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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

CURRENT ECONOMIC POSITION
AND PROSPECTS
OF
GUYANA
(in two volumes)

VOLUME II
AGRICULTURE

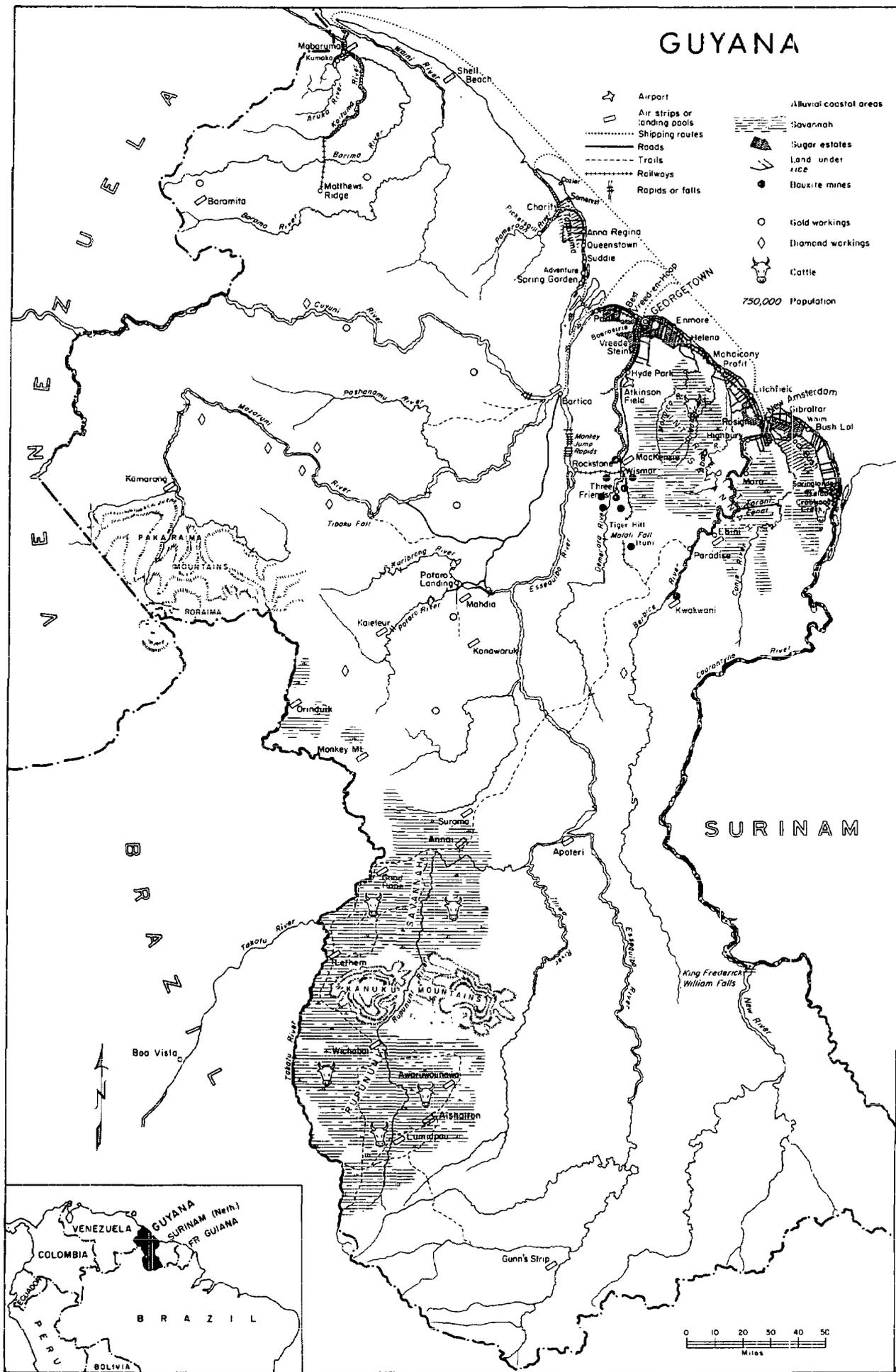
October 1, 1970

Central America and Caribbean Department

CURRENCY EQUIVALENTS

1 Guyanese Dollar (G\$)	=	US\$0.50*
US\$1	=	G\$2.00

* New rate effective since devaluation of
November 1967 (old rate was G\$1 = US\$0.58;
US\$1 = G\$1.71)



AGRICULTURE IN GUYANA

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SUMMARY AND CONCLUSIONS

1. Approximately one-third of the occupied population is engaged in agriculture which accounts for about one-fifth of GDP, and provides about half of the country's exports. Sugarcane in turn accounts for nearly half of agricultural output and employs about one-third of the agricultural workforce.
2. Guyana's agriculture displays a remarkable degree of concentration in respect of location, product and management. Virtually all present output comes from a narrow coastal strip of less than 2,500 square miles. A little over 160 square miles, or about 0.2 percent of the total land area, is under sugarcane which accounts for almost one-half of total agricultural production. Twelve estates, owned or controlled by two expatriate companies, grow virtually all the sugarcane.
3. The volume of agricultural production increased by about 1.5 percent per annum during the 1960's compared with annual growth rates of about 3 percent for population and 4-5 percent for GDP in real terms. This relatively slow rate of growth was due mainly to the failure of crop production, particularly sugarcane and rice, to expand. Sugarcane production, which suffered a serious setback in the mid-1960's, has been expanding fairly rapidly in recent years. Rice production, by contrast, has tended to decline since the mid-1960's.
4. Capital formation in the agricultural sector in the 1960's was about 15 percent of the total for Guyana. The response in terms of increased production for a given investment has been poorer in the agricultural sector as a whole than elsewhere in the economy. Within the agricultural sector, sugarcane production has increased in response to investment at a rate comparable with the non-agricultural sectors.
5. The dominant position of sugarcane in the agricultural sector, the concentration of control in two expatriate companies, the slow growth of world demand, the future uncertainty of Guyana's present favorable position in the high-priced U.S. and U.K. markets point to the need for a lessening of the country's dependence on this crop. However, Guyana's comparative advantages in sugar, reflected in relatively low production costs and high rates of return, strongly suggest that any lessening of dependence on sugarcane should be achieved by the more rapid expansion of other lines rather than by curtailing the present rate of expansion of sugarcane production. Particular attention should be given to expanding the acreage of small growers' sugarcane, for which conveniently located land, now waste, is available.
6. The problems confronting the rice industry are deep-rooted and complex. They essentially stem from the inefficient use of existing resources and opportunities rather than from a dearth of these. Rent controls militate against an efficient allocation of land among growers. The recovery from rice growers of only a small proportion of the cost of water control deprives the controlling authority of the resources necessary to fulfill its functions effectively. At the same time, an inappropriate price for an input as important as water, leads to its irrational economic use by rice farmers. A primary objective of

rehabilitation should be the direction of available resources into the hands of more efficient growers - who, by and large, are likely to be properly supported small growers - to be achieved by creating a more rational land market and by adopting an appropriate pricing policy for the water control facilities provided. Changing the Rice Marketing Board's purchasing methods may be the best way to achieve worthwhile improvement in rice quality.

7. There are a number of interesting possibilities in cattle. A livestock development program, to be financed in part by IDA, is under consideration. It envisages the formation of group ranches in the Rupununi as well as among coastal owners of small herds, placing their cattle on ranches further inland, fencing the grazing area, cleaning patches of higher land for grazing and safe calving during the flooded rainy season. The project would involve the commercial banks for the first time in long-term lending for agriculture.

8. The development of publicly-controlled grazing areas for those cattle owners remaining outside the proposed cattle project, should be considered as another means of developing the cattle industry on rational lines.

9. The possibility of spreading foot-and-mouth disease from the Rupununi to the coast is a danger to be guarded against. The present method of subsidizing the air freight of beef from the Rupununi increases the risk of infection. A freight subsidy should only be paid on boneless meat, from which the danger of infection is less.

10. The proposed Litton Forest Products Ltd. pulpwood project, if successful, could be the start for more extensive development of Guyana's hitherto largely untapped timber resources. A feasible system of timber impregnation, to increase the recovery rate from inferior varieties of trees, would also be an important element in successful forest exploitation.

11. A lucrative shrimping industry has developed in neighboring waters and Guyana has a number of important advantages in this industry. There are also good prospects for developing an offshore fishing industry for the domestic market. Consideration should be given to a joint CARIFTA approach to the exploitation of the Caribbean fisheries which are largely concentrated in waters close to Guyana: Guyana could expect to play a leading role in any such venture.

12. Major objectives of government agricultural policy are:

- i. The creation of employment opportunities for the growing population, many of whom are at present unemployed.
- ii. Developing agriculture as a primary growth sector, with increased, diversified exports, particularly to Guyana's fellow CARIFTA member countries.
- iii. The development of the country's interior to provide employment and produce crops of a diversified nature.
- iv. The use of cooperative societies as a major force in agricultural development.

13. Several aspects of the implementation of this strategy require further consideration:

- i. The simultaneous attainment of production and welfare objectives is peculiarly difficult in Guyanese agriculture. The present emphasis on welfare objectives can hinder the achievement of adequate production targets and may have long-term adverse effects on social and economic development. The creation of an efficient agriculture would of itself probably result in the expansion and strengthening of family farming, thus developing a more broadly based agricultural structure.
- ii. Undue reliance is being placed on an undeveloped co-operative movement, there is a danger that this could encourage the setting of unattainable targets and result in disillusion with the cooperative movement.
- iii. The desirable objective of agricultural diversification should not be sought at the expense of expansion of the staple sugarcane and rice crops.
- iv. High protected domestic prices for agricultural commodities divert resources from more competitive lines, raise living and production costs and reduce the competitiveness of exports. Present pricing arrangements for sugar on the domestic market should be reviewed and proposals which would result in higher domestic prices for other commodities should be regarded critically.
- v. The development of interior regions is being pressed primarily for reasons other than economic, and there is a danger that further development of this kind can become a heavy, continuous drain on the economy.

14. Potential areas for investment include:

- i. Rehabilitation of Black Bush and Tapakuma land settlement schemes: The successful rehabilitation of these schemes could serve as valuable demonstrations for a general reorganization of rice growing in Guyana.
- ii. Cattle: A recently appraised cattle development project is consistent with the general strategy for agricultural expansion. The public provision of controlled grazing areas for cattle remaining outside the project should also be considered.
- iii. Shrimping: Returns are attractive and there is scope for a considerable expansion of Guyana's present small shrimping fleet.

- iv. Fishing: Development of trawling to supply the domestic market should be advantageous. There is also the possibility of further expansion of Guyanese trawling as part of a joint CARIFTA exploitation of Caribbean fisheries.
- v. Lumbering: Establishment of a viable wood-pulping industry should greatly improve the prospects for economic exploitation of Guyana's timber resources and open new opportunities for investment in lumbering and sawmilling.
- vi. Crop Development: Despite many years of research, little progress has been made in the growing of crops other than sugarcane and rice. Research should be concentrated on a few crops, rather than as at present, diffused over a wide range.
- vii. The Guyana Marketing Corporation: The Corporation's plans for expanding its cold storage space seem sound. In the light of the suggested investment in fishing (iv. above) a greater expansion than now contemplated may be warranted.

I. AGRICULTURE IN THE GUYANESE ECONOMY

Introduction

1. Guyana, a country of some 83,000 square miles, is situated on the northern coast of South America. Its population of about 730,000 in 1969 is growing at almost 3 percent per annum. Gross Domestic Product in 1969 was around US\$250 million; income per capita stood at roughly US\$275. Agriculture, including forestry and fishing (but excluding such major agro-industries as sugar manufacturing and rice milling) accounts for around one-fifth of GDP and provides the main source of employment for about one-third of the work force. Goods of agricultural origin account for half of the country's total exports.

2. Guyana's agriculture displays a remarkable degree of concentration in respect of location, product and management. Virtually all present output comes from a narrow coastal strip of less than 2,500 square miles. A little over 160 square miles, or about 0.2 percent of the total land area, is under sugarcane which accounts for almost one-half of total agricultural production. Twelve estates owned or controlled by two expatriate companies grow virtually all of the sugarcane.

Volume and the Structure of Production

3. The structure of agricultural production during the past decade is shown in the following table. Crops account for about 70 percent of total sector product.

TABLE A

VALUE OF AGRICULTURAL PRODUCTION 1960-1969, AT CONSTANT 1965 PRICES
(G\$ million)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Sugarcane	37.8	36.7	36.8	35.8	29.2	34.9	32.6	38.8	35.8	41.1
Rice	12.0	11.8	12.4	9.8	14.9	15.7	15.2	12.1	13.0	10.6
Coconuts	3.0	3.6	3.3	3.1	3.6	2.4	3.0	2.5	3.7	4.1
Coffee	0.3	0.4	0.4	0.6	1.0	1.0	1.0	1.1	1.1	1.2
Other Crops ^{1/}	8.2	9.3	5.3	5.3	6.2	6.0	5.4	4.5	4.4	4.8
Total Crops ^{2/}	61.3	61.8	62.3	54.6	54.9	60.0	57.2	59.0	58.0	61.8

^{1/} Ground provisions and plantains.

^{2/} Excludes cocoa, fruits, green vegetables and corn, which together in 1968 represented about 4 percent of the value of total crop production.

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Cattle	3.7	3.8	3.9	4.0	4.4	4.5	4.5	4.2	4.2	4.5
Pigs	0.4	0.4	0.5	0.6	0.6	0.6	0.9	1.1	1.3	1.6
Sheep	-	-	-	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Poultry & Pigs	1.0	1.2	1.1	0.9	1.7	1.8	3.7	4.8	5.2	4.9
Milk	<u>1.0</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.4</u>	<u>1.2</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>
Total Livestock and Livestock Products ^{1/}	<u>6.1</u>	<u>6.5</u>	<u>6.7</u>	<u>6.9</u>	<u>8.2</u>	<u>8.5</u>	<u>10.4</u>	<u>11.6</u>	<u>12.3</u>	<u>12.8</u>
Fish	2.5	2.6	2.8	3.8	4.2	4.8	4.7	5.8	7.0	7.6
Forestry	<u>5.5</u>	<u>5.7</u>	<u>5.1</u>	<u>4.4</u>	<u>5.6</u>	<u>5.2</u>	<u>6.3</u>	<u>6.1</u>	<u>6.1</u>	<u>6.1</u>
Total Fish & Forestry	<u>8.0</u>	<u>8.3</u>	<u>7.9</u>	<u>8.2</u>	<u>9.8</u>	<u>10.0</u>	<u>11.0</u>	<u>11.9</u>	<u>13.1</u>	<u>13.7</u>

TABLE B

INDEX NUMBERS OF AGRICULTURAL PRODUCTION, 1960-69
Base 1960 = 100

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Crops	100.0	100.8	101.6	89.1	89.6	97.9	93.3	96.2	94.6	100.8
Livestock & Products	100.0	106.6	109.8	113.1	134.4	139.3	170.5	190.2	201.6	209.8
Fish & Forestry	<u>100.0</u>	<u>103.8</u>	<u>98.8</u>	<u>102.5</u>	<u>122.5</u>	<u>125.0</u>	<u>137.5</u>	<u>148.8</u>	<u>163.8</u>	<u>171.3</u>
Total Agriculture	<u>100.0</u>	<u>101.6</u>	<u>102.0</u>	<u>92.4</u>	<u>96.7</u>	<u>104.1</u>	<u>104.2</u>	<u>109.4</u>	<u>110.6</u>	<u>117.1</u>

Source: Ministry of Agriculture & Ministry of Economic Development.

4. Agricultural output, of which about three-fourths is crop production, increased by around 11 percent between the average of the years 1960-62 and 1967-69. This represents a growth in the volume of production of some 1.5 percent per annum, or about half the rate of growth of population, and less than one-quarter of the growth rate of total GDP.

5. Of the two major crops, sugarcane production was only some 4 percent greater in the later years of the decade than in the earlier years; reported figures of rice production indicate a slight decline in output. Output of other crops, which include plantains and various roots such as cassava and edoes (generally known as "ground provisions"), is reported to have declined sharply during the decade.

^{1/} Price 26.98 cents per lb. being average price paid by Guyana Marketing Corporation for fish in 1968 (Annual Report, Ministry of Agriculture and Natural Resources 1968, part VI, page 4).

6. The difference in production trends in the 1960's between sugarcane and rice is noteworthy. Sugarcane production declined by 13 percent to a trough during the mid-years of the decade; but by the end years production was 20 percent higher than in 1964-66. Rice production on the other hand rose by 27 percent to 1964-66, but thereafter fell off sharply by 22 percent in the final years of the decade. Sugarcane production appears to have been seriously affected by the civil strife of the mid-1960's but to be recovering sharply in recent, more settled years. But while rice production appears not to have suffered at all from the conditions of civil strife in the mid-1960's, it has declined seriously during the recent, more settled years.

