronounced shift from "Resignation" to "Expulsion" (*baja*) probably indicates that the cooperative was indeed utilizing expulsion as a form of discipline to a much greater extent in recent years. Unfortunately, the use of expulsion as a usual form of labor discipline within a cooperative may engender problems of its own. If cooperative functioning is enhanced both by the sense of ownership possessed by each member, and by the existence of social solidarity among members (Prychitko and Vanek 1996:xv; Romero Valcárcel et al 1994:42; Bonfiglio 1986:187), and if, as seems probable, both the ownership and solidarity are undermined by expulsions, then the frequent use of expulsion as a method of eliciting work discipline may be fundamentally incompatible with cooperative forms of production.[19]

The Harvest

The sugarcane harvest itself was the most developed example of payment (of the wage-like "advance") according to norms. This is because it was the one ma-

19. Another issue raised indirectly by Table 4 is the high rate of turnover among membership. High turnover was especially marked among male members who entered without land. Between the co-op's inception and 1995, 179 landless men entered, and 119 also left during the same period. Some data indicate that this level of turnover may not have been typical of CPAs in general (Deere et al 1992:Table 4, p. 131).

Table 4. Reasons for Leaving "Amistad Cuba-Laos" Cooperative, Selected Years

	Resignations		Explusions		Retirements		Other		Unknown		Total	
1984	5	100%	0	0%	0	0%	0	0%	0	0%	5	100%
1986	12	86%	0	0%	0	0%	1	7%	1	7%	14	100%
1987	1	20%	2	40%	1	20%	1	20%	0	0%	5	100%
1988	4	44%	2	22%	1	11%	2	22%	0	0%	9	100%
1993	0	0%	22	88%	3	12%	0	0%	0	0%	25	100%
1994	0	0%	11	85%	1	8%	1	8%	0	0%	13	100%

Source: "Lista Consolidada de Socios de Cooperativa 'Amistad Cuba-Laos.'"

jor operation where output was always measured, and officially recorded (for payment by the sugar mill to the co-op). Each wagonload was weighed, with a receipt is issued which included the wagon number. Based on this documentation from the cane receiving station, the cooperative developed its own documentation in order to assign each wagon-load to the work group responsible for harvesting and moving that output.

Not all members were needed to participate directly in the harvest; those chosen to "go to the harvest" (*ir a la zafra*) appeared to consider it an honor, or at least an opportunity to earn increased monetary income through extra workdays and by exceeding the norms. The selection was said to be based on good work and especially on low absenteeism. Members with more seniority also tended to participate. Whatever criteria were used by the cooperative executive board, the list of those who implement the harvest had to be submitted to the general assembly for approval. Some specialized workers, like the combine drivers, invariably take part. Although this research was not conducted during the harvest months, it was apparent from many interactions with co-op members that the usual enthusiasm, and even mystique which agriculturists reserve for the harvest was alive and well at "Amistad Cuba-Laos."

The role of the "record keeper" (*computador*) was described as vital to determining the output of each work group. This member maintained a record of the movements of each of the 32 trailers circulating from the fields to weighing/receiving station, and back. Each trailer was hauled alongside a combine harvester that filled it with harvested, chopped cane. When full, the trailer was hauled to a staging area, where it was hooked with two other trailers and towed to the receiving station. At the receiving station, the driver was given a receipt showing the weight of cane unloaded from each trailer. The receipts would later be matched up with each of the combine and tractor drivers who handled the trailer, and the amount of cane shown would be added to the day's total for each operator.

Detailed tables of norms were consulted to evaluate the daily performance of those involved in the harvest. Although the tables referred directly to the amount harvested by the combine, the norms for other machine operators were easy to derive: for each combine, there were two tractors that haul trailers as they are filled (*movedores*). The norm for the operators of each of these two tractors was one half the norm for the combine. There were five other tractors (*tiradores*), which hauled the full trailers, three-at-a-time, from the staging area to the receiving station and back empty. Since these five operators served all four combines, the norm for each of them was the combine norm multiplied by four, and then divided by five. In this fashion, most of the participants in the harvest had the satisfaction of knowing precisely their own (and each others') productivity. Central to the process were the combine drivers, who each aspired to harvest a million *arrobas* (11,502 metric tons) of cane in a season. Prior to the Special Period, "millionaire" status brought a material reward, such as a motorcycle, in addition to the social status. Usually, individuals from each harvest job category were selected as outstanding workers, and received recognition for their efforts. As a group, the members of "Amistad Cuba-Laos" were proud that they had, on

various occasions, won recognition as the best harvest team (*pelotón*) in Havana province. Overall, the compensation for harvest activities was a good example of payment based on work done, rather than on membership alone.

