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Cuban Agriculture and Necessary Transformations*

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The Importance of the Agricultural Sector in the Cuban Economy

The agriculture and livestock sector plays an important role in the Cuban economy because of its direct and indirect participation in the makeup of Gross Domestic Product (GDP) and in a more general sense because of the multiplier effect it has in the Cuban economy.

The agriculture and livestock sector is essential and strategic for the Cuban economy for several reasons. While its direct contribution to GDP at the end of 2009 was only 3.9%, it would be a mistake to base its importance on that number. Before the significant decline in agricultural production, the sector was contributing directly between 7% and 8% of GDP (see Table 1).

A significant group of industries (sugar and sugar derivatives, food, tobacco, beverages and liquor, leather, rope/string, and lumber, among others) depends totally or partially on prime materials supplied by the agricultural and livestock sector. These industries contribute 6.3% of GDP. Other activities, such as the transportation and sales of agricultural products (processed or unprocessed), are estimated to contribute about 10% of GDP. Thus, more than 20% of the nation's GDP depends directly or indirectly on agricultural and livestock activity, even in the current depressed conditions of agricultural and livestock production. This is why it is important to reactivate this sector of the economy.

The multiplier effect of the agricultural and livestock sector in the Cuban economy is also manifested in forward and backward linkages and spillovers. If the sector does not produce satisfactory results, such linkages can lead to significant outlays (unfavorable multiplier effects), which the economy must absorb in order to make up for the sector's deficiencies. To a certain extent, this is what has occurred in the Cuban economy in recent years, and the response has been to continue to increase food imports (see Table 2).

During these recent years, food imports have increased at an average rate of more than 20% annually and it is widely believed that the level it reached in 2008 was the highest it should be allowed to go, and a generally unsustainable situation for a country even during times when the economy is functioning normally. Estimates are that imports will be reduced by approximately US $600 million during 2009.

This situation has led to a more vulnerable economy from the point of view of food security since there is greater dependence on food imports.

Table 3 illustrates the dependence on external sources for food and shows that currently, domestic production contributes only 40% of total daily calories and 37% of daily protein. About 56% of the animal protein eaten in the country is produced nationally, but only 29% of vegetable protein comes from domestic production.In terms of the sector's participation in generating income in foreign currency, Table 4 shows how agricultural exports dropped from a high of 83% in 1991 to only 18% in 2008. Sugar products in particular, which at one point had brought in about 77% of the total value of exported goods, had fallen to 6.3% by the close of 2008.

* This document is one in a series of papers on the Cuban economy involving analyses by Cuban, Cuban American, and international experts. Please see www.wilsoncenter.org/cuba for our other publications on Cuba.

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About 21% of the economically active population works in the agricultural sector. This percentage increases significantly, however, when related activities are included since a significant number of the industries already mentioned depend on raw materials provided by the sector. In reality, the family economy of about four million Cubans depends directly on the performance of agricultural activities. This shows another significant impact of the sector's multiplier effect in the national economy.

The agricultural sector is also important from the point of view of energy in that it generates renewable, non-polluting energy through the sugar cane agro-industry. Sugar cane biomass is used to create electricity, bio-fuels, and biogas, providing significant economic, social, and territorial advantages. The part of agro-industry dedicated to bio-energy is self-sustaining in terms of energy, creates sufficient energy surpluses, and achieves positive balances in terms of gas emission and absorption. Studies show that sugar cane fields act as absorption areas; they absorb carbon dioxide (CO2) from the air—the primary cause of the greenhouse effect and global warming—and expel it in the form of oxygen. It is estimated that in one year, one hectare of sugar cane can absorb more than 60 tons of carbon dioxide and produce some 40 tons of pure oxygen, in what is known as the "forest effect."

The industry also has other linkages with various branches of the national economy including the mechanical industry (machinery, implements, tools), light industry (clothing and shoes), and chemicals (agrochemicals, inner tubes, batteries, fuel). Thus, it also introduces dynamism through the demand side.

Economic Transformations during the 1990s

The creation of the Basic Unit of Cooperative Production (UBPC) in late 1993 and 1994 began a significant process of changing the relations of production to address a situation created by an oversized state enterprise. In this process, the means of production—except for land—was sold to cooperative members, and land was authorized to cooperatives under usufruct conditions for an undetermined period of time. A free market for agricultural and livestock products was also reopened (October 1994). The positive experience of the Agricultural Production Cooperatives (CPA) over their more than 20 years of existence served as a model for the planning and constitution of the UBPCs, whose creation alongside the already existing CPAs and the Credit and Service Cooperatives (CCS), defined cooperativism as the way forward for agricultural and livestock production. Significant changes occurred in the ownership and use of land (see Table 5).

On more than one occasion it has been pointed out that the creation of the UBPCs was an abrupt process wherein agricultural workers became collective owners (members of cooperatives) practically overnight in the midst of Cuba's economic crisis and in an extremely difficult economic situation for agriculture. [3]As cooperatives acquired control over the means of production, they also acquired significant debts which they would have to repay over a certain period of time. In practice, however, debt repayment period was extended and in some cases the debts were cancelled. UBPCs are still facing a number of difficulties and problems that have been identified and discussed at

various times. Some of these problems have existed since the creation of the UBPCs and, of course, others have emerged in the 15 years since. They can be summarized as follows:

- The UBPCs are committed to selling more than 70% [4] of their basic production to the state procurement and distribution agency, Acopio, as well as a certain quantity of products not classified as basic production. The prices paid by Acopio are significantly lower than free market rates for agricultural and livestock products and in general do not cover costs.[5]
- The UBPCs have their range of products, quantity of production, and markets defined for them.
- An intermediary enterprise that groups UBPCs together centralizes, guides, and makes decisions about what should be produced, who they should sell to and at what prices, what inputs they will receive, and what investments should be made, among other things.
- Resources are assigned to the UBPCs from a centralized source, since there is no market where the producer can go to purchase inputs and equipment.

Table 1: Gross Domestic Product by Economic Activity (% in 1997 prices)

Category	2008	2009
Total	**100.0**	**100.0**
Goods including:		19.2
Agriculture	3.7	3.9
Fishing	0.2	0.3
Mining	0.6	0.6
Sugar industry	0.3	0.5
Manufacturing industry	14.2	12.9
Basic Services	39.5	39.4
Other Services including:		41.3
Trade	19.4	19.7
Education	9.3	8.1
Public Health	16.3	17.5
Culture and Sports	3.9	4.0
Public Administration and Social Welfare	3.1	3.8

Source: Author's construction based on Cuba's National Statistic Office (ONE) publication: "Panorama Económico Social 2008–2009"

Table 2: Imports 2002–2008 (Thousands of US Dollars)

	2002	2003	2004	2005	2006	2007	2008
Total Imports	4,140,767	4,612,598	5,615,198	7,604,259	9,497,890	10,082,557	14,249,234
Of which:							
Food:	827,236	998,120	1,183,273	1,494,204	1,391,928	1,746,402	2,544,822
for Humans	762,385	912,296	1, 073,422	1, 357,313	1, 261,697	1, 570,706	2, 280,401
for Animals	64,851	85,824	109,851	136,891	130,231	175,696	264,421
Food % of total	20.0	21.6	21.1	19.6	14.7	17.3	17.8

Source: Based on information in Anuario Estadistico de Cuba, ONE, 2002–2008.

