

Organization and Performance of Cuban Agriculture at Different Levels of State Intervention

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I. Introduction

The structural changes taking place in Cuba's agricultural sector after the 1959 revolution have captured the attention of researchers both on the island and abroad.[\[2\]](#) The demise of the Soviet Union and the collapse of socialism in the Eastern European countries have placed Cuba at a crossroads. Expected changes may include new economic policies leading to economic liberalization and less State intervention.

The agricultural sector will undoubtedly play a major role in any such changes for a number of reasons. First, it is the most important sector and the cornerstone for revitalizing the Cuban economy. Second, it will be the main source to gradually alleviate and eventually resolve the food scarcity present during more than thirty years of rationing. Third, given its proximity to the United States and because of its climate, Cuba could be expected to be an important potential exporter of tropical fruits and vegetables to the U.S. market (VanSickle and Messina, 1992). On the negative side, the expectations of the Cuban exiles who equate privatization with property restitution may result in a confrontation with Cuban producers who have farmed those lands for decades. Finally, of great interest and adding a new dimension to the "special period in time of peace," Cuban agriculture has become more "sustainable" by applying less fertilizers and chemicals to the land.

In addition, agriculture is the only sector in the Cuban economy with different levels of State intervention after more than three decades of collectivization. Analyzing its organization and performance at those levels may provide useful insights on its potential for evolving into a more market-oriented economy.[\[3\]](#) Questions that come to mind when thinking about this issue include:

How many less-State-controlled producers are there?

Are they organized?

How much land do they farm?

Do they have equal access to all factors of production, inputs, and technical assistance?

Can they hire labor?

Do they have access to new technology and credit?

Do they benefit from new investments?

In simple terms, are they playing on a level field?

How much do they contribute to total output?

Do they show a productivity higher than State farms?

Would they respond to market incentives?

This paper intends to provide answers to these questions.[\[4\]](#) The main hypothesis of this study is that, *as the State control decreases in agricultural production units, the quantity and quality of output increases despite a decreasing access to factors of production and other resources.*⁵ The general assumption is that all forms of Cuban agricultural production are, with varying degrees, under direct control of the State and that none of the units can be considered truly private.

II. Brief Historical Background

Up to 1959, most activities of Cuban agriculture took place under a market economy. Being the pivotal sector of the economy, agriculture was to experience drastic and continuing changes under the new leadership.[\[6\]](#) The 1959 revolution changed the system of private ownership of land. Although most authors only cite the two Agrarian Reform Laws

enacted after 1959, the agrarian revolution originated in the Sierra Maestra when Law No. 3 of the Rebel Army was promulgated in November 1958, with land to be given to those who cultivated it.

Domínguez (1978) states that, prior to 1959, only less than a tenth of the peasants were without any legal claim to the land they tilled. These squatters were mainly concentrated in the province of Oriente --the focal point of Castro's guerrilla warfare. And he adds:

This more or less accidental event brought the leaders of the revolution in contact with what was essentially an atypical rural dweller. The revolutionary government's policies in 1959 and thereafter were influenced by this experience, a fact that explains why so much of their early legislation was devoted to solving the problems of Cuba's few squatters, while the many more peasants who were not squatters and the even more numerous agricultural workers received less government attention. The early experiences of the revolutionary leadership distorted the new government's agrarian policies for several years, and were one reason for the striking differences between the rural revolution in the 1950s and the rural counterrevolution in the 1960s (pp. 423-424).

Although this issue is later explained at length by Domínguez (1978, pp. 435-445), he acknowledges that the 1959 Agrarian Reform Law had not broken up the large cattle ranches and sugar plantations, which were inappropriately designated as cooperatives (p. 447). Thomas (1971, pp. 1216-1217) explains that Castro had changed his mind by the time of the 1959 Agrarian Reform Law. He already believed that rather than dividing latifundios into small plots (that would decrease production), they should be organized under State control.^[7] Perhaps there was a political reason behind that change. Policies that support the family farmer and truly private cooperatives have always had more potential for political differentiation than converting a salaried worker or a farmer into an agricultural laborer of a State-run enterprise. For land distribution purposes, the landless peasants were in reality the rural proletariat and, as they amounted to nearly 400,000 workers in sugarcane alone, they represented a powerful political weapon.

Two other Agrarian Reform Laws were subsequently enacted which represented a drastic change from the original idea of massive land distribution. Emphasis fell first on State intervention on expropriated lands, and then on depriving the remaining private farms of the right to hire salaried workers.

The first law was enacted in May 1959. It proscribed the latifundia^[8] and initially distributed some land and encouraged the development of cooperatives on large estates. Cooperative directors were to be appointed by the National Institute of Agrarian Reform (INRA), and members would receive a salary as an advanced payment of their annual profits (Alvarez, 1990, p. 102). Most of these cooperatives, however, were truly State farms by 1962.

In May 1961, the National Association of Small Farmers (ANAP) was established with membership restricted to farmers with fewer than 67 ha and larger farmers who had proven allegiance to the revolution. ANAP's conflicting roles include: (a) being a pressure group to promote and advance its members' self-interest; and (b) being a mass organization for the government and Communist Party, reflecting Lenin's thesis for politicizing the civil society. A pressure group cannot go beyond the means and goals previously authorized by the government --the *modus operandi* of "democratic centralism" in a command economy.^[9]

A second Agrarian Reform Law, enacted in October 1963, expropriated the land of farmers with more than 67 ha. The reasons behind this new law were twofold: (a) the socialist nature of the revolution had advanced more in other sectors of the economy and the previous limit on land ownership became unacceptable; and (b) the rural bourgeois was in contradiction with the revolutionary process and even helping armed groups fighting the government (Aranda, 1968, p. 189).

Most of the land expropriated in the 1959 law belonged to foreign companies and large Cuban owners, while the 1963 law impacted only medium-size Cuban farmers. An interesting and important fact, sometimes overlooked in the literature, is that, after the 1959 Agrarian Reform Law, Cuban farmers prepared themselves for subsequent, more restrictive legislation following two main surviving strategies. Large owners divided their remaining lands into smaller farms, using relatives and extended family members as "legitimate owners" of legally accepted size units. Some of them assumed a predatory attitude vis-à-vis available resources, knowing that, sooner or later, they might leave the country. But the majority did not. Medium- and small-size owners duplicated the experiences of other countries such as Russia, China and Viet Nam, by deepening themselves into the peasant economy. By doing so, they used the peasant economy as a refugee sector intended primarily for self-protection and survival. These farmers did not leave the country.

Data in the book of a Chilean economist who worked eight years in Cuba seem to support the previous statements. Aranda (1968) contains statistics from the National Planning Board (JUCEPLAN) that show 165,866 "private"

production units with up to 405 ha in 1961 with a total of about 4 million ha (p. 190), for an average of 24 ha per farm; and also figures from the July 1965 census that show 199,207 "private" producers with a total of 2.69 million ha (p. 147), for an average of 13.5 ha per farm. In summary: (a) The difference between the 165,866 production units in 1961 and the 199,207 "private" producers in 1965 represent an extra 33,341 producers, for an increase of 20 percent but, at the same time, (b) total farm area decreased by 32 percent, and (c) average farm size decreased by 43 percent. The figures confirm that farmers anticipated the enactment of the 1963 law by reinforcing and expanding the peasant economy where common law prevails over statute law.

Forster (1989) describes the predatory and restraining aspects of that attitude in the following way:

During the early years of the revolution as they faced expropriation, large farmers decapitalized their holdings, failed to maintain irrigation and machinery, slaughtered their animal herds, and otherwise adversely affected production for years to come. Even after the 1963 Agrarian Reform, it is likely that farmers in the remaining private sector were hesitant to invest heavily until they were sure that they too would not be expropriated (p. 239).

Cuban newspapers and magazines contain numerous accounts of the existing antagonism between semi-private farmers and the State.^[10] Domínguez states that "theoreticians often suggest that peasants owning small farms are more likely than others to collaborate with the government, but this pattern is only rarely demonstrable" (1979, p. 463). Cuba is not an exception.^[11] Cuban farmers and their family members typically did not leave the country,^[12] and instead remained on their lands, and fought changes with shrewd anticipation to survive in a hostile environment.^[13] By doing so, they were just corroborating Shanin's analysis of the Russian peasantry's behavior under the threat of Stalinist collectivization when the peasant class, despite previous classic predictions, became a more cohesive one (Shanin, 1983).^[14] This is reflected in the current forms of organization of Cuba's agricultural production units.

III. Organization of Production

Agricultural production presently takes place under four different forms that show varying degrees of State intervention (Table 1).^[15] The State sector comprises large State farms. The non-State sector includes "the Cooperatives of Agricultural Production (CPA), the Cooperatives of Credit and Services (CCS) and, finally, the dispersed small private producers who establish commitments with the State regarding the sale of agricultural products" (Comité Estatal de Estadísticas, 1991, p. 178).

The Cooperatives of Agricultural Production (CPA) are defined as "a superior form of collective production of social property which were started after the farmers' decision to join their lands and other fundamental means of production" (Comité Estatal de Estadísticas, 1991, p. 178).

Table 1. Main characteristics of the four official forms of agricultural production in Cuba from more- to less-controlled enterprises.

STATE SECTOR

State Farms

- Under the Ministry of Agriculture (MINAGRI) or the Ministry of the Sugar Industry (MINAZ).
- Social ownership. Wage earners. Priority for inputs, technical assistance, credit, investments, new technology, etc.
- Enterprises: agriculture, cattle, forestry, agroindustrial complexes (CAI) in sugar and rice.
- All sales to the State procurement agency (*acopio*).
- Concentrated housing and social services as incentives to workers.

NON-STATE SECTOR

Cooperatives of Agricultural Production (CPA)

A "superior form of production"

- Collective ownership.