7. Well over half of the increase in livestock production was accounted for by poultry. It is important to bear in mind that the output figures are gross; that the value added component of poultry production, the industry's contribution to GDP, is much less, probably not more than one-quarter of gross output. Very much the same qualification applies to pig production - i.e., net output is unlikely to be more than one-quarter of the gross. By contrast, the net output, or value added, of cattle production is likely to approximate gross output. Cattle production increased at about the same rate as total agricultural production.

8. Fishing (exclusive of shrimping) was by far the most rapidly growing major component of the agricultural sector. The volume of fish landings increased by just 160 percent between 1960-62 and 1967-69. Annual average shrimp landings increased from 5.2 to over 9 million lbs. between 1960-62 and 1967-69. However, as about nine-tenths of the shrimp are landed by foreign-owned trawlers operating mainly in international waters and are graded, stored and re-exported on commission, the value of these landings clearly cannot be included in the agricultural product of Guyana.

9. Forestry production increased at approximately the same rate as the sector as a whole, viz. about 11-12 percent between 1960-62 and 1967-69.

Resources Employed

Human Resources

10. Guyana's commercial agriculture continues to be predominantly of a plantation nature. Its main product, sugar, is produced by two large firms which operate on orthodox commercial lines; all of their inputs, including labor, are purchased. Unlike the typical family farm, where the family farm income is a residual after paying relatively few cash outgoings and production is maintained unless better alternative employment is available,

estates cease to operate as soon as income falls below outgoings. This state of affairs is often determined by collective action rather than by the availability of alternative employment opportunities. Guyana's many defunct estates, in the midst of widespread unemployment, are evidence of this process.

11. As a corollary of this organizational form, the Guyanese agricultural population is predominantly of the wage-earner rather than farm-family type, for the most part the descendants of slaves from Africa and indentured laborers from India. A class of independent farmers is evolving in rice growing, but even here the larger type grower employing some labor is more predominant than the small family farmer typical of most rice-growing countries. Persons of Indian descent tend to predominate in agriculture while those of African descent predominate in the manufacturing and service sectors.

12. A little over 30 percent of the total work force, or 44,000 persons, were reported in 1965 as being engaged in agriculture. It is unlikely that there has been any decrease and there may well have been an increase in the numbers engaged since then. With agriculture accounting for around one-fifth of GDP and providing employment for some one-third of the work force, output per person in the sector is about half of that of persons engaged in the other sectors.

13. Within the agricultural sector, sugarcane production, as noted, accounts for some 47 percent of sectoral product. It employed on average 14,100 field workers or about 32 percent of the total agricultural labor force in 1969. The value of output, or value added, per sugarcane worker is about twice as high as that of output per worker elsewhere in agriculture and is about on a par with the average value of output per occupied person in Guyana.

Land

14. Guyana has a large land area relative to population. However, less than 1,000 of the country's 83,000 square miles are used for crop production, and this is located in a narrow strip of alluvial soils on the coast and in riverine areas near the coast which has a total area of less than 2,500 square miles. There is 0.7 acres of cropland per head of population compared with 0.3 acres per head of population in the other principal CARIFTA countries. Additionally, Guyana has large tracts of grazing land, though of low productive capacity.

15. The coastal belt is situated below sea level. Sea wall defenses are necessary to prevent flooding at high tide and, particularly, at spring tides. The sea defenses are incorporated into a system of polders which permit the outflow of drainage water at low tide while simultaneously preventing the ingress of seawater at high tide.

16. The low-lying nature of the coastal belt, while necessitating the erection of sea defences and creating difficult drainage problems, also makes irrigation possible. About one-quarter of the coastal belt has been declared drainage and irrigation areas and is provided with some drainage and irrigation service. Much of the remainder is saline marsh-land used for grazing.

17. The sugar estates in particular have achieved a high level of efficiency in water control and this more than any other factor accounts for their relatively high level of output per acre and per man. This control includes drainage, irrigation and the use of water courses to provide an exceptionally cheap form of intra-estate transport.

18. The quality of the soil on the coastal plain deteriorates as one moves further from the coast, clays and silts giving way first to marsh savannahs and later in the southeast to dry, brown and white sand savannahs and to forest land. The coastal belt in the northwest rapidly gives way to rolling forest on generally poor soils. There is a further large savannah area, the Rupununi district, in the southwest. The remainder of the country is jungle (see Map).

19. There are about 105,000 acres of land under sugarcane. The acreage of rice varies greatly from season to season; the main autumn crop has been as high as 280,000 acres and as low as 180,000 acres during the 1960's. The smaller spring crop has varied even more widely. The acreage of land under coconut is estimated at 45,000 and under plantains some 17,000. All other crops together account for a further 21,000 acres.

20. The value of land in Guyana is a function of its proximity to Georgetown and of the degree of control of water on it. Land in the environs of Georgetown has a high value. Apart from that, land suited for rice growing with good drainage and irrigation services has a market value of about US\$500 per acre if freehold and about half that if it is held on a 25-year lease from the Government.

21. Coastal land without drainage and irrigation has little value. Land in the intermediate savannahs and in the Rupununi district has little if any value, reflecting the general infertility of the soil and distance from market. Most of the remainder of Guyana's land, the forest lands which account for over 80 percent of the country's area, has no market value due to the high cost of clearing the jungle, the generally low fertility of the soils and the distance from markets.

22. Statistics are not available to indicate the present number and sizes of separate agricultural holdings. The Rice Producers' Association, however, estimated that there were in 1965 45,000 individual rice-growing families with acreages as follows:

Percentage of Rice Growers	Size of Holdings (acres)	Percentage of Rice Land Farmed
81	0 - 9	42.7
17	10 - 49	25.8
1	50 - 99	6.9
1	100 and over	23.6

These figures suggest that about 8,500 growers account for well over half of the rice acreage. As the total number engaged mainly in agriculture is only about 44,000, of whom 14,000 are sugarcane workers, it is clear that many rice growers have other non-agricultural occupations.

23. Land immediately abutting on the coast is usually held freehold or, in the case of existing sugar estates, by license of occupancy at nominal rents during "Her Majesty's Pleasure", in lots of roughly 1,000 acres, the original basic estate acreage. These lots, known as "the first depth", are usually about two miles deep with a frontage of about 1,500 yards on the coast road. The first depth lots are, apart from the sugar estates, in most cases fragmented, often among as many as 500 or more owners, each of whom will have a narrow frontage and a long thin strip running the length of the original lot.

24. Land inward from the first depth is normally non-vested, State-owned land. That of the second and occasionally third depths is usually held at low rents on 25-year leases with a right of renewal. Land further inland, used mainly for grazing, is normally held on a one-year "permission of occupancy". The occupier is forbidden to plant permanent crops and is subject to eviction by the State at six months' notice without compensation.

25. Freehold land or land leased from the State may be relet to tenants. This is normally confined to the letting of land to grow rice. Most rice growers hold land rented other than directly from the State. Such land is

subject to the Rice Farmers (Security of Tenure) Ordinance, 1956. This provides that while nominally land is rented for rice growing on an annual basis, the tenant has virtually absolute security of possession subject to the payment of a low fixed rent. The maximum rent chargeable is US\$6 per acre, plus an additional US\$4 per acre for land highly maintained in respect of drainage and irrigation services. A market exists for the transfer of the tenant-right of rice growers, though the free operation of this market is hindered by restrictions on the tenant's right of transfer.

Capital

26. Nearly 30 percent of public sector investment during the 1960's, some US\$29 million out of US\$103 million, was in agriculture. The main items were irrigation, drainage and land development which together absorbed US\$19 million.

27. The principal private investment in agriculture during the 1960's has been in sugarcane and in farm machinery. The Persaud Commission on the Sugar Industry^{1/} estimated total capital formation in the industry between 1959 and 1966 as US\$12.1 million. The industry indicated that since then gross capital formation has been running at around US\$3.5 million per annum, suggesting a total investment for the decade of around US\$21 million. About two-thirds of this, or US\$14 million (being the proportion of total sugar production accounted for by cane production), was probably in respect of cane production and the balance in respect of sugar manufacturing. Farm machinery investment during the 1960's is estimated conservatively at US\$15 million of which around US\$2.5 million may have again been for sugarcane production. These two items, investment in sugarcane and in farm machinery together represent rather more than 10 percent of total private capital formation in the decade.

28. Judging from calculations of the incremental capital-output ratio, the returns in terms of increased output for a given investment appear to have been lower in the agricultural sector than in the economy as a whole during the 1960's. However, the returns in sugarcane were probably as good as in other sectors.

29. Credit is available to agricultural producers on an ad hoc basis through a number of sources. The commercial banks lent US\$2.2 million in 1969, compared with US\$1.2 million in 1966 (see Table 29). The Guyana Credit Corporation had outstanding loans of US\$1.9 million to agriculture in 1968, a figure which had not changed over a number of years. Hire-purchase credit of US\$2.1 million was outstanding in 1969 in respect of industrial and agricultural equipment and vehicles. The Guyana Rice Corporation is owed

^{1/} The Commission was occasioned by a labor dispute in the industry. It examined the working of the industry in depth and reported in 1967.

about US\$1 million mainly in respect of cultivations done on contract for rice growers; much of this debt was taken over from the defunct Rice Development Company. The Guyana Cane Farming Development Corporation commenced lending medium-term credit to farmers in 1969 to enable them to put land under sugarcane. The Corporation has agreed to make loans available to farmers in 1970 to prepare and plant a further 2,300 acres of sugarcane. The Guyana Marketing Corporation provides feeding stuffs on credit to farmers.

30. Thus, agricultural credit does not appear to be a seriously limiting factor on production. Possibly the most crucial area is in medium-term credit for land improvement. The Guyana Cane Farming Development Corporation has commenced to supply such credit for sugarcane land. There remains a need for similar type credit to improve the internal layout of rice farms in order to obtain better water control.

Agricultural Policy

31. The objectives of government policy are stated to be: to increase food production in order to feed better an expanding population; to provide more employment in the sector; to generate exports, particularly in a CARIFTA context; to provide more raw materials for processing industries; and to obtain from an expanding agriculture resources to be used for stimulating growth in other sectors. In addition to these primary objectives, the Government hopes to diversify agriculture, so lessening the country's dependence on the sugar industry. It is also hoped that much of the agricultural development will take place in the interior, thus opening up these largely untapped resources and creating what is regarded as a strategically important presence in sparsely populated areas.

32. Building up the cooperative movement is at once regarded as a means and as an objective of policy. Cooperatives are regarded as a means of enabling the small man in farming to produce, buy and sell more efficiently. They are also regarded as a desirable political objective in themselves, inasmuch as they will increase the opportunities for the mass of the people to save and to acquire ownership and control of economic assets, thus diffusing economic power and lessening the country's dependence on foreign capital.

33. Agriculture is regarded by the Government as a primary growth sector whose progress will generate growth in other secondary sectors. This economic strategy stems from the Government's view that the country has abundant land resources and from its recognition of the relatively poor manufacturing and tourist potential.

34. A brief description of the principal official and quasi-official organizations involved in implementing policy is given in an Appendix.

II. AN ANALYSIS OF RECENT PERFORMANCE PROBLEMS
AND PROSPECTS

Sugarcane

35. Underlying the predominance of sugarcane is the crop's superior economic performance: output value per acre is six times higher than rice; output per man is twice as high and output value per unit of investment is about 50 percent higher than for other agriculture. Despite this, the sugar industry is vulnerable in two important respects: because of its predominance and because of its centralized control by two expatriate companies, especially now that Guyana has become a Co-operative Republic. For both reasons it is argued by the Guyanese that a lessening of dependence on sugar is desirable. Achieving this is unlikely to be easy.

36. The dominance of the sugarcane crop is due less to the amount of resources involved in its production than to the lower productivity of these resources when used in other forms of agricultural production. Only about 20 percent of the land farmed in Guyana is under sugarcane. Less than one-third of the sector's labor is employed and an approximately similar proportion of the sector's capital formation has been invested in sugarcane production. Had labor, capital and land been used as efficiently in other farm enterprises, total agricultural production would now be 50 percent higher and sugarcane would represent less than one-third instead of as at present one-half of agricultural output. It appears therefore that the emphasis should be on attempting to increase the productivity of resources used in other agricultural activities rather than on decreasing even the relative amount of those resources used for cane production.

37. The present dominance of sugarcane needs to be considered in relation to the dependence of the crop's profitability on the maintenance of special pricing arrangements in the export market. Nearly 90 percent of Guyana's sugar exports go to the United Kingdom or the U.S.A. where in each case they earn considerably more than the balance realizes on the world market. The pattern of exports in 1969 was as follows:

	United Kingdom	United States	Canada	Total
Volume (thousand tons)	195	94	44	333
Value per ton (US\$)	107.5	142.0	68.0	112.5
Total value (US\$ millions)	21.0	13.5	3.0	37.5

Source: Guyana Sugar Producers' Association.

38. The dependence of the sugar industry's well-being on these special pricing arrangements is obvious. Both these arrangements could change in the future: in Britain's case because of its possible entry to the European Economic Community; in the U.S. case because of the possible re-entry of Cuba to the lucrative U.S. market. Cuba's former share of the U.S. market is now apportioned among other producers, including Guyana. Clearly until these two issues are resolved an element of uncertainty must surround the future of world sugar trading and the price receivable by Guyana and similarly situated exporters.

39. However, this element of uncertainty can be exaggerated. Even major changes in the British Commonwealth Sugar Agreement and/or in the re-allocation of U.S. import quotas need not necessarily give rise to serious instability in the world sugar market. Provided no abnormally rapid expansion of sugar supply followed, the global balance of sugar production/consumption/prices should be substantially maintained, though with local deviations. It is possible, for example, that countries such as Guyana now benefitting from the CSA and U.S. purchases, would suffer a price decline as a result of the revision of existing arrangements. It would appear, however, that should sugar prices decline, Guyana is at least as well placed to meet this eventuality as most other producers.

40. The mission estimates that Guyana can produce sugar at a direct cost^{1/} of about US\$80 per ton, or about 3.7 cents per lb. That is to say, the industry could continue to operate at an export price 25 percent below the average realized in 1966 (and considerably below the average realized in any year of the 1960's) or 20 percent above the 1969 free market price. Declines in average export prices of this magnitude seem highly unlikely and would only result from a major disruption of the present global balance of sugar production and consumption. Such low average export prices would be unlikely to persist as many producers who, like Guyana, now sell the bulk of their exports at well above the "free market" rate, would be quickly forced to reduce production. Even in the worst eventuality therefore, Guyana's sugar industry is likely to survive better than others. This factor, together with the high rates of return in sugarcane compared with other agricultural activities, suggest prima facie the desirability of expanding Guyanese sugarcane production.

41. Any decision on future production of sugarcane would clearly need to be taken in the light of developments in the world sugar trade in general and in the West Indian trade in particular. World trade in sugar has expanded very slowly and this trend is likely to continue. But within this fairly

^{1/} That is exclusive of depreciation, pension payments and income tax.

stagnant global picture, there have been remarkable changes in the roles of different producing regions and individual countries. The situation in relation to the British West Indies is a case in point.

ANNUAL AVERAGE NET IMPORTS AND EXPORTS OF SUGAR
(thousand metric tons)

	1960-62	1966-68	Change (percent)
World Net Sugar Imports	17,860	18,092	1.3
British West Indian Net Sugar Exports			
Barbados	150	177	18.0
Jamaica	375	392	4.5
Leeward and Inland Islands	64	38	-40.6
Trinidad and Tobago	193	176	- 8.8
Guyana	316	306	- 3.2
TOTAL	1,098	1,089	- 0.8

Source: Sugar Yearbook 1966 and 1968

42. The British West Indies has failed to maintain its share in the world's slowly growing sugar trade. A variety of reasons, including land shortage in Barbados, increasing alternative employment in manufacturing and tourism and concomitant increases in labor costs in Jamaica and in Trinidad and Tobago, the fairly pronounced recovery of production in Guyana from the setback received in the mid-1960's suggest that even within a very slowly growing world trade and an even slower growing or declining West Indies trade in sugar, there is still scope for a fairly substantial expansion of Guyana's sugar exports in the 1970's.

43. Repeating a point made earlier, it would be wrong at this stage to lessen the dominance of sugar in Guyanese agriculture by halting or slowing expansion of the industry; rather a more diversified agriculture should be sought to the extent that this is practical, through a more rapid expansion of

other lines of production. At the same time, it seems highly desirable to insure that such further growth as occurs should as far as possible have the effect of diluting the present high degree of concentration within the industry. This can be achieved in two principal ways, both recommended by the Persuad Commission: by expanding small cane farming and by a high degree of local participation, both public and private, in future investment by the sugar industry.