Table 3: Imported Component of Daily Calories and Proteins (%)

Nutrient	1950	1975	1980	1985	2005	2007
Calories	47	56	53	53	58	60
Protein	53	64	61	59	62	63
Animal protein	-	35	31	35	43	45
Vegetable protein	-	65	69	65	71	72

Source: Based on information from several sources including Marcos M. "Algunos aspectos de las condiciones de vida del cubano antes del triunfo de la Revolucion (1959)" Demanda Interna No. 2. 1987; Anuarios estadístico de Cuba through 2008; and Nova A. "La agricultura en Cuba: evolución y trayectoria (1959–2005)"

Table 4: Agricultural Exports and Participation (in Millions of US Dollars)

Year	Total Exports	Agricultural Exports	%	Year	Total Exports	Agricultural Exports	%
1991	2979.5	2486.4	83	2001	1621.9	797.9	49
1992	1779.4	1365.7	77	2002	1421.7	618.3	43
1993	1156.6	860.3	74	2003	1671.6	545.5	33
1994	1330.8	871.7	66	2004	2188.0	521.1	24
1995	1491.6	861.2	58	2005	2159.4	526.3	24
1996	1865.5	1124.3	60	2006	2924.5	598.6	20
1997	1819.1	1053.3	58	2007	3685.6	617.7	16
1998	1512.2	849.7	56	2008	3679.5	664.1	18
1999	1495.8	710.9	48				
2000	1675.3	659.6	39				

Source: Author's construction based on Cuba's Anuarios Estadísticos from 1996, 2002, 2005, and 2006

Table 5: Land Ownership and Use before the Transformations and in 2007 (in thousands of hectares)

	1989		2007					
	Total		Total		Agriculture's share of total		Of Agricultural land, % of land cultivated	
	Area	%	Area	%	Area	%	Area	%
TOTAL	**11016**	**100**	**10988.6**	**100**	**6619.5**	**100**	**2988.5**	**100**
State	9065	82	6391.8	58	2681.0	40	786.3	26
Non State	1951	18	4596.8	42	3938.5	60	2202.2	74
UBPC of which:	-	-	2551.2	24	2177.2	33	1093.4	37
Sugar cane	-	-	1335.8		-		801.1	
Coffee	-	-	134.7		-		29.8	
Plantains	-	-	105.5		-		26.2	
Citrus and Fruit	-	-	168.2		-		51.7	
Rice	-	-	201.3		-		54.3	
Misc. crops	-	-	795.0		-		128.1	
Tobacco	-	-	66.4		-		2.2	
CPA	**868**	**8**	**700.6**	**6**	**593.1**	**9**	**330.7**	**11**
Sugar cane	235		-		-		200.7	
Non-sugar cane	633		-		-		130.0	
Coffee	-		-		-		18.6	
Plantains	-		-		-		12.0	
Citrus and Fruit	-		-		-		12.5	
Rice	-		-		-		14.2	
Misc. Crops	-		-		-		63.9	
Tobacco	-		-		-		8.8	
CCS	**833**	**7**	**914.6**	**8**	**794.3**	**12**	**526.4**	**18**
Small Farmers	**250**	**3**	**431.4**	**4**	**373.9**	**6**	**251.7**	**8**

Source: ONE "Estadísticas Agropecuarias 1996." Sept./97 and Cuba's Anuario Estadístico 1989

- Neither basic products from the livestock UBPCs (milk and meat) nor rice, citrus, and potatoes from UBPCs can be sold in the free agricultural market.
- The cooperatives have internal difficulties related to accounting and stability.

In sum, the UBPCs lack a necessary autonomy, and this has led to a situation in which a significant number of UBPCs are still not generating profits. They are thus becoming institutions that do not stimulate the economy because they cannot distribute earnings. Selling food products on the free agricultural market (MLA) is also somewhat problematic in that the MLA operates within an oligopoly. On one hand, the state (represented by Acopio) takes its products to the markets operated by the Ministry of Domestic Commerce (MINCIN). But, to the detriment of the MINCIN operated markets, there has also been a progressive development of state markets with fixed prices (*mercados de precios topados*) operated by the Ministry of Agriculture (MINAG), where the supply is inconsistent and prices are very close to MINCIN prices but without the same quality, selection, and consistency in supply. This has been the case since the MINAG created and began to operate these fixed-price markets independently.

In reality, the agricultural market in recent years has little by little come to resemble more of a monopoly because of physical volume of the state-controlled supply (of both agricultural and animal products). The direct participation of the UBPCs, CPAs, CCSs, and private farmers has been on a continuous decline in the free agricultural and livestock markets (both the MINCIN markets and the MINAG fixed price markets).

The three hurricanes that swept through Cuba in late 2008 also had a major effect on agriculture and on the Cuban economy as a whole, leading to a series of restrictive measures including the establishment of capped prices in the free supply-and-demand markets that continue to be in effect today. This has not helped to improve performance and has limited the food supply in those markets

In this situation, the food market, which by its very nature should operate in conditions of almost perfect competition, is functioning currently as a market of imperfect competition.

Agricultural Production 2004–2007

Agricultural and livestock production has been in decline since 2000, though there was some slight growth in 2007 as compared to 2006, which was the lowest overall level since 2000 (see Table 6).

In terms of livestock production, especially bovine, the number of cows slaughtered has decreased, and the increase in the average weight of the cow has not compensated for the decrease in the total meat production (see Table 7). The supply of milk is growing, stimulated in large part by the increase in the price of milk and a slight increase in the number of cows being milked (600 cows) and an increase in the yield of liters of milk per cow.

Porcine livestock production has improved in all of its indicators as compared to the previous year. The state is the largest producer here, producing 86% of the total volume of pork. This has allowed the state to supply a larger amount to the free agricultural market (6,422.4 tons of pork pieces in 2007, as compared to a supply and sale of 3,349.6 tons in 2006).

Poultry production has been on the rise, particularly egg and meat production, in spite of a decrease in efficiency indicators such as the number of eggs per hen (this indicator has been declining consistently since 2005) and the consumption of feed per egg, which has not improved as compared to 2006. The production target of 2 billion eggs initially projected for 2006 has not been reached, nor has the proposed 2.3 billion eggs target for 2007.

