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STOCK FARMING IN BRAZIL: ITS STATUS AND PROSPECTS

(Preliminary report)

NOTE: The present text is incomplete, as the field work related to the study, for which several consultants familiar with the problems of the different parts of the country have been recruited, is still in progress.

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INTRODUCTION

The present preliminary report is merely the first stage of a detailed study being prepared by the Joint ECLA/FAO Agriculture Division of conditions, problems and trends in the livestock industry of Brazil. This study, together with similar studies already completed on Colombia, Mexico, Uruguay and Venezuela and those to be carried out on other countries, will serve as a basis for a general appraisal of the livestock industry in Latin America. A knowledge and analysis of the stock farming sector in Brazil and an analysis thereof will constitute a particularly significant contribution to the fulfilment of that objective because Brazil is the country with the largest livestock potential on the American continent and the major producer of animal products in Latin America.

Livestock production is a major source of wealth to the Brazilian economy and its share of the national income has been growing. Total livestock production in 1959 amounted to 119,168 million cruzeiros, of which cattle represented 74 per cent. The income produced by stock farming has increased its share in the total product, even in areas of rapid industrial growth and in those where coffee and other crops have traditionally held a predominant position. A case in point is the State of São Paulo, where coffee has yielded to stock farming. In fact, coffee's share of the total product dropped from 39.7 per cent in 1955 to 23.2 per cent in 1959, a figure only slightly higher than the 21.7 per cent represented by beef and milk production.^{1/} If pork output is included, the product of livestock activities exceeds that of coffee.

Stock farming, with an inventory officially estimated at about 73 million head in 1959, is the most important branch of the Brazilian livestock industry. In other words, Brazil has more than one-third of Latin America's total cattle population and the third largest cattle population in the world, after India and the United States.

Stock farming is practised in almost every State under vastly different soil and climatological conditions, ranging from the tropical and semi-arid

^{1/} Agricultura em São Paulo, bulletin of the Department of Agriculture, May 1960.

zones in the north and north-east, through Central Brazil with its subtropical climate, to the southern State of Rio Grande do Sul, where the temperate climate is ideal for livestock. This explains why the characteristics of the Brazilian stock farming sector vary so widely with respect to the quality of pasture, animal breeds and the incidence and distribution of animal diseases and also explains the diversity of the problems related to the supply of and demand for livestock products.

It should be noted that, while the livestock population has grown substantially during the past ten years, production in this sector has risen far less rapidly. This is explained by the low livestock productivity indices and the drop experienced in some branches. For example, beef output per animal slaughtered has declined in recent years.

The chief factors responsible for low productivity are the extensive methods used in stock farming, the low level of technique on most stock farms and the critical seasonal fodder shortages which involve farmers in heavy losses. The conditions and measures essential for the improvement of production methods and techniques have obviously not been available to the farmers. On the contrary, they have suffered from the effects of inflation, the rise in input costs and the disequilibrium between the agricultural and industrial sectors. Moreover, the higher costs resulting from short-term industrialization have not only affected the functions of production but also the marketing and processing of livestock products, all of which have contributed enormously to pushing up prices.

On the other hand, the stock farmers have benefited from a steadily growing demand and its favourable effect on the prices they receive. The great expansion in demand must be attributed to increasing consumer capacity, and to the rapid urban population growth, both of which have been assisted by the process of industrialization. This dynamic trend in the Brazilian economy has been of benefit to stock farmers in Central Brazil and has encouraged them to expand their activities.

I. AVAILABLE RESOURCES

1. Livestock and poultry inventories

According to official estimates, Brazil's cattle population in December 1959 amounted to nearly 73 million head, the world's third largest after India and the United States which had slightly under 159 million and about 97 million respectively. On the same date, the Brazilian cattle population was valued at over 332,000 million cruzeiros. The cattle population grew by 30 per cent between 1950 and 1959, which is equivalent to an average annual increase of about 4 per cent^{2/} (see table 1). As will be seen later, the meat yield growth rate during the same period was much smaller.

The pig inventory in 1959 is estimated at 46.8 million, which puts Brazil in a tie for third place with the Soviet Union, after mainland China (about 146 million) and the United States (about 51 million).^{3/} Between 1950 and 1959 the natural growth rate of the pig population was apparently 80 per cent, with an annual average compound rate of 8.5 per cent, which is also much higher than the increase in the meat yield for pigs.

Table 1

BRAZIL: LIVESTOCK AND POULTRY INVENTORIES, 1950, 1955 and 1959
(Thousands of head)

Type	1950	1955	1959
Cattle	52,655	63,608	72,829
Pigs	26,059	38,606	46,823
Sheep	14,251	18,484	18,995
Goats	8,526	9,879	10,644
Horses	6,937	7,564	8,333
Mules	3,101	3,390	4,047
Asses	1,572	1,774	2,031
Poultry	...	154,209	175,401

Source: Ministry of Agriculture, Production Statistics Service: 1950 - census figures; 1955 and 1959 - estimates.

^{2/} Some Brazilian experts are of the opinion that the cattle population figures have been slightly overestimated.

^{3/} In 1957/58, according to FAO Production Yearbook, 1959.

The inventory of sheep and lambs in 1959 was estimated at 19 million, a drop of approximately 1 million compared with 1957 and 1958. Relatively speaking, the sheep industry has lagged behind in Brazil since its inventory is exceeded in descending order of magnitude, by that of Australia, the Soviet Union, China (mainland), Argentina, New Zealand, India, the United States, Turkey, the United Kingdom and Uruguay.

The goat population of slightly more than 10 million is relatively high since it puts Brazil in sixth place after India, China (mainland), Turkey, Nigeria and Ethiopia. Goat breeding and farming has been more or less stable during the past five years.