- State land and machinery.
- Established "freely" by farmers' decisions.
- Join lands and other means of production.
- Products belong to the cooperative.
- Salary is advanced payment.
- Benefits in services, not in cash.
- Most sales to the State (*acopio*).

Cooperatives of Credit and Services (CCS)

"Primary organizations"

- Collective nature.
- Assets belong to the State.
- Facilitate common use of infrastructure (irrigation, warehouses, etc.), equipment and services (credit and technical assistance).
- Individual property of the farm.
- Private production without hired labor.
- Most sales to the State (*acopio*).

Dispersed (separated) Producers

"Traditional form of production (chaotic and anarchic)"

- Controlled inputs.
- Own investment plan.
- Own production without hired labor: subsistence=> barter=> sales.
- Some sales to State (Exceptions: at the farm in the 1970s and at the free farmers' markets in the early 1980s).

Source: Summarized mainly from Comité Estatal de Estadísticas (1991, p. 178) and other Cuban sources. The origins and reasons for establishing the CPAs are described by Benjamin et al. (1986). The decision to push cooperatives was made in 1975 when the government realized that "the small farmers were not pulling their own weight, producing far below their potential while burdening the government with the cost of low interest credits, crop insurance, and social services" (p. 175). CPAs were also seen "as a way of increasing productivity through smaller government investments" since State farms had shown that "huge investments in such inputs as irrigation and machinery were slow to pay off" (pp. 175-176).

Official statistics reveal interesting insights about the evolution of CPAs (Table 2). Except for tobacco, which shows a steady decrease in the number of CPAs, the remaining crops have experienced ups and downs, and all show a decline from 1987 to 1989. Similar trends are observed in the remaining indicators (area, number of members, average ha/coop, and number of members per coop), with the exception of ha/member which has remained relatively constant since 1985 at about 14 ha. [\[16\]](#)

The Cooperatives of Credit and Services (CCS) are "primary organizations of a collective nature that allow the public use of irrigation, some facilities, services and other means, as well as the transacting of their credits, although the

property of each farm, its equipment and resulting production remains private" (Comité Estatal de Estadísticas, 1991, p. 178).

Finally, the "dispersed" (separated) farmers are those who work their lands with family labor, follow ANAP's planting and production plans, and deliver an assigned share of their production to the State procurement agency (*acopio*). These farmers control 3.4 percent of the total agricultural land, have restricted access to some factors of production and inputs, but produce a large share of several agricultural commodities.

In summary, there are State farms, CPAs, CCSs, and small dispersed semi-private farmers. The previous categories reflect the State intervention in descending order but the use of four different groups is a source of confusion that needs to be elucidated or at least addressed.

The breakdown most commonly used in official Cuban statistics includes the State and non-State sectors:[\[17\]](#)

State Sector Non-State Sector

State farms CPAs

CCSs

Dispersed farmers

However, a difference is made between the socialist and the private sectors:[\[18\]](#)

Socialist Sector Private Sector

State farms CCSs

CPAs Dispersed farmers

Table 2. Selected indicators of the Cooperatives of Agricultural Production (CPA) in Cuba, selected years 1980-89.

Item	1980	1981	Year 1982	1983	1985	1987	1989
Number							
Sugarcane	314	348	431	441	422	432	411
Tobacco	262	233	222	230	212	206	197
Coffee	130	199	283	290	266	271	266
Other	329	348	480	511	478	509	479
Total	1,035	1,128	1,416	1,472	1,378	1,418	1,353
Area (1,000 ha)	213	383	690	938	1,009	977	876
# Mem- bers	29,535	39,519	63,285	82,611	69,896	69,604	63,838
Average ha/CPA	206	340	488	637	732	689	648
Members /CPA(#)	29	35	45	56	51	49	47
Ha/member	7.1	9.7	10.8	11.4	14.3	14.1	13.8

Source: Comité Estatal de Estadísticas (1991, p. 184); "Other" and "Ha/member" based on calculations by the authors.

In essence, all four forms of production are subjected to the power of the State, whose interference decreases (but does not end) from State farms to dispersed farmers: State farms ==> CPAs ==> CCSs ==> Dispersed farmers.

The National Association of Small Farmers (ANAP), has evolved throughout the years to become a quasi-governmental organization (See Puerta and Alvarez, 1993, p. 13). Domínguez has explained the origins and evolution of ANAP in the following manner:

The revolutionary government sought to bring political order and social equality to the countryside by abolishing their

many competitive rural political organizations and replacing them with the single... ANAP, in which political and ideological merit rather than wealth or social status would determine political leadership and access to power. This association, unlike the other mass organizations in the early 1960s, looked after the interests of its members, lobbying vigorously on their behalf among the other offices of the state. The expansion of the power of the state into the countryside in subsequent years curtailed ANAP's autonomy and adaptability, turning it into an extension of a government whose policies a majority of the peasantry continued to resist even into the 1970s. In particular, most peasants stubbornly opposed government programs that required them to surrender the right to decide how their land would be used, a resistance that remains to the present day (1978, p. 424).

Although not truly independent, ANAP is still the only Cuban association with a semi-private sector component. Its membership surpassed 200,000 in the past and accounted for almost one-third of the economically active rural population.[\[19\]](#)

IV. Structure of Land Distribution and Use

Total area of Cuban agricultural units has experienced a continuous expansion (Table 3). From 1973 to 1989, the area increased from about 9 million ha to slightly over 11 million ha, an equivalent of 24 percent, distributed as follows:[\[20\]](#) six percent in agricultural lands (from an increase of nine percent in farmed land and a decrease of three percent in non-farmed land), and the remaining 18 percent in non-agricultural lands (a nine percent boost in both forest and land devoted to other purposes). The former coincides with the expansion of military enclaves protected by forestry areas. The latter is due primarily to the expansion of housing facilities and services in the countryside, a process intended to concentrate the rural population within the boundaries of productive units. As an urbanization program, it represents an innovative national effort to develop rural areas, achieving better results than the Rumanian case.

Following the official breakdowns, the total of slightly over 11 million hectares of Cuban land is distributed in the following manner: the State sector controls 82.3 percent while the non-State sector controls the remaining 17.7 percent. Using the socialist versus "private" sector breakdown, the socialist sector accounts for 90.2 percent while the remaining 9.8 percent is in "private" hands. In terms of non-agricultural land, the State sector controls 95 percent of the total, while the non-State sector controls only five percent (Table 4).

The land use within each type of agricultural organization unveils an interesting fact (Table 4). Dividing the amount of farmed land over total agricultural land provides a parameter that measures the intensity of land use. The State occupies the first place with 68.4 percent followed by dispersed farmers with 63.3 percent, then by CPAs with 58.4 percent and, finally, by CCSs with 50.6 percent. This differential usage should be kept in mind since the State controls the best available lands, as explained in the following section.

V. The First Test: Access to Inputs

Before analyzing relative productivity and production parameters, the first question one must answer is whether or not all types of agricultural production units have equal access to inputs and technology. If not, is the access determined by the degree of State intervention? In simple terms, are non-State farmers playing on a level field? The following quotes have been taken from the work of foreign and Cuban researchers, and statements submitted by Cuban officials to the United Nations and published by its Committee on Food Aid Policies and Programmes (World Food Program -WFP/CFA).[\[21\]](#) They provide some insights on this issue.

On the use of best available lands:

The cooperatives also benefitted in this [1981-83] period by the policy of granting the CPAs the best land, as land was traded by state farms and cooperatives in order to consolidate contiguous land areas (Deere et al., 1992, p. 125).

Before the revolution, the best flat soils in the province [of Camagüey] were used for sugarcane. The best of the remaining land was occupied by large beef-producing ranches, and the state farms within the project area have been established on these ranches. The remaining areas of land were generally the least valuable and belong to the present cooperative sector within the project area (WFP/CFA: 25/11-A (CDL) ADD. 3, 28 March 1988, p. 3).

Much of the land [in the CPAs] is still natural pasture --uneven and covered with shrubs and stones. The cooperatives consist of pieces of land which can be several kilometers apart. The Government has assisted cooperatives to establish greater contiguity of land area by exchanging state land with cooperative land (WFP/CFA, p. 4). [However, the collection of milk twice a day] is more easily achieved with CPA's than with CCS's because of the greater compactness

Agricul.	4032.7	98.4	94.0	19.3	4244.4	95.0	2.3	2.2	0.5	100
TOTAL	9065.2	868.2	833.1	249.9	11016.4	82.3	7.9	7.6	2.2	100

(a) Calculated by the authors.

Source: Comité Estatal de Estadísticas (1991, p. 185)

This [average CCS] farmer cannot contribute as much towards the establishment of pasture and forage as the farmers in the CPA models because he does not have the necessary machinery. He must also chop his cane by hand. There is no investment in buildings, yards, weighing scales or machinery, apart from a share in the tractor-plus-trailer unit required for the CCS deliveries (based on 39 members per CCS). This farmer controls ticks on his cattle by means of a knapsack spray unit. He uses the regional project machinery unit to plant his pastures (25 hectares) and cane (two hectares). He has no irrigation (WFP/CFA, p. 18).

On taxation:

Under the tax law of April 1983, the production cooperatives received preferential treatment. Both CPAs and individual farmers were now subject to a progressive income tax on their sales to the state, to range from 5 percent to a maximum of 20 percent. But whereas the cooperatives would be taxed on the value of their **net** sales income, individual farmers would be subject to a tax on their **gross** sales income. Opposition to the progressive taxation structure was so vehement among peasants that in 1984 it was reduced to a flat 5 percent of gross sales income for all individual farmers. The progressive taxation of CPA profits was rescinded at the same time, although they maintained the advantage of being subject to a 5 percent tax of net, rather than gross, sales income (Martín Barrios 1987, 209) (Deere et al., 1992, p. 126).