The complicated situation in the agricultural and livestock sector has led to inadequate use of the land; with a high level of uncultivated land, including some idle lands, one the one hand (see Table 8), and a low agricultural yield per area on the other (see Table 9).

Agricultural and Livestock Production 2008–2009

The 2009 year ended with overall agricultural and livestock production closing at a level of 100.5%, almost on par with 2008. While the production of foods of plant origin grew by 5.6%, production in the livestock sector fell by 4.6%.

The production of *viandas* (tubers/roots and plantains) decreased by 0.5%. Contributing factors included a 18.5% drop in plantain production (110,900 tons less). Tuber and root vegetable production increased by 9.5% overall, with potatoes growing by 17.8% and *boniato* (sweet potato) by 49.2%, while *malanga* (taro), yucca, and other tubers decreased by 19.0, 26.7, and 1.5% respectively.

Vegetable production increased by 11.0% with growth occurring primarily in tomatoes (43.3%). (Significant losses were estimated during harvest and post-harvest periods, however, due to a lack of packing containers, problems with transportation, and difficulties involving the capacities of the processing industry.) Production also increased for onions (2.6%),

Table 6: Production of Foods with Vegetable Origin 2004–2007

Products	2004	2005	2006	2007	07/06 %
Tubers and roots:	31738.4	26559.0	23817.5	24283.5	101.9
Including:					
Potatoes	7113.5	6738.2	6143.9	2967.5	48.3
Boniato (sweet potato)	10567.8	7168.1	-	-	-
Malanga (taro)	5304.5	3940.9	-	-	-
Plantains	18023.3	12657.0	14339.5	18083.2	126.1
Fruit	6735.3	5474.1	5584.4	5837.1	104.5
Root Vegetables	11288.0	7182.9	8755.1	12246.1	139.8
Vegetables	53677.3	42926.2	37963.0	36729.7	96.7
Including:					
Tomato	10442.6	9193.7	8442.5	7522.0	89.0
Peppers	1202.0	1053.1	901.0	873.9	96.9
Onion	1902.3	1850.5	1623.7	1580.4	97.3
Garlic	712.6	682.5	487.1	484.8	99.5
Rice, paddy humid	10628.6*	7991.6*	9439.5*	9400.0**	99.5
Corn	6537.8	5344.5	5085.4	5774.1	113.5
Beans	1722.7	1295.3	974.0	1191.3	122.3
Citrus	17428.9	10872.2	7306.5	10102.5	138.2
Fruit	10659.0	8683.5	8488.0	8715.5	102.6

Unit of measurement: thousands of quintales (qq)(one hundred pound bags)
-Not available. 1 MT= 21.74 qqs
Source: Constructed from information in Principales Indicadores del Sector Agropecuario, ONE, 2004, 2005, 2006, and 2007, and Anuario Estadistico de Cuba, ONE.

garlic (25.8%), pumpkin (6.1%), melon (11.1%), and other vegetables (3.3%), but it decreased for peppers (6.3%), cucumber (14.0%), and cabbage.

Corn production fell by 6.4% while humid (pre-processed) paddy rice grew by more than 40%, and bean production rose by 37%.

Citrus production grew slightly by 1%, while tropical fruit production fell by 3.2%.

At the end of the fourth quarter, and therefore the year, livestock production continued to decline as it had throughout the year (see Table 10) primarily because of the drop in porcine production, where the production of live animals, the number of pigs sent to slaughter, and the average weight and total number of pigs all fell. The reduction in total amount of pork was seen primarily in the private sector (CCS and private farmers), which is a significant supply source for fresh meat on the free supply and demand market. The drop in porcine production is attributed primarily to a lack of availability of feed which in general is made

Table 7: Production and Indicators for Livestock 2000–2007

Category	Unit	2000	2001	2002	2003	2004	2005	2006	2007	07/06%
Cattle										
slaughter	Mcabz	491.6	478.3	460.7	371.8	388.6	466.2	360.6	339.6	94.1
Standing weight	Mt	145.5	141.8	131.7	112.1	107.7	118.4	111.3	109.5	98.3
Average weight	Kg	296.1	296.5	285.8	301.6	277.2	254.0	308.5	322.3	104.4
Milk production	MMl	422.8	436.2	400.7	429.4	362.4	322.7	371.7	411.3	110.6
Cows being milked	Mcabz	368.4	369.8	364.6	360.3	325.2	274.2	317.6	318.2	100.1
Liters/cow/day	-	3.14	3.23	3.01	3.26	3.05	3.22	3.20	3.5	109.3
Total livestock	Mcabz	4110.2	4038.5	3973.7	4025.3	3942.6	3703.6	3737.1	3787.4	101.3
Pigs										
Slaughter	Mcabz	1100.9	985.8	963.5	1098.8	1097.7	1161.8	1463.8	2134.5	145.1
Standing weight	Mt	73.1	58.9	68.5	75.4	73.8	86.3	119.1	181.9	152.7
Average weight	Kg	66.4	59.8	71.1	68.6	67.2	74.3	81.4	85.2	104.6
Total livestock	Mcabz	1221.8	1307.2	1351.8	1335.6	1245.3	1293.3	1410.2	1502.1	106.5
Poultry										
Egg Production	MMU	1337.6	1177.6	1365.6	1464.4	1405.2	1727.1	1913.2	1983.7	103.6
Including: layers	MMU	1152.7	982.7	1157.2	1262.5	1186.3	1494.6	1718.8	1760.9	102.4
Total laying hens	Mcabz	5145.9	4790.3	4198.7	4586.5	4490.3	5711.7	7042.8	7315.9	103.8
Eggs/Laying hens	one	224	205.1	275.6	275.3	264.2	261.7	244.1	240.7	98.6
Feed/10 eggs	kg	1.8	1.9	1.5	1.4	1.5	1.5	1.6	1.6	100.0
Meat products	Mt	27.2	26.5	12.9	9.5	10.1	8.6	9.3	12.0	129.0
Sheep-goats										
Meat Production	Mt	5.508	6.143	6.847	7.301	7.783	7.781	8.042	8.897	110.6
Slaughter	Mcabz	209.4	241.7	248.6	264.6	284.6	291.6	301.2	320.0	106.2
Average Weight	Kg	26.3	25.4	27.5	27.5	27.3	26.6	26.6	27.8	104.5

- Not available
Mt=Millions of tons MCabz=Millions of heads MMl=Millions of liters MMU=Millions of units
Source: Author's own elaboration based on ONE Primary Indicators of the Agricultural Sector. 2006–2007

Table 8: Land Use 2005 (in thousands of hectares)

Total	10,988.6	
Agricultural surface area	**6,597.1**	**100.0 %**
State	2,658.6	40.0
UBPC	2,177.2	33.0
CPA	593.1	9.0
CCS	799.6	12.0
Private	368.6	6.0
Of which: Cultivated land area	**3,222.7**	**100.0 %**
State	909.4	27.6
UBPC	1,182.3	37.0
CPA	344.7	11.0
CCS	531.9	16.6
Private	254.4	7.8
Uncultivated	**3,374.4**	
State	1,749.2	
UBPC	994.9	
CPA	248.4	
CCS	260.0	
Private	121.9	
Of which: Natural grasslands	**2,268.5**	
State	1,072.4	
UBPC	681.6	
CPA	192.9	
CCS	218.7	
Private	102.9	
Idle lands	1,105.9	
State	676.8	
UBPC	313.3	
CPA	55.5	
CCS	41.0	
Private	19.3	
Non-agricultural land area	4,391.5	

Source: Nova A. based on the Anuario Estadístico de Cuba, 2003–2005, ONE.