The estimated number of horses, mules and asses in 1959 was 8 million, 4 million and 2 million respectively. The average annual growth rate has been fairly low. The poultry inventory is estimated at 175 million, which would indicate a substantial expansion in the past five years.

2. Area used for stock farming

No recent information is available on the area in Brazil used for stock farming. The only figures to hand are those of the 1950 agricultural census, according to which there were then 107.6 million hectares of perennial pasture - 92.6 million hectares of natural grasslands and about 15 million hectares of artificial or cultivated pasture. Perennial grasslands thus account for 85 per cent of the total pasture area. Considering that in 1950 the cattle-to-pasture ratio was, generally speaking, 2 head to 1 hectare and assuming the present ratio to be about the same,^{4/} Brazil would now seem to have at least 140 million hectares of grassland.

^{4/} Assumption based on the predominance of traditional methods of pasture cultivation and management.

II. STOCK FARMING AREAS AND THEIR ECOLOGY

A general description is given below of the main ecological features of the stock farming areas of Brazil based on the following division of the country according to its natural resources:^{5/}

1. North: States of Acre, Amazonas, Pará and territories;
2. North-East: States of Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco and Alagoas;
3. East: States of Sergipe, Bahia, Minas Gerais, Espírito Santo, Rio de Janeiro and Guanabara;
4. Central-West: States of Mato Grosso and Goiás;
5. South: States of São Paulo, Paraná, Santa Catarina and Rio Grande do Sul.

1. Northern region

While this region comprises about 42 per cent of the total territory of Brazil, it has only 1.3 million head of cattle. It has a predominantly equatorial, tropical, rainy climate with a mean temperature of 26°C. Its grasslands are mainly natural and its cattle chiefly criollo or cross-bred with Zebu. Stock farming is based on very extensive methods.

2. North-Eastern region

With 11.39 per cent of the total area of Brazil, the North-Eastern region maintains about 7 million head of cattle and over half the country's goat herds. Stock farming is mainly of the savanna type - extensive and tropical - and the strains are chiefly criollo or mixed criollo-zebu. Dairy farming with specialized breeds is practised only in the vicinity of the larger cities.^{6/} Stock farming consists primarily of cattle and goat breeding. While the quality of the soil is very often satisfactory, animal husbandry is greatly hampered by critical seasonal fodder shortages caused by dry periods which last from 3 to 5 months with a rainfall of less than 50 mm.

^{5/} Classification by the Brazilian Geographical and Statistical Institute (Instituto Brasileiro da Geografia e Estatística).

^{6/} For instance, dairy herds mainly of Netherlands breeds, with an average daily output of 8 to 10 litres of milk per cow, may be found in Alagoas, Pernambuco and Ceará.

/3. Eastern region

3. Eastern region

This region covers about 15 per cent of Brazil's total area but has a higher cattle density than the two regions mentioned above, since it has one third of the country's cattle. It has a high-altitude tropical climate with an annual mean temperature of 18° to 20°C, with dry periods lasting from 3 to 5 months which affect the growth of grass. The leading stock farming States are Minas Gerais and Bahia, with 16 million and 15.7 million head of cattle respectively.

(a) Minas Gerais

Minas Gerais, with its 16 million head of cattle, is the chief stock farming State not only of the Eastern region but of Brazil as a whole. The main activity is the breeding of beef cattle in the northern and western regions of the State. Extensive grazing on large ranches is predominant and the herds consist chiefly of pure zebu or cattle with strong zebu strains. The largest concentration of zebu cattle of the "Gir", "Guzerat", "Indu-Brasil" and "Nellore" strains, is to be found in the area known as "Triangulo Mineiro". Fattening is only practised on a small scale, mainly in the Rio Doce valley, because most of the cattle is sent to other areas, particularly the prairies of São Paulo, for fattening.

Dairy farming is also developing rapidly in Minas Gerais, which is the State with the highest output of processed milk. The dairy farms are usually situated south of the 19th parallel. There are two large dairy farming areas - Belo Horizonte and southern Minas Gerais -, the latter being part of the São Paulo and Rio de Janeiro dairy area. While the percentage of cattle used for milk production in the State is not known, it is estimated that about 55 per cent of the dairy cattle consist of zebu cattle crossed - to widely varying degrees - with European dairy strains, with most animals being half-breeds. The remaining 45 per cent are either pure zebu or a cross between zebu and criollo.

The grasslands of Minas Gerais are in mountainous and, to a lesser extent, rolling terrain. The most common artificial grasses are the "Gordura" (Melinis minutiflora), "Coloniao" (Panicum maximum) and "Yaragúa" (Hyparrhenia rufa). Cultivation of the two last-named grasses is being /rapidly developed.

rapidly developed. Some dairy farms are also cultivating fodder crops for cutting or harvesting, such as "Guatemala" grass (Tripsacum Laxum), elephant grass (Pennisetum Purpurum) and Caña Forrajera.

Pig-breeding and fattening is also an important activity, particularly in the southern areas, Mata and the western part of the State. Minas Gerais, with a pig population of 8.2 million, has the most thriving pig industry in the country.

(b) Bahia

This State has a wide range of soils, climates and precipitation. Rainfall is abundant in the south and along the seaboard, is evenly distributed in the area called "Medio Sul" and is very low in "Sertão Médio", a semi-arid region. Stock farming conditions and natural resources therefore vary considerably from area to area.

Favourable ecological conditions in "Medio Sul" have endowed it with good artificial grasslands, with a much higher carrying capacity than in other areas (38 head per square kilometre). In the upper Sertão region, on the other hand, there are only 3 head of cattle per square kilometre,^{7/} and the animals have to cover considerable distances in search of water and fodder. Better soil is to be found in the "Sertão Médio" although this area, enclosed as it is in the "Dry Polygon", also suffers from prolonged dry periods. It would have a great stock farming potential if the water supply were improved and grasslands, palm-trees and fodder plants suitable to the area were cultivated more extensively. Beef and dairy cattle breeding is carried on in the north-eastern and Recôncavo zones respectively. Stock farming could be developed much more extensively in Recôncavo.