On access to machinery and technical assistance:

By 1985, thirty-nine of the forty-five Havana Province sugarcane CPAs owned all the equipment necessary to harvest their own sugarcane fields. Individual sugarcane farmers, in contrast, continued to lease mechanized services from state farms (ANAP-MINAZ 1986, 1).^[22] The latter situation was often beset by delays since the state farms generally carried out their own planting and harvest operations first, reducing the yields and thus profits of individual farmers. State policy also encouraged giving priority to the CPAs over individual farmers in the delivery of technical assistance and other aid (Deere et al., 1992, p. 125).

On interest rates and investment:

Whereas independent farmers paid interest rates of 6 percent, the CPAs would pay only 4 percent on their loans. Moreover, the lion's share of private-sector investment credit --the level of which was to increase significantly-- would now be channeled to the new cooperatives (Deere et al., 1992, p. 121).

The Bank of Cuba grants credit at a six-percent annual interest rate to members of CCS's and at four percent to the CPA's (WFP/CFA, p. 4).

The allocation of the WFP funds in the Jimaguayu Basin has been modified so that a larger share, or 51 percent, will be given to the cooperative and private producer sector and remaining 49 percent to the state farms. This allocation ... reflects the keen interest of both WFP and the Government in supporting the cooperative and private dairy producers, who are the poorest farmers in the project area and who have been very responsive in the first phase. It should be noted that whereas in the original project the distribution of the combined government and WFP funds to the public and cooperative and private producer sectors in the Jimaguayu basin were 88.6 percent and 11.4 percent respectively, during the next four years (1988-91) the percentage distribution has been modified so that the public sector will receive 73.1 percent and the cooperative and private producer sector 26.9 percent (WFP/CFA, p. 9).

On access to credit:

Data provided by the Cuban National Bank's Credit Division for Cooperatives and Peasants in 21 February 1991 for the 1979-90 period (Deere et al., 1992, Table 2, p. 124) reveal drastic inequalities. In 1979, CPAs received 7 million pesos (44 percent) in credit, while individual farmers obtained 9 million pesos (56 percent). In 1990, CPAs borrowed 47 million pesos (92 percent), while individual farmers were lent 4 million pesos (8 percent), reflecting a decreasing trend that started in 1982.

On the political motives:

The different treatment of CPAs and individual farmers with respect to interest rates, taxes, access to equipment and construction materials, and so on, is of course an economic incentive designed to make the CPAs more attractive and viable than individual farming (Deere et al., 1992, p. 141).

To delve further into the issue, let us analyze the only crop (sugarcane) for which official statistics are available (Table 5). Except for application of balanced fertilizer (N-P-K) with non-mechanical means (slightly higher in non-State farms), and with mechanical means (about the same in both sectors), the answer to the question posed at the beginning of this section is "no" in the case of sugarcane farmers:

(a) irrigated area in the non-State sector accounts for only 10 percent of its total cane area, while it is over 20 percent in the State sector.

(b) although the gap has been closing since the late 1980s, non-State farms still apply less nitrogen fertilizer than State farms by non-mechanical means;

(c) although the disparity has been decreasing since the mid-1980s, applications of herbicides by non-mechanical means in non-State farms are still between 50-60 percent lower than in the State sector; and

(d) access to mechanical inputs, with the exception of balanced fertilization mentioned above, shows even more disparity between the two sectors. Non-State farms use aerial fertilization in only two percent of their cane area, while State farms do it in about 20 percent of their area. The gap in the use of tractors for cultivation has been closing in recent years but it is still much lower in the non-State sector than in the State sector despite the fact that cultivation with non-mechanical means and hand weeding are also lower in the non-State sector (cannot hire labor) than in the State sector (Table 5).

It must be pointed out that non-State farms include CPAs which, as shown in a previous section of this paper, have the blessings of the State and preferential access to inputs when compared with CCS members and dispersed farmers. That explains the sharp increases in the use of nitrogen fertilizer, and of mechanical cultivation and mechanical balanced fertilization after 1975. [23]

Table 5. Comparison of State and non-State access to inputs and cultural activities as a percentage of sugarcane area, selected years 1975-89.

Year	1975		1980		1985		1986		1987		1988		1989	
	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS	S	NS
----- Percent(a) -----														
MECHANICAL														
Aerial fert.	19.2	4.2	23.6	1.6	22.8	0.8	16.3	0.6	12.4	0.5	15.1	2.0	20.5	2.5
Balanced fert.	29.8	10.5	58.2	23.2	65.0	58.2	69.6	59.5	75.3	74.2	61.6	59.3	61.5	60.2
Cultivation	102.0	28.0	146.0	47.0	214.0	147.0	270.0	175.0	248.0	176.0	196.0	144.0	192.0	164.0
NON-MECHANICAL														
Balanced fert.	80.9	83.4	81.6	76.6	69.5	74.4	73.9	73.6	72.3	71.6	64.3	70.4	64.1	70.2
Nitrogen fert.	43.4	24.9	78.2	50.0	74.1	59.4	72.0	60.3	66.0	57.5	60.4	59.9	65.7	61.7
Cultivation	175.0	150.0	172.0	122.0	219.0	172.0	275.0	200.0	253.0	200.0	200.0	164.0	197.0	188.0
Herbicide ap.	103.0	24.0	142.0	36.0	110.0	41.0	128.0	53.0	126.0	57.0	113.0	62.0	132.0	75.0
Hand weeding	153.0	162.0	191.0	145.0	140.0	129.0	162.0	144.0	185.0	157.0	231.0	177.0	231.0	189.0

Area irrigated 10.7 5.9 21.7 8.2 24.5 8.9 NA NA 23.2 10.0 23.5 10.4 23.5 9.8

(a) Percentages higher than 100 represent activities performed more than once over the same area.

Source: Calculated by the authors from Comité Estatal de Estadísticas (1991, pp. 187, 190).

VI. Production and Productivity in the Non-State Sector

This section tests the general hypothesis that, as the State intervention decreases over agricultural production units, the quantity and quality of output increases despite a decreasing access to factors of production and other resources. The analyses are based upon the contribution of the non-State sector to total production from its share of planted area, and the total production per planted area --a proxy for missing yield data in all crops except sugarcane.

Specific hypotheses are included for more-perishable commodities such as fruits and vegetables; for less-perishable commodities such as *viandas* [24]; and for the intermediate commodity of sugarcane, which needs to be processed in the State mills and for which complete data are available. The specific hypotheses originate in the following assumed scale of preferences for farmers: on-farm consumption ==> barter ==> black market sales. [25]

The previous hypotheses, and the way they are tested, are the result of the fact that, measuring productivity in the non-State sector, still presents the problems stated by Forster (1989, pp. 241-243). First, with the exception of sugarcane, the Anuario Estadístico de Cuba no longer reports yield comparisons between the State and non-State sectors as it did for the 1972-75 period. (The Anuario still reports area harvested and yields for the State sector; however, production per planted area is used as a proxy for yield because of data availability for both sectors.) Second, Cuban production statistics reflect only commodities collected by or sold to the State procurement agency (*acopio*), thus excluding any output consumed on the farm, bartered, or sold privately --legally (in the farm during the 1970s or in the free farmers' markets during the 1980s) or in the black market-- and products left standing in the fields due to harvesting or collection problems. [26] Therefore, *acopio*'s production figures undoubtedly understate non-State sector output more than State sector output because of the difference in resource allocation for harvesting and post-harvesting activities. [27]

Finally, official statistics on the area planted by non-State farmers seem to be based on estimates given to ANAP by the farmers themselves. The fear of future expropriations, and the satisfaction of their scale of preferences, may lead farmers to: (a) under-reporting their planted area; (b) non-reporting intercropping practices; and (c) reporting as self-consumption the plantings intended for sales.

Those statistical problems, however, do not preclude the fulfillment of our objectives. The caveats should be kept in mind when reading the discussion of productivity in most of the commodities analyzed.

Sugarcane

Sugarcane is perhaps the best case study to test the main postulate of this study for the reasons stated by Forster (1989). First, because it occupies most of Cuba's farm cropland and is of critical importance to the national economy, it has been a high priority crop for State managers and technicians. Second, it is the commodity with more available data. Finally, because it requires processing, it is not consumed in significant amounts by non-State producers nor sold privately in large quantities outside *acopio* (p. 248).

Even with the dramatic disparity of non-State farmers' access to inputs, they have performed slightly better than State farms in each of the last twenty-one seasons (*zafras*) for which data are available (Table 6). On the average, these farmers have accounted for 17.9 percent of harvested area but have produced 19.3 percent of total output. Yield differences range from a low 0.3 in 1983-84 to a high 11.7 metric tons/ha in 1976-77. Average yields in the State sector have been 50 metric tons/ha, compared with 54.8 metric tons/ha in the non-State sector, with both following almost identical patterns that may reflect annual weather conditions. [28] These figures represent an average difference of around 5 metric tons/ha/year, which translate into an increase of close to 10 percent in favor of the non-State sector (Fig. 1). These results may appear fairly insignificant but they represent an "extra" *zafra* every 10 years. Furthermore, and *ceteris paribus*, if the non-State sector were in charge of State lands (Comité Estatal de Estadísticas, 1991, p. 188), this apparently minimal difference in productivity would translate into an "extra" *zafra* every four years.

In summary, the general hypothesis is accepted. The non-State sector is more productive than the State sector in the

intermediate case of sugarcane despite its lack of access to some capital inputs and technology. The available data facilitated the testing of the hypothesis. The logical explanation is that almost all sugarcane produced is handed over to *acopio* because it is not suitable for direct consumption, barter or black market sales since it needs to be processed and the State controls all sugar factories.

Seasonal Crops

The general hypothesis is more difficult to test in the case of seasonal crops than in sugarcane. The analysis is based upon the contribution of the non-State sector to total production from its share of planted area, and the total production per planted area (a proxy for missing yield data) of the different crops. Although lack of data restricts the analysis, the information available leads one to believe that the performance of the non-State sector in the production of seasonal crops is mixed.