Table 9: Land Use — December 31, 2007

	Total land Area (Mha)	Agri-cultural Land Area (Mha)	Cultivated Land Area (Mha)	Level of Land Use (%)	Idle Land (Mha)	Index of Idle Forest Land (%)	Forested Land Area* (Mha)	Level of Forest-ation (%)
00 Cuba	10 988,6	6619,5	2988,5	45,1	1232,8	18,6	2905,0	26,4
01 Pinar del Río	1 090,4	506,9	265,4	52,4	70,8	14,0	467,7	42,9
02 La Habana	573,2	401,8	278,4	69,3	14,9	3,7	76,2	13,3
03 Ciudad de La Habana	72,1	32,6	21,6	66,3	1,9	5,9	2,9	4,1
04 Matanzas	1 180,3	531,0	221,8	41,8	93,5	17,6	419,4	35,5
05 Villa Clara	841,2	615,1	279,3	45,4	99,7	16,2	124,1	14,8
06 Cienfuegos	418,0	307,0	133,3	43,4	84,6	27,6	61,9	14,8
07 Sancti Spiritus	673,7	485,3	206,5	42,5	95,4	19,7	96,2	14,3
08 Ciego de Avila	678,3	441,1	239,6	54,3	95,5	21,6	133,5	19,7
09 Camaguey	1 561,5	1 060,2	310,0	29,2	369,6	34,9	301,3	19,3
10 Las Tunas	658,8	504,4	194,4	38,5	157,9	31,3	90,8	13,8
11 Holguín	929,3	522,9	278,4	53,3	23,7	4,5	299,3	32,2
12 Granma	837,5	547,9	241,7	44,1	76,7	14,0	179,7	21,4
13 Santiago de Cuba	615,6	349,5	187,0	53,5	16,5	4,7	209,1	34,0
14 Guantánamo	616,8	245,2	118,3	48,2	14,6	6,0	307,9	49,9
15 Isla de la Juventud	241,9	68,7	12,7	18,5	17,4	25,4	135,2	55,9

*Excludes deforested land area

from imported raw materials. In this case, the lack of liquidity in foreign currency limited the importation of raw materials.

In poultry, egg production was up by 115.5 million units but was still lower than 2007 levels. Here, the number of laying hens decreased, but the eggs-per-hen rate increased, which translated into an improvement in the rate of feed consumed per every 10 eggs produced. Poultry meat production fell for the second consecutive year.

Cattle production had better results (see Figure 1). Beef production increased due to a larger number of animals sent to slaughter and slight improvements in the average weight (an increase of 0.6 kg per animal). Milk supply grew for the third consecutive year, sustained by an increase in the number of cows being milked and a slight increase in the average yield of liters per cow (0.2 liters per cow). The increase in the price of milk in the past two years has contributed to these results, but production is still below existing potential. The amount of milk given directly to the population continued to rise. And the total number of cows also rose.

The Need for a More Efficient Agricultural Model

An analysis of the results in agricultural and livestock production, particularly bovine (see Figures 1 and 2), and a look at the inefficient utilization of the fundamental means of production of the sector (land), manifested in the increasing area of idle farmland[6] and low agricultural yields, leads to the conclusion