Bahia has the largest goat herds in the country (about 2.5 million head) and the second largest sheep population (2 million) after Rio Grande do Sul.

4. Central-Western region

This region consisting of the States of Mato Grosso and Goiás, covers an area of 1,877,773 square kilometres or 22 per cent of the total area of Brazil. Weather conditions are similar to those of the rest of continental Brazil, with the same tropical savanna climate as prevails in

^{7/} Ministry of Agriculture, Pecuaría Bahiana, publication Nº 22 of the Agricultural Information Service, 1958.

the north-eastern area of the country. Rainfall varies from 1,000 to 1,800 mm, although it drops to less than 50 mm during the dry periods.

Animal husbandry consists mainly of cattle-raising; the total herd amounts to almost 17 million head, of which 10 million are in Mato Grosso and the rest in Goiás. Next in order of importance is the pig-breeding industry, followed by a very small sheep and goat industry. Cattle-farming is very extensive because of the uneven quality of the grasslands, large tracts of which are seasonal natural pastures (chiefly paspalum), as for instance the flood-prone lowlands of the "Pantanal Mato Grossense".

The beef cattle industry is forging ahead rapidly in the Central-Western region, particularly as regards breeding techniques. The zebu breed has been gaining steadily, both in Goiás and the corresponding area in the "Triângulo Mineiro". Most of the young animals are sent to São Paulo for fattening.

5. Southern region

This region covers an area of 825,357 square kilometres, or 10 per cent of Brazilian territory. The States of São Paulo and Rio Grande do Sul, the major southern stock farming States, spread over about two thirds of the region. They will be dealt with separately in view of the vastly different conditions in which the livestock industry is developing in the two States.

(a) São Paulo

This State's livestock inventories consist of 10 million head of cattle, 5 million pigs, half a million goats, very few sheep and about 36 million poultry, the largest poultry figure in the country. The climate is mainly of the tropical savanna variety, with a mean temperature of 22.5°C, rains from October to March and a dry season from April to September. A sub-tropical humid climate prevails in the south, with a mean temperature ranging from 10°C to 17.5°C.

Cattle-farming in all its forms is the chief livestock activity. Breeding is carried on throughout the State. The north-west is the main grazing area, particularly for cattle being fattened and, to a lesser extent, for breeding cattle of local origin. Fifteen years ago the main

/beef-cattle

beef-cattle activity was the fattening of animals from other States. The beef cattle industry is developing rapidly in São Paulo as regards quantity, breed improvement, herd and farm management and, lastly, fattening methods.

The principal breed of beef cattle is the zebu ("Nellore", "Guzerat", "Gir" and "Indú-Brazil"). São Paulo has the largest number of "Nellore" cattle and, generally speaking, the highest percentage of zebu blood in mixed breeds (between 3/4 and 15/16ths of Indian blood). The development of earlier-maturing breeds is being promoted as a result of the progressive ideas of breeders and the technical guidance they are receiving both from Government and private sources. Thus, the cross-breeding of Charolais and zebu cattle (called "Canchim") is becoming very widespread. This produces a more economic animal which has the zebu's ruggedness and adaptability to the tropics and the Charolais' higher yield of better quality meat.

Dairy farming is also expanding rapidly not only in the main dairy farming area in the south-west part of the State (Paraíba valley) but also in many others such as the south-east and north-east. São Paulo is the second largest milk-producing State in Brazil, the leading State being Minas Gerais. The proportion of pure European dairy breeds - Holstein, Brown Swiss, etc. - is barely 1 per cent of the total São Paulo dairy herd, virtually all of which consists of mixed breeds produced by the crossing of zebu with European strains. The trend seems to be towards mixed breeds with more Indian than European blood.

The quality of the grasslands is fairly good, with a high carrying capacity. The main grasses are the "Colonião" in the western part of the State, the "Yaragua" in the central region and the "Gordura" in the south-east. Breeding and fattening usually take place on big enclosed pastures, while dairy farms are relatively small and often use intensive methods.

(b) Rio Grande do Sul

The characteristics and methods of stock farming in Rio Grande do Sul differ considerably from those in other Brazilian livestock States. This is mainly because of the different ecological conditions, particularly those associated with the temperate climate and the clear-cut division of the year into four seasons. These conditions foster the growth of highly nutritive forage plants (alfalfa, clover, Rhodes, Blue Grass, etc.) and to use pedigree dairy and beef cattle of European origin.

/Stock farming

Stock farming in Rio Grande do Sul, in common with that in Argentina and Uruguay, is notable for the extent to which improved breeding techniques are applied to the herds, whether of beef or of dairy cattle. Despite this care and the existence of natural pasture land with a high nutritive value, yields and productivity are low for reasons which will be analysed later.

Cattle stocks are estimated, in round figures, at 9 million head. They have not only remained at the same level for the last few years but are even dropping slightly at present.

The most important branch of the industry is the breeding and fattening of beef cattle most of which are "pure-bred by crossing" with Herefords, Aberdeen Anguses, Shorthorns and Devons in particular. The best pastures and highest quality livestock are to be found in the areas bordering on Uruguay and Argentina, where nearly two thirds of the Rio Grande cattle population is concentrated. Stock farming is of the extensive type on large holdings covering an average of 2,000 hectares.