44. The creation of the Guyana Cane Farming Development Corporation is a desirable move in the right direction. It has the active support of the two major sugar companies, which welcome farmers' sugarcane as a means of increasing factory throughput. Its presently available resources, financial and human, may not be adequate, however, for the difficult task of expanding on a sound basis the hitherto small acreage of farmers' sugarcane so as to achieve a desirable level of overall growth and to widen local participation in the industry.

Rice

45. Rice is the next most important product after sugarcane in Guyana's agriculture. About one-quarter of a million acres are used for its cultivation and, with considerable double-cropping, upwards of 300,000 acres of rice are harvested annually.

46. There has been very considerable public and private investment in rice production in the 1960's. The results have been disappointing. The average acreage of rice harvested annually during the period 1960-62 was 242,510 with an output of 126,700 tons of rice, giving an average yield of 0.52 tons per acre. During the last years of the decade, 1967-69, the equivalent data were 282,000 acres reaped, with an output of 125,000 tons of rice and an average yield of 0.44 tons per acre. Although a larger acreage of rice was grown, a smaller amount was produced.

47. The explanation for the reported very poor performance of the rice crop, despite the large investments and the deep public concern for the industry, is patently complex. An exhaustive analysis of the problems involved was outside the mission's scope but a number of causal factors did become evident and have central relevance for Guyanese agricultural development generally.

48. A series of unfavorable seasons may have played a part in reducing yields in recent years. But even in favorable years, yields are low and have tended to decline. Only Ecuador and Brazil have lower yields in South America, while average yields in neighboring Surinam are over twice as high.^{1/}

^{1/} FAO Production Yearbook 1968, p. 75.

49. A rapid extension of the rice acreage on to land inadequately serviced by water controls is a frequently quoted explanation for Guyana's low rice yields. However, recent experience of simultaneously declining acreage and yields casts doubt on the validity of this explanation. Further, the Government's land settlement schemes accounted for a large share of the total acreage increase in the 1960's and, although the standard of water control and other services on these schemes was above average, yields on them are below average.

50. Two points need to be borne in mind in considering the very low overall yield of rice farming in Guyana. First, yields even among good farmers rarely exceed one ton per acre and average around 0.8 tons. This, by the standards of good rice farming in other countries, is low. But second, while many farmers regularly achieve yields of around 0.8 tons, the average yield in recent years has been 0.45 tons per acre. Clearly there are in Guyana many farmers whose yields fall far below those achieved by good farmers. Not only do the very low yields of poor farmers depress the national average, but the circumstances which give rise to the existence of many inefficient rice farmers also depress the performance of good farmers.

51. A number of technological factors cause even good rice farmers in Guyana to adhere to a low-yielding technology. For example, there is widespread use of varieties which are unresponsive to fertilizers, have maximum yields of about one ton per acre under good conditions, but are capable of giving some return under adverse conditions. The varieties used are late maturing and are not conducive to double-cropping. Their long growing season makes it possible for wild "red rice" to mature with the sown crop, reducing the quality and value of the harvested sample through the presence of this undesirable species.

52. Inadequate drainage and irrigation, however, is the most important deterrent to the introduction of a better rice technology. The most important single factor in explaining the wide gap between the high output per acre on the sugar estates and the low output elsewhere, on land of similar quality, is that on the former there is effective water control and on the latter control is ineffective.

53. Effective water control is technically difficult to achieve under Guyanese conditions where most of the farmed land is below sea level. There have as well been technical defects in the design of drainage and irrigation schemes, resulting in silting which has impeded drainage, and inadequate water supplies in years of below average rainfall.

54. The Drainage and Irrigation Division of the Ministry of Public Works and Hydraulics provides the main drainage and irrigation canals. Land between the main canals frequently suffers from inadequate access to these. Additionally, individual paddy fields are inadequately graded to achieve uniform coverage with available water supplies. There is some confusion and disagreement among growers themselves and between growers and the Drainage and Irrigation Division as to when water is to be applied and where. The absence of a uniform cropping timetable renders the work of the Drainage and Irrigation Division in managing water resources particularly difficult.

55. Budgeted expenditure by the Drainage and Irrigation Division during the six years 1964-69 was US\$4.7 million. Actual expenditure over that period amounted to US\$3.2 million or just two-thirds of the budgeted expenditure. The Drainage and Irrigation Division estimates that the budgeted amount is required for the proper functioning and adequate maintenance of its various schemes. Over a long period, only two-thirds of the amount budgeted has been spent, which suggests that the schemes have not been adequately maintained and thus not able to function properly.

56. The Guyanese Rice Marketing Board, the sole buyer of rice in the country, reduced the price it paid for rice in the 1966 and subsequent marketing seasons following losses incurred in previous years' operations. The price was reduced from an average of US\$8.94 to US\$7.90 per 180 lb. bag of rice, weighted according to the intake of rice of various qualities in the 1965/66 season. It was argued at that time that the effect would be to compel farmers to improve their husbandry and thereby increase yields and output of better quality rice. Events have not borne this out so far; both acreage and yields per acre declined sharply. (Prices had previously been changed in the 1961/62 season, resulting in an average rise of just 4 percent; acreage and, to a less pronounced extent, yields increased subsequently.) It seems plausible in view of the predominance of relatively large-scale growers with high variable costs in the form of hired labor and machinery that rice production in Guyana should respond positively to price changes. It is probable, therefore, that the reduction in the rice price has been an adverse effect on production.

57. Coupled with the reduction in price there has been a reorganization of the Rice Marketing Board which resulted in the representatives of the Rice Producers' Association being removed from it. Many growers complained that the present position where a monopoly purchasing board without producer representation had cut the price of rice and was generating substantial surpluses above costs was not such as to instill confidence in growers or to induce them seriously to attempt to increase production.

58. Although some effort has been made in the introduction of higher-yielding, quicker maturing varieties from the United States - notably the variety Bluebelle - resistance to the introduction of these varieties is widespread, on the grounds that although when fertilized and grown under favorable conditions they yield better, the increased yield is frequently

inadequate to offset the increased cost of production. Experiments with International Rice Research Institute varieties are also in process, with some strains being used for crossing to develop new varieties suitable for local growing and marketing conditions.

59. Inadequate water control and the high incidence of "blast" militate against the introduction of higher yielding, quick maturing varieties. Slow growing varieties make the control of "red rice" difficult, which in turn reduces the value of the produce. These factors, together with the reduction in price and the removal of producers' representatives from the RMB partly account for the continuing low average rice yield in Guyana and for the decline in that yield in recent years. Attention is now directed to factors which appear to cause many growers to fail to exploit the potentials even of the prevailing poor technology.

60. The tenure system is conducive to many continuing to farm a larger acreage of rice than they might otherwise. The Rice Farmers (Security of Tenure) Ordinance fixes low maximum rents for rice land and assures possession subject to the payment of these low rents. Two important consequences are to be expected. First, owners or tenants-in-chief who, through age or ineptitude or because they have other interests, are unable to grow good rice crops will find it economically more profitable to grow poor rice crops than to rent out some or all of their land at low rents on irrecoverable leases to persons more competent or better positioned to do so. Indeed, in the virtual absence of land taxes, the prospect of capital appreciation can make it more attractive to leave good land idle than to rent it on a virtually irrecoverable lease at a low rent.

61. Tenants who have rice land rented are encouraged to retain it provided they in turn can obtain a surplus from it sufficient to cover the low fixed rents. That the surplus required to pay the legally fixed rents is easily obtained is indicated by the existence of a clandestine market in such tenancies. It is reported that although illegal and difficult to conceal, tenants do transfer informally and by devious means their tenant rights, frequently for substantial considerations.

62. The high degree of mechanization in a situation of large-scale rural unemployment, which is characteristic of Guyanese rice-growing, is one more obvious aspect of the rigidities introduced by rent and tenancy controls. Wages in rice-growing tend to be determined by the level obtaining in the more productive sugarcane growing, precluding intensive use of hired labor. At the same time, controls discourage occupiers from renting land surplus to what they can handle with their own or family labor. These circumstances are conducive to holding land, using relatively little labor on it and hiring or owning

relatively large amounts of machinery. Even small growers, who have no desire to work in the paddy-fields themselves, prefer to hire machinery to do the work than to rent their land to others who would be prepared to do this work. The common resort to machinery in a situation of high unemployment is an apparent misuse of resources.

63. The non-collection of drainage and irrigation charges has much the same effects as the fixing of low rents. The exaction, in the form of drainage and irrigation charges, of the full cost of water control would require those to whom the services are made available either to use them efficiently or to make way for those who can.

64. A number of Land Settlement Schemes, of which the most important are Anna Regina/Tapakuma and Black Bush, have come into production in recent years. In addition to water control, further investment in housing, roads, etc., took place on these schemes. Settlers were generally selected because of their economic needs and not because of their likely competence as rice growers. Their performance as rice growers has been poor, and because they account for a substantial proportion of the total rice acreage, they are a factor in depressing the national average yield. They have fallen heavily into arrears on current costs of the Land Settlement Schemes and have paid nothing towards their capital cost.

65. It is clear from the above that the problems of Guyanese rice growing are complex and deep rooted. In addition to the technological and price factors such institutional factors as rent controls, the mode of selection of settlers on land schemes and the failure to exact the cost of water control are conducive to the widespread failure to exploit even the prevailing limited technological and price possibilities. Placing the industry, which is the way of life of a large segment of the Guyanese population and which is the best immediate prospect of diversifying the agricultural sector from its hitherto extreme dependence on sugar, on a sound efficient basis calls for a thoroughgoing reorientation.

66. Such a reorientation should halt the decline in production of recent years and make possible at relatively little cost an expansion of output to meet a fairly buoyant domestic and export demand. Domestic rice consumption is expected to increase from 40,000 tons in 1968 to 55,000 in 1975. Exports to CARIFTA countries, at relatively high negotiated prices, are likely to increase from 56,000 tons to 96,000 tons over the same period, and it should be possible to maintain exports to other markets, in the Caribbean and West Africa, at the 1968 level of 40,000 tons. This would give Guyana a total outlet for about 190,000 tons of rice in 1975, compared with an actual average annual output of 125,000 tons in the period 1967-69. This

increased output should be attainable with modest additional capital inputs, providing present resources are utilized more effectively.

67. The key elements to improved performance in the rice industry, in the light of the above analysis, would appear to be:

- a. the development through research of a better rice-growing technology applicable to Guyanese conditions;
- b. effective water control; and
- c. policies to encourage the shift of productive resources into the hands of those best able to use them.

Action may also be possible to improve the quality and marketing of rice so as to increase its ex-farm value.

68. Present developments at the Mahaicony-Abary Rice Development Station (MARDS) promise results upon which an improved, more productive rice technology will be made available. It is planned to spend US\$1.5 million between 1970 and 1972 on facilities for breeding, testing and propagating new varieties. It is also intended to carry out large-scale trials on water control, fertilizing and other husbandry aspects. Achieving the other essential elements of reorganization will be much more complex and difficult.

69. A more effective pricing system for the provision of drainage and irrigation facilities is required. This hinges upon compelling those who occupy land benefitting from these services to pay for their cost, provided this is less than the benefits which accrue from their efficient utilization. Such a policy would have the dual merits of compelling a better utilization of existing facilities and provide sources and the incentive to improve these facilities. Additional water control services should only be provided if the benefits they yield exceed their economic cost.

70. Achieving efficient utilization of drainage and irrigation facilities within the main system provided by the Drainage and Irrigation Division could be tackled by one or more of the following means:

- a. giving internal land occupiers the automatic right to construct water channels through intervening land;
- b. reorganizing holdings so that all individual lots have access to the main system; and
- c. requiring the Drainage and Irrigation Division to assume responsibility for internal drainage and irrigation channels.

71. The direction of available resources into the most competent hands can be achieved by a greater reliance on the pricing system. The extraction of the full cost of water control, at least to the point where this is less than the benefits to efficient users, will compel those who cannot pay to make way for more efficient growers.

72. Existing rent control legislation needs to be changed so as to make it more attractive to those who hold land and are unable or unwilling to make effective use of it to rent it to those who can. It is also necessary to increase the economic pressure on those who already rent land but are no longer able or willing to use it effectively, to surrender all or a portion of it to those who can.

73. Change in rent control legislation might be complemented by increasing land taxes. Along with the suggested improved collection of drainage and irrigation charges, these would put added pressure on inefficient land owners to pass on portions of their land to more efficient tenants. The combination of higher land taxes, water control charges and higher rents would at once create greater pressure and more attractive inducements for the more efficient allocation of land among rice growers. Such an allocation would result for the most part in competent growers increasing their present acreage and less competent ones decreasing theirs. It is unlikely that more than a small number of very inefficient growers would be forced, or find it more profitable, to abandon rice growing.

74. It should be recalled here that one objective of the Government's agricultural policy is "to provide from agricultural production such economic surpluses as can be invested in other sectors of the economy". The practice of supplying water control facilities below cost runs counter to this objective. Recovery of the full cost of this service coupled with a land-tax (to accompany a rational land tenure system) provides the most effective means of mobilizing the economic surplus of agriculture for use in other sections.

75. The development of an improved rice technology and the suggested changes in the tenure and water control systems should make it easier for the small, efficient rice grower to progress. But much more can be done to assist and encourage him. The suggested increase in land taxes provides a source of funds some of which can be effectively re-directed back to the sector in the form of credit and extension services to small efficient farmers capable of making good use of them.

76. The Rice Marketing Board sells portions of its supplies on the domestic market above the world price. It also sells on Caribbean markets at high negotiated prices for limited quantities (see Table 11). The balance is disposed of in other markets at current world prices.

77. It is economically sound for the RMB to generate surpluses equivalent to the excess it earns by selling rice on the domestic and Caribbean markets at higher than world prices, so that the price to growers is approximately equivalent to the Board's marginal revenue from sales at world prices.^{1/} The surpluses which are at present used partly to subsidize inefficient producers through the machinery contract services of the Guyana Rice Corporation could be used more effectively, again by providing credit services to efficient small producers. These credits are required for the purchase of better seeds, fertilizers, the hire of machinery and, especially, the grading of paddy fields. The restoration of growers' representation on the Board should contribute to the acceptance of such a pricing and resource allocation policy on the part of the Rice Marketing Board.

78. The sudden increase in free market sales, from 3,000 tons in 1964 to 40,000 in 1965 and to 62,000 tons in 1966, may have been a factor in depressing returns from this market. A more orderly flow of supplies to the free market should enable Guyana to get higher prices there. Such a more orderly flow would result from an improved technology, characterized by less year-to-year fluctuations in yields and acreage. Additionally, the RMB might marginally influence free market sales by accepting the need for compensating stock changes.

79. Rice quality should also improve as a result of better growing technology, which would reduce the incidence of "red rice" and pest damage. There may be a case for reviewing existing quality differentials with a view to widening these and so increasing incentives to growers and millers to supply better rice to the RMB. Additionally, it may be desirable to provide credit to growers and millers to enable them to improve disease and pest control, drying and milling facilities.

80. Payment by the RMB of a seasonally uniform price for milled rice is an incentive to mill paddy immediately after harvest. This involves loss in a number of ways. First, there is probably a tendency to over-use milling capacity immediately after harvest to mill and sell to the RMB as soon as possible, so as to cash the crop and to sell to the Board before it becomes overstocked with milled rice. This is likely to lead to poorer quality milling and to some loss of product. Second, more rice is held in milled form - its only marketable form - by the RMB, the millers and the growers than is required to meet market requirements. As milled rice is more perishable than paddy, avoidable losses occur in storage. Third, there is also likely to be deterioration of the rice bran, a highly perishable commodity. Finally, this system undermines the Government's aim of providing a guaranteed price to growers. As the guaranteed price applies only to milled rice and the RMB is unable to take up all the

^{1/} The RMB's 1968 surplus of US\$13 million approximately equalled the difference between the value of government-to-government contract sales and what the same would have realized if sold at non-contractual prices. (See Tables 10 and 11)

milled rice offered to it at harvest time, growers, who are normally short of cash and probably also storage space, are forced to sell paddy at a discount to millers who can afford to hold it pending sale to the RMB.

81. Government, with financial assistance from USAID, hopes to improve rice quality through a rice development program, the main feature of which is the erection of six storage facilities with a capacity of 60,000 tons of paddy. This will enable the Guyana Rice Corporation, which will control the facilities, to purchase and store in paddy form all of the rice likely to be offered for sale at harvest. The cost of the new storage facilities is estimated at nearly US\$10 million. Particularly in view of Guyana's declining rice output - production in 1969 was 111,000 tons compared with 165,000 tons in 1965 - it would appear desirable to consider possible alternative methods of avoiding the losses occasioned by carrying excess stocks of milled rice and bran.