Table 10: Livestock Production and Indicators

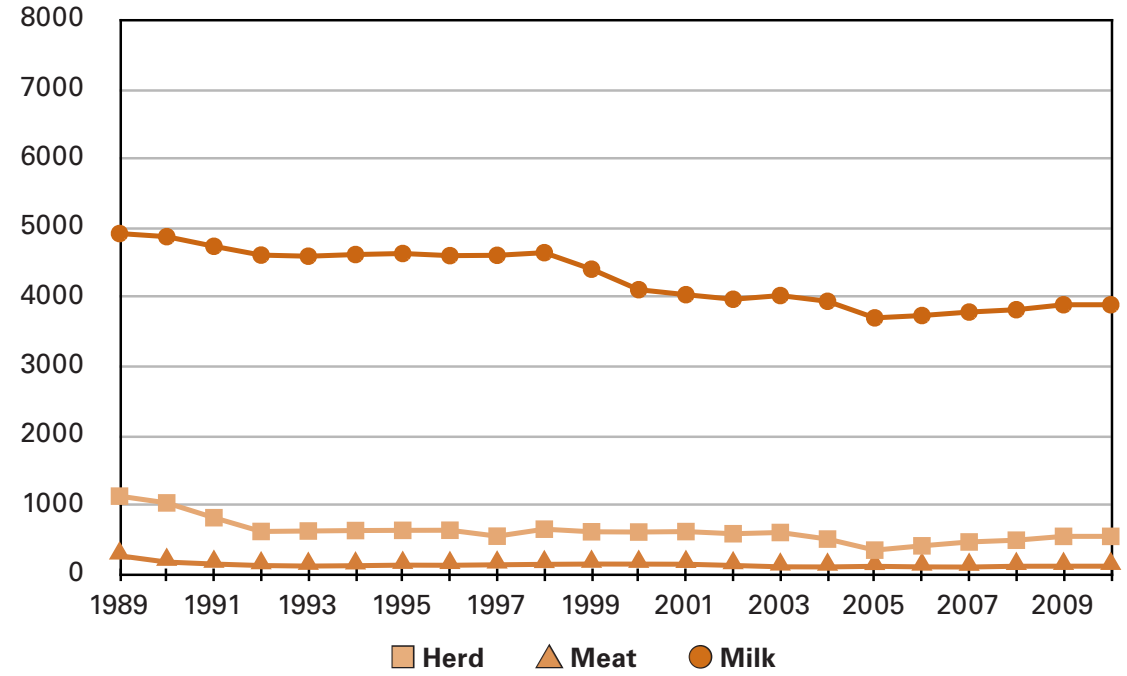
Bovine	U.M.	2002	2003	2004	2005	2006	2007	2008	2009
Slaughter	Mcabz	460.7	371.8	388.6	466.2	360.6	339.6	368.5	370.3
Standing weight	Mt	131.7	112.1	107.7	118.4	111.3	109.5	120.7	121.5
Average weight	Kg	285.8	301.6	277.2	254.0	308.5	322.3	327.5	328.1
Milk Prod	MMl	400.7	429.4	362.4	322.7	371.7	411.3	482.0	535.8
Dairy Cows	Mcabz	364.6	360.3	325.2	274.2	317.6	318.2	364.5	370.3
Liters/cow/day	-	3.01	3.26	3.05	3.22	3.20	3.5	3.8	4.0
Total herd	**Mcabz**	**3973.7**	**4025.3**	**3942.6**	**3703.6**	**3737.1**	**3787.4**	**3821.3**	**3892.8**
Porcine									
Slaughter	Mcabz	963.5	1098.8	1097.7	1161.8	1463.8	2134.5	2280.5	2107.8
Standing weight	Mt	68.5	75.4	73.8	86.3	119.1	181.9	194.3	170.7
Average weight	Kg	71.1	68.6	67.2	74.3	81.4	85.2	85.2	81.5
Total number	**Mcabz**	**1351.8**	**1335.6**	**1245.3**	**1293.3**	**1410.2**	**1502.1**	**1553.8**	**1469.2**
Poultry	**U.M.**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Egg production	MMU	1365.6	1464.4	1405.2	1727.1	1913.2	1983.7	1920.4	1931.9
Of which: layers	MMU	1157.2	1262.5	1186.3	1494.6	1718.8	1760.9	1704.3	1693.6
Total layers	**Mcabz**	**4198.7**	**4586.5**	**4490.3**	**5711.7**	**7042.8**	**7315.9**	**7271.1**	**7100.0**
Egg/layer	one	275.6	275.3	264.2	261.7	244.1	240.7	234.4	239.0
Feed/10 eggs	kg	1.5	1.4	1.5	1.5	1.6	1.6	1.7	1.6
Meat prod. (weight standing)	Mt	12.9	9.5	10.1	8.6	9.3	12.0	11.1	10.6
Ovine-caprine									
Meat Prod.	Mt	6.847	7.301	7.783	7.781	8.042	8.897	10.3	10.5
Slaughter	Mcabz	248.6	264.6	284.6	291.6	301.2	320.0	361.6	358.6
Average Weight	Kg	27.5	27.5	27.3	26.6	26.6	27.8	28.0	29.0

-Not available

Mt=Millions of tons; MCabz=Millions of heads; MMl=Millions of liters; MMU=Millions of units

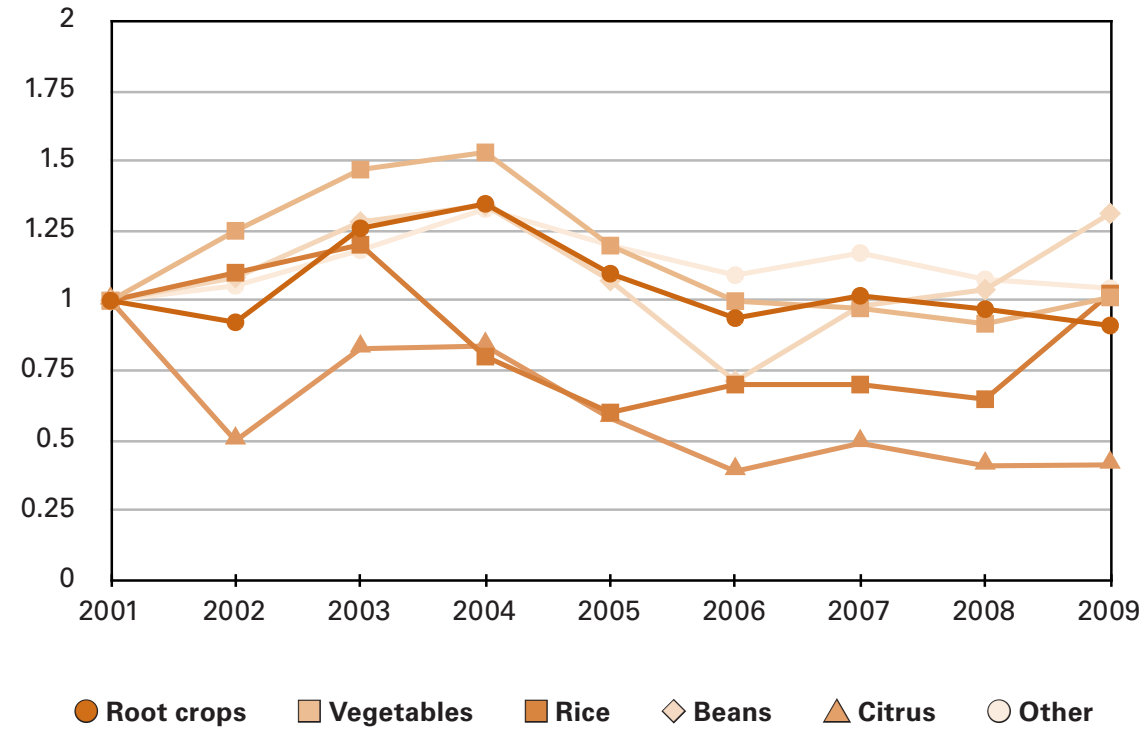
Source: Constructed from "Principales Indicadores del Sector Agropecuario" ONE 2002–2009.

Figure 1: Cattle, Beef, and Milk Production, 1989–2009



Source: Author's construction based on "Principales Indicadores Sector Agropecuario," 2001–2008, ONE.

Figure 2: Selected Agricultural Products, 2001–2009



Source: Author's construction based on "Principales Indicadores Sector Agropecuario, 2001–2009," ONE.

that the forces of production are being restrained and that it is necessary to eliminate the obstacles that are slowing their development. To do so, the relations of production must be modified or transformed.

The private sector, made up of both the CCSs and the private farmers (both reported by ONE as private sector), occupies an important place currently in the country's food production (see Table 11). It produces an average of 57% of the overall total of national food production though it operates on only 24.4% of the cultivated area of land (see Table 10). (This excluded the area used for tobacco. If tobacco is included, it would be 26%.) The CCSs and the private small farmers only have 3.7 and 1.7% respectively of the nation's idle lands (see Table 12), that is to say 66,800 hectares.

In summary, while agricultural and livestock production has been declining, a significant amount of agricultural land remains idle and the deficit in national production is being covered by increasingly high volumes of food imports. The signs point clearly to the fact that the forces of production are being held back and that it is necessary to eliminate the obstacles in the way of their development.