The farming of dairy cattle is much less widespread than that of beef cattle, and occupies a relatively small and well-defined area. The principal source of milk is the zone known as the "Depressão Central", which stretches as far as Lake dos Patos.^{8/} Dairy farming is usually intensive, the herds being relatively small and of European breeds, in which Holsteins predominate followed by Jerseys. Supplementary rations are often given to milk cows.

Sheep farming is highly developed in Rio Grande do Sul, which has the best herd in Brazil, estimated at slightly more than 11 million head in 1959, i.e. nearly 60 per cent of the country's total sheep population. Latterly, however, stocks seem to have decreased by nearly a million, despite the high price of wool on the international market.

As regards pig farming, Rio Grande do Sul ranks as the second most important producer in Brazil, with a little over 6 million animals in 1959. Although pigs are raised in many parts of the State, they are chiefly found in the north (Colonia Nova), where the only animal husbandry of any economic importance is carried on.

^{8/} Ministry of Agriculture, A pecuaria de corte no Rio Grande do Sul, publication No. 15 of the Agricultural Information Service, 1957.

III. PRODUCTION CHARACTERISTICS

1. Livestock production

(a) Value

Official statistics place the value of livestock production in 1959 at 119,168 million cruzeiros,^{2/} which reveals the importance of stock farming and related activities for the Brazilian economy. Of the total value, 46 per cent was represented by beef, nearly 28 per cent by milk, 13 per cent by eggs, 8 per cent by pork and 5 per cent by wool, poultry, meat, mutton, lamb and goat flesh.

(b) Meat production

Total output of red meat and poultry has been steadily increasing as a result of the larger number of animals slaughtered. In 1959, the overall volume was 1.47 million tons, of which 1.26 million - 85 per cent - consisted of beef, followed by pork, mutton and lamb, goat flesh and poultry meat. This output was obtained from the slaughter of 7.78 million cattle, 7.1 million pigs, 1.45 million sheep and lambs, 1.47 million goats and 4.79 million birds (see annex, table III).

(c) Milk and egg production

The milk produced in 1959 amounted, in round figures, to 4,648 million litres, with an estimated value of more than 33,000 million cruzeiros. In the same year, egg production was nearly 500 million dozen, valued at 15,643 million cruzeiros. Both branches showed a persistent upward trend, at least in 1948-59 (see annex, table IV).

(d) Wool production

Brazil's wool production in 1959 was 30,351 tons, with an approximate value of 3,205 million cruzeiros. This branch also expanded steadily during the last few years.

2. Production trends

During the twelve years of the period considered in this report (1948-59), the quantum of production (at constant 1959 prices) rose uninterruptedly in all branches of animal husbandry (see annex, table V).

^{2/} Production of meat, milk, eggs and wool (see annex, table II).

/Thus, in

Thus, in 1958 and 1959, total livestock production, including poultry, rose nearly 79 per cent above its 1948 level, i.e. at an average rate of 7 per cent yearly. The greatest increments in relative terms were recorded for milk and eggs (120 and 108 per cent respectively), those for meat and wool being less marked (39 and 68 per cent). In the course of the twelve years, output of beef expanded 39 per cent,^{10/} that of pork 46 per cent and that of poultry 42 per cent. The smallest increments were in mutton and goat flesh production (23 and 30 per cent respectively) (see annex, table VI).

Per capita production trends have been highly favourable in the case of milk and eggs (increasing 63 and 57 per cent yearly) but much less so in that of meat (8.8 per cent) (see table 2).

Table 2

BRAZIL: ANNUAL PER CAPITA PRODUCTION OF RED MEAT, MILK AND EGGS IN SELECTED YEARS

	Red meat (kilogrammes)	Milk (litres)	Eggs (dozens)
	<u>Annual average</u>		
1948-49	21.5	44.0	4.9
1954-55	20.5	64.7	7.0
1958-59	23.4	71.8	7.7
	<u>Indices of percentage increase</u>		
<u>1958-59</u> <u>1948-49</u>	8.8	63.0	57.0

Between 1948 and 1956, beef production increased less than the population. In 1957, the population and beef output both grew 27 per cent in respect to their 1948 levels, and it was not until 1958 that beef production succeeded in forging ahead slightly. Milk production, on the other hand, has kept well in advance of population growth (see annex, tables VII and VIII).

^{10/} Equivalent to the percentage increase for meat as a whole.

3. Yields and productivity

Although Brazilian stock farming has undoubtedly progressed in the sense that herds are continually increasing, average yield and productivity are still low and have even deteriorated in some ways, as will be seen below.

(a) Slaughter rate^{11/}

In recent years - 1958 and 1959 - the slaughter rate for cattle fluctuated between 10 and 11 per cent, which is appreciably lower than the average of 12 per cent prevailing in 1948-49 (see annex, table IX). It should be noted that while the slaughter rate in central Brazil^{12/} - where the cattle population has grown more rapidly than the human population - is equal to the country average, in Rio Grande do Sul it continues to be nearly 13 per cent, despite the stagnant state of the livestock industry there. Hence, the indices of livestock production for consumption are notoriously low in Brazil, which, in this aspect of its stock farming, is surpassed by other Latin American countries, such as Argentina, Chile, Colombia, Uruguay, and some Central American republics. The low rate of slaughter is primarily due to the seasonal shortage of good-quality fodder, which slows up the fattening process and makes it necessary to defer slaughter until the cattle are as much as 4, 5 or even 6 years old.

(b) Meat yield

The output figures for carcass meat per head of cattle slaughtered did not vary to any great extent during the last six years and remained in the neighbourhood of 164 kilogrammes (see again table IX). This is much lower than the general average for Latin America, which is estimated at some 200 kilogrammes of fresh meat per animal slaughtered. The regional variations are, however, considerable. For example, yield from livestock in the State of São Paulo is more than 200 kilogrammes on an average for carcass meat per animal - steers, cows and calves -

^{11/} Livestock slaughtered as a percentage of stocks.