82. A possible alternative means of reducing present losses is by the introduction by the RMB of seasonally variable prices for rice. The seasonal price variation could be pitched to ensure that the Board would never be required to take up more milled rice than was needed for normal trading purposes. In addition to possible gains from improved quality, the RMB would be saved the cost of financing unnecessarily large rice stocks and much of its present storage capacity could be leased out to millers (including the Guyana Rice Corporation) for paddy storage. These gains and savings would enable the Board to pay a higher weighted average price than its present uniform one.

83. Sufficiently wide seasonal price variations would of themselves ensure a desired flow of sales to the RMB. However it is possible that due to acute shortage of funds on the part of millers and growers, unacceptably wide seasonal price variations might be required. This problem could be overcome by the provision of credit to millers, rice-growing cooperatives and large rice growers against paddy stocks. Consideration might also be given to the provision of credit to these to improve the quality of existing storage capacity.

84. The various measures outlined in the paragraphs above may be a more effective and less costly way of achieving improvement in the quality and free market price of Guyanese rice than the present rice development program. They, or some variation of them, appear worthy of consideration.

Coconuts

85. Coconut plantations are located on a number of narrow sand reefs running parallel to the coast. There has been no increase in production over a number of years. Domestic production of coconut oil is inadequate for the country's requirements. Imports in 1967 were US\$148,000. There were additionally US\$208,000 imports of other vegetable oils and oilseeds.

86. It is government policy to hold the consumer price of edible oils, particularly coconut oil, as low as possible. Following this policy, the Guyana Marketing Corporation has a monopoly of oil imports and incurs losses on its edible oil trading, equivalent to about 4 percent of its turnover. The price of oil is further held down by the general prohibition of copra and coconut oil exports. All locally-produced copra is sold to two local processing plants at 14.5 Guyanese cents per pound, a price which has obtained for the past six years. Producers believe that if exports were freely permitted they could realize higher prices, though the average f.o.b. price of copra at present is only about 16.5 Guyanese cents per pound.

87. Growers complain that apart from the low price of copra, the industry is adversely affected by the larceny of nuts, inadequate drainage and by tariffs on insecticides. The latter are necessary for the control of pests which cause serious damage to trees and are a major factor in holding down production.

Other Crops

88. A wide range of other crops is grown. These are mainly vegetables and fruits for direct human consumption; together, they account for about 10 percent of agricultural sector output. The small local market and widespread larceny militate against expansion. Climatic conditions make it difficult if not impossible for local producers to compete with imports of a number of temperate zone vegetables and fruits which are imported in fairly substantial quantities, such as potatoes, onions and cabbage. A small amount of maize is grown, mainly for human consumption, but most of the maize used for livestock feeding is imported.

89. There are few longer term possibilities of expanding crops other than sugarcane and rice. With respect to maize, sorghum and soybeans, there should be continuing and more intensive research on the development of high yielding varieties adapted to Guyanese conditions, and the development of appropriate husbandry techniques. But results available to date clearly indicate that unless and until much higher yields are obtained, little expansion of output of these crops can be expected.

90. Despite the negative indications from past research, a recently formed government enterprise, Global Agri-Industries Limited, plans to grow maize on the intermediate savannah, commencing in 1970. The company intends to use "modern large-scale agricultural techniques" to harvest four crops every 13 months. It expects to get 191,600 tons of grain from the four crops on 22,500 acres. This represents an output of 8.5 tons per acre over a 13-month period, or approximately 7.8 tons of grains per acre per annum. This is an extremely ambitious venture in the face of uncertain prospects for growing maize economically in Guyana. A pilot project on a much reduced scale, and viewed as part of a continuing program of crop research, would appear to be a more appropriate line of approach.

91. Priority in the allocation of public funds should at the present stage also go to research on feedstuffs production rather than to the stimulation of pig production, as in the case of the GMC's provision of credit to pig producers (see below, paragraph 113). Only if Guyana solves the problems of providing low-cost feed can it hope to create an efficient, vigorous pig industry.

Cattle

92. Guyana, despite its large area relative to population, and a low per capita consumption, is a net importer of beef. Production has been increasing slowly, consumption slightly faster and imports more rapidly still (see Table 5). Recent production levels appear to have been achieved at the cost of a run down of the national herd, which is about one-quarter million cattle, and average slaughter weights have declined.

93. There are three main forms of cattle production in Guyana. First there is extensive ranching in the savannah area of the Rupununi in southwest Guyana, where about one-fifth of the total cattle population is located. Ranches are few and larger in area; one organization, the Rupununi Development Company, owns some 60 percent of the cattle in the area. The land is poor, with a present stocking of about ten to twelve head per square mile. This fact, coupled with the high cost of air transport into and out of the Rupununi - US\$4.5 per pound - limits investment. A further factor hampering the development of cattle production in this region is the incidence of foot-and mouth disease, infection being likely to occur from neighboring Brazil. Additionally, the flight from the area and abandonment of properties by a number of the ranchers, following a recent abortive rebellion, has caused a setback.

94. Land in the Rupununi is held at low rents on one-year license of occupancy from the Government. In practice this land has been ranched on similar terms since the beginning of this century and no case is known of renewal of a license of occupancy being refused to an occupier or his heirs. However, some uncertainty on this account appears to have arisen among ranchers since Guyana became independent and this may also be a factor in slowing development. Production in the Rupununi is characterized by a low production rate, very slow maturation - the normal finishing age being five-six years - and by an extraction rate of about 10 percent. Cattle are slaughtered adjacent to the Lethem Airfield and the meat is flown to the Georgetown market. Producers get US\$21 per pound carcass weight, which price is partly made possible by a subsidy of US\$2 per pound on the US\$4.5 air freight cost.

95. A second form of cattle production is by a small number of commercial ranches in the coastal area. These are located, for the most part, in the land behind the rice and sugar-growing areas in the Abary river basin. The

pastures are normally flooded during rainy seasons, with some drier areas at higher elevations. Of the approximately 100,000 acres of land in the Abary area capable of being ranched, about 20,000 acres are at present being used. Although productivity from these ranches is at present low, some improvement is taking place and the area has potential for higher output.

96. The third form of cattle production is that practised by a number of small cattle-owners resident on the coast. These account for the bulk of the country's cattle-and-beef-production. This form of cattle production is characteristically non-commercial. There is little relationship between the number of cattle a person owns and the land he has available for grazing. Herds, of an average size of 11-12 head, are grazed in common, on roadways and on unoccupied land, particularly saline marshlands, and on rice-land after harvesting. When grazing is scarce, especially during the rice-growing season, cattle are moved further inland to graze the State-owned marsh savannahs. This form of cattle production has major defects. There is no form of pasture management, or attempt at relating stocking to available pasturage; as the grazing is for the most part common, the individual cattle-owner gains nothing from limiting his stock as this simply leaves more grazing for his neighbors' cattle, with no significant benefit to his own. Disease and parasite control is difficult if not impossible, as is likewise the pursuit of a systematic breeding policy. The fact that the cattle are, for the most part, grazing inundated pastures results in heavy calf losses due to drowning as well as other causes. The larceny of cattle, to which the communal grazing system readily lends itself, has always been a serious problem and appears to be becoming more acute.

97. There are a number of possible approaches to improving cattle production in Guyana, especially in the coastal areas. The extensive area available and the small number of production units involved suggest the Rupununi as a promising cattle area as well, although the problems already mentioned - poor land, distance from supplies and market, and the incidence of foot-and-mouth disease - have to be surmounted for its development. This situation could change if the proposed road to Lethem is constructed, although neither the cattle producing nor the agricultural potential of the Rupununi would, of themselves, justify the building of this road. Moreover, any movement of live cattle would incur serious disease control costs and risks.

98. Safeguarding the coastal cattle industry suggests the need to treat with extreme caution plans to expedite the moving of live cattle from the Rupununi to the coast. Indeed, it appears highly desirable to reactivate the boning plant at Lethem so as to fly out only boned beef. This would have the dual advantages of greatly lessening the risk of spreading foot-and-mouth infection to the coast and of reducing transport costs. The bones, if processed, would also supply locally needed fertilizers. The present subsidy on beef air-freight from Rupununi to Georgetown reduces the incentive to ship boneless beef.

99. Elsewhere in Guyana the most promising line of cattle development appears to be a cattle project at present under consideration. This envisages the supply of credit to the small number of existing commercial cattle ranchers to enable them to expand operations. Its more important element, however, is

the creation of a number of group ranches embracing a large proportion of the non-commercial cattle-owners on the coast, placing their cattle under centralized control on ranches further back from the coast, fencing the grazing area and clearing patches of higher land and sowing these to pasture to provide grazing and safe calving grounds during the flooded rainy seasons. The success of the project will depend to a very large extent on the willingness of herd owners to surrender their cattle to group ownership and control, and, thereafter, on the competence and firmness of the project management.

100. Many small coastal owners may remain outside this project, in which case there would continue to be two highly dissimilar forms of cattle production on the coastal belt. One, a relatively small number of commercial ranches, including the existing ones and the group ranches which are envisaged under the project; the other would be the large number of small herds operating outside the proposed group ranches.

101. Even if many small producers consign their cattle to the proposed group ranches a large number will continue to operate as at present. It is therefore worthwhile considering means by which this more traditional system of cattle production could be improved. Two approaches are suggested. Cattle are at present moved from the coast to inland areas during periods of pasture shortage. But, in the general absence of control, cattle-owners complain of high losses, due to mortality and larceny among their cattle when they are located in these more distant areas, away from their homes. It would appear worth investigating the possibility of providing better, more closely controlled seasonal grazing facilities in these inland areas. What is envisaged here is a modification and improvement of the existing system.

102. A possible approach might be for government or local authorities to fence in and subdivide grazing land inland from the coast and capable of providing grazing at periods when this is scarce in the more popular grazing areas close to the owners' homes. Cattle would be accepted into these publicly controlled grazing areas subject to a fee and other appropriate conditions. The fee collected should substantially, at least, cover the costs involved; the likelihood of their doing so should be a key condition in deciding upon the provision of these services.

103. It is stressed that consideration of the creation of agistment areas should not be allowed to jeopardize the success of the proposed cattle project by presenting it to Guyanese cattle-owners as a competing alternative. The development of grazing areas should only take place after the lapse of sufficient time to ensure that all those likely to participate in the proposed project will have done so.

104. A second approach to improving the existing small scale cattle production on the coast is through a more determined effort to reduce, if not eradicate, larceny. Widespread larceny of coconuts, vegetables, fruits and livestock is a much cited impediment to the more rapid development of agriculture in Guyana.

105. The prevalence of predial larceny reflects no doubt deep-seated social attitudes to property, and the rate of economic progress in general will to a large extent be determined by the pace and extent to which these attitudes change. Meanwhile, however, it may be possible to take some concrete action to curb the larceny of cattle and other livestock. Proper control of the grazing areas should reduce or eliminate the larceny of cattle when in these areas. More vigorous police action, closer scrutiny of village slaughterhouses and a more stringent judicial attitude seem called for, if not to redress the wrong of the individual owner whose livestock is stolen, then to create conditions more favorable for investment in and rational development of the Guyanese livestock industry.

106. It is stressed that the possible provision of communal grazing areas and better control of larceny are aimed at improving the traditional pattern of small-scale cattle production on the coastal belt, which in one form or another seems bound to persist. They are approaches which are unlikely to bring immediate or spectacular results, but if properly executed they should give results of a permanent nature and at very little cost.

Dairying

107. This, as in most tropical countries, is a small industry producing at a high cost for a narrow market. The GMC, which has a legal monopoly of milk-pasturization and sale in Guyana, handles less than one million gallons yearly. It incurs losses equivalent to about 11 percent of its sales. Production costs are high because of the low milk output of the indigenous cow stock, or, where improved stock are introduced, the cost of these, their relatively poor performance and short life under tropical conditions, and the need to feed them liberally with expensive food to obtain moderate yields. Additionally, there are difficult problems in maintaining milk at an acceptably high quality for any prolonged period in Guyana's climate. The purchasing power of the local market is such that it can only absorb a small quantity of liquid milk at local high costs of production.

108. Improvements can, no doubt, be made in production methods which would reduce costs, and, as income increases, demand for liquid milk will also increase. But both of these forces are unlikely, in the foreseeable future, to result in a major expansion of the liquid milk industry.

109. The replacement of dairy produce imports by local production may offer a possible means of development. But the production of these from local milk would greatly increase their cost. The present plans of the GMC seem sounder: these are to produce evaporated milk locally, using imported milk fat and skim-milk powder.

Pigs and Poultry

110. The number of pigs in Guyana is reported as having increased from 50,000 in 1963 to around 80,000 in 1968. The country is virtually self-sufficient in pigmeat, hams being the only remaining import of significance. The GMC is

the principal outlet for pigs and is the sole producer of bacon, hams and pickled pork. It purchased over 5,000 pigs in 1968 for a total cost of US\$172,000. It incurred operating losses amounting to about 5 percent of its turnover on pigmeat.

111. The GMC has recently begun actively to encourage pig-production by the supply of foodstuffs on credit to groups of pig-producers loosely organized into cooperatives. The standard of husbandry among the cooperatives' members appears to be low and the extension of credit is likely to result in losses.

112. Production of poultry and eggs appears to have expanded more rapidly and more soundly than pigs. Poultry numbers have increased from 2.5 million to over 6 million and the value of output from US\$0.9 to US\$2.5 million between 1964 and 1969. The better performance of poultry is attributed to a better technology practised by a smaller number of larger units and to the better feed conversion rates achieved by poultry. The latter point is important in Guyana where feed is expensive and much of it is imported.

113. The point seems worth making that pig or poultry production based on imported feedstuffs, at best adds relatively little to GNP. Under good management and husbandry conditions, the value of the product is rarely more than 25 percent in excess of the cost of the purchased foodstuffs. When good management and husbandry conditions do not obtain, as is frequently the case in Guyana, the value of the product can very easily drop below the cost of purchased inputs, resulting in a decrease in GNP. Pig and poultry production can very readily be stimulated by official action, such as the easy provision of feedstuffs on credit by the GMC; it is an altogether more difficult task to bring about an economically worthwhile expansion of those enterprises. Such expansion has been taking place with poultry, though with a minimum of official intervention or encouragement.

Forestry

114. Although 70,000 out of Guyana's total area of 83,000 square miles are under forests, timber's contribution to the economy is extremely small. Forestry production accounts for about 7 percent of total agricultural sector output, or 1.6 percent of GDP; it accounts for 2.6 percent of agricultural sector exports and for about 1.5 percent of total exports. Timber output has remained virtually static over a number of years. The main explanation for forestry's small contribution is the generally poor commercial quality of the forests.

115. Guyana's forests are characterized by extreme heterogeneity and by the small size of most trees. As many as 15 and commonly 40 - 50 different species are found in an acre of forestland. Only a small number of these species can, under present conditions, normally be exploited commercially; these are purple-heart, greenheart and, to a lesser extent, wallaba. A forest survey, which has already covered most of the country's forest reserve has, so far as it has progressed, confirmed the heterogeneous nature of these resources. The first

phase of the survey, which is being executed with assistance from the United Nations, ends in 1970. It is intended to continue the survey to cover all the country's forest land.

116. The heterogeneity of the forests implies that the commercially valuable species are sparsely interspersed with other commercially unattractive trees so that the yield from any acreage of forest worked is small. The Guyana Timber Company, a subsidiary of the Commonwealth Development Corporation, is at present harvesting about 125 cubic feet, or 2.5 tons, of commercial timber per acre of forest worked. This low yield of commercial timber increases the unit cost of recovery, particularly in relation to road and track building. The Company, which is the largest timber company now operating in Guyana, is at present incurring heavy losses in its logging and sawmilling operations which are only offset by the profits from its timber fabrication operations.

117. The situation tends to worsen with time. This is because the most accessible stands of the commercially valuable species are worked out and it has become necessary to press further into the forests to obtain fresh stands. The increasing distance that has to be covered and the additional road-making costs make extraction increasingly less attractive.

118. Their generally small size is the main obstacle to exploiting species other than greenheart, purpleheart and wallaba. The nature of these species precludes the use of the outer sapwood, which is subject to rapid decay once the trees are cut. The result is that whereas in the case of greenheart, whose sapwood can be used, there is a 55 percent recovery of lumber from the logs, in the other species the normal recovery is 35 percent.

119. There are a number of possible approaches to the problem of the heterogeneity and the small tree size of Guyana's forests. One, which the Forestry Division of the Ministry of Agriculture and Natural Resources, hopes to try on a pilot scale, is the use of small, portable sawmills used at or near the felling site, to rim and square logs so that only recoverable timber would be hauled out, thereby greatly reducing present impossibly high transport cost. Persons in the timber trade do not appear to consider this a feasible solution.

120. A second, and more hopeful solution, is the development of a pulping industry which would permit the use of a wide range of hardwood species of varying, mainly short, fibre lengths. The Litton Industrial Development Corporation, which has been given a concession of over one million acres of forest on either side of the Demerara River, is investigating the technical feasibility of this operation and is negotiating terms with the Guyanese Government.