The question is how to remove the restraints that are currently hampering the forces of production. To do so, it is necessary to change the relations of production, and that implies an analysis and assessment of how to resolve the issue of ownership in the agricultural sector, and what steps must be taken to do so.

It is likely that the new agricultural production model about to be launched will be based on the UBPCs, the CPAs, the CCSs, the state enterprise, and private farmers—in other words, a model with diverse forms of landholdings. The model should be based on the measures and/or transformations required to achieve a sense of ownership that will remove restraints from the forces of production. Here, the local jurisdiction, or municipality, should be the basic area of action.

Necessary Transformations

Some initial steps have been taken recently towards the creation of an input market for producers. Stores are being created where producers can go to buy inputs and where their purchasing power is based on the production results they achieve. Likewise, timely steps are being taken to allow local jurisdictions (the municipality) to make decisions on issues that affect the local area, especially as regards to producers. To that effect, municipal agricultural and livestock delegations are being created.

The agricultural and livestock sector is in urgent need of significant transformations and reforms. Above all, it is necessary to give continuity to the transformations begun in the agricultural sector in the early 1990s (mentioned previously) and to take new measures aimed at facilitating the development of the sector's productive forces. Some suggested measures are the following:

- Reduce the number of institutions and simplify structures both at the grassroots and superstructure levels in order to help ensure that the production units or enterprises have the necessary autonomy. Currently, three ministries (MINAG, MINAZ, and MINAL[7]) are involved in food production, and they reproduce the same functions all the way to the base level. It would be advisable to continue to reduce the number of institutions and create a simplified structure. There could be a single ministry, for example, to deal with food issues. The process should also separate government management from enterprise management and move towards decentralization (see Figures 3, 4, and 5).

- The local geographic area should be a defining element in food production and in the search for solutions. Currently the ministerial structures are the same down to the municipalities, and horizontal relationships are not practiced. In order to decentralize and help the agricultural and livestock sector to function better, the various economic entities involved in agricultural production that are located in each geographic area (UBCs, CPAs, CCSs, private farmers, and state enterprise) must develop a system of broad horizontal relationships, no matter which organizational structures they are linked to institutionally. In order to achieve these horizontal relationships effectively, it would be advisable to create producer associations made up of the directors of each of the production units in the area, with a Director and Secretary elected for certain renewable periods of time. These organizations would be able to make decisions on management, financial, technological, economic, and other matters that can be resolved locally, without having to wait for a decision to be made at a higher level (see Figure 4).

Table 11: Participation of Private Producers (CCS and Private) in Domestic Food Production 2008

Agricultural products	%	Livestock	%
Tubers and roots	58.0	Milk production	56.0
Of which: potatoes	6.3	Average cows being milked	55.6
Plantains (fruit)	53.0	Total bovine livestock	50.1
Plantains (root)	54.0	Pork production	11.0
Vegetables	62.3	Total porcine livestock	58.7
Of which: tomatoes	68.9	Egg Production	1.0
garlic	86.3	Poultry meat production	7.0
onions	83.7	Sheep –goat meat production	59.0
peppers	70.6		
cucumber	61.5		
Rice	40.0		
Corn	77.3		
Beans	80.5		
Cacao	82.0		
Citrus	13.3		
Fruit	73.7		

Source: Author's construction based on "Principales Indicadores del Sector Agropecuario ONE 2008"

Table 12: Idle Land Area by Province, 2002–2007

	Thousands of hectares		Change	Makeup (%)
	2002	2007	2007–2007	2007%
00 Cuba	933,3	1 232,8	299,5	100,0
01 Pinar del Río	41,7	70,8	29,2	5,7
02 La Habana	12,1	14,9	2,9	1,2
03 Ciudad de La Habana	2,1	1,9	-0,2	0,2
04 Matanzas	76,3	93,5	17,2	7,6
05 Villa Clara	73,0	99,7	26,7	8,1
06 Cienfuegos	50,8	84,6	33,8	6,9
07 Sancti Spiritus	79,1	95,4	16,3	7,7
08 Ciego de Avila	66,0	95,5	29,4	7,7
09 Camaguey	307,9	369,6	61,7	30,0
10 Las Tunas	114,2	157,9	43,7	12,8
11 Holguín	18,7	23,7	5,0	1,9
12 Granma	58,4	76,7	18,3	6,2
13 Santiago de Cuba	13,7	16,5	2,8	1,3
14 Guantánamo	12,2	14,6	2,4	1,2
15 Isla de la Juventud	7,1	17,4	10,4	1,4

Figure 3: Food Production (Macro-Structure)