Tubers and Roots

With the exception of potato, the contribution of the non-State sector to total production of tubers and roots is smaller than its share of the area planted to these crops resulting from lower production per planted area (Fig. 2 and Table 7). During the study period, the annual average share of area planted to potato by the non-State sector was almost 18 percent, while its contribution to total production per year was over 19 percent.

Table 6. Comparison of the Cuban sugarcane State and non-State sectors, by area harvested, total production and yield, 1968-69 through 1988-89.

Season	Non-State sector (a)		Yield (mt/ha)		Difference a	
	% Area	% Total	Non-State	State	mt/ha	Percent
	hrv.	vs. prod.	(3)	(4)	(5)	(6)
(1)	(2)	(3)	(4)	(5)	(6)	
1968-69	24.9	27.1	48.2	42.8	+5.4	+ 12.6
1969-70	21.7	23.3	59.9	54.7	+5.2	+ 9.5
1970-71(b)	20.4	21.5	44.1	41.1	+3.0	+ 7.3
1971-72	18.9	19.6	39.1	37.1	+2.0	+ 5.4
1972-73	17.5	18.5	47.1	44.4	+2.7	+ 6.1
1973-74	16.5	17.7	48.7	45.0	+2.9	+ 8.2
1974-75	16.8	18.3	48.0	43.6	+4.4	+ 10.1
1975-76	15.9	18.2	50.3	42.7	+7.6	+ 17.8
1976-77	16.8	19.9	62.8	51.1	+11.7	+ 22.9
1977-78	16.5	20.7	61.2	55.3	+5.9	+ 10.7
1978-79	15.9	17.5	64.6	57.8	+6.8	+ 11.8
1979-80	15.1	16.6	50.5	45.2	+5.3	+ 11.7
1980-81	16.3	18.2	61.3	53.8	+7.5	+ 13.9
1981-82	16.0	17.6	61.0	53.9	+7.1	+ 13.2
1982-83	19.3	21.2	63.6	56.7	+6.9	+ 12.2
1983-84	18.3	18.3	57.6	57.3	+0.3	+ 0.5
1984-85	18.2	18.4	50.7	49.8	+0.9	+ 1.8
1985-86	17.6	18.0	52.7	51.3	+1.4	+ 2.7
1986-87	17.1	17.8	54.5	51.7	+2.8	+ 5.4
1987-88	18.2	19.5	61.3	55.9	+5.4	+ 9.7
1988-89	17.2	18.0	62.8	59.4	+3.4	+ 5.7
Average (a)	17.9	19.3	54.8	50.0	+ 4.7	+ 9.5

(a) Calculated by the authors. Col (5) = (3) - (4); col. (6) = [(5) / (4) * 100].

(b) From the 1987 Anuario, p. 309.

Source: Comité Estatal de Estadísticas (1991, p. 188).

The figures for the rest of tubers and roots show a different picture. Average annual share of area planted to *boniato* was 34.6 percent, while average annual contribution to production was 30 percent, reflecting the difference in production per planted area between 3.9 and 3.3 mt/ha for the State and non-State sectors, respectively. *Malanga* shows more dramatic differences than *boniato*. While the average share of planted area amounted to 55 percent, the non-State sector contributed only 34.5 percent to total production per year as the result of an annual average 8.6 mt/ha in the State sector versus an average of 3.2 mt/ha in the non-State sector. Statistics for all tubers and roots (which include other crops also) show a non-State average share of planted area of 40 percent with a 29 percent contribution to total production. Average annual production per planted area is higher (6.5 mt/ha) in the State sector than the 3.9 mt/ha of the non-State sector.

As stated above, production figures represent only the volumes moving through the State procurement agency (*acopio*). These figures contradict Forster's findings for the 1964-76 period (1989, pp. 244-245) when the non-State sector was making a larger contribution to production. Her work indicated that root crops and vegetables "do best under the small-scale, labor-intensive cultivation typical of peasant smallholdings and are also the crops which have received the least emphasis on state farms" (p. 248). The fact of the matter is that, with the exception of potato, the statistics show large differences in favor of the State sector.

The low degree of perishability of these commodities, combined with the assumed scale of preferences for farmers, may provide an explanation for the apparent low performance. Tubers and roots can be stored for a period of time long enough to facilitate their hiding from *acopio* for future on-farm consumption, bartering or sales in the black market. The case of *malanga*, which reflects even poorer performance, may reinforce the previous explanation. The demand for this commodity is higher than for the other tubers and roots. Benjamin et al. (1986) call *malanga* "the starchy tuber most Cubans love" (p. 57) while stating that "Cubans consider [*malanga*] the ideal weaning food" (p. 57). However, this commodity is not legally available to the general population since it is "allocated through rationing primarily to groups with special diets --small children, the elderly, people with digestive problems, for example" (p. 64).

Vegetables

The non-State sector has consistently produced more than its share of area planted to these crops (Fig. 3 and Table 8). During the study period, the non-State sector has accounted for an average of over 49 percent of the area planted to all vegetables while its contribution to total vegetable production averaged almost 60 percent. Specific figures for tomato are 54 and 58 percent; for onion they are 42 and 49 percent; and for pepper they are 76 and 89 percent, respectively. The differences in annual average production per planted area are impressive when one considers the constraints faced by farmers in the non-State sector. On the average, the non-State sector has outproduced the State sector in tomato (17.5 percent), onion (38 percent), pepper (116 percent), and all combined vegetables (56 percent) in every of the 16 years in the study period.

Notwithstanding Forster's quote in the previous section, the case of vegetables is different than that of root crops. First, vegetable production is capital intensive in many areas of the world. Therefore, the statement does not justify the poor performance of the Cuban State sector. Second, if pepper^[29] production is excluded, the State and non-State sectors have an equal share of area planted to vegetables and the latter outproduces the former every year. Even if vegetables were among the crops which have received the least emphasis on state farms,^[30] one has to recall the case of sugarcane --the most important crop in Cuban agriculture and thus "a high priority commodity for state farm managers and technicians" (p. 248). Yet, non-State sugarcane farmers have also consistently outproduced the State sector in this capital-intensive commodity.

Table 7. Share of area planted and contribution of the Cuban non-State sector to the production of selected tubers and roots, and production per planted area as a proxy for missing yield data in the State and non-State sectors, 1970, 1975, and 1977-89.a

Year	Potato				Boniato				Malanga				All			
	A	P	S	NS	A	P	S	NS	A	P	S	NS	A	P	S	NS
	Percent - mt/ha -				Percent - mt/ha -				Percent - mt/ha -				Percent - mt/ha -			
1970	31	41	6.0	9.3	43	21	1.5	0.5	67	41	1.8	0.6	45	33	2.7	1.7
1975	27	28	12.7	12.9	17	22	3.6	5.1	63	60	4.3	3.8	27	30	4.9	5.8
1977	24	25	12.4	13.0	34	31	3.8	3.3	53	35	8.2	3.9	44	33	6.3	4.0
1978	17	21	18.1	22.7	40	34	3.4	2.7	45	16	16.8	4.1	47	26	9.6	3.8
1979	21	18	15.8	13.3	37	30	3.6	2.6	43	21	12.6	4.6	45	28	7.7	3.7
1980	16	19	16.6	20.4	37	35	4.7	4.2	49	23	14.2	4.5	43	31	7.3	4.3
1981	14	17	16.2	21.6	33	30	4.6	4.0	51	20	12.4	3.0	37	26	7.3	4.4
1982	16	15	18.0	17.0	28	25	3.5	3.1	59	27	8.3	2.2	35	25	5.9	3.6
1983	14	16	15.8	18.9	33	28	4.5	3.7	57	28	9.2	2.7	39	29	5.9	3.8
1984	14	14	15.6	15.6	35	33	4.6	4.2	57	30	9.5	3.0	39	28	7.4	4.5
1985	13	15	20.2	23.2	42	37	4.6	3.8	58	44	6.9	3.9	42	30	7.5	4.3
1986	15	14	22.4	21.7	37	33	4.3	3.6	57	40	10.0	4.9	41	28	8.0	4.4
1987	13	15	13.9	16.7	36	30	4.4	3.3	63	46	6.1	3.1	42	30	6.0	3.5
1988	14	15	14.9	16.4	34	29	3.7	2.9	53	34	5.5	2.5	39	27	5.7	3.3
1989	18	16	18.1	16.1	33	29	3.9	3.2	50	53	3.9	2.0	39	28	5.4	3.3
Average	18	19	15.8	17.2	35	30	3.9	3.3	55	34	8.6	3.2	40	29	6.5	3.9

A = Area planted. P = Production. S = State sector. NS = Non-State sector.

aArea figures are percentages of area planted in that year. Production figures are percentages of volumes moving through the State procurement agency (*acopio*).

Source: Calculated by the authors from Comité Estatal de Estadísticas (Various Issues).