^{12/} Lying between the 16th and 24th parallels, it comprises the States of Goiás, Mato Grosso, Minas Gerais, São Paulo, Rio de Janeiro and Guanabara.

/while the

while the average registered in Piauí and Maranhão in 1958 was less than 150 kilogrammes.

The low slaughter rate and lightness of the cattle slaughtered keep meat production per animal at a markedly low level (18-20 kilogrammes) in comparison with the much higher indices for other countries.

(c) Milk yield

The fact that Brazil's climate is mainly tropical or subtropical largely accounts for the low productivity of dairy farming. Laudable efforts are being made to obtain suitable breeds of dairy cattle for the tropics with a view to improving current production per cow, which, even in the favourable climate of Rio Grande do Sul, barely averages 4 to 5 litres daily. In São Paulo, despite the progressiveness of the dairy farmers, it is only 3.5 kilogrammes during a lactation period of not more than 7 or 8 months. According to surveys made by the National Dairy Farming Commission (Comissão Nacional Pecuária Leiteira) of the Ministry of Agriculture, the average daily milk yield per cow in 1953, during the rainy season, was 2.7 litres in Belo Horizonte, 3.1 in Niterói, 3.5 in São Paulo and 3.7 in what was then the Federal District and is now Guanabara State. The same survey revealed that, in the Federal District, milk output per unit of area was greatest on dairy farms of up to 50 hectares and diminished thereafter, the figures for yield per hectare being 57 per cent lower on farms of more than 1,000 hectares.

(d) Birth rate

This differs not only from one State to another but also within the same area, the variations ranging from 40 per cent in the case of badly-managed farms to 75 per cent and possibly more in the case of farms using up-to-date techniques. The average rate for Brazil as a whole is estimated to be 50 per cent of births among dams. If a 10-per-cent death rate is assumed, real reproductive efficiency would be barely 40 per cent.

Physical productivity is low in other branches of animal husbandry as well, such as pig and sheep farming. This may be partly because of the predominance of native breeds, whose quality has not been greatly improved, and to the low technical level of the farms.

IV. FACTORS LIMITING LIVESTOCK PRODUCTION

1. Malnutrition

Unquestionably malnutrition is the most serious obstacle to the expansion of cattle production in Brazil. Low yields of meat, milk, etc., are a direct result of food deficiencies and these also leave the door open to various diseases causing heavy losses. The lack of forage during the dry season, which in many areas continues until the middle of the year, causes sharp seasonal fluctuations in output and consequently in prices. It would not be exaggerated to add that in some production centres, during four to six months of the year, livestock would have almost no natural food if it were not for man's intervention. Steer lose 30 kilogrammes and more in weight. Malnutrition considerably retards growth and keeps the slaughter rate very low. Milk production usually declines by 20 to 50 per cent during the dry season. To the shortage of forage characteristic of the dry season should be added the neglect of much of the pasture, because stock farmers do not consider grass to be a crop; in addition, it is not the usual practice to keep forage by ensilage or storing hay. The main causes of livestock malnutrition include:

- (a) the lack of a national forage campaign;
- (b) seasonal forage crises;
- (c) wastage of forage during the rainy season;
- (d) lack of forage storage facilities;
- (e) preponderance of natural grassland;
- (f) lack of selected grass seed;
- (g) traditional continuous grazing systems, with inadequate fertilization;
- (h) water supply difficulties;
- (i) limited use of concentrates, prepared feeds and mineral preparations;
- (j) inadequate splitting up of pasture land into enclosures;
- (k) absence of periodic rotation;
- (l) inadequate weed control.

/2. Incidence

2. Incidence of disease and pests

A great variety of microbes and parasites limit Brazilian livestock output by causing high mortality among animals of all ages and taking their toll of yields.^{13/}

The infectious and contagious diseases causing the greatest losses are foot-and-mouth disease, colibacillosis, salmonellosis (paratyphus), omphalophlebitis and pneumonia in calves. High cattle mortality is also caused by brucellosis or infectious abortion, paralytic rabies, clostridium chauvoei and anthrax. Equine encephalomyelitis, swine fever (hog cholera), Newcastle disease and pasteurellosis are also serious scourges.

Internal worm conditions are very common in calves, particularly those produced by Haemonchus, Trichostiongylus and bronchopulmonary parasites. In cattle of pure blood or with a high degree of crossing with European strains there is high incidence of anaplasmosis and piroplasmosis. Ticks (causing ectoparasitic diseases) abound from Bahia to Rio Grande do Sul, Mato Grosso and Goiás. Torsalo (Dermatobia Hominis) is prevalent in stock farms in Central Brazil.

Lastly, total absence or deficiencies of minerals and avitaminosis (deficiency diseases) also cause falls in output, retard growth, lead to declines in fertility and lessen yields.

3. Management and administration systems

With the exception of intensive dairy farms and improved herds and flocks raised for slaughter, in most farms primitive systems of extensive unimproved breeding prevail. The backward management of cattle and pasture, the neglect of disease control and the poor organization of estates must be attributed, on the one hand, to absentee landlordism and, on the other, to the scarcity of technically qualified administrators and experienced overseers. The situation is further aggravated by the small number of veterinary surgeons and agricultural engineers; these are insufficient in number to meet the many needs of livestock of such numbers as there are in Brazil.

^{13/} It is estimated that average mortality is from 4 to 5 per cent among cattle and up to 20 per cent among pigs. This means that in 1959 deaths amounted to some 3 million among cattle and 9 million among pigs, particularly young animals.