121. A third approach, at present being developed with the help of UN technical assistance, is the impregnation of logs to prevent decay. Successful impregnation would make possible the retention of the outer sapwood, thereby raising the milling recovery rate to 45 percent or more.

122. The trade has suggested, however, that even this recovery rate would be uneconomic; that less than a 50 percent recovery would be non-viable, under present circumstances. On the other hand, the establishment of a pulping industry would also provide an outlet for the large volume of chips which otherwise would be wasted and which would result from an expanded sawmilling industry.

123. The successful use of impregnation and the sale of chips to a pulp-mill could alter the economics of forest exploitation in Guyana. These two developments would raise substantially the rate of recovery of lumber from logs and simultaneously lower the break-even rate of recovery. This would make possible the use of a wider number of species and smaller trees and, in turn, would greatly increase the yield of timber per acre, which would reduce the overhead costs of road building. In this way the successful development of impregnation and the establishment of a pulping industry are means of placing the lumber industry on a much sounder basis, which would offer prospects of rapid growth.

Fishing

124. There are two distinct, very dissimilar, sections of the Guyanese fishing industry, fishing and shrimping. The former is almost exclusively an inshore operation, conducted by numbers of individuals either with nets cast off from the shore or from small fishing boats. A few larger trawlers also operate into Georgetown and New Amsterdam.

125. Guyana imports over one-quarter of its fish requirement, mainly in the form of dried, salted fish. Expansion of the industry, which would require the procurement of additional trawlers fishing offshore, is discouraged by the better returns available to shrimping. Almost all of the small increase in Guyana's trawling fleet in recent years has been used for shrimping.

126. There are some 400 trawlers fishing for shrimps off the north coast of South America. This number is expected to grow and the fished area to be extended. The shrimping trawlers are owned mainly by United States and Japanese interests (about 15 are Guyanese-owned) but most are locally based in Guyana, Surinam, Trinidad and Barbados. Some 150 trawlers are based on Georgetown and are serviced by Georgetown Seafood Limited and Guyana Industrial Holdings (Bookers) Limited. Servicing includes unloading the catch, washing, grading, boxing it in five-pound packs, freezing, storing and shipping. A charge of US\$12 per pound is made for these services. An export tax of US\$3.5 per pound is levied. Exports, mainly to the U.S., Japan and Britain, are valued at an average of about US\$1.30 per pound.

127. Shrimping in the area is recognized to be highly profitable. A well operated vessel can land some 80,000 pounds of shrimp per annum. Allowing for the cost of servicing the catch and for the export tax, the average value to the shrimper is about US\$1.16 per pound, or US\$92,800 per boat per annum. Deducting operating costs of about US\$42,000 plus amortization on the average cost of a boat (US\$100,000 over a seven-year period), yields an annual profit of nearly US\$40,000.

128. The most serious immediate factor limiting expansion of shrimping is the availability of adequate, suitably situated shore facilities for handling the catch. Guyana Industrial Holdings, with some Japanese participation, plan to erect a new handling plant up-river from Georgetown at a cost of US\$3 million.

This plant, which is expected to begin operations in mid-1971, will be capable of handling another 150 shrimping vessels. No difficulty is foreseen in achieving full utilization of the additional capacity.

129. Apart from a likely small expansion of the private locally-owned shrimping fleet - of which Bookers have the largest number - the Guyana Development Corporation is considering in conjunction with the Commonwealth Development Corporation and, possibly, Japanese interests, the acquisition of a shrimping fleet. Guyana is well situated to develop such a fleet.

130. Georgetown, a major port, is well situated in relation to the shrimping grounds. The time taken in getting to and from the grounds is less than in the case of Trinidad or Barbados. The catch-handling facilities are well established and expanding rapidly. Shore labor is abundant, cheap and of good quality. The handling of the catch is not subject to many of the usual port restrictive practices and, it is expected, will be even less so at the planned new handling plant up-river from the main port of Georgetown.

131. Guyanese are good fishermen and their wages are relatively low. Most U.S. and all local shrimping vessels are also manned by Guyanese, and their performance compares well with that of foreign crews.

132. The prospects for regular trawl fishing are good, if not quite so good as shrimping. As already mentioned, with the high returns available in shrimping, it is difficult to justify the direction of similar equipment and personnel to the less lucrative trawl fishing.

133. Again, market prospects for fish are not as good as in the case of shrimps, which find a ready export market. Additional fish landings would have to be sold in the domestic market or, at best, in other local markets. As already seen, Guyana imports over one-quarter of her fish requirements. These imports, amounting to about US\$1.4 million annually, are mainly in the form of dried or salted fish, for which there is a strong demand in Guyana as in other Caribbean countries. Locally landed, fresh fish of good quality and attractively priced could probably in time replace imported dried or salted fish.

134. A recent FAO report on trawl fishing off the Guyana coast^{1/} suggests that investment in a trawling fleet would yield a return of 18.5 percent on capital. These returns were based on a 17-day schedule which allowed five days for travelling to and from the fishing grounds and 6 days fishing. The travelling time was the estimated average for a number of Caribbean countries, all but one of which was considerably more distant from the fishing grounds than Guyana. It should be possible for Guyana substantially to reduce the scheduled travelling time with a corresponding increase in productive fishing time. This would greatly increase the return on capital invested in a Guyana-based trawling fleet.

^{1/} UN and FAO, 1969, Report SF/CAR/REG/16MI.

135. Given its locational advantage, Guyana might hope to develop an export trade in fish. However, the ongoing UNDP/FAO study of fishing in the Caribbean has awakened general interest in the countries of the region in the possibilities of developing off-shore fishing. It appears likely, in the light of this interest, that the other member countries of CARIFTA will wish to develop their individual off-shore fishing industries. Because of this it appears advisable that before Guyana embarks on an expansion of its trawling fleet, other than to supply its domestic market, consideration should be given to the joint development of a CARIFTA fleet. In any such development, Guyana, with its locational advantage and seagoing population, could expect to play a major role.

III. AGRICULTURAL POLICY

136. Many aspects of agricultural policy have already been discussed, as these apply to particular commodities, in the preceding chapter. The present chapter is devoted to an examination of certain broad aspects of policy, which in many cases cut across individual commodities and which therefore could not be adequately dealt with by a commodity approach.

Welfare Aspects of Agricultural Policy

137. Understandably, the Guyanese Government is deeply concerned to improve the economic conditions of the mass of the people and particularly of those whose incomes are especially low. In common with many other governments, the Guyanese Government sees in agriculture not merely a means of adding to GNP but also a sector in which a wide section of the population, and particularly the poorest class, can participate. In this way, GNP is increased in a manner likely to be directly beneficial to many people, especially the poorest. Not surprisingly, therefore, government action in relation to agriculture is frequently dictated as much by a desire to improve the incomes of a deserving class as to increase output.

138. Aspects of this simultaneous striving for the dual objectives of welfare and production in relation to the rice crop are the failure to exact anything like the full cost of water control; rent controls; the choice of settlers for Land Settlement Schemes on the basis of need rather than competence; the losses incurred by the Guyana Rice Corporation in providing cultivation and harvesting services for less competent rice growers whom commercial contractors are reluctant to service. The regulation of copra exports, if this results in lower prices, would represent a case of welfare being pursued directly at the cost of production. A further example was seen in the GMC granting of easy credit to pig producers, an action dictated in part by a desire to increase pig production and in part by a desire to improve the income of those getting the credit. (Other, patently more efficient, pig producers did not have to buy on credit from the GMC.) Again, the deficits run by the GMC are incurred partly in an attempt to stimulate diversified agricultural production and partly to raise the very low incomes of those from whom it purchases.

139. To keep the matter in perspective, however, it should be emphasized that even by Guyanese standards the losses already or likely to be incurred by the GMC are very modest; they represent less than one-quarter of one percent of GNP - a far lower proportion than most countries pay directly for welfare objectives in agriculture. Much the more serious situation is that in respect to rice, where heavy direct costs in the form of unrequited expenditures on water control are incurred by the exchequer.

140. The pursuit of welfare objectives in agriculture is likely to be particularly costly in Guyana's case. Although Guyana has abundant land, bringing new land into production, whether on the coast or inland, is costly.

That coastal agricultural land, with good water control, is worth US\$500 per acre, is a measure of the scarcity of well located, reasonably fertile developed land and of the cost of bringing new land into production. Guyanese agriculture has potential, but exploiting this potential will not be easy.

141. The achievement of rapid agricultural growth depends above all on getting resources into the hands of those who can make the most effective use of them. It by no means follows that such a direction of resources must inevitably result in the continued concentration of those resources as in the past in Guyana. Special factors have accounted for the remarkable degree of concentration in Guyanese agriculture, in sugarcane especially, but also in rice. It is entirely compatible with the pursuit of agricultural expansion that the debilities which have in the past hampered the development of efficient small-scale farming in Guyana should be removed. Much can be done along this line in sugarcane by strengthening and encouraging the Guyanese Cane Farming Development Corporation; in rice by liberalizing and rationalizing the land market; and generally by the provisions of credit to creditworthy farmers and by facilitating the development of efficient marketing services.

142. An agriculture which is economically efficient in a Guyanese context is unlikely, with existing developed land resources, to employ fewer people or to have fewer production units than at present. Progress toward economic efficiency could be characterized for the most part by a redistribution of existing land resources among the farming community, with the less efficient passing some land to the more efficient. A small minority, comprising the least efficient producers - probably mainly the part-time rice-growers - may leave agriculture altogether. It is clearly of equal importance that additional land resources, whether drained and irrigated coastal land or land cleared from jungle, should also be directed to economically efficient farmers.

143. A possible alternative to the present approach of giving scarce and costly newly created agricultural resources to people without knowledge, experience or interest would be the provision of public work. Some, or all, of the wages paid might then be regarded as the price which circumstances required that the recipients should get to forego their "claims" on a share of the country's productive agricultural resources. Looked at in this way, labor would be available to the Government at little economic cost for public works. The exercise would be justified if the value of the increased production from the agricultural resources set free, plus the value of the public works, exceeded the wages paid.

The Role of Cooperatives

144. The declaration of a Cooperative Republic underlines the great reliance which the Government places on this form of economic organization. Guyanese cooperatives have a long history, of which the first major landmark was the cooperative purchase of a village by a group of liberated slaves. The record of cooperatives in Guyana has not, however, been very successful, one frequently quoted reason being the indifference of pre-independence governments to the cooperatives. It is argued that with the present, much more benevolent Government attitude,

cooperatives can play a much more constructive role in the future. Further, Government emphasizes its readiness to experiment with different forms of cooperative organization with a view to evolving forms more suited to local conditions than the classical form.

145. It would be unrealistic, however, to expect that the achievements of agricultural cooperatives in the near future will be significantly better than in the past. An uncritical faith in the capacity of the cooperative form of organization, especially given its present level of development in Guyana, may be hindering Government from taking a more pragmatic approach to many existing problems in agriculture. At the same time it may encourage the formulation of plans and the setting of targets which are unrealistic.

146. It would be a service to agriculture if more rigorous thought were given to the possible contribution of cooperatives in their present stage of development in Guyana. It is particularly necessary in the longer term to attempt to evolve in Guyana a form of cooperative organization more appropriate than the classical form. One such alternative might be a corporation-like organization conducive to firm, skilled management, which in turn could be accountable to central direction. This could still enable the participation of "the small man" as a shareholder and/or laborer, and might well be better suited to Guyana's situation at this juncture.

Diversification

147. Guyana has some opportunities for expanding its agriculture along diversified lines. The most immediately hopeful of these are cattle, shrimping, fishing and forestry. But the largest and quickest returns are to be gained from an expansion of the two staples, sugar and rice. It would be tragic if the challenges affecting increased production of these two crops were faced less determinedly because of a diversion of attention and resources to the development of other commodities whose prospects, generally speaking, are more speculative and distant.

Marketing and Pricing Policies

148. Charging higher prices on the domestic market than the producer realizes abroad could, especially in the context of a policy of agricultural diversification, quickly lead to serious economic distortions. By granting a sufficiently high level of protection on the domestic market, as for example in the case of manufactured dairy products, resources could be attracted from more competitive enterprises, such as sugar, rice and cattle. At the same time, living and, therefore, production costs would be raised generally, reducing the competitiveness and further hindering the growth of efficient industries. Rather than contemplate a higher price for sugar on the domestic market, as has been suggested by the Sugar Producers Association, the Government should consider reducing it to the level of the least valuable exports - i.e. those to Canada.

149. The GMC reported the following losses in its operations in recent years:

1964	US\$301,000
1965	478,000
1966	221,000
1967	207,000
1968	287,000

150. These losses would, probably, have been greater but for the fact that the Corporation is the monopoly importer or exporter of a number of staple commodities, viz. edible oils, cabbage, carrots, wheat middlings, pickled pork and beef, processed hams and bacon, pasteurized milk. Profits from these activities partly offsets losses on its domestic purchases.

151. The Corporation acts as buyer-of-last-resort for a number of commodities. In this way it also performs, at some cost, the welfare function of helping to maintain the income of inefficient producers whose commodities are generally inferior, at glut periods. Whether the GMC should perform such a function is questionable on grounds that higher productivity could come from these resources if diverted to other purposes, and the same welfare ends might be achieved more effectively and cheaper by other means. However, as already noted, the amounts involved, even by Guyanese standards, are modest.

152. The management of GMC appears to be reasonably efficient; it performs its statutorily required task at low cost. However, the recently introduced provision of feedstuffs on readily available credit terms, may prove an exceptionally costly operation. GMC believes it could help reduce its losses by further investment, mainly in cold storage space to iron out short-term supply/demand discrepancies and for the construction of a milk-reconstitution plant.

Interior Development

153. Considerations other than economic appear to motivate Guyana's drive to the interior. Foremost of these is what is conceived to be a strategic need to maintain or establish a strong presence in border areas, subject to encroachment from neighboring countries. The road to Lethem, together with the agricultural development of Mathews Ridge, represents the main thrust of the drive to the interior. The Government expects this will open new lands en route. It may also facilitate the development of the grazing potential and of pockets of rice soil in the lee of mountains in the Rupununi. Finally, it is hoped that a road to Lethem on the Brazilian border, will eventually lead to a major development of trade between this north-eastern region of Brazil and Georgetown, which is the nearest major port.

154. Settlement of the interior is costly. A very approximate mission estimate, based on the available data, suggests that clearing and bringing an acre of land into cultivation in Mathews Ridge costs from US\$300 to US\$400. It costs a considerably smaller amount to place an additional acre of otherwise waste land on the coast under sugarcane or rice. In addition to land clearance, the building of houses, schools and shops, and the provision of other public

services are necessary. It is true that these facilities are adequate for the present population of some 700 families in Mathews Ridge but, if this number is added to, additional facilities will at once be necessary. The need for such social infrastructure is less on the coast, where existing facilities can be more intensively used, just as production can be increased by the more intensive use of land already under cultivation or at the margin.

155. Transport is likely to prove a crippling cost in the development of the interior for agricultural purposes at the present stage. Even if the road to Lethem is built, overland freight costs into and out of the Rupununi will still be high, hardly less than US\$1 per pound. The reduction in input costs is unlikely, given the quality of the land, to stimulate production greatly. Air freight is the chief form of transport from Mathews Ridge; the cost of this is US\$4.5 per pound. How significant this is may be grasped from Table 18 showing prices paid by GMC for agricultural produce in 1968. Of 20 crop products bought, the average price paid exceeded the freight cost from Mathews Ridge only in the case of seven. Of these seven, except for coffee, the freight cost was more than one-third the value of the commodity. Consumption and production goods being brought into the area involve a similar high cost.

156. The high capital cost and the continuing high transport cost would only be justified, on economic grounds, if the land were extremely productive of high value commodities relative to weight, or if settlers in the interior were prepared to accept extremely low returns. As neither of these conditions obtain, it is clear that the creation and maintenance of interior agricultural settlements must involve a very large subsidy element.

157. Expenditure on Mathews Ridge to date has mainly been for land clearance. Little farming has taken place there as yet. Most of the former mine-workers have been employed on this work, and it is intended to continue employing these on clearing further land to accommodate settlers who are expected to arrive in early 1970. If plans for clearing and settling the area fructify, Guyana could shortly be faced with the situation of having a fairly large population located at Mathews Ridge, dependent upon an agriculture which can only provide a subsistence at the cost of extremely heavy subsidization. Mathews Ridge, on present plans, could quickly be built up into a sizeable public liability.