Table 8. Share of area planted and contribution of the Cuban non-State sector to the production of selected vegetables, and production per planted area as a proxy for missing yield data in the State and non-State sectors, 1970, 1975, and 1977-89.a

Year	Tomato				Onion				Pepper				All			
	A	P	S	NS	A	P	S	NS	A	P	S	NS	A	P	S	NS
	Percent - mt/ha -				Percent - mt/ha -				Percent - mt/ha -				Percent - mt/ha -			
1970	24	30	5.5	7.2	50	44	6.4	5.0	12	66	5.5	7.6	16	33	2.8	7.2
1975	38	41	7.9	8.7	44	66	3.5	8.8	71	83	5.7	11.4	35	48	4.5	7.7
1977	46	55	4.7	6.7	59	56	5.8	5.2	83	89	4.9	8.1	46	58	3.2	5.2
1978	50	56	6.7	6.8	57	67	4.5	6.9	87	91	5.6	8.2	49	60	3.4	5.3
1979	56	53	6.7	6.0	56	67	4.7	7.5	86	93	3.1	6.7	54	60	3.9	5.1
1980	57	63	6.2	7.8	50	70	2.6	6.1	91	94	6.7	10.8	54	66	4.0	6.5

1981	55	59	9.0	10.5	26	62	1.8	8.4	81	92	3.4	9.2	49	57	6.0	8.4
1982	56	65	6.0	8.7	35	42	3.6	4.9	79	91	3.7	10.2	48	60	4.2	6.8
1983	60	68	3.9	5.5	39	21	4.0	1.7	79	91	3.1	7.7	51	63	3.2	5.3
1984	60	65	5.6	7.0	36	32	3.5	3.0	76	90	3.3	9.3	55	63	4.0	5.6
1985	61	58	9.1	8.2	40	39	7.1	6.9	82	91	5.4	11.9	58	63	5.6	6.7
1986	64	62	7.7	7.0	37	47	3.9	5.7	80	89	4.0	7.9	59	64	4.7	5.7
1987	63	68	4.9	6.1	33	46	4.6	7.9	82	91	5.0	11.3	59	69	3.4	5.2
1988	60	66	6.2	7.8	33	34	4.2	4.3	75	92	2.9	11.0	54	65	3.4	5.4
1989	58	65	5.2	6.8	34	43	3.2	4.7	73	89	4.0	11.5	52	65	2.8	4.9
Average	54	58	6.3	7.4	42	49	4.2	5.8	76	89	4.4	9.5	49	60	3.9	6.1

A = Area planted. P = Production. S = State sector. NS = Non-State sector.

aArea figures are percentages of area planted in that year. Production figures are percentages of volumes moving through the State procurement agency (*acopio*).

Source: Calculated by the authors from Comité Estatal de Estadísticas (Various Issues).

The main hypothesis of this study has been demonstrated in the case of vegetables. The reason for the higher productivity in the non-State sector is that these highly perishable crops have to be moved fast to the State's refrigerated facilities to avoid spoiling. For that reason, they are less likely than tubers and roots to be consumed on the farm, bartered or sold in the black market in large quantities. Therefore, vegetable statistics --as sugarcane statistics-- are closer to reality than those of less perishable crops.

Cereals

Cereals, also land- and capital-intensive crops, show a different picture than the extremes portrayed in the two previous groups of commodities during the study period (Table 9). In rice, the non-State sector contributes slightly less to total output (8.5 percent) than its share of area planted (9.9 percent), because of higher production per planted area in the State sector (3.1 mt/ha) than in the non-State sector (2.6 mt/ha). These production figures reported may be very close to real output since farmers lack drying, storing, and milling facilities that would enable them to consume, barter, or sell rice outside the official channels. Lack of inputs (especially irrigation facilities, fertilizers and chemicals) may be responsible for the slightly lower production.[\[31\]](#) However, they do little to support Forster's assertion that rice is "one of the state farms' showcase crops" (1989, p. 247).

The differences in corn are more accentuated. While the non-State sector's share of planted area to corn is over 50 percent, it only produces 38 percent of total output with the State sector showing 0.6 mt/ha versus 0.3 mt/ha in the non-State sector (Table 9). The lower average production figures in corn may be the result of farmers' scale of preferences since corn has always been a very popular crop[\[32\]](#) that can be stored for long periods of time without spoiling. An additional factor that may explain the differences in the reported production per planted area is the fact that corn is also used as animal feed and farmers may hide additional amounts for that purpose.

Bean

With an average share of planted area of 43.6 percent during the study period, the non-State sector has contributed an average of 33 percent to total annual bean production. Average production per planted hectare amounted to 0.3 mt in the State sector versus 0.2 mt in the non-State sector (Table 9).

However, Forster (1989, pp. 246) reports average bean yields for the 1972-75 period as being 1.18 higher in the "private" sector than in the State sector. Using different parameters (yields in Forster's study versus production per planted area in this study) may be responsible for the apparent contradiction. However, beans are another good example of farmers' scale of preferences since they are a Cuban staple and can be stored for long periods of time.

Tobacco

During the study period, the non-State sector has averaged over 73 percent of planted area per year while contributing an

average of over 74 percent to total annual tobacco production. This corresponds to average production per planted area of 0.6 and 0.7 mt/ha in the State and non-State sectors, respectively (Table 9).[\[33\]](#)

Table 9. Share of area planted and contribution of the Cuban non-State sector to the production of rice, corn, bean, and tobacco, and production per planted area as a proxy for missing yield data in the State and non-State sectors, 1970, 1975, and 1977-89.a

Year	Rice		Corn		Tobacco				Tobacco				Tobacco			
	A	P	S	NS	A	P	S	NS	A	P	S	NS	A	P	S	NS
	Percent - mt/ha		Percent - mt/ha		Percent - mt/ha -				Percent - mt/ha -							
1970	4	2	2.0	1.0	41	24	0.5	0.2	38	58	0.2	0.4	82	85	0.5	0.6
1975	5	5	2.5	2.8	24	25	0.7	0.7	27	45	0.3	0.6	76	82	0.4	0.7
1977	5	6	3.0	3.2	58	30	0.5	0.2	60	39	0.2	0.1	73	80	0.5	0.7
1978	7	5	3.1	2.2	62	32	0.6	0.2	62	34	0.3	0.1	72	78	0.6	0.8
1979	8	6	3.0	2.0	64	34	0.6	0.2	53	41	0.2	0.1	67	74	0.5	0.7
1980	8	7	3.3	2.9	59	41	0.7	0.3	47	28	0.3	0.1	71	55	0.2	0.1
1981	9	8	3.2	2.7	59	40	0.6	0.3	47	25	0.3	0.1	65	70	0.7	0.9
1982	11	7	3.6	2.3	51	40	0.5	0.3	41	25	0.4	0.2	72	74	0.6	0.7
1983	9	8	3.5	3.2	47	34	0.6	0.3	38	39	0.3	0.3	76	74	0.5	0.4
1984	10	9	3.5	3.1	46	32	0.6	0.3	35	25	0.3	0.2	72	75	0.7	0.8
1985	11	12	3.3	3.3	48	39	0.6	0.4	38	22	0.3	0.1	77	73	0.8	0.7
1986	14	15	3.3	3.7	48	54	0.5	0.7	34	23	0.4	0.1	76	73	0.8	0.7
1987	17	13	2.9	2.1	49	54	0.4	0.5	45	32	0.3	0.2	72	76	0.6	0.7
1988	15	13	2.9	2.4	53	47	0.5	0.4	46	32	0.4	0.2	75	72	0.8	0.7
1989	15	12	3.3	2.7	49	43	0.6	0.5	43	27	0.3	0.2	71	74	0.7	0.9
Average	10	8	3.1	2.6	50	38	0.6	0.3	44	33	0.3	0.2	73	74	0.6	0.7

A = Area planted. P = Production. S = State sector. NS = Non-State sector.

aArea figures are percentages of area planted in that year. Production figures are percentages of volumes moving through the State procurement agency (*acopio*).

Source: Calculated by the authors from Comité Estatal de Estadísticas (Various Issues). The time series data used in this study seem to be appropriate for its purposes. Stubbs (1987) states that "the years 1971-76 were defined as a period of 'tobacco recuperation', as both private and state sectors brought tobacco production back up to previous levels" (p. 53) after the disastrous results of the 1970 sugar campaign. And she adds:

An initial price reform acted as a major impetus toward increased tobacco production. Private small farmers had previously found it more remunerative to harvest staple crops than tobacco; these were often in short supply and could be marketed both to the state and a highly lucrative black market (p. 53).

Tobacco is another good example that renders credibility to the main hypothesis of this study. First, as it is the case with sugar, this is an important export crop that receives special attention by State managers and technicians. Second, there are large numbers of tobacco CPAs in the non-State sector (see Table 2) with better access to inputs and technical assistance than CCS and dispersed farmers. Third, this crop needs further processing and thus farmers would be expected to render most of their production to the State procurement agency. Fourth, *acopio* prices for tobacco have been generally higher when compared to other crops partly due to the State's interest in promoting a hard currency export product. Therefore, the results are very similar to those obtained in sugarcane and vegetables in terms of higher

productivity in the non-State sector.

Permanent Crops

The lack of data for testing the general hypothesis is even more restrictive in the case of permanent crops than is the case with seasonal crops. In addition to lack of yield comparisons, and figures for area harvested, official Cuban statistics do not break down area devoted to production between bearing and non-bearing trees, which makes it impossible to calculate the yield proxy previously used. The figures on "existing area in production" are useless because they include non-harvested areas resulting from droughts, blights and other causes (Comité Estatal de Estadísticas, 1991, p. 179). For those reasons, this section only describes the contribution of the non-State sector to the production of these crops as they appear in Puerta and Alvarez (1993, pp. 33-38).

In the case of plantains, the non-State sector increased its contribution of *vianda* plantain to total production from more than six percent in 1970 to over 40 percent in the late 1980s. During the same period, non-State banana production increased from eight percent to around 30 percent.

The contribution of the non-State sector to total citrus production shows sharp declines since the mid-1970s. The decline is true for orange, grapefruit and lemon. A possible explanation is the fact that the Anuario figures seem to reflect only the production moving through *acopio* for the fresh market thus excluding the production intended for processing.

The statistics concerning other fruits are very revealing. The average contribution of the non-State sector to total production, except for papaya which shows a sharp decline, exhibits some fluctuations during the study period. However, the non-State sector is still producing most of the mango, guava, papaya, and other combined fruit crops.

The contribution of the non-State sector to total coffee production has decreased from 73 percent in 1970 to 35 percent in the late 1980s. Although coffee is an export crop, black market sales are common because this commodity can be processed outside the official facilities.