Although credit restrictions and investment problems are in themselves factors which slow down the improvement of livestock, the unfavourable effect of such restrictions is felt less on stock farms which have rationalized their management and administration, particularly on estates which have made livestock production part of their overall agricultural activities. This means in fact that the human factor is of overriding importance and is recognized as such by all; but it is a factor to which unfortunately too little attention is given in the livestock sector.

4. Level of improvement in breeding techniques

With official help, with valuable contributions by animal geneticists and the intervention of breeders associations, very encouraging progress has been made in breeding techniques. The State of Rio Grande do Sul has highly improved herds. Zebu cattle in central Brazil are reaching a high functional standard and the percentage of pure blood strains is continuously increasing. In addition, various experiments are being made with cross-breeding in a search for more economic types of livestock better adapted to their environment both for meat production and for dairy purposes. The predominance of a tropical environment, the forage problem and the general conditions in which the livestock are raised prevent the economic expansion and development of selected European breeds. The experience of breeders and producers favours cross-breeding and, unless environmental conditions improve markedly, stock farmers in tropical areas will continue to be reluctant to work with pure European breeds.

Faced with the ever-increasing use of zebras and the emergence of new breeds of cattle, certain indigenous breeds are disappearing, despite the Government's efforts to preserve and improve certain models of native cattle which have undeniable advantages. This may be due in part to long-term plans involving selective breeding and to the increasing demand of the consumer markets which bring pressure to bear on producers to give preference to whatever may be the swiftest means of improving breeding techniques, and these may not necessarily be the most suitable. It can therefore be seen that there are many problems connected with breeding techniques, not only for cattle but also for pigs and sheep.

/5. Other

5. Other factors limiting supply

(a) Marketing systems

The summary nature of this report makes it impossible to deal with all aspects of the marketing of livestock commodities and for that reason this section is confined to a brief review of the main shortcomings.

The livestock and meat trades are in the hands of middlemen whose numbers vary with market conditions; in some areas there are as many as four to six. In Rio Grande do Sul, for example, many breeders practice winter feeding and fattening and are in the habit of selling their livestock direct to slaughter-houses with refrigeration facilities, these being the only intermediary between producers, on the one hand, and retailers or the international market on the other. In central Brazil, however, the number of middlemen is considerable, for in many cases the original breeder sells to another breeder and he to yet another who will in his turn sell to a fatterer when the stock is two to three years old; it is then bought by slaughter-houses with refrigeration facilities or by dealers who turn it over to the municipal slaughter-houses and later to wholesalers or else direct to retailers.

In addition, the scarcity, inefficiency and slowness of the available means of transport for livestock mean that the animals suffer rough treatment and lose much weight,^{14/} particularly when they travel on the hoof. Losses in weight mean that steer have to be fattened anew for an extra period.

All this complicates the marketing problem which is further aggravated by the lack of any national legislation on the subject and the absence of grading standards for livestock and meat. Such disorganization not only adds to marketing costs, thereby pushing up prices, but usually also causes irregularities in supply.

Middlemen play a smaller part and their participation is better organized in milk marketing, as the producer sells direct to the processing plant which in turn sells to retailers or large-scale consumers. In other

^{14/} During 10 days transport by rail, livestock lose as much as 20 per cent of their original weight. When livestock are moved on the hoof, losses may be double that figure.

cases, it is the producer who himself processes or pasteurizes the milk; this is generally the case with producers' co-operatives.^{15/}

The chief drawback in marketing is irregularity in health control or inspection. These are in fact almost non-existent in small centres and suburban areas.

(b) Processing

The systems for slaughtering livestock and for handling and processing meat and milk have been undergoing a considerable degree of modernization, and this is especially true of the plants supplying the large markets of São Paulo, Rio de Janeiro, Recife, Belo Horizonte, Salvador, Porto Alegre, Fortaleza, etc. But a large number of provincial markets remain to be attended to for there the processing of commodities is non-existent or else is carried out uneconomically and negligently.

About three fifths of the cattle slaughtered pass through municipal slaughter-houses which are badly equipped and organized, the result being almost total wastage of by-products. Another fifth is reserved for the processing of jerked and other similar meats, this also in very unsatisfactory conditions. Only the remaining fifth goes for slaughter to the large abattoirs with refrigeration facilities where the handling, chilling and preservation of meat is carried out in satisfactory conditions. Chilled and frozen meats are not popular with consumers, which accounts for the fact that many refrigeration plants have sometimes as much as 81 per cent of their capacity lying idle.^{16/}

Full use of the capacity of the refrigeration plants would help to regularize meat supply and hence to avoid the serious problems of provisioning, speculation and prices that occur every year during the off-season. Unfortunately, consumer preference is clearly for fresh meat and, in addition, the monopolistic and oligopolistic practices of certain enterprises have played their part in restricting the expansion of such activities.

^{15/} The Rural Producers' Central Co-operative of Minas Gerais has 27 affiliated co-operatives with more than 6,000 members. Its plants pasteurize milk and also produce powdered milk and casein.

^{16/} See "Alguns aspectos da produção pecuária", in Conjuntura Económica, August 1960.

The dairy product industry is developing most satisfactorily in central Brazil where the numbers and activities of pasteurizing and milk tinning plants and factories for the production of other milk derivatives increase year by year. Thus, for example, in the line of pasteurized milk subject to federal inspection, volume reached approximately 334,000 tons in 1959 as against 274,000 in 1957.^{17/} In addition, the quality of the processed products is satisfactory and is getting steadily better. The presentation of milk is being modernized and improved thanks to the use of smoked glass bottles and wax paper containers which help keep milk fresh. In São Paulo three grades of processed milk are sold (A, B and C), and the quality is comparable to milk of similar categories in other countries such as the United States. It has been noted that most of the grade C milk conforms to the standards laid down for grade B, and grade B milk is so good that it seems to be easing grade A off the market. Grade A can only be produced at high cost and requires extremely complicated processing.