158. A policy of consolidation, rather than expansion, seems urgently necessary at Mathews Ridge. This would involve concentrating on settling the land already cleared rather than clearing additional land. Newcomers should not be encouraged for the time being. Farming the cleared land will inevitably involve heavy subsidies, which may be regarded as the cost of maintaining a presence in the area. The object, however, should be to contain and minimize this subsidy. This will involve the development of the most appropriate cropping patterns with emphasis on crops of high value relative to weight in view of the heavy transport cost. Cattle production might also be encouraged, not because production at Mathews Ridge could ever hope to be as economical as on the coast, but as a form of land use likely to involve smaller losses than others.

159. The history of land settlement schemes in Guyana, present developments and the circumstances of the Mathews Ridge scheme indicate the need for caution. Mathews Ridge is clearly an exceptional case which, as well as serving important strategic objectives, could provide useful experience for further settlements and, if appropriate policies are followed, need not be excessively expensive. Generally, however, sound interior agricultural settlement is most likely to follow mineral and forestry exploitation as a source of food for miners and loggers and with agriculture benefitting from the roads and other infrastructure provided by the primary extractive industries. Possibly, by the time the extractive process is completed, some areas may become sufficiently well established to operate permanently as agricultural settlements.

160. Complementing a policy of following penetration by mining and lumbering with agriculture, a positive policy of encouraging spontaneous settlement by individuals or groups wishing to settle in the interior seems desirable. Such settlement may well take place along the route as the road to Lethem is constructed. The ready granting of leases to such settlers, subject to protecting the legitimate interests of the indigenous Amerindian population, would facilitate settlement, which would in turn contribute to the economic justification of the road.

APPENDIX

INSTITUTIONS

1. The principal institutions or agencies of Government agricultural policy are:

The Ministry of Agriculture and Natural Resources:

2. This is the main policy-making body. Its writ covers, in addition to agriculture, forestry, fishing and minerals other than bauxite. It is responsible for agricultural training generally, and for research, extension, development implementation and administration in all commodities other than sugar and rice. Primary responsibility for interior development for agricultural purposes and for the collection, processing and publication of agricultural statistics has recently been moved from this Ministry to the Ministry of Economic Development.

The Ministry of Economic Development:

3. In addition to dealing with interior development and agricultural statistics, this Ministry plans public investment in agriculture, and is responsible for the development of cooperatives, many of which are for the production and marketing of agricultural produce.

The Ministry of Works and Hydraulics:

4. Responsible for the building and maintenance of sea-defences, which prevent most of the country's agricultural land, situated on a narrow coastal strip, from being inundated. This Ministry is also responsible for the installation and maintenance of irrigation and drainage, which are again prerequisites of farming the low-lying area. Approximately one-quarter of the coastal belt is provided with drainage and irrigated, though the sugarcane estates for the most part provide these facilities on their own land.

5. The Land Settlement Division of the Ministry of Agriculture and Natural Resources has in cases supplemented the work of the Ministry of Works and Hydraulics. The Division has aimed to create farm holdings on the drained and irrigated land in eight areas covering in all about 61,000 acres. The total area of the coastal belt is about 1,600,000 acres.

The Rice Marketing Board (RMB):

6. A statutory body which has the sole right to buy milled rice at fixed prices in Guyana. It sells at relatively high prices on the domestic market, at relatively high negotiated prices in CARIFTA countries, and disposes of the balance on the free market (see Table 11). It proposes to utilise trading surpluses of recent years partly to create a price-stabilization fund and partly to stimulate production by credit and mechanization.

Guyana Rice Corporation (GRC):

7. A statutory body which has recently taken over the assets and role of the defunct Rice Development Company. Its activities include extensive rice-growing and milling. It proposes to engage in large scale storage of paddy and it is embarking on an ambitious program of research and variety development. It also provides a wide range of contractor services to growers, including ploughing, harvesting, insect and disease control, and sells fertilizers and pest control chemicals. Its predecessor, the Rice Development Company, incurred heavy losses.

Guyana Marketing Corporation (GMC):

8. A statutory body which attempts to pay guaranteed minimum prices for a wide variety of crops other than sugarcane and rice, produce and fish. It sells wholesale and through its own retail outlets. It has a legal monopoly of milk pasteurizing, which it performs in its Georgetown plant. It has the sole right to import the following: edible oils, cabbage, carrots, pickled pork and beef, processed hams and bacon. It has the sole right to export wheat middlings. The Corporation has operated at a loss for a number of years (see Table 23).

Guyana Credit Corporation

9. A statutory body created to supplement commercial banking, which provides credit to agriculture, housing and manufacturing industry. It was financed in part by a Bank loan of US\$1 million. Its operations have not been successful; loan repayments have been poor, 26 percent of those to agriculture being in default. It has virtually ceased lending to agriculture.

Cooperative Credit Bank

10. A newly created bank which proposes to direct most of its funds to cooperative societies, including agricultural cooperatives.

Guyana Cane Farming Development Corporation

11. This company was registered in 1965, having a nominal equity capital of US\$250,000 held as to 25 percent each by the Government of Guyana, the United Kingdom Commonwealth Development Corporation, the Royal Bank of Canada and Barclays DCO. Bookers Sugar Estates Limited, the Demerara Sugar Company and the Government have, in addition, subscribed US\$185,000 preference capital. The CDC and the two commercial banks provided additional loan capital of US\$1.5 million.

12. The purpose of the Corporation is to provide short- and medium-term loans to farmers to develop land for sugarcane production. It commenced

operations in 1969. It has approved loans for the development of 2,300 acres of land for sugarcane in 1970.

The Sugar Producers Association

13. An association of Guyana's two sugar producers, Bookers and the Demerara Sugar Company. Its main function is pooling the receipts of all sugar sold so that each company obtains the same pooled price for its sugar.

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Table 1: GUYANA - BASIC DATA ON AGRICULTURE, 1955 and 1960-1969

	1955	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Production											
Sugar ('000 tons)	250.1	334.4	324.7	326.0	317.1	258.4	309.4	288.9	343.9	316.8	364.5
Rice ('000 tons)	89.1	126.2	124.0	129.9	102.9	155.9	164.9	159.4	126.9	136.7	110.9
Coconuts (million nuts)	57.5	44.0	52.9	49.4	45.9	53.0	35.6	44.0	36.3	55.2	n.a.
Ground provisions and plantains (million lbs.)	34.4	172.2	193.7	196.7	110.3	128.8	125.4	112.3	93.4	91.1	n.a.
Coffee (million lbs.)	1.3	0.8	1.0	1.0	1.5	2.5	2.5	2.5	2.8	2.9	n.a.
Beef (million lbs.)	6.6 ^{a/}	8.4	8.5	8.8	9.0	9.9	10.2	9.4	8.6	8.8	n.a.
Fish (million lbs.)	n.a.	n.a.	n.a.	n.a.	14.0	15.7	17.8	17.3	21.6	21.1	n.a.
Shrimp (million lbs.)	n.a.	2.6	3.9	5.1	6.5	7.0	8.0	9.5	9.0	9.2	n.a.
Timber (million cu. ft.)	5.8 ^{a/}	5.4	5.6	5.0	4.3	5.5	5.1	6.2	6.0	6.0	n.a.
Area ('000 acres)											
Sugar (reaped)	77.5	98.1	107.8	100.3	97.0	95.2	107.1	103.8	115.3	107.5	124.9 ^{b/}
Rice (reaped)	171.9	220.2	261.4	246.0	201.1	311.4	337.2	308.4	253.5	313.1	279.3
Coconuts ('000, includes bearing and non-bearing trees)	32.0	35.3	35.3	38.0	38.9	39.9	40.2	40.7	44.2	45.4	n.a.
Ground provisions and plantains ('000)	22.4	24.5	27.6	32.0	26.8	31.9	32.0	24.7	24.3	21.5	n.a.
Coffee	4.8	2.8	2.9	3.0	3.4	3.1	3.4	3.5	3.1	3.1	n.a.
Yields/acre											
Sugar (tons)	3.23	3.41	3.01	3.25	3.27	2.71	2.89	2.78	2.98	2.95	2.85 ^{b/}
Rice (bags of padi)	13.8	15.3	12.7	14.1	13.6	13.4	13.0	12.7	12.3	10.4	9.8
Coconuts ('000 nuts per planted acre)	1.8	1.2	1.5	1.3	1.2	1.3	.9	1.1	0.8	1.2	n.a.
Ground provisions and plantains ('000 lbs.)	1.5	7.0	7.0	6.1	4.1	4.0	3.9	4.6	3.8	4.2	n.a.
Coffee (lbs.)	271.0	286.0	345.0	336.0	430.0	812.0	743.0	716.0	914.0	920.0	n.a.

^{a/} 1956 figure

^{b/} Provisional

n.a. = Not Available

Source: Economics Division, Ministry of Agriculture

Table 2: GUYANA - SUGAR: PRODUCTION, ACREAGE AND YIELDS,
1956-1969

	Production		Acreage		Yields	
	Total (Estates & Farmers)	Cane Farmers (Share of Total)	Total (Estates & Farmers)	Cane Farmers (Share of Total)	Estates	Cane Farmers
	(tons)		(acres)		(tons per acre)	
1956	263,333		75,837		3.67	2.10
1957	284,973		83,432		3.62	2.09
1958	306,361		86,988		3.73	2.33
1959	289,425		89,134		3.37	1.74
1960	334,441	9,508	93,094	3,012	3.59	3.16
1961	324,745	8,164	107,840	3,219	3.18	2.54
1962	326,023	9,490	100,334	3,021	3.41	3.14
1963	317,137	9,600	97,014	3,204	3.49	3.00
1964	258,378	8,606	95,183	4,199*	2.82	2.47
1965	309,445	14,032	107,104	6,300*	2.89	2.57
1966	288,869	15,038	103,772	6,166*	2.81	2.44
1967	343,922	21,716	115,298	7,838*	3.00	2.77
1968	316,848	21,513	107,450	7,534*	2.96	2.86
1969	364,465	22,261	124,931 ^{a/}	8,850* ^{a/}	2.92	2.85 ^{a/}

* Includes Lochaber and Belle Vue
^{a/} Provisional

Source: Economics Division, Ministry of Agriculture

Table 3: GUYANA - RICE: PRODUCTION, ACREAGE AND YIELDS,
1955-1969

Year	Acreage Reaped	Production of Rice (tons)	Padi Yield per acre of 140 lbs. (bags)
1955	171,900	89,100	13.8
1956	136,000	78,500	15.4
1957	152,500	57,449	10.0
1958	183,326	100,519	14.6
1959	195,776	104,075	14.2
1960	220,207	126,153	15.3
1961	261,349	124,023	12.7
1962	245,973	129,924	14.1
1963	201,145	102,884	13.6
1964	311,417	155,926	13.4
1965	337,231	164,899	13.0
1966	308,395	159,408	12.7
1967	253,499	126,915	12.3
1968	313,135	136,690	10.7
1969	279,303	110,857	9.8

Table 4: GUYANA - BASIC DATA ON LIVESTOCK, 1955 AND 1960, 1965-1969

	1955	1960	1965	1966	1967	1968	1969
<u>Cattle</u>							(Subject to revision), Prov. Estimate
Population '000	n.a.	160	350	315	305	250	250
Slaughtering '000	18.6	21.6	27.3	18.7	27.8	29.0	32.6
Meat Production '000 lbs.	6,556 (1956)	8,434	10,234	10,155	9,413	9,547	10,069
Official Slaughtering '000 lbs.(Meat Production)	(n.a.)	(6,187)	(8,591)	(9,423)	(8,648)	(8,783)	(9,362)
Average Slaughter Weights	n.a.	325	315	328	311	302	288
<u>Pigs</u>							
Population '000	36.9	20	65	68	83	79	n.a.
Slaughtering '000(rounded to nearest thousand)	11	9	14	15	18	23	28
Meat Production '000 lbs.	769	631	1,018	1,402	1,701	2,149	2,610
Average Slaughter Weights	n.a.	76	70	93	93	94	95
<u>Sheep</u>							
Population '000	36.5	n.a.	87	82.6	100	97.7	n.a.
Slaughtering '000	809	621	3,254	3,988	4,836	5,060	5,686
Meat Production '000 lbs.	19	14	78	99	108	106	137
Average Slaughter Weights	n.a.	33	24	25	22	21	24
<u>Goats</u>							
Population '000	12.1	n.a.	33	31	42	38	n.a.
Slaughtering '000	510	443	266	307	413	356	474
Meat Production '000 lbs.	12	11	6	7	9	7	12
Average Slaughter Weights	n.a.	35	25	25	23	21	24
<u>Poultry</u>							
Population '000	611.4	398	3,000	3,537	4,562	5,923	n.a.
Slaughtering '000	n.a.	438	701	1,672	1,871	2,009	2,023
Meat Production '000 lbs.	n.a.	1,096	2,103	4,179	5,473	5,923	5,564
Average Slaughter Weights	n.a.	2.5	3	3	3	3	3

1/ Cattle Population: Population figures are very crude estimates. A survey in 1969 gives an estimate of 250,000 head.

2/ Meat Production: The figures presented in table above on beef production were adjusted and includes an allowance for private slaughtering and meat equivalent of live animals exported. The figures in brackets are the estimated meat production from official slaughtering.

3/ Average Slaughter Weights: The average slaughter weights were arrived at by taking the total estimated production of beef from official slaughterings and dividing by the number of head of cattle reported slaughtered.

Source: Economics Division, Ministry of Agriculture

Table 5: GUYANA - PRODUCTION, TRADE AND CONSUMPTION OF BEEF,
1956 - 1968

Year	Production*	Increase from Previous Year		Increase from Base Year		Exports		Not available from production	Imports		Consumption
	('000 lbs)	('000 lbs)	%	('000 lbs)	%	('000 lbs)	(\$'000s)		('000 lbs)	(\$'000s)	
1956	6,556	-	-	-	-	1	1	6,555	1,944	837	8,499
1957	7,110	553	8.4	552	8.4	29	13	7,080	1,651	789	8,732
1958	7,410	301	4.2	854	13.0	244	123	7,166	1,811	919	8,977
1959	7,990	580	7.8	1,434	21.9	132	54	7,857	1,511	833	9,368
1960	8,435	445	5.6	1,879	28.7	189	74	8,246	1,744	1,003	9,990
1961	8,490	55	0.7	1,934	29.5	188	112	8,302	1,988	1,173	10,290
1962	8,841	351	4.1	2,285	34.9	231	113	8,611	2,020	1,138	10,631
1963	9,000	159	1.8	2,444	37.3	204	87	8,796	2,101	1,141	10,897
1964	9,919	919	1.0	3,363	51.3	547	220	9,372	2,003	1,153	11,375
1965	10,234	315	3.2	3,678	56.1	979	420	9,256	2,630	1,556	11,885
1966	10,155	- 79	- 0.8	3,599	54.9	565	289	9,590	2,278	1,611	11,867
1967	9,413	- 742	- 7.3	2,857	43.6	333	103	9,080	2,362	1,555	11,442
1968	9,547	134	1.4	2,991	45.6	383	142	9,164	2,704	1,789	11,868

* Includes meat equivalent of live animals exported and allowance made for unofficial slaughterings.

Source: Economics Division, Ministry of Agriculture

Table 6: GUYANA - ESTIMATED MILK PRODUCTION,
1955 - 1968

Year	Gallons (000)
1955	2,848
1956	n.a.
1957	n.a.
1958	n.a.
1959	2,689
1960	2,848
1961	3,170
1962	3,542
1963	3,850
1964	4,042
1965	4,250
1966	3,443
1967	4,268
1968	4,560

Source: Economics Division, Ministry of Agriculture

Table 7: ESTIMATED PRODUCTION, LOCAL CONSUMPTION OF FISH AND SHRIMP AND EXPORTS OF SHRIMP, 1960 - 1968

YEAR	PRODUCTION		CONSUMPTION		EXPORTS OF SHRIMP	
	Fish (¹ '000 lbs)	Shrimp ¹ / (¹ '000 lbs)	Fish ² / (¹ '000 lbs)	Shrimp ³ / (¹ '000 lbs)	Quantity (¹ '000 lbs)	Value (\$ ¹ '000)
1960	9,348*	2,613	15,791	46.3	2,523	1,651.6
1961	9,678*	3,951	15,953	47.6	4,170	2,741.0
1962	10,209*	5,071	16,180	48.9	5,113	3,365.1
1963	14,018	6,508	19,324	50.3	5,875	3,868.6
1964	15,713	6,984	22,931	51.7	5,577	4,248.2
1965	17,798	8,048	23,856	53.0	7,704	5,444.0
1966	17,322	9,545	24,049	n.a.	9,731	6,461.1
1967	21,600	9,036	27,888	n.a.	8,810	5,984.0
1968	26,000	9,161	31,490	n.a.	9,153	7,310.1

* These figures have been revised.

¹/ Production not available - the amount represents shrimps handled by commercial producers.

²/ Consumption = Production + Imports and these include (1) fish, fresh, chilled or frozen and (2) all fish, salted, smoked, in tins or otherwise prepared.