The Repair Shop

Repairs and maintenance of agricultural machinery were carried out within the cooperative's shop structure. Open on three sides, the shop was well lighted (during the day) and had excellent ventilation. Its concrete floor and high, pitched roof could accommodate six tractors and two harvesters at the same time. There was an area for welding, and another for secure storage for technical manuals, tools, supplies and spare parts. The staff consisted of about ten mechanics, welders and helpers, a fuel dispatcher, an administrator and a technical supervisor. The precise number of workers varied throughout the year, since some shop helpers and other machine operators are not always attached to the shop.

While mention of the harvest brought a smile to the face of nearly any co-op member, reference to the mechanical repair shop was likely to cause a look of concern. Of course, as work environments, these two situations could not have been any less similar. The harvest was a glorious battle, with a precise beginning and ending, and a sweet victory when the co-op's planned harvest was met or exceeded. The shop was an unending series of guerrilla skirmishes against aging machinery, with victory impossible, and defeat unthinkable.

Related to the inherent differences between the activities of the harvest and the shop, there is another difference. Among all major co-op activities, the harvest produced the most complete record of individual and group productivity, while the shop produced hardly any record linking people to work performance. It should be noted that the problem was not one of individual versus collective tasks: shop work by a given mechanic was as "individual" as any performed at the cooperative, while "individual" performance within the harvest was heavily conditioned by the coordinated functioning of the work group. Nor was this a problem of basic organization. The critical role of machinery in the farm's productive process, the scarcity and high cost of spare parts and replacement machines, and the reporting requirements of the CAI (Complejo Agro-Industrial), each underscored the importance of achieving and maintaining an acceptable level of shop organization. In fact, the shop worked according to a post-harvest plan for major repairs, tracked maintenance periods through machine fuel consumption, and maintained a well-organized store room for spare parts. Missing, however, was precisely the element that made the harvest stand out—thorough record keeping. There was no way, beyond remembering, to know who performed a specific repair, on what date, and how much shop-time was involved.

Observations and interviews in the shop revealed poor morale, and generalized "free riding" in the form of low quality and quantity of work. Neither the low levels of work, nor low morale could be justified either by inadequate knowledge and skills among the workers, or by poor working conditions. Rather, the problem was motivational, probably related to the excessively egalitarian payment system already discussed, and compounded by the relative difficulty (though certainly not impossibility) of applying norms to maintenance and repair work.

This was not in any way an inevitable situation. The repair shop personnel possessed sufficient technical knowledge and experience to develop a performance-based system of rewards and sanctions, based on complete machine repair records. The goal of such a system would be to link each job to a specific mechanic, as well as account for the hours worked each day. The data collected would eventually form the basis of developing the shop's own set of norms for time spent on common repairs. Within the observed shop environment, there is no question that the implementation of such a system would require a good measure of leadership. The large question is, if such a system of accountability were implemented, to what extent might the problematic work ambiance of the repair shop be replaced by harvest-like smiles and productivity?

SUMMARY AND CONCLUSIONS

This paper presents partial results of four weeks of fieldwork at the sugarcane CPA "Amistad Cuba-

Laos" conducted in 1995. At that time, the cooperative was in its 15th year of operation, and seemed to be recovering from the most difficult years of the Special Period.

Members received income from five sources: "wage" (or more precisely, advance on surplus), end of year surplus, food crop allotment, individual family plots, and backyard pig raising. Only in the case of the wage was there any direct relation between work quality and income, and only "end of year surplus" varied directly with farm profitability. All other income sources depended solely on membership. Since these "other" sources comprised the bulk of all income, the system of payment and incentives was dominated by non-performance related elements.

The preponderance of non-performance related income almost certainly had a negative effect on work motivation. The analysis of very different working environments within the cooperative suggests that improved linking of individuals or small workgroups to their own productive results could significantly improve work motivation. This approach would minimize the need to resort to potentially destructive expulsions, which recently has been the motivational factor used by the cooperative for alleviating the problem. If sense of ownership and solidarity enhance cooperative functioning and, as seems probable, both feelings are undermined by expulsions, then the frequent use of expulsions may be fundamentally incompatible with cooperative forms of production.