^{17/} Laticínios, bulleting of the Ministry of Agriculture, 1957 to 1959.

V. LIVESTOCK PRODUCTS: DEMAND AND CONSUMPTION

The highly dynamic nature of the Brazilian economy, the concentration of people in the big towns and the overall increases in population and income are rapidly pushing up demand for livestock products and, in some cases, having a stimulating effect on per capita consumption.

1. Milk

The growth in per capita consumption has been particularly noticeable in São Paulo, where the amount of fresh milk consumed daily rose from only 104 grammes in 1939 to twice as much by 1958. Greater regularity of supply and better quality have undoubtedly helped to raise consumption. Nevertheless, the slow rate of annual increase (3.4 per cent in the 14 principal towns as a whole)^{18/} and the low per capita intake mean that a satisfactory level of nutrition cannot be obtained as things are at present for a very long time to come.

Consumption of fresh milk varies greatly from one area to another and is low in the towns of the North, in the North-East and in part of the East. Under-consumption is of course a more acute problem in the small isolated urban centres and in rural areas. The per capita average for the 14 principal towns^{19/} was about 63 litres a year in 1959, but the general level fluctuated widely from 6 litres in Belem to 94 litres in Porto Alegre (see table 3).

Table 3

BRAZIL: PER CAPITA DAILY CONSUMPTION OF FRESH MILK IN
TOWNS, BY AREAS, 1959

Area	Daily <u>per capita</u> consumption
North	16
North-East	50
East	152
South	210
Central-West	254

^{18/} Direct information from the Ministry of Agriculture, National Dairy Farming Commission.

^{19/} Porto Alegre, Goiania, São Paulo, Niterói, Belo Horizonte, Rio de Janeiro, Curitiba, Vitória, Florianópolis, Teresina, Maceió, Aracajú, Salvador and Belem in descending order.

/Except for

Except for Belo Horizonte, Niterói, São Paulo, Goiania and Porto Alegre, where per capita consumption approaches or exceeds 200 grammes daily, in the remainder of the country it is frankly too low. The reasons for this are very varied, ranging from the limited purchasing power of the low-income groups and the inelasticity of supply in many parts to transport and marketing difficulties and the high level of relative prices.

2. Meat

For the same reasons as those applying in the case of milk, effective demand for meat has increased considerably in Brazil. However, serious supply limitations and the sharp and uninterrupted rise of prices keep per capita consumption at very low levels.

The figures in table 4 relating to the market for meat in São Paulo bear out this statement, at least in so far as price and supplies are concerned.

Table 4
BRAZIL: MEAT SUPPLY, DEMAND AND PRICES IN SAO PAULO,
BY SELECTED YEARS

Year	Supply index	Daily <u>per capita</u> consumption (grammes)	Retail price index
1940	100	101.1	100
1945	94	71.8	287
1950	197	120.0	.371
1955	230	104.5	2,035
1957	281	113.3	2,277

Source: Comissão Nacional Bem Estar Social.

/The first

The first fact to emerge from the table is that the expansion in total effective demand was a result of population growth, since per capita consumption went up from 101 grammes a day to only 113, i.e. 11 per cent, which, for the period between 1940 and 1957 was not even as much as 1 per cent annually. The retail price index, on the other hand, soared to an unusual extent during the same space of time; in 1955, it was 20 times as high and continued to climb in subsequent years. This would seem to show that the dizzy upswing of prices wiped out the effect of the improvement in purchasing power when relative prices were favourable for the consumer.

Table 5 shows the variations in per capita meat consumption in recent years. It may be seen from it that average consumption of red meat^{20/} per person was strikingly low for Brazil in general and even declined in 1959 with respect to its level in the previous year, on the one hand, owing to the cut in production and, on the other, to the increase in exports. It is evident that the average of 22 kilogrammes per capita is theoretical to a certain extent, since regional differences are considerable and variation are even to be found within the same locality as a result of the unequal distribution of family income. In the principal towns, consumption of beef and pork - which have the highest coefficients as regards elasticity of demand - is more than 50 kilogrammes per person, while in many other areas - the North and North-East, for instance - it is less than 20 kilogrammes and, in addition, the meat is of poor quality. Hence, it may be said that, although Brazil has been a meat exporter, its output has always fallen short of its internal requirements and is still far from reaching recommendable standards of nutrition or consumption targets.

^{20/} Red, jerked and prepared meats, not including consumption from undeclared slaughter in situ.

Table 5

BRAZIL: APPARENT PER CAPITA CONSUMPTION OF RED MEAT,
1951-55 TO 1959

Year	Output (thousands of tons)	Exports (tons)	Annual consumption <u>per capita</u> (kilogrammes)
1951-55 ^{a/}	1,168.0	5,500	20.7
1956	1,273.0	12,978	21.4
1957	1,370.3	31,306	22.0
1958	1,506.1	48,452	23.2
1959	1,469.5	63,392	21.9

Source: The output figures were supplied by the Ministry of Agriculture, Production Statistics Service; export figures are taken from Conjuntura Econômica, October 1960.

a/ Annual average for the five-year period.

3. Eggs

The per capita consumption of eggs is also very low; it is barely half the recommended diet and is at least seven times below the United States and less than one third of Canadian per capita consumption.

4. Consumption and prices

Demand for meat, milk and eggs is very sensitive to price changes. A slight rise in price will discourage consumption, and the lower the individual income, the more this is so. In spite of the Brazilian Government's efforts to improve price stability, the policy adopted for that purpose has not had the desired effect; the belief is in fact current that such policies have had the opposite effect and have encouraged the black market in meat and promoted the interests of a small number of middlemen. Such a result can be attributed only to the
/lack of

lack of technical data for appraising the situation; indeed there is sufficient information about production, marketing and processing costs, and furthermore the other basic studies which a proper price fixing policy would require, have not been carried out. It is also to be observed that the vertical integration of the meat business undertaken by certain refrigeration plants has been a further determining factor in price rises.