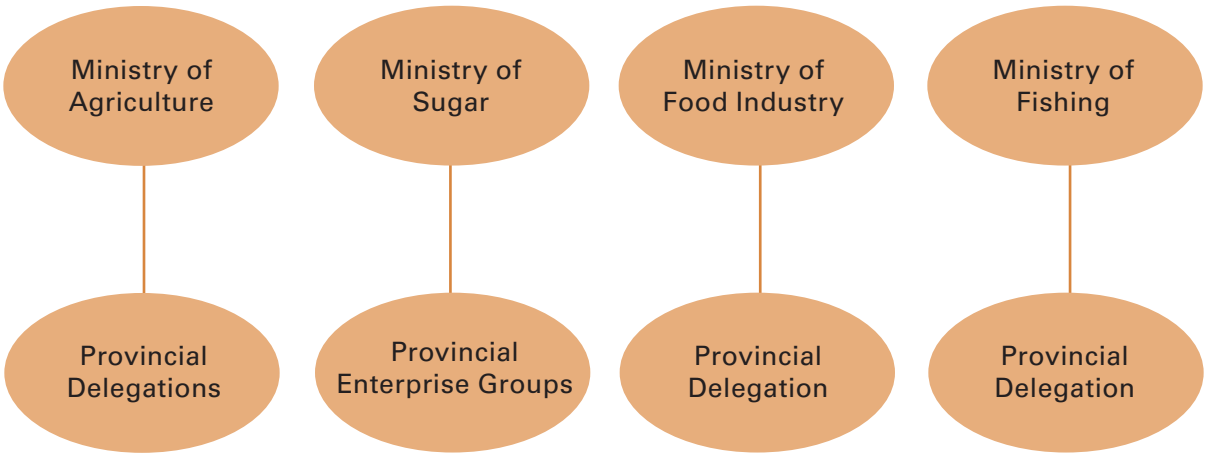


Figure 4: Agricultural Production Structure

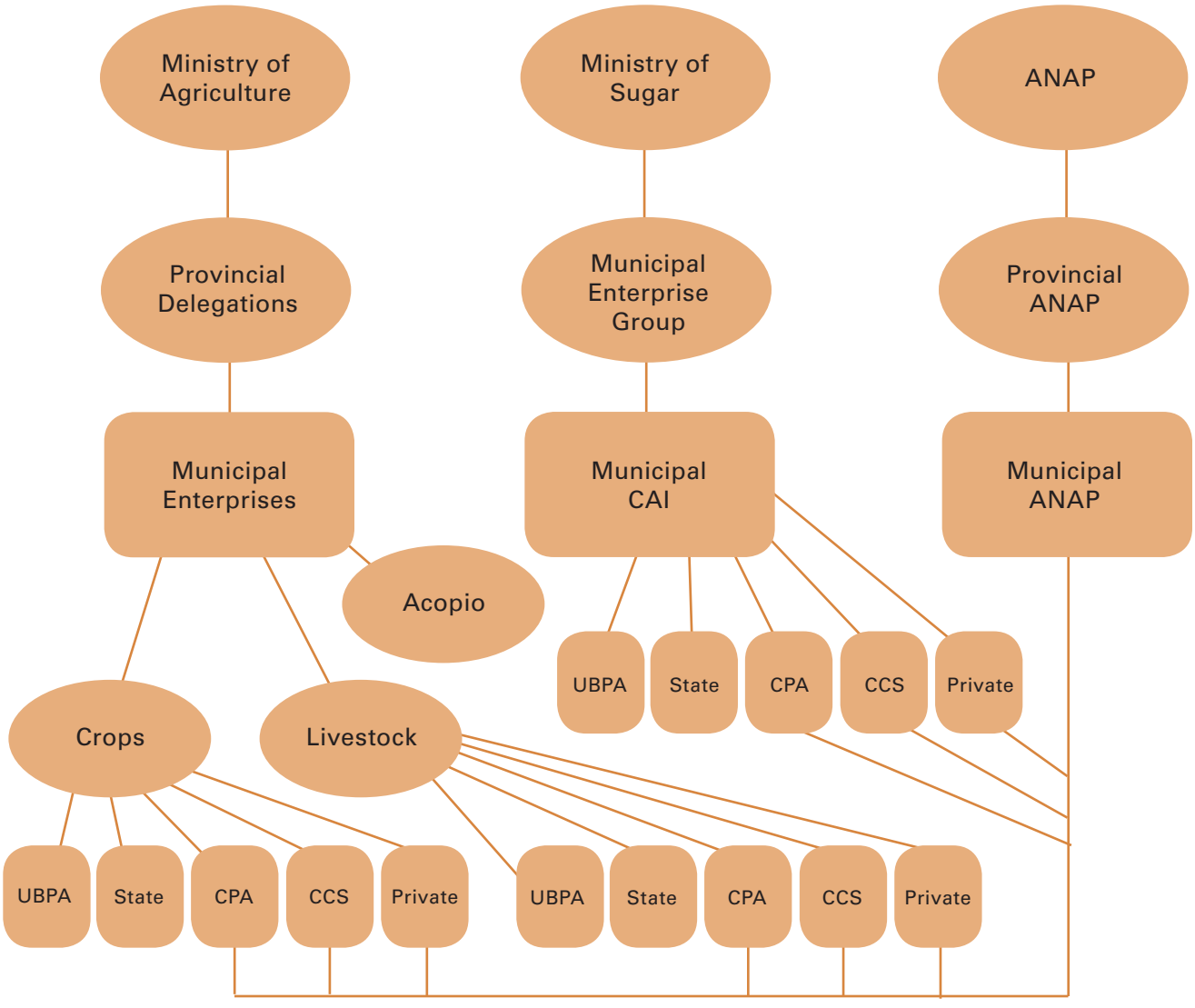
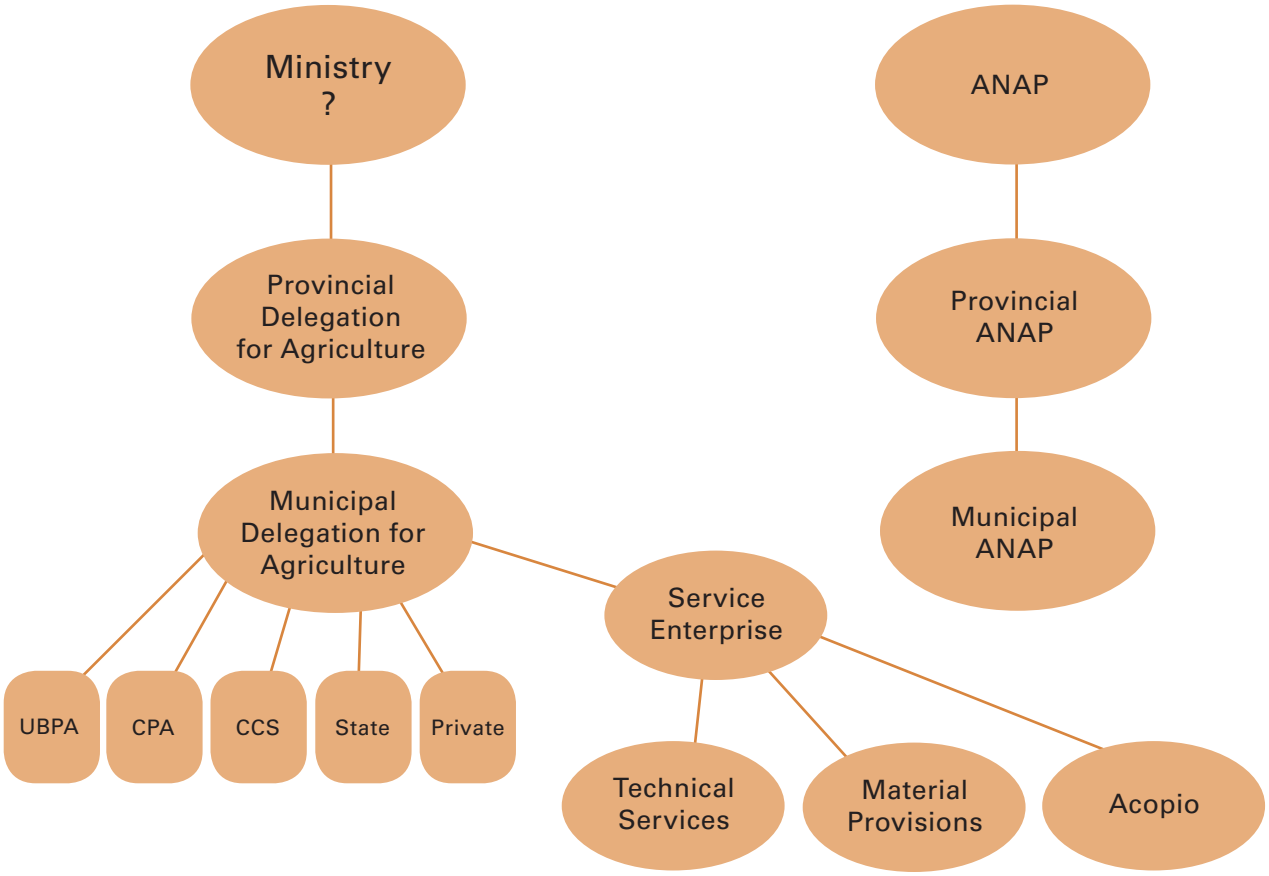