³/ The figures supplied by the Fisheries are only shrimps which are available for consumption from commercial producers, and do not include quantities produced by small fishermen.

Source: Fisheries Division, Ministry of Agriculture

Table 8: GUYANA - TIMBER PRODUCTION BY PRINCIPAL SPECIES,
1956 - 1968

('000 cubic feet)

TYPES	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968*
Greenhart	3,304	3,472	3,371	3,486	3,359	3,608	3,165	2,559	3,279	3,609	3,897	3,617	--
Crabwood	767	412	322	387	429	420	442	349	345	361	280	399	--
Wallaba	130	316	793	254	273	320	366	251	288	283	202	276	--
Mora	465	517	525	373	338	307	208	302	446	281	303	307	--
Other	1,133	1,030	1,008	747	963	962	830	791	1,121	569	1,503	1,375	--
TOTAL	5,799	5,747	6,019	5,247	5,362	5,625	5,011	4,252	5,479	5,103	6,185	5,974	5,999

* Only total available to date

Source: Forest Division, Ministry of Lands, Forest and Mines

Table 9: GUYANA - EXPORTS OF SUGAR,
1964 - 1969

(Volume in thousand long tons;
value in million Guyana dollars;
unit value in dollars per long ton)

	1964	1965	1966	1967	1968	1969
<u>Total Exports</u>						
Volume	234	286	266	312	294	333
Value	49	53	52	51	62	75
Unit value	210	185	195	184	211	225
<u>United Kingdom</u>						
Volume	176	185	186	180	189	195
Value	37	39	41	38	41	42
Unit value	209	213	219	212	217	215
<u>United States</u>						
Volume	26	31	35	55	61	94
Value	5	6	7	13	17	27
Unit value	174	201	211	242	278	287
<u>Canada</u>						
Volume	32	70	45	77	44	44
Value	8	8	4	6	4	6
Unit value	250	108	86	77	91	136

Source: Sugar Producers' Association

Table 10: GUYANA: EXPORTS OF MILLED RICE, TOTAL AND BY PRINCIPAL DESTINATIONS
AND TYPE OF SALE, ANNUAL,
1961 - 1968

(thousand metric tons)

	1961	1962	1963	1964	1965	1966	1967	1968
Total Exports:								
by calendar year	91.7	80.7	-	78.8	95.1	109.9	101.6	95.7
by crop year ending 30th September	74.2	89.9	79.3	-	-	-	-	-
By Government-to-Government	----(by crop year)-----			----- (by calendar year)-----				
Contracts	63.2	77.6	74.6	75.5	54.7	47.7	55.9	55.9
Regional Rice Agreements								
Jamaica	(8.9)	(12.9)	(11.2)	(14.3)	(11.7)	(10.8)	(15.3)	(17.3)
Trinidad and Tobago	(26.1)	(23.0)	(25.7)	(28.2)	(29.8)	(28.5)	(31.4)	(30.7)
Others ^{1/}	(14.0)	(13.2)	(14.5)	(14.1)	(9.5)	(8.4)	(9.2)	(7.9)
Cuba	(14.2)	(28.5)	(23.2)	(18.9)	(3.7)	-	-	-
By Non-Contractual Sales	11.1	12.3	4.7	3.3	40.4	62.2	45.7	39.8
French Caribbean Islands	(0.6)	(0.2)	(0.3)	(0.3)	(4.0)	(5.8)	(8.8)	(8.1)
Other West Indies and Caribbean								
Countries	(6.7)	(5.1)	(3.9)	(a)	(a)	(a)	(a)	(a)
British African Countries	-	-	-	(b)	(16.8)	(21.0)	(b)	(b)
French African Countries	-	-	-	(b)	(b)	(8.8)	(16.3)	(b)
Far East	-	-	-	(b)	(b)	(5.0)	(12.7)	(b)
Western Europe	(2.8)	(2.7)	(0.5)	(0.4)	(7.8)	(b)	(b)	(1.6)
Others (residual)	(1.0)	(4.3)	-	(2.6)	(11.8)	(21.6)(c)	(7.9)	(30.1)(d)

^{1/} Mainly Barbados and Antigua

(a) Included in Regional Rice Agreements

(b) Included in others

(c) Of which Liberia, 11.4

(d) At least half of which was to Far East

Sources: Reports of the British Guiana Rice Marketing Board and Monthly Accounts Relating to External Trade, The Statistical Bureau, Georgetown, various issues.

Table 11: GUYANA - INDICATORS OF AVERAGE VALUATION OF EXPORTS OF MILLED RICE,
BY PRINCIPAL TYPES OF SALE OR DESTINATIONS, WITH COMPARISONS TO
WORLD MARKET PRICES FOR RICE, ANNUAL, 1964-1968

(US\$ per metric ton)

	1964	1965	1966	1967	1968
<u>Average Unit Values, by origin</u>					
<u>Guyana, by type of sale or destination:</u>					
Government-to-government contracts					
Regional Rice Agreements					
Trinidad & Tobago, Jamaica (average)	154	157	157	158	146
Others	175	191	151	162	143
Cuba	174	172	-	-	-
Non-contractual sales					
Range	136 ^{1/}	102-142	94-133	112-138	110-129
All Exports, Average	162	141	132	145	136
<u>Thailand:</u> Avg. unit value ^{2/}	107	108	120	140	157
<u>Burma:</u> Avg. unit value, Parboiled rice	93	103	103	114	142
<u>Average Export Prices, by origin and quality</u>					
Government-to-government contracts					
Guyana, first quality ^{3/}	150	150	150	150	^{4/}
Thailand, white rice, 35% broken	102	102	106	128	166
Thailand, white rice, 5-7% broken, sold by private trade	137	137	166	224	203
<u>FAO Rice Export Price Index</u>					
Bilateral contracts sub-index (1957-59=100) ^{3/}	109	112	118	131	152

^{1/} Average for 2.0 thousand tons out of 3.3 thousand tons exported.

^{2/} Weighted average value for all milled rice except these grades: 10% whole, 5% broken, 10% broken.

^{3/} For comparative purposes, contract prices for Guyanese milled rice, first quality, sold under regional rice agreements during 1957/58 was US\$137/metric ton. This price was increased during 1961/62 to \$150.

^{4/} Not quoted.

Sources: Unit values. Guyana. Monthly Accounts Relating to External Trade, var. issues, with valuations changed to US\$ at these exchange rates: 1964-67: 1 US\$ = 1.71 G\$; 1968 1 US\$ = 2.00 G\$. Other unit values are calculated by Economics Dept. IBRD, from official external trade statistics in a similar manner. Average Export Prices and FAO Rice Export Price Index from Reports of Study Group on Rice to the CCP, FAO, Rome, various sessions and years.

Table 12: GUYANA - TIMBER IMPORTS AND EXPORTS,
1956 - 1968

(Thousands of G\$)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
IMPORTS	300.9	652.8	341.8	319.3	369.7	298.6	242.5	150.4	253.8	343.2	454.1	386.7	464.3
EXPORTS	3,235.8	3,494.6	3,623.9	3,347.3	5,637.0	2,997.3	3,010.2	2,554.5	2,591.7	3,125.2	3,551.3	2,664.9	2,767.7

Explanatory Note: The above figures have been revised and represent Imports and Exports of all categories of timber

Source: Economics Division, Ministry of Agriculture

**Table 13: IMPORTS: TOTAL VALUES OF NET IMPORTS OF AGRICULTURAL MERCHANDISE
AND THEIR PERCENTAGE OF THE TOTAL VALUE OF NET IMPORTS**

(in thousands of G\$)

	1960	1961	1962	1963 ^{a/}	1964	1965 ^{a/}	1966 ^{a/}	1967 ^{a/}	1968 ^{a/}
Live animals chiefly for food	141	61	59	112	207	278	259	166	177
Meat and meat preparations	2,054	2,234	2,004	2,000	2,203	2,652	2,989	2,632	2,672
Dairy products, eggs and honey	5,686	5,667	5,512	5,279	6,491	7,359	8,480	8,536	8,528
Fish and fish preparations	2,371	2,213	2,352	2,210	2,572	2,690	2,644	2,990	2,533
Cereal and cereal preparations	5,329	5,965	8,424	6,610	7,953	6,937	8,137	8,838	9,782
Fruits and vegetables	4,189	4,194	4,318	4,472	4,985	5,640	5,974	5,991	5,939
Sugar and sugar preparations	337	389	297	291	227	423	423	405	658
Coffee, tea, cocoa, spices and manufactures thereof	1,717	1,864	1,415	1,471	1,570	1,669	1,735	1,638	1,756
Feeding stuff for animals (not including unmilled cereals)	1,436	1,482	980	522	499	632	637	311	260
Miscellaneous food preparations	1,433	1,384	1,524	1,599	1,612	2,036	2,078	1,910	2,497
Beverages	1,287	1,428	867	858	863	1,037	1,168	1,119	951
Tobacco and tobacco manufactures	828	943	800	92	866	857	953	906	1,082
Hide skins and fur skins undressed	-	-	-	-	-	-	-	-	-
Oil seeds, oil nuts and oil kernels	4	101	2	4	2	159	88	1,392	160
Animal and vegetable oils (not essential oils), fats, greases and derivatives	1,799	1,369	569	1,302	1,172	2,607	1,743	1,760	2,086
Essential oil and perfume materials, toilet, polishing and cleansing preparations	1,883	2,136	2,012	2,433	2,639	3,381	3,173	3,094	3,049
Live animals other than for food	1	72	37	10	-2	11	-11	-23	-21
TOTAL	30,497	31,505	31,174	29,265	33,859	38,367	40,472	41,664	42,114
Total net imports	145,420	144,807	123,478	116,610	147,294	176,749	198,169	219,732	211,235
Percentage	20.97	21.76	25.25	25.10	22.99	21.71	20.42	18.96	19.94

a/ Provisional

Source: Ministry of Agriculture and Natural Resources.

Table 14 : EXPORTS: TOTAL VALUES OF EXPORTS OF DOMESTIC PRODUCE RELATED TO AGRICULTURE
AND THEIR PERCENTAGE OF THE TOTAL VALUE OF EXPORTS OF DOMESTIC PRODUCE

(in thousands of G\$)

	1960	1961	1962	1963 ^{a/}	1964	1965 ^{a/}	1966 ^{a/}	1967 ^{a/}	1968 ^{a/}
Live animals chiefly for food	54	120	121	88	83	73	97	118	112
Meat & meat preparations	49	22	16	5	159	358	200	1	33
Dairy products eggs & honey	3	4	2	2	3	2	2	2	
Fish & fish preparations ^{b/}	1,653	2,741	3,366	3,869	4,797	5,895	7,022	6,854	8,131
Fruits & vegetables	222	235	306	99	186	106	121	128	201
Sugar & sugar preparations	60,246	59,545	62,289	79,249	57,947	46,060	51,311	59,261	63,594
Coffee, tea, cocoa, spices & manufactures thereof	271	146	123	126	162	126	120	98	80
Feeding stuff for animals (not including unmilled cereals)	320	420	556	328	285	384	562	383	333
Miscellaneous food preparations	25	31	26	33	42	52	42	54	80
Beverages	3,132	3,182	3,312	3,185	3,369	4,339	3,512	5,789	4,335
Tobacco & tobacco manufactures	1	1	.7	7		1	1	2	2
Hide skins & fur skins undressed	43	34	31	26	21	26	37	34	26
Oil seeds, oil nuts & oil kernels	-	-	-	-	-	-	-	-	-
Animal & vegetable oils (not essential oils), fats, greases & derivatives								1	1
Cereal & cereal preparations	15,422	23,034	19,859	23,002	22,232	29,984	23,446	24,043	27,667
Essential oils & perfume materials, toilet, polishing & cleansing preparations	584	541	594	562	737	593	667	627	576
Live animals other than for food	242	242	223	277	429	12	13	16	16
TOTAL	82,268	90,300	90,827	110,859	90,452	88,012	87,156	97,412	105,190
Total Domestic Exports	125,031	146,907	160,418	175,805	160,681	166,213	181,149	190,745	208,244
Percentage	65.80	61.47	56.62	63.05	56.29	52.95	48.11	51.07	50.51

^{a/} Estimated.

^{b/} Includes shrimps

Source: Ministry of Agriculture and Natural Resources.

Table 15: GUYANA - DISTRIBUTION OF RICE ACREAGE

Acres	Farmers	Percent of Ricelands
	%	%
0-9	81	42.7
10-49	17	25.8
50-99	1	6.9
100 and over	1	23.6

Source: Rice Producers Association, 1968

Table 16: GUYANA - RICE GROWING FAMILIES AND NUMBER
OF SUGAR WORKERS, 1955-1968

	(Thousands)			
	Rice Growing Families	Sugar Workers		
		Field	Factory	Total
1955	32.1	22.9	5.5	28.5
1956	33.8	22.2	5.0	27.2
1957	34.4	21.0	5.2	26.2
1958	36.0	19.5	5.2	24.7
1959	37.7	18.0	4.9	22.9
1960	39.4	17.8	4.6	22.4
1961	41.8	17.1	4.2	21.3
1962	42.5	14.9	3.9	18.8
1963	43.3	15.2	3.6	18.8
1964	44.9	13.2	3.5	16.7
1965	45.0 (approx.)	15.0	3.8	18.8
1966	n.a.	14.5	3.4	17.9
1967	n.a.	14.8	3.6	18.4
1968	n.a.	15.2	3.7	18.9

Source: Sugar Producers Association and Rice Producers Association

Table 17: GUYANA - MINIMUM PADDY PURCHASE PRICE,
SINCE 1950
(G\$)

Effective from Jan. 1, 1950	\$3.15	per bag of 140 lbs. net delivered at a rice factory								
"	"	Oct. 1, 1950	\$3.25	"	"	"	"	"	"	"
"	"	Sept. 1, 1951	\$4.50	"	"	"	"	"	"	"
"	"	Oct. 1, 1951	\$4.95	"	"	"	"	"	"	"
"	"	Oct. 1, 1953	\$6.30	"	"	"	"	"	"	"
"	"	Oct. 1, 1955	\$6.00	"	"	"	"	"	"	"
"	"	Sept. 11, 1957	\$6.80	"	"	"	"	"	"	"
"	"	Oct. 1, 1962	\$7.30	"	"	"	"	"	"	"
"	"	Oct. 1, 1966	\$6.30	"	"	"	"	"	"	"
"	"	Sept. 1, 1968	\$2.90-	"	"	"	"	"	"	"
			7.80 <u>1/</u>							

Explanatory Note:

1/ The Guyana Rice Marketing Board has continued to advocate a minimum paddy price of G\$6.30 per bag of 140 lbs. net for dry, clean, winnowed paddy delivered at mills. Owing to the flexibility of this order, the Guyana Rice Development Company established the following purchase prices for paddy as from 1st September 1968:

Grade Extra "A"	- \$7.80	per sack of 140 lbs. net
Grade A	- \$7.30	" " " " " "
Grade B	- \$6.80	" " " " " "
Grade C	- \$6.30	" " " " " "
Grade D	- \$4.70	" " " " " "
Grade E	- \$2.90	" " " " " "

An incentive of 50¢ extra is offered for each bag of Blue Belle paddy (90 percent purity) purchased.

Source: Economics Division, Ministry of Agriculture

Table 18:

(a) GUYANA - FLOOR AND AVERAGE PRICES PAID BY CENTRAL PRODUCE DEPT, 1968
(Guyanese currency)

Commodity	Minimum Price*	Commodity	Minimum Price*
	<u>Cents per lb.</u>		<u>Cents per lb.</u>
Plantains, Grade A	4	Dhal	14
Plantains, Grade B	3	Castor Beans	9
Sweet Cassava	1.5	Peanuts	24
Eddoes	2.5	Corn	6
Tannias	4		
Yams	4		<u>Cents each</u>
Sweet Potatoes	4	Oranges, Grade A	2
Cabbage	17	Oranges, Grade B	1.25
Onions	8	Oranges, Grade C	.75
Blackeye peas	16	Grapefruit, Grade A	2
		Grapefruit, Grade B	1

* Prices unchanged since 1965

(b) AVERAGE PRICES PAID TO FARMERS BY GUYANA MARKETING CORPORATION, 1968

Commodity	Average Price	Commodity	Average Price
	<u>Cents per lb.</u>		<u>Cents per lb.</u>
Plantains	6.0	Coffee Beans	43.5
Eddoes	6.0	Pumpkins	3.7
Sweet Potatoes	8.0	Cucumber	9.0
Yams	10.4	Tomatoes	26.2
Tannias	9.6	Cabbage	21.8
Cassava	2.3	Peppers	16.5
Bananas	3.9	Corn	7.1
Limes	8.0		
Golden Apples	4.0		<u>Cents each</u>
Blackeye Peas	19.8	Oranges	2.7
		Grapefruits	2.8
		Lemons	1.5

Source: Guyana Marketing Corporation.