Cacao, also an export commodity that requires processing before consumption, shows a trend similar to coffee's. Non-State sector's share of total production has decreased from over 90 percent in 1970 to slightly over 50 percent in the late 1980s.

If data were available, following the specific hypotheses, one would expect plantains, citrus and other fruits to display results very similar to those found in vegetables; and coffee and cacao figures paralleling the results found in tobacco and sugarcane.

Other Areas of Agricultural Production

The non-State sector contributes strongly to the production of bovine cattle, equine cattle, and beekeeping. That contribution has remained relatively stable during the last decade for which data are available.

The percentages of the number of head of bovine cattle show slight increases in CPAs at the expense of CCS and dispersed farmers since the mid-1980s, with the latter still contributing around 20 percent to total production. The only productivity parameter (percentage of deaths over births, which is different than mortality rate) shows that this ratio has been consistently much lower in the non-State sector than in the State sector: always lower than 17 percent in the former and always higher than 17 percent (reaching a high 22 percent in 1988) in the latter (Puerta and Alvarez, 1993, pp. 38-40).

The non-State sector contributes more in head of horses, donkeys, and mules than the State sector. The figure, however, has been declining slightly since the mid-1980s but still remains well over 60 percent (Puerta and Alvarez, 1993, pp. 38-39).

Although the non-State sector has controlled around 50 percent of the total number of beehives during the study period, it has contributed less in both honey and wax production. The low degree of perishability of these products is a logical explanation. These are also high price-density products, which make them ideal for sales in the black market once self-consumption and bartering needs have been fulfilled. This seems to be supported by the fact that the contribution of honey is lower than the contribution of wax, reflecting a lower demand for the latter when compared with the former (Puerta and Alvarez, 1993, pp. 38-40).

VII. The Last Test: the Free Farmers' Markets^[34]

The free farmers' markets (*mercados libres campesinos* -MLC) support the general hypothesis. The following quote from Benjamin et al. (1986) renders credibility to the main postulate of this study concerning State intervention and farmers' scale of preferences:

... it is impossible to determine how much the private farmers really produce because official statistics only take into account sales to the government. If private consumption, barter, black-market, and free-market sales were recorded, the picture could change considerably. When the farmers' markets were created in 1981 and suddenly much more food was legally available for sale, it was obvious that black-market sales had been substantial and that probably, given the right incentives, private farmers could produce more (p. 170).

In fact they did. Although including numerous rules and regulations, Decree No. 66 of the Cuban Council of Ministers in April 1980 legalized the MLC. After delivering their assigned quotas to *acopio* at fixed prices, farmers were allowed to sell their surplus at prices determined by the laws of supply and demand --a scandalous heresy! A dash of capitalism was intended to add some dynamism to the socialist economy without relinquishing the fulfillment of the centrally-planned procurement quotas.^[35]

Once the incentive to produce and sell openly was established, these markets quickly (in less than three months) proliferated throughout the country. Benjamin et al. recognize that "with the coming of the private markets there was a visible explosion of planting in the countryside, and innumerable patches of idle land, in both town and country, suddenly blossomed into gardens" (1986, p. 65-66). And they add:

Apart from increased production, more food became available because farmers let less go to waste. In one of our visits to the countryside, for example, we came upon a tobacco farmer with a half dozen assorted fruit trees in his backyard. For years, he and his family would eat their fill, gave some away to friends and relatives, and let the rest rot on the ground. However, with advent of the farmers' markets, he assured us, we'd no longer see such food going to waste. Other farmers also told us that they were giving less food away to neighbors and relatives, as well as consuming less themselves (p. 66).

Less State intervention brought about more production and less food waste. These commodities were taken to the more than 200 MLC in operation by 1981 throughout the island with the greatest volume of activity taking place around the main cities. Since a comprehensive set of statistics to evaluate MLC performance is not available, the authors have to rely on excerpts selected from the literature, which include:

Market favorites included onions, garlic, rice, beans, plantains, and the other standard *viandas*, as well as good-looking fresh produce and seasonal fruits, including huge avocados. There was Cuba's favorite meat, pork (except right after holidays when farmers sold everything they could to take advantage of the especially high prices), along with fresh cheese and a menagerie of live animals" (Benjamin et al., 1986, pp. 61-62).

The previous quote is very revealing. Less State intervention had an immediate impact on the quantity, quality, and variety of food produced outside the State sector. The MLC provided the population with grains, *viandas*, produce, fruits, dairy products and meat. The fast response of farmers revealed their ability to manage scarce resources to increase their productivity in the presence of market incentives.

In the Cuban province of Villa Clara, private sector production of rice and beans increased by over 400% during 1979-81, tubers and root crops by 223%, vegetables by 179%, and pork production by a 525%. Of this increased production, over 75% of rice, beans, and pork production and 22% of vegetable production passed through the peasant markets in 1981 (Figuroa and García, 1984, Tables 2 and 5, as cited in Deere and Meurs, 1992, p. 831).

... one small credits and services cooperative in Matanzas province had sold only five *quintales* (500 pounds) of garlic to the state in 1979. However, in 1980 its members fulfilled their *acopio* commitment of 120 *quintales* for the first time in years and freed themselves for farmers' market sales. Similarly, in 1980 their sale of beans to the *acopio* was nearly four times the previous year's level (Forster and Handelman, 1985, p. 189).

Although the last two excerpts are local in scope (the first one --from two Cuban authors-- refers to the province of Villa Clara, while the second concerns one CCS in the province of Matanzas), they reflect the fact that the laws of supply and demand came to the rescue of Cuban socialism in food production and distribution. The State had been unable to meet its obligation to consumers. To a great extent, however, the fulfillment of production quotas in the non-State sector allowed

the government to distribute the rationed quotas to consumers. Only the remaining production went for sale in the MLCs --a fact not emphasized enough in the literature. This fact, however, was true throughout the island:

During the first half of 1985, 80.9 percent of all garlic sold in Cuba came from the MLCs (Ghai, Kay, and Peek 1988, 51). The MLCs held a virtual monopoly on fresh pork, white cheese, peanuts, okra, green beans, and tropical fruits. They were also important sources for taro (15 percent of national sales) and plantains (13 percent), popular items in the Cuban diet that were available on the *libreta* only to those with special dietary needs (Benjamin, Collins, and Scott 1984, 67) (Rosenberg, 1992, p. 70).

It is interesting to compare the previous four quotes with the discussion of farmers contributing less than their share of area planted to different commodities. Each of them adds credibility to the general (on State intervention) and specific (degree of perishability) hypotheses of this study. In an indirect fashion, they also support the assumed farmers' scale of preferences.

In some areas, the government itself tried to act as a competitive force, setting up nonrationed government produce markets (*ferias del agro*) alongside the farmers' markets. These markets sold at fixed prices that were higher than rationed prices but way below rates at the farmers' markets. In some places we visited, such as the market in Santa Clara in central Cuba, this worked quite effectively with fresh produce and root crops. But the state markets usually offered little variety and poor quality goods. In Santiago, the bustling farmers' market shared the same location with the government *feria del agro*, which seemed to have hardly any customers. Prominently displayed on the back wall of the stall was a blackboard with chalked-in prices for a wide variety of goods, all of which were remarkably lower than those at the farmers' market just across the road. The only catch was that the bins were empty, except for some lemons (Benjamin et al., 1986, pp. 63-64).

The previous statement testifies to the fact that Cuban socialism cannot compete even with restricted capitalism in the agricultural sector. It also adds credibility to the main hypothesis of this study since the "little variety and poor quality goods" are produced at the highest levels of State intervention.[\[36\]](#)

The lesson learned brought about the opposite expected reaction. The government closed down most of the MLCs on 28 February 1982, arresting hundreds of vendors and confiscating thousands of pesos worth of goods. The markets, while still officially open during the rest of 1982 and well into 1983, stood virtually empty (Benjamin et al., 1986, p. 72). At the end of ANAP's second annual meeting of CPAs in May 1986, Castro announced that the remaining MLC would be closed that same day (Granma, May 19 and 20, 1986, as cited in Deere and Meurs, 1992, p. 835).

Although other reasons had some weight on the final decision, it is obvious that ideological reasons (related to the main theme of this study on the productivity of State vs. non-State farms) played the most important role. Benjamin et al. have explained them in the following manner:

More and more, people started to wonder why, after twenty or more years, the government-run food system was still unable to fully satisfy people's food desires. Also, after seeing what the farmers were able to produce in such a short time, as well as the quality of their produce, complaints about government-produced foods became more frequent.

Why was the government produce so inferior to private produce? The conventional wisdom is that just as the small farmer cannot compete with the government in mass production, so the state farm is no match for the small farmer in terms of quality and freshness. The time and attention private farmers put into their work is unlikely to be matched by government farmworkers receiving a monthly salary (1986, p. 71).

In summary, the experience of the MLCs unveiled a reality that could not be directly proved because of lack of statistics in earlier periods: (a) before their establishment, non-State farmers were outproducing State farms in many commodities but most of their production was consumed on the farm, bartered, or sold in the black market; (b) given the right incentives, non-State farmers could produce even more despite their lack of access to inputs; (c) lack of transportation and containers did not impede the flow of goods to the MLCs; (d) the black market became almost obsolete when prices and trade were legally liberated; (e) there is a latent entrepreneurial spirit that surfaced with the proliferation of middlepersons and others providing storage and other supportive and ancillary services to the farmers.

The MLCs also brought about some negative tendencies, which included, among others: (a) an increase in the stealing of inputs in State farms to supply non-State farmers; (b) private use of State lands in the form of *conucos* (small parcels) to divert their production to the MLC; (c) an increase in corruption because of the legal obstacles of a command economy; [\[37\]](#) and (d) a disparity in income distribution.