Figure 5: Possible Structure



- Make full use of the macro structures that exist in the municipality such as: Poder Popular, the Bank (reinforcing the agricultural related activities of the bank and then deciding whether a specialized agrarian bank might be warranted), the Office of Statistics, and ONAT[8], as elements of balance, facilitators, and liaisons with the provincial and national superstructure, perhaps strengthening these institutions rather than creating new administrative structures. If any new structure is to be created, it should be fully justified ahead of time, based on the need for its functions, and keeping in mind the goal of eliminating any unnecessary layers of bureaucracy for the producers. It is important to have an overall reference point in the territory, but this could be achieved through the macro structures that already exist in the area, rather than by creating any new structures that would only end up distancing producers from the decision-making process.

- The UBPCs, CPAs, CCSs, and other enterprises that make up the production system of the agricultural and livestock sector should have the autonomy they need to be able to make decisions about how to combine production factors efficiently, obtain resources for production, make their final product available, and obtain economic benefits that will help them develop a real sense of ownership.

- Recognize and identify the true nature of UBPCs: enterprises with rights and obligations.

- The nascent inputs market should broaden its range of products, expanding to include the sale of machinery, equipment, tools, irrigation systems, and services, among others. This is relevant for closing the production cycle efficiently and for gearing up for expanded production in subsequent years.

- Clarify the definition of the term "usufruct," which currently leaves collective and individual producers with a degree of uncertainty and distances them from the sense and right of ownership. The problem should be solved within the terms of the lease, by establishing rights and duties both for the lessor and the lessee. The terms of legal ownership and economic ownership should be well defined (with the right of ownership in its full sense, decisions, and results) This would help—along with the other suggestions in this list—to develop the forces of production and help them achieve the full potential of the property.

- The achievement of ownership is not strictly attributable to the possession, or not, of a property title. It goes beyond this to encompass such aspects as an individual or collective's ability to make its own decisions regarding how to combine production factors efficiently, what kind of production structure to use, who to market or sell its products to, the prices they should receive for their products, and where to buy production inputs and equipment. The system should be based on results and on prices, corresponding to the prices and the income obtained through the sale of their production. And finally, after they have deducted their financial commitments, they should be able to have control over the economic results. In this process, the producer or producers should reconcile social interest with the producers' interests, keeping in mind the real and objective existence of the market. The implementation of the lease (taxes charged for using land for production) ensures that land ownership remains in the hands of the state, but it also helps to resolve the current lack of definition of legal ownership vs. economic ownership. Article 2 of recently issued Decree-Law No. 259, establishes the time of the usufruct and the possibilities for successive extensions of that time period. The third final provision of the same decree-law says that the relationship and obligations of the state and the holder of the usufruct will be established via an agreement signed by both parties specifying the rights and responsibilities of each party. This is a significant step that helps eliminate the current lack of definition and uncertainty around the terms of the usufruct. Making land available is a necessary condition for the successful closure of a production cycle, but it is not sufficient; it requires other accompanying measures and transformations.

- Planning should play a regulatory role towards achieving macroeconomic balance and stability and a role in aspects related to local territories and jurisdictions. It should also facilitate a successful closure of the production cycle, by keeping the market in mind and using it.

- The market will exist as long as monetary/mercantile relations—money—exists. The market is an objective reality and should be used as a tool that aids in distribution and facilitates the process for producers and consumers.

- The state should participate as another actor that uses the market, but it should also ensure the appropriate behavior of prices, acting as a regulator to balance supply and demand, prices, and the interests of the consumer, and using appropriate economic mechanisms to do so.

- Eliminate the series of barriers that producers and products currently face in accessing the market. (Milk, beef, dairy products, rice, potatoes, and citrus from producer enterprises are not being sold in the supply-demand free market).

- The commitment to sell products to Acopio, the government's procurement and distribution agency, should be only those commitments that are absolutely necessary. Most of the production should be sold on the free supply and demand market. Dynamic and flexible measures that stimulate the producers to increase production should be applied.

- Help producers, as individuals or cooperatives, to sell directly to the market, by simplifying the sales chain, reducing costs, and making sure that the most of the value created stays with

the creative production source as an essential element to stimulate increased production.

- Achieve a greater participation of foreign investment in the various branches and sub-branches of the agricultural sector, beginning with those where production is declining most quickly but which can also recover quickly to produce food for internal markets as well as to substitute for imports, generate renewable energy sources, and produce exportable quantities.

- As these changes are being implemented, they will lead to, or motivate, the emergence of new measures within the systemic context in which they are being carried out. The process itself is dialectic and dynamic, constantly seeking to develop the forces of production.

Notes

1. Author is a professor of economics and a researcher at the Center for the Study of the Cuban Economy at the University of Havana.
2. Includes direct food imports and secondary imports (national products that require imported inputs for their production)
3. Nova A. "Las Nuevas Relaciones de Producción en la Agricultura." CUBA: Investigación Económica INIE. No. 1. January–March. 1998.
4. García A. "Mercado Agropecuario Evolución Actual y Perspectiva." CUBA: Investigación Económica." INIE No. 3 and 4 July–December 1997. p. 116.
5. Villegas R. "Las UBPC como forma de realización de la propiedad social en la agricultura cubana." Granma University. May 1999. Summary. p.11.
6. President Raul Castro reported on July 26, 2009, that more than 110.000 requests had been made and at that point about 82,000 had been approved, representing an area of some 690,000 hectares, or 39% of the idle area. (From this it can be deduced that the total area of idle lands may be approximately 1,769,230 hectares.) To date, 225,000 hectares have been planted, representing 32.6% of the land awarded. In the December 20, 2009 report to the National Assembly, the President of the State Councils indicated that 920, 000 hectares of land had been given out, benefitting more than 100,000 applicants. The quantity of lands requested through January 18, 1999 grew to 1,311,995 hectares and 946,344 hectares have been turned over. Of these, 1,124,297 hectares correspond to natural persons to whom 866,406 hectares have been given. ANAP Economic Department, February 8, 2009.
7. Ministry of Agriculture (MINAG), Ministry of Sugar Industry (MINAZ), and Ministry of Food Industry (MINAL).
8. National Office of Tax Administration (ONAT)

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