At the other extreme one finds the sugarcane harvest as the most developed example of payment according to the norm performed. Granted, the nature of the process allowed the participants to have the satisfaction of knowing precisely their own (and each others') productivity, and of the material and moral rewards involved in the process. This example contrasted sharply with the situation found in the repair shop because of the very nature of the work performed and the way it was conducted. A constant cause of concern (where poor morale and "free riding" were generalized), this unit maintained hardly any record linking people to work performance. The situation, however, could be partially solved through the establishment of a good system of record keeping. Examples for accomplishing this goal are given in the main text of this paper. The question posed in that section still remains: if such a system were implemented, to what extent might the problematic work ambiance of the repair shop be replaced by the more satisfactory situation prevailing in the annual harvest? The answer to this and the other questions posed in this section rest on the cooperative leadership and the members at large.

Although the members of the CPAs originally were small landowners, many entering later have not brought land with them. At the CPA examined in this study, the August 1995 membership consisted of 21 land contributors, and 67 who entered without land. To the extent that this situation is typical of the sugarcane CPAs, it points out an important convergence in the nature of the membership between the CPAs and UBPCs.

Never in Cuba has there been a period of greater commitment to cooperative production than the one initiated in late 1993 with the decision to reorganize the state agricultural sector along the lines of the existing agricultural production cooperatives. In 1995, close to one-half million members of 6,621 agricultural production cooperatives (CPAs), credit and service cooperatives (CCSs) and basic units of cooperative production (UBPCs) were producing on 4.8 million hectares, which represents nearly three-quarters of Cuba's total agricultural land area (Oficina Nacional de Estadisticas 1996). The importance of the current cooperative movement deserves more attention from scholars studying the Cuban situation.

REFERENCES

Alvarez, José, and Lázaro Peña Castellanos. *Preliminary Study of the Sugar Industries in Cuba and Florida Within the Context of the World Sugar Market*. International Working Paper IW95-6. Gainesville, Florida: IFAS, University of Florida, 1995.

Alvarez, José, and William A. Messina, Jr. "Cuba's New Agricultural Cooperatives and Markets: Antecedents, Organization, Early Performance and Prospects." *Cuba in Transition—Volume 6*. Washington: Association for the Study of the Cuban Economy, 1996.

Aranda, Sergio. *La Revolución Agraria en Cuba*. México: Siglo Veintiuno Editores, 1968.

Asamblea Nacional del Poder Popular. "Ley No. 36: Ley de Cooperativas Agropecuarias." *Gaceta Oficial* 63 (July 22, 1982).

Bianchi, Andrés. "Chapter 3. Agriculture: Post Revolutionary Development." *Cuba: The Economic and Social Revolution*, ed. Dudly Seers, Andrés Bianchi, Richard Jolly and Max Nolff. Chapel Hill, North Carolina: University of North Carolina Press, 1964.

Bonfiglio, Giovanni. "Gestión Empresarial y Cooperativas Agrarias de la Costa." *Perú: El Problema Agrario en Debate*, ed. Seminario Permanente de Investigación Agraria (SEPIA). Lima, Perú: Seminario Permanente de Investigación Agraria (SEPIA), 1986.

Comité Estatal de Estadísticas. *Anuario Estadístico de Cuba 1989*. La Habana: Editorial Estadística, 1991.

Consejo de Ministros. "Decreto No. 159: Reglamento General de las Cooperativas de Producción Agropecuaria." *Gaceta Oficial* 8 (September 20, 1990), 15-28.

Deere, Carmen Diana. "The New Agrarian Reforms." *NACLA Report on the Americas* 29(2) (Sept/Oct 1995): 13-17.

Deere, Carmen Diana, Mieke Meurs, and Niurka Pérez. "Toward a Periodization of the Cuban Collectivization Process: Changing Incentives and Peasant Response." *Cuban Studies* 22 (1992): 115-149.

Deere, Carmen Diana, Niurka Pérez, and Ernel Gonzáles. "The View from Below: Cuban Agriculture in the 'Special Period in Peacetime.'" *The Journal of Peasant Studies* 21(2) (January 1994): 194-234.