Table 19: GUYANA - SELECTED AVERAGE ANNUAL RETAIL PRICES 1961 - 1969

COMMODITIES	UNIT	(Guyana cents per pound)								
		1961	1962	1963	1964	1965	1966	1967	1968	1969
Beef	lbs.	55.1	57.5	57.8	56.6	55.0	62.8	62.7	66.1	67.4
Pork	"	80.7	74.5	75.0	74.3	74.9	75.0	75.2	75.0	75.9
Mutton	"	1.0	104.4	109.8	110.0	107.0	110.7	110.0	109.3	116.3
Chicken	"	95.0	98.1	97.7	100.2	98.0	86.4	91.2	96.9	100.3
Red Snapper	"	71.1	65.2	74.0	79.4	80.3	85.3	89.8	81.0	83.5
Cabbage (Local)	"	30.0	30.4	39.1	35.0	38.2	39.3	65.3	35.9	37.1
Oranges	"	12.7	10.5	13.5	15.5	17.7	15.3	14.7	14.5	16.4

Source: Economics Division, Ministry of Agriculture.

Table 20: GUYANA - LANDED COST AND FARM COST OF THE MAIN
TYPES OF FERTILIZERS, 1965 AND 1968

Kinds of Fertilizers	1965	1968	1965	1968
	Landed Cost per ton c.i.f. G\$		Cost to Farmers at Retail Stores per ton G\$	
Sulphate of Ammonia	92.14	81.26	124.30	135.00
Urea	194.80	177.33	215.00	210.00
Triple Superphosphate	164.72	196.58	197.00	245.00
Hyperphosphate	74.29	81.10	79.60	--
Muriate of Potash	99.59	108.03	136.98	178.00
Nitrophoska	167.31	170.28	181.84	--
10 - 20 - 0	154.20	173.10	170.00	194.50
15 - 15 - 15	175.79	171.06	195.00	235.00
13 - 13 - 20	175.99	--	211.0	215.00
Limestone	19.14	32.32	26.00	49.16

Source: Economics Division, Ministry of Agriculture

Table 21: GUYANA WAGE RATES FOR UNSKILLED WORKERS 1955-1969
(In Guyanese Dollars)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Sugar fields ^{1/}	0.88	0.92	0.96	0.96	1.04	2.49	3.00	3.00	3.45	3.45	3.45	3.60	3.60	3.90	3.90
Sugar milling ^{2/}	0.19	0.19	0.24	0.28	0.29	0.31	--	0.38	0.43	0.43	0.43	0.45	4.50	0.49	0.48
Rice Development Corporation ^{2/}	0.31	0.34	0.32	0.36	0.38	0.35	0.36	0.38	0.38	0.40	0.46	0.48	0.50	0.53	?
Bauxite Mining ^{2/}	0.49	0.49	0.58	0.68	0.80	0.90	0.90	1.00	1.00	1.00	1.15	1.15	1.25	1.25	1.30
Metal works manufacturing ^{2/}	0.33	0.33	0.36	0.38	0.40	0.40	0.47	0.47	0.47	0.56	0.56	0.60	0.63	0.67	0.69
Public Works	2.52	2.52	2.52	2.52	2.75	3.04	3.04	3.04	3.04	4.00	4.00	4.00	4.00	4.00	4.00
Commercial Under-takings												0.51½	0.51½	0.51½	0.51½

1/ Per day

2/ Per hour

Source: Ministry of Labor and Social Security

Table 22: GUYANA - RICE MARKETING BOARD
 FINANCIAL OPERATIONS, 1965-70^{1/}
 (G\$ Million)

	1965	1966	1967	1968	1969	1970 (Forecast)
<u>Receipts</u>	<u>26.8</u>	<u>26.0</u>	<u>26.5</u>	<u>30.3</u>	<u>21.5</u>	<u>23.8</u>
Local sales	2.7	3.1	2.7	2.5	2.7	2.8
Export sales	24.1	22.9	23.8	27.8	18.8	21.0
<u>Expenditure</u>	<u>-31.1</u>	<u>-28.9</u>	<u>-26.0</u>	<u>-26.7</u>	<u>-19.5</u>	<u>-21.0</u>
Rice purchases	26.8	25.1	21.7	22.6	16.0	17.8
Administration	4.0	3.3	3.5	3.9	3.4	3.1
Interest	0.3	0.5	0.8	0.2	0.1	0.1
<u>Operating Surplus (gross)</u>	<u>-4.3</u>	<u>-2.9</u>	<u>0.5</u>	<u>3.6</u>	<u>2.0</u>	<u>2.8</u>
Depreciation	-	-	-	-	-0.2	-0.4
Debts written off	-	-	-	-0.1	-0.1	-
<u>Operating Surplus (net)</u>	<u>-4.3</u>	<u>-2.9</u>	<u>0.5</u>	<u>3.6</u>	<u>1.7</u>	<u>2.4</u>
Capital Expenditure	0.3	-	0.2	-	0.4	1.0
<u>Overall Surplus-Deficit</u>	<u>-4.6</u>	<u>-2.9</u>	<u>0.3</u>	<u>3.5</u>	<u>1.3</u>	<u>1.4</u>
<u>Financing</u>						
Government credit (net)	1.7	1.1	-0.3	1.7	-1.5 ^{2/}	-0.5
Bank borrowing (net)	2.5	0.2	-1.3	-3.6	-	-
Others, including change in assets ^{3/}	0.4	1.6	1.3	-1.6	0.2	-0.9
(of which change in rice stocks)	(2.9)	(-1.2)	(-1.4)	(-1.4)	(0.9)	-

^{1/} Financial years ending September 20th.

^{2/} G\$2.5 million debt written off by Government; G\$4 million repaid.

^{3/} - = Increase

Source: Rice Marketing Board

Table 23: GUYANA - LOSSES OF GUYANA MARKETING CORPORATION
AND GOVERNMENT SUBSIDY, 1964-1968
(in G\$)

	1964	1965	1966	1967	1968
Milk Plant	389,895.73	410,419.61	253,842.23	257,249.54	243,011.96
Produce Depot	70,806.51	248,285.68	90,872.88	130,820.82	315,330.06
Ham and Bacon Factory	-	34,152.82	17,713.98	32,839.65	33,335.72
Processing Factory	26,055.29	32,107.33	27,441.22	14,808.90	3,368.04
New Amsterdam	12,828.34	31,023.24	22,298.06	23,320.53	18,499.46
Fish Market	13,952.40	3,727.80	17,217.70*	19,641.61*	270.81*
Edible Oil Trading	<u>94,064.76</u>	<u>197,163.63</u>	<u>47,936.73</u>	<u>40,783.16</u>	<u>8,821.28*</u>
TOTAL	601,586.87	956,880.11	442,887.40	414,502.13	574,650.20
Government Subsidy	631,610.00	1,255,000.00	600,000.00	600,000.00	600,000.00

* Trading Surplus

Source: Guyana Marketing Corporation

Table 24: GUYANA - GOVERNMENT INVESTMENT IN AGRICULTURE, 1954-1968

	Level of Agricultural Investment (G\$ millions)			Composition of Agricultural Investment (G\$ thousands)					Irrigation & Drainage as a % of Total Agri- culture
	Total Public Sector Investment	Agricultural Sector Total	Agriculture as a percent of Total	General <u>1/</u> Agriculture	Irrigation & Drainage	Land Devel- opment	Forests	Total Agri- culture	
1954-1959	103.8	33.0	31	4,589	26,606	2,774	n.a.	32,968	76
1960-1964	82.3	29.5	36	3,230	23,527	2,409	n.a.	29,168	81
1965	16.4	3.5	15	1,048	1,981	455	35	3,519	56
1966*	26.3	6.5	24	3,716	1,076	1,660	91	6,543	17
1967*	27.2	6.4	24	3,062	1,233	1,265	88	6,433	19
1968*	32.0	5.5	17	2,230	1,150	1,211	89	5,478	22

1/ Spending by Ministry of Agriculture mainly on research, education, soil surveys and acreage subsidies.

* Estimates; subject to revision.

Source: Ministry of Finance

Table 25: GUYANA - PUBLIC INVESTMENT IN AGRICULTURE IN THE DEVELOPMENT PROGRAM, 1966-1972
(in G\$ thousands)

	1966-72	Revised 1970-72		1966-72	Revised 1970-72
<u>Drainage and Irrigation</u>			<u>Agriculture</u>		
1. Boerasirie Internal (Jacob's Lust/Georgia)	400	-	1. Rice Development	153	192
2. Tapakuma	510	-	2. Soil Surveys	-	-
3. Atkinson/Mackenzie	100	-	3. Ebini Research Station Crops	90	-
4. Mahaicony-Abary	10,500	-	4. Meteorological Stations	13	-
5. Mara/Torani	500	-	5. Crop Investigations	-	-
6. Black Bush Front lands	750	-	6. Technology Division	15	-
7. Crabwood Creek Southwards	800	-	7. Eradication of Accoushi Ants	10	90
8. Minor Works	1,800	-	8. Information and Communication	28	28
9. Surveys	750	-	9. Rural Youth	-	-
10. Canje Basin Dam, Pump, Roads, etc.	24,000	-	10. Farmer Training and Refresher Courses	-	-
11. Staff	-	-	11. New Animal Laboratory and Quarantine Station	100	100
			12. Expansion of Livestock Farm	700	-
Sub-Total	<u>40,110</u>		13. Sheep and Goats	20	-
			14. Beef Cattle Development, Ebini, etc.	700	-
<u>Land Development</u>			15. Progressive Farmers' Scheme	-	-
1. Anna Regina	150	-	16. Beef, Dairy, Banana, etc.	8,000	-
2. Charity	100	-	17. Staff	-	-
3. Tapakuma	50	-	18. Agricultural Credit	3,000	-
4. Mara	150	-	19. By-products Plant Lethem	36	36
5. Onverwagt	600	-	20. Guyana School of Agriculture	200	700
6. Black Bush	150	-	21. Bonus to Producers	50	-
7. Brandwagt-Sari	250	-	22. Payments for Rice Combines	500	-
8. Wauna/Yarakita/Kaituma/Arakaka	725	400	23. World Food Program	400	-
9. Machinery	500	-	24. Technical Assistance	<u>1,200</u>	-
10. Crabwood Creek Southwards	200	-			
11. Torani	150	-	Sub-total	<u>15,215</u>	
12. Contingencies	<u>200</u>	-	25. Guyana Marketing Corporation	575	
Sub-Total	<u>3,175</u>		Total	59,075 ^{1/}	

1/ This sum is approximately G\$5 million less than the sums of agricultural investments listed in Appendix A of the Development Program (1966-1972)

Source: Development Program (1966-1972)

Table 26: GUYANA - STOCK OF FARM MACHINERY IN 1965
AND ADDITIONS FROM 1966-1968

KINDS	Stock of	ADDITIONS		
	Farm Machinery 1965	1966	1967	1968
	No.	No.	No.	No.
Tractors	3,635	269	229	341
Ploughs	3,268	67	106	122
Combines	393	27	27	--
Reapers and Binders	9	--	--	--
Threshing & Sorting Machines (Shellers and Hullers)	98	--	--	--
Other Harvesting Machines	5	--	--	--
Small mills for crushing seeds and cakes	195	1	197	35
Fertilizers, distributors and seed drills		7	6	7
Lawn Mowers	873	--	117	103

Source: Economics Division, Ministry of Agriculture

Table 27: GUYANA - INVESTMENT IN RICE MACHINERY
1957 - 1965 and 1966 - 1968

1. Rice Mills and Machinery

Year	No. of Mills	Approximate Value of Equipment & Building (excluding land)	Improvements
		G\$	
1957	200 private single-stage	3,000,000	
1960	2 Govt. Mills	5,000,000	
	Improvements to private mills	250,000	Two single-stage mills were replaced by two multi-stage mills; 40 other mills installed additional hullers, expanded storage sheds, etc.
1961-1965	204 private mills	3,600,000	
	4 Govt. run Cooperative Mills	3,000,000	64 multi-stage mills were erected and five mechanical driers installed. The other millers expanded their drying floors, storage sheds and milling capacity. A number of shallow wells were also bored.
Total Rice Milling Assets -			
	Private	6,850,000	
	Government	<u>8,000,000</u>	
		<u>14,850,000</u>	

Source: Rice Producers Association

Continued/

Table 27: (Continued)

2. Tractors & Combines

Year	Tractors	Unit Price (G\$)*	Combines	Unit Price (G\$)*
1957	800	3,325	25	
1958	1,042		41	
1959	1,360		63	
1960	2,104	3,700	137	25,000
1961	2,611		183	
1962	3,176		222	27,000
1963	3,687		263	
1964	4,103	4,200	334	30,000
1965	4,503	4,700	349	29,000
1966	3,450		341	
1967	3,611		371	
1968	3,625		380	

* Different sizes and makes of tractors and combines are used. Listed below are the sizes of the most popular types:

Tractors			Combines		
Make	Size	Prices	Make	Size	Prices
Massey Ferguson	45 H.P.	\$5,950	Massey Ferguson	14 ft. cutter	\$34,900
"	"	60 H.P.	Case	" " "	42,000
"	"	67 H.P.	International		
International Harvester	42 H.P.	6,350	Harvester	13½ " "	42,500

Source: 1957 to 1965 estimate by the Rice Producers Association;
 1966 to 1968 estimate by the Economics Division, Ministry of
 Agriculture.

Table 28: GUYANA - Data on Existing and Proposed Land Development Schemes

Land Development Projects	Year Started	Gross Acreage	Number of Farms	Average size of Farms	Number of Families		Financial Support from Government					Total Investment to 1969	Investment per Acre 1969	Allocation for 1966 - 1972	Revised 1970/72
					Already settled	To be settled	1965	Investment made in			1969				
				(acres)			G\$	G\$	G\$	G\$	G\$	G\$	G\$	G\$	G\$
<u>Existing Schemes</u>															
1. Anna Regina	1954	7,549	800	15-2	800	Nil	599,274	50,000	37,000	11,400	30,518	728,192	-	100,000	150,000
2. Charity/Amazon	1954	170	268	1/2-3/4	150	118	45,560	-	85,300	7,600	9,956	98,416	578	100,000	100,000
3. Onverwagt	1955	6,000	441	10-20	422	19	-	-	-	-	-	-	495	600,000	600,000
4. *Mara	1956	3,800	220	15-17 1/2	32	-	2,501,273	-	-	-	-	2,501,273	658	50,000	50,000
5. Black Bush Polder	1960	31,000	1,500	17 1/2-10	1,500	-	16,896,521	50,000	20,500	11,400	Nil	16,978,421	547	150,000	150,000
6. Wauna Pilot Project	1961	3,000	50	15-50	40	10	326,459	100,000	110,500	33,000	12,280	582,239	194	225,000	-
7. *Tapakuma	1963	35,000	-	5-10	-	-	13,133,139	-	-	-	-	13,133,139	375	50,000	-
8. Brandwagt/Sari Pilot Project	1964	1,000	100	10	4	96	181,936	60,000	27,000	52,000	65,000	385,936	386	250,000	250,000
<u>Proposed Schemes</u>															
Wauna/Yarakit/Kaituma	1966	200,000	-	-	-	6,000	-	-	-	-	-	-	-	500,000	500,000
Crabwood Creek Southwards	-	8,000	-	-	-	600	-	-	-	-	-	-	-	200,000	200,000
Torani	-	4,000	-	-	-	300	-	-	-	-	-	-	-	150,000	150,000
<u>Other Projects</u>															
Preliminary Investigations	1960	300,000	-	-	-	-	8,000	5,000	3,000	-	15,750	31,750	-	200,000	-
World Food Program Project	1964	-	-	-	-	-	-	-	-	-	-	-	-	-	300,000
Purchase of Combines	1964	-	-	-	-	-	492,000	-	-	-	-	492,000	-	500,000	500,000

4. * This Scheme has been abandoned.

7. * Includes 31,000 acres alienated Crown Lands which are not controlled by Land Development.

Source: Economics Division, Ministry of Agriculture

Table 29: GUYANA - COMMERCIAL BANKS' CREDIT TO
 AGRICULTURE OUTSTANDING AT END OF
 THIRD QUARTER 1966 & 1969
 (in G\$ thousand)

	1966	1969
<u>Category</u>		
<u>Individuals</u>		
Sugarcane Planting	21	77
Paddy	1,564	2,436
Livestock	225	536
Other Agriculture	127	953
Fishing	169	311
Forestry	328	156
Sub-total	2,434	4,469
<u>Agro Industries</u>		
Sugar and Molasses	3,837	13,645
Rice Milling	3,698	1,039
Timber	721	1,743
Sub-total	<u>8,256</u>	<u>16,427</u>
Total	<u>10,690</u>	<u>20,896</u>

Source: Bank of Guyana