VIII. Summary, Conclusions and Implications

The main hypothesis posed at the beginning of this paper was that, as the State intervention decreases over agricultural production units, the quantity and quality of output increases despite a decreasing access to factors of production and other resources. The last part of the hypothesis was tested first. The results showed a preferential access to factors of production and other resources for State farms, then for CPAs, and, finally, for CCS and dispersed farmers. They include the use of the best available lands, access to modern inputs (fertilizers, chemicals, irrigation, machinery), investment, taxation, access to credit, interest rates, and technical assistance. In summary, what Cuban authorities call "private sector" in agriculture is not playing on a level field.

The main thrust of the hypothesis was then tested for individual commodities or groups of commodities. The test was based on how the degree of perishability of the commodity or the need for immediate refrigerated storage or further processing worked against the assumed scale of preferences for farmers: on-farm consumption ==> bartering ==> sales in the black market.

The non-State sector was found to be more productive than the State sector on export crops that need further processing such as sugarcane and tobacco. It is also more productive on vegetables (which require immediate refrigerated facilities), and on bovine cattle --also an export commodity subject to high State control.

The State sector seems to perform better than the non-State sector on less perishable commodities such as tubers and roots (except for potato), corn, bean, and beekeeping (honey and wax). These products share a high demand by farmers for self-consumption, bartering and sales in the black market.

The case of rice falls in-between the two previous groups. Although this crop needs further processing, the non-State sector performs slightly lower than the State sector. The reason may be the disparity on access to inputs for a crop that needs a high level of technology and inputs not accessible to non-State farmers.

Even more restricted information on other permanent crops (plantain, citrus, and other fruits) precluded reaching definite conclusions concerning non-State sector performance. Yet, this sector makes substantial contributions to the production of these commodities.

Finally, and for the same reasons just stated, non-State sector lower performance in coffee and cacao can not be clearly defined. It is obvious that the non-State sector contribution to total production has been declining. The reasons may be the lack of labor for tending and harvesting these crops coupled with increased attention they have received on State farms. The only distinction is the existence of farmers' scale of preferences in the case of coffee, not applicable to cacao for the reasons explained in the main body of the text.

In addition to using the scarce data available, the general hypothesis was tested with the scattered information emerging from the experience of the free farmers' markets. This was a real laboratory where less-State farmers proved, without any doubt, that they can produce more, with better quality, than the State when given the right incentives.

The previous findings were not unexpected. Even with the lack of complete data, numerous accounts from foreign and Cuban researchers seemed to corroborate them. Of special importance is the following by Benjamin et al. (1986): "In our visits to numerous state farms, cooperatives, and individual farms, the latter two invariably appeared to have higher yields than the large state farms" (p. 180). Although an anecdotal account, nevertheless based on numerous observations, the previous statement seems to corroborate the main postulate of this study about increasing performance with decreasing State intervention.

Perhaps the main contribution of this analysis to the study of Cuban agricultural production units has been the logical explanation behind the apparent differences in productivity statistics between the State and the less-State production units in some commodities. Abstracting from the cause-effect relationship between the degree of perishability and further processing requirements and farmers' scale of preferences has led some researchers to inaccurate conclusions when analyzing output differences between these sectors. For example, after noticing some modest to strong growth in the State sector and serious declines in the production of several commodities in the non-State sector during the 1964-76 period, Forster (1989) states:

This evidence seems to support observations by some visiting scholars and the Cuban government that the private sector is backward (still using ox plows for cultivation) and slow to adapt to modern technology [Aranda, 1968; Flora and Flora, 1979]. Such interpretations of the above data have reinforced the Cuban government's inclination to place the

majority of its investments in the state farm sector (p. 245).

The evidence presented in this paper contradicts the previous statements, which reflect the results of a policy and the source of the problem. First, Forster and other visiting scholars acknowledge that all production does not move through *acopio*. If on-farm consumption, bartering, and sales in the black market could be quantified, the results would be completely different. Second, reiterating the old argument that the "private sector" is "backward... and slow to adapt to modern technology", is misleading. This study has shown that those farmers have minimal access to most inputs. If they still use ox plows for cultivation, it is because they have been denied access to machinery and equipment controlled by the State. Deere et al. (1992) blame the Cuban leadership for that erroneous policy when they state that "little was done, therefore, to modernize private farming, which continued to rely on ox plow and family labor, while state farms were mechanized" (p. 119). Finally, and in addition to the former, if the Cuban government places "the majority of its investments in the state farm sector", one has to wonder how non-State farmers have performed so well in such adverse environment.

One possible explanation for the poor performance of the State sector may be inefficient management. After mentioning the fact that the State sector has received significant quantities of modern inputs, Forster (1989) adds that

there has apparently been a great deal of waste in the use of these inputs. Tractors have been imported only to fall into disrepair and be left idle due to a shortage of skilled mechanics. Fertilizers are spread liberally but unevenly, failing to produce anticipated increases in yields. Sugar cane which we observed in early 1980 often showed signs of poor fertilizer application. Dams have sometimes been built without irrigation ditches to carry the water. Finally, we observed some indication of uneven mechanization on several state farms. Tractors might be bought without a sufficient variety of implements. Payoffs from the mechanization of certain tasks such as plowing might be negated by inefficiency of manual labor needed for planting, weeding, or harvesting (pp. 251-252).

An important dimension of poor management in State farms, which is not explored in this study because of lack of data, is given by the differences in production costs. Benjamin et al. (1986) state:

But the most telling differences are in production costs. While cooperatives' costs averaged 62 centavos for every peso's worth of production, those for the state farms run over a peso. The vast majority of state farms run at a loss and keep functioning thanks to state subsidies. At one of the state farms we visited in Granma province, production costs were over 2 pesos for every peso's worth of production. Vice President Rodríguez admitted to us that while "almost all of the cooperatives are profitable, almost none of the state farms are." Of course, whether or not the state farms are profitable depends on what the government pays for their production, and some state farm managers suggested to us that the government is not paying enough. But the cooperatives can make a profit with the same prices. Clearly, the government finds itself in an embarrassing position when the "superior" form of farming cannot pay its own way (p. 180).[\[38\]](#)

In the path toward a more market-oriented agricultural economy, current positive and negative factors should be taken into account. The positive factors include: (a) despite opposite statements by some scholars and Cuban government officials, the outstanding managerial ability of farmers in less-State production units; (b) their ability to respond to market incentives; and (c) their dedication to their crops. The negative factors include: (a) lack of operating capital to replace an obsolete technology; (b) unequal access to modern technology; (c) lack of marketing know-how resulting from more than 30 years operating under subsidized prices in the official market and highly inflated prices in the black market; (d) scarcity of transportation resources; (e) lack of availability and access to storage and refrigerated facilities; and (f) environmental problems[\[39\]](#) (See Espino, 1992; Díaz-Briquets and Pérez-López, 1993).

Of equal importance in that decision-making process is the grouping of special policies for (a) permanent vs. seasonal crops; (b) processed vs. ready-to-eat products; (c) capital/land/labor intensive vs. non-intensive crops; (d) domestic vs. export crops; and (e) perishable vs. non-perishable commodities.

In fact, and up to a certain point, the main postulate of this study has been proven to be true in the Cuban tourist sector. What started as a series of State enterprises has become mixed with foreign capital and is progressing more and more toward the establishment of private enterprises. The lesson learned should induce the Cuban leadership to extend the privatization process to the main sector of Cuba's economy. The lifting of the State intervention on the agricultural sector would bring about considerable increases in production with a significant number of Cuban nationals accruing the benefits and not a few foreign investors as is the case now in the tourist sector.

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Footnotes

Organization and Performance of Cuban Agriculture at Different Levels of State Intervention

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[2] Although a survey of such prolific literature is beyond the scope of this paper, the interested reader is referred to Rodríguez (1987) for an analysis of the socio-economic impact of agricultural reforms on the Cuban peasantry, to Rodríguez (1990) for a thorough analysis of Cuba's development policies, to Aranda (1968) for an in-depth analysis of the Cuban agrarian revolution, and to García (1992) for a description of the current organization of Cuba's agricultural sector. Specific studies can be found in many issues of the Cuban journals Cuba Socialista and Economía y Desarrollo.

[3] The recent joint ventures between the Cuban government and foreign capital on the island are different because Cuba's share is owned by the State and not by private entrepreneurs. Furthermore, nationals provide only labor to these endeavors.

[4] Although Rodríguez (1987), Figueroa and García (1988), Forster (1989), Deere et al. (1992), and Deere and Meurs (1992) have shed light on some of these issues, their studies were conducted within different frameworks and covered specific periods of time. According to sources now living in exile, similar questions have been addressed in Cuba by many agricultural professionals and ANAP leaders in private meetings and unpublished studies since the late 1960s.

⁵ Recent market-oriented economic policies have been more successful in developing countries with centralized economies such as China and Viet Nam. The basic reform in these countries rested in the legalization of private property and private enterprises. In the case of China the eradication of agricultural communes was of special relevance. The new private sector has responded fast and vigorously and has contributed to an impressive increase in production (PNUD, 1993, p. 53).

[6] Rodríguez (1987, pp. 27-28) contains a summary description of the evolution of Cuba's changing agricultural policies from 1959 until the present. More thorough descriptions can be found in Aranda (1968) and in the two famous and polemic accounts of Dumont (1964; 1971).

[7] Armando Hart, a member of the Cuban Communist Party's Politburo, reiterated that policy in a 1969 public speech when he stated that "the goal of the Cuban revolutionary leadership is the total eradication of private property in the countryside" (Dumont, 1971, p. 145).

[8] Latifundia was defined as estates larger than 405 ha. According to Thomas (1971, p. 1217), many eastern European reforms of the 1920s went further than the Cuban ideas of 1959. For example, the maximum amount of land allowed in Poland and Bulgaria was between 20 ha and 49 ha, respectively. This comparison does not account for population density, which will be addressed in a later section of this paper, with respect to neighboring countries.