Deere, Carmen Diana, Niurka Pérez, and Cary Torres. "Random Survey in Havana Markets of 'Alta Habana,' 'Marianao,' and 'El Egido,' January 18, 1995; June 10, 1995 and January 6, 1996." To be published as a table in "Reforming Cuban Agriculture," *Development and Change*, forthcoming in Fall 1997.

Domínguez, Jorge I. *Cuba: Order and Revolution*. Cambridge, Massachusetts: Belknap Press of Harvard University, 1978.

Dumont, René. *Cuba: Socialism and Development*. New York: Grove Press, 1970.

Edquist, Charles. *Capitalism, Socialism and Technology: A Comparative Study of Cuba and Jamaica*. London: Zed Books, Ltd., 1985.

Figueroa, Víctor M. *La Reforma de la Tenencia de la Tierra en Cuba y la Formación de un Nuevo Modelo Mixto de Economía Agrícola*. Universidad Central de Las Villas, Cuba, 1995. 33 pages.

Fuller, Linda. *Work and Democracy in Socialist Cuba*. Philadelphia: Temple University Press, 1992.

Ghai, Dharam, Cristobal Kay, and Peter Peek. *Labour and Development in Rural Cuba*. New York: St. Martin's Press, 1988.

Martín Barrios, Adelfo. *La ANAP: 25 Años de Trabajo*. La Habana: Editora Política, 1987.

MINAZ-ANAP, Delegación La Habana. *Programa de Desarrollo Perspectivo de la Cooperativa de Producción Agropecuaria "Amistad Cuba-Laos*." Se-

gunda etapa del plan rector CPA modelo. La Habana, 1983.

Oficina Nacional de Estadísticas. *Estadísticas Agropecuarias 1995*. Ciudad de La Habana, Septiembre 1996.

Pastor, Manuel Jr., and Andrew Zimbalist. "Cuba's Economic Conundrum." *NACLA Report on the Americas* 29(2) (Sept/Oct 1995): 7-12.

Pérez Rojas, Niurka, and Cary Torres Vila. *La Apertura de los Mercados Agropecuarios: Impacto y Valorizaciones*. Paper presented at Latin American Studies Association Conference, September 1995. Rural Research Team. La Habana: University of Havana Faculty of Philosohpy and History; Department of Sociology, 1995. 25 pages.

Pérez-Stable, Marifeli. *The Cuban Revolution*. New York: Oxford University Press, Inc., 1993.

Prychitko, David L., and Jaroslav Vanek. *Producer Cooperatives and Labor-Managed Systems: Theory*. Cheltenham, UK: Edward Elgar Publishing, Ltd., 1996.

Reed, Edward P. "Introducing Group Farming in Less Developed Countries: Some Issues." *Cooperative and Commune*, ed. Peter Dorner. Madison, Wisconsin: University of Wisconsin, 1977.

Regalado, Antero. *Las Luchas Campesinas en Cuba*. La Habana: Editorial Orbe, 1979.

Romero Valcárcel, Lázaro, Prisco Barroso Fernández, and Ramón Díaz Menéndez. "Vías para el Perfeccionamiento de la Actividad Socioeconómica de la UBPC '9 de Abril.'" *Colectivos Laborales de Nuevo Tipo, Resumen de Investigaciones Sobre las UBPC*, ed. Polo Científico de Humanidades. La Habana: Universidad de La Habana, 1994.

Royce, Frederick S. "Cooperative Agricultural Operations Management on a Cuban Sugarcane Farm: '. . . and Everything Gets Done Anyway.'" Master of Science Thesis. Gainesville: University of Florida, 1996.

Sims, Brian G., Raymundo Ventot, and Alberto Rivera. "Cooperatives as a Solution to Small Farm Mechanization Problems in Cuba." *Agricultural Mechanization in Asia, Africa and Latin America* 24(4) (1993): 63-72.

Zimbalist, Andrew, and Claes Brundenius. *The Cuban Economy: Measurement and Analysis of Socialist Performance*. Baltimore, MD: Johns Hopkins University Press, 1989.

Zimbalist, Andrew, and Susan Eckstein. "Patterns of Cuban Development: The First Twenty Five Years." *World Development* 15(1) (1987): 5-22.