[9] Aranda (1968, p. 165) states that ANAP's assignments go beyond production matters because it fulfills important ideological orientation, cultural, and social tasks.

[10] Peasant guerrillas operated in the early 1960s in the mountains of the Escambray in Cuba's central region. For information on that campaign, the interested reader is referred to Clark (1990, pp. 47, 614 (n. 41), 615 (n. 42)).

[11] The following quote from Castro's closing speech at the second annual meeting of production cooperatives that Mesa-Lago (1988) cites from Granma Weekly Review is very revealing:

There are still a few tens of thousands of [private] farmers left. Working with them is much more difficult [than with concentrated cooperatives], it is terrible, virtually insolvable because one must discuss and make plans with tens of thousands of them... The day is not too far off... when we can say that 100 percent of [private] farmers are in cooperatives... We are waging a battle against [them] (p. 63).

[12] This fact is obvious to those familiar with the composition of the Cuban exile community. Thomas estimated that, at the end of the 1950s, there seem to have been some 200,000 families of Cuban peasants (1971, p. 1108). If immediate and extended family members were included, the figure would surpass the total of approximately one million Cuban exiles. "Compared with the Cuban population as a whole (according to the 1953 population census), the refugee community in the United States in the late 1960s was... under-represented by... agricultural workers..." (Blutstein, et. al., 1971, p. 64). The situation has not changed afterwards.

[13] A different interpretation for the late 1970s can be found in Deere et al. (1992). Although they claim that "the Cuban experience with collectivization is notable for its relatively voluntary and successful nature" (p. 141), they recognize that, "while state support is also crucial, the Cuban case illustrates how too much control can lessen cooperative autonomy and thus the attractiveness of this form of production to the peasantry" (p. 115).

[14] The idea that peasants are passive and non-modern people has been proven wrong in the scientific literature many times over. For example, Shanin (1979) contains numerous case studies on peasant societies written by social scientists from around the world.

However, this backward interpretation of the peasantry is still held by many today.

[15] Interested readers are referred to Puerta and Alvarez (1993) for summary descriptions of official collectivization mechanisms in Cuban agriculture (Table A1), main characteristics of cooperatives in a system of centralized economic planning (Table A2), and surviving mechanisms (deviations) of farmers in Cuban agriculture (Table A3).

[16] In fact, after more than 30 years of State intervention, Cuba shows results similar to those of neighboring countries of lower and higher population densities in Central America (Puerta and Alvarez, 1993, p. 10). Deere (1992, p. 45) states that Cuba's cultivable land per capita is on the order of 0.5 ha per person, significantly above the world average of 0.3 ha.

[17] These two sectors reflect the doctrinal preference of the Cuban leadership for collective farms (State control) over cooperative farms (social or community control) or privatization of the agricultural means of production. As stated above, that preference appeared in the early 1960s and is not based on actual performance by types of enterprises but on purely ideological grounds (Dumont, 1971, pp. 29-31, 50-51).

[18] The socialist-private sector distinction clusters CPAs with State farms for privileging them over other forms of production. The Cuban government's argument is that CPAs are "superior forms of collective production" when compared with the CCSs' "primary organizations" and with the non-cooperative or dispersed farmers who are "chaotic and anarchic" in their production.

[19] Aranda (1968) reports the results of the July 1965 census that found around 2.7 million ha in the 200,000 farms of what he calls "the private sector". The labor force in this sector included 290,000 men and women producers and their family members and an additional 36,000 permanent workers plus additional seasonal workers (pp. 147-148). The numbers, however, have changed since that time. CPAs were established 10 years after that census and their members are now part of the socialist sector. On the other hand, the number of peasants with small parcels (*conucos*) producing for family consumption, bartering or sales in the black market is not known. Deere et al. (1993) acknowledge that the 1987 first census of "private" sector land revealed that "the amount of land held by the non-peasant sector was not insignificant and that it had been previously underestimated in official data" (p. 9).

[20] The year 1973 has been used as the base because land use statistics in the Anuario for the 1960s seem to be unreliable. For example, a well known Cuban scholar (Rodríguez, 1987, p. 26) cites a total farm area of 8.5 million ha in 1959 from INRA-Legal Department rather than the 3.7 million ha in 1962 reported in the 1976 and 1977 Anuarios consulted by the authors.

[21] To what extent the farmers in the dairy development project of the Jimaguayú basin of the province of Camagüey described in the documents are representatives of the whole peasant population in Cuba is unknown to the authors. However, it is not unreasonable to assume similar conditions for CCS and dispersed farmers in the rest of the country as described by several foreign and Cuban researchers. Furthermore, our analysis will prove that to be the case with sugarcane producers for which data are available.

[22] Deere et al. (1992) explain that, "since the late 1970s, individual sugarcane farmers and CPAs in this sector are grouped together with state farms in what are known as Complejos Agroindustriales Azucareros (CAIs). Functionally linked to a sugarcane *central*, the state enterprise management is responsible for providing inputs and equipment required for sugarcane production by the private sector" (p. 144).

[23] Deere et al. (1992, pp. 123, 125) contain further proof concerning the level of new investments on irrigation systems and mechanization, in addition to access to credit and better lands mentioned earlier.

[24] The term *viandas* includes *yuca* (cassava), *papa* (potato), *boniato* (sweet potato), *malanga* (taro), *plátano* (plantain), and *calabaza* (pumpkin).

[25] The *acopio* quota is not included at the beginning of the scale because, rather than being a "preference", it is the only means that guarantees farmers' limited access to inputs.

[26] According to Cuban agricultural technicians and professionals now living in exile, State sector production is also deviated from *acopio* centers. However, these quantities are insignificant when compared with volumes in the non-State sector.

[27] Forster (1989) summarizes the chronology of this issue in the following manner:

...It is impossible to know precisely what portion of private output is siphoned off through those outlets. During the early years of the revolution, Dumont estimated (in 1963) that the *acopio* collected scarcely 70 percent of the country's corn, 59 percent of the tomatoes, 50 percent of the eggs, 40 percent of the beans, 38 percent of the poultry, and 18 percent of the *malanga* (taro). Domínguez estimates that in 1967 the *acopio* of private farm produce ranged from 76 percent of some crops to only 27 percent of others, with most of the remainder sold privately to consumers.

During the 1970s, as black market activity declined (due in part to *acopio* prices more favorable to the farmer) and the private sector was more effectively integrated into the state collection system, the *acopio*

has undoubtedly gathered a far larger proportion of private production than the earlier figures from Dumont and Domínguez suggest. However, it is likely that in areas near the large cities, private (non-*acopio*) sales are still quite substantial. My own conversations in 1978 and 1980 with farmers outside Havana, Pinar del Río, and Cienfuegos indicated that some of them were producing two to four times their *acopio* quotas with the rest going to private consumption, barter (with neighboring farms), or private sales (to urban consumers) (p. 242).

[28] Pérez-López (1991, pp. 31-32) argues that yield differences are much less significant when the data are examined at the provincial level. Although his analysis of three *zafras* in the provinces of La Habana, Matanzas and Villa Clara (where yields tend to be highest and where non-State farmers tend to be concentrated) seem to support that assertion, non-State yields in those provinces are still higher than State yields on the average and much higher in the remaining 10 provinces.

[29] Pepper, better green than red, has the lowest demand of all vegetables studied. It is not a staple consumed directly but rather a basic ingredient in a cooking sauce of Cuban cuisine.

[30] Although the following quote could portray an isolated event, it is very revealing: "On one state farm, for example, the administrator himself told us that for onions, their number two crop, the private farmers in the same area had 50 percent higher yields than the state farm" (Benjamin et al., 1986, p. 180).

[31] However, according to recent Cuban exiles with a rural background, rice has become a very popular crop in *conucos* for on-farm consumption. Rice is a Cuban staple with a yearly per capita consumption of 120 pounds before the revolution (Marrero, 1970, p. 189). Today, Cubans receive half of that amount through the official rationing system.

[32] Before the revolution, corn was grown in more than 65 percent of Cuban farms (Marrero, 1970, p. 189).

[33] The drastic drop in both State and non-State production in 1979-80 was due to a severe blight of Blue Mold (Stubbs, 1987, p. 53).

[34] For more information on the free farmers' markets, the interested reader is referred to Alonso (1992), Deere and Meurs (1992, pp. 829-836), Figueroa and García (1984); Rosenberg (1989; 1992), Benjamin et al. (1986, pp. 57-77), and Mesa-Lago (1988, pp. 69-72).

[35] "The only products excluded from the [MLC] were beef, tobacco, coffee and cocoa. (The state kept control over these commodities because their exports provided substantial convertible currency)" (Alonso, 1992, p. 174).

[36] Cuban authorities reiterated their preferential treatment for CPAs which were involved in MLC operations. Alonso explains:

Special consideration was granted [to CPAs] in obtaining prime location, logistical support and tax exemptions. CPAs were authorized to contract with the state transportation system to ship goods to market, thus receiving the benefit of low state shipping rates. This was a considerable advantage over private farmers (1992, p. 174).

[37] Alonso (1992) states that "the government had lost control of the FFM -they had developed their own set of rules and the farmers were learning to operate at the fringes of socialist legality" (p. 175).

[38] Benjamin et al. (1986, p. 174) describe an interesting dialogue with the elected officers of a cooperative:

Authors: Are state farms really superior to cooperatives?

Co-op member: Of course.

Authors: Are they better organized?

Co-op member: Oh, no.

Authors: Are they more efficient?

Co-op member: Definitely not.

Authors: Are they more profitable?

Co-op member: No way!

Authors: Then what makes them superior?

Co-op member: (shrug)

The authors later recognized that "nobody could tell us" (p. 187) the answer to the last question.

[39] Readers interested in Cuba's efforts in the area of low input sustainable agriculture are referred to Rosset and Benjamin (1993)