As to the source of foods of animal origin, almost the total amount consumed is produced domestically. Imports of dairy products, which are the only imports of any size, represent only a very small percentage of consumption.

/VI. BRAZIL'S

VI. BRAZIL'S LIVESTOCK POTENTIAL

Brazil's livestock potential is immense. No one will contradict such an assertion as it is known to be true both in economic and in livestock development circles. The country has natural resources on a vast scale and there are enormous areas which could be turned into grazing land. Some Brazilian experts have claimed, with good reason, that the number of cattle in the country could be tripied and even quadrupled - which would mean up to 260 to 300 million head of cattle - by a sustained long-term livestock development plan. Experts of the Ministry of Agriculture assert, for example, that the cattle population could be doubled in 13 years if inventories of dams could be increased at an annual rate of 8 per cent.

The summary nature of this report does not leave room for discussion of the magnitude of Brazil's livestock potential. Development in the future will depend, on the one hand, on the scope, nature, effectiveness and continuity of the plans which are adopted, and, on the other, on the incentives offered to producers and also on trends in demand. Many courses could be followed to achieve the proposed production targets. Greater importance could, for example, be given to stepping up the physical productivity which would result from more intense operation of stock farms and the introduction of improved techniques within the present area; such a course would clearly be very compatible with conditions in central Brazil, São Paulo and Ríó Grande do Sul, where many pasture lands are saturated and where at the same time other crops compete for the use of the soil.

Another possibility would be to increase livestock density in breeding areas remote from the large consumption centres; this could be done by improving pasture and by employing extensive rationalized grazing techniques. Lastly, there are enormous virgin areas which would be suitable for livestock. The two last mentioned solutions could be applied in certain parts of Mato Grosso, Goiás, the western part of Minas Gerais, Pará, Bahía, Piauí and Maranhao, where many stock farms continue to be worked on colonial lines and new land is available, which could easily be turned into pasture.

/Brazil is

Brazil is the largest producer of livestock items in Latin America. It could become one of the foremost exporters particularly of meat, a commodity for which there is great international demand. It need hardly be added that such an economic programme could only be put into operation after fully satisfying internal demand and achieving production costs compatible with meat prices on the world market.

/STATISTICAL ANNEX

STATISTICAL ANNEX

Table I

BRAZIL: LIVESTOCK POPULATION, 1948-59
(Thousands)

Year	Cattle	Horses	Asses	Mules	Pigs	Sheep	Goats	Poultry
1948	50 089	6 918	1 529	3 094	22 979	13 390	7 888	...
1949	51 937	6 902	1 536	3 095	24 152	13 549	8 249	...
1950	52 655	6 937	1 572	3 101	26 059	14 251	8 526	...
1951	53 513	6 994	1 593	3 181	27 801	15 891	8 840	...
1952	55 854	7 111	1 611	3 215	30 916	16 264	8 822	123 106
1953	57 626	7 059	1 612	3 133	32 721	16 800	8 915	134 255
1954	60 700	7 316	1 675	3 245	35 296	17 459	9 414	143 996
1955	63 608	7 564	1 774	3 390	38 606	18 484	9 879	154 209
1956	66 695	7 935	1 876	3 576	41 416	18 867	10 339	160 352
1957	69 548	8 128	1 967	3 760	44 190	20 164	10 640	165 958
1958	71 420	8 185	1 946	3 917	45 262	19 921	10 194	169 102
1959	72 829	8 333	2 031	4 047	46 823	18 995	10 644	175 401

Source: Ministry of Agriculture, Production Statistics Service

/Table II

Table II

BRAZIL: MEAT PRODUCTION, VOLUME AND VALUE, 1948-59

Year	Cattle	Pigs	Sheep	Goats	Poultry	Total
<u>Volume (tons)</u>						
1948	910 292	116 622	17 782	12 554	3 927	1 061 177
1949	954 664	119 902	17 203	12 801	4 445	1 109 015
1950	955 956	125 315	18 836	12 012	4 092	1 116 211
1951	1 002 765	139 710	17 574	12 869	4 473	1 177 391
1952	974 620	132 959	22 301	12 897	3 829	1 146 606
1953	984 813	137 469	23 784	13 524	4 135	1 163 725
1954	1 003 411	145 410	21 839	13 554	6 460	1 190 674
1955	992 432	150 964	22 314	14 637	4 790	1 185 137
1956	1 076 823	160 415	20 748	15 012	5 316	1 278 316
1957	1 156 545	175 469	21 770	16 566	5 262	1 375 612
1958	1 285 159	181 227	22 501	17 216	5 831	1 511 934
1959	1 261 076	170 235	21 891	16 347	5 585	1 475 134
<u>Value (thousands of cruzeiros)</u>						
1948	5 277 784	1 066 701	87 981	62 305	74 116	6 568 957
1949	6 016 407	1 146 383	86 866	68 745	86 617	7 405 018
1950	6 686 672	1 262 964	101 022	69 088	82 396	8 202 142
1951	8 604 335	1 646 728	112 101	92 335	106 844	10 562 343
1952	10 772 220	1 876 170	171 170	110 773	99 236	13 029 569
1953	13 112 574	2 322 809	205 565	135 581	131 585	15 908 114
1954	17 013 089	3 099 242	255 127	171 060	261 284	20 799 802
1955	23 357 518	4 076 698	346 771	248 431	212 023	28 241 441
1956	28 509 844	5 031 118	386 111	296 286	320 215	34 543 574
1957	31 854 398	5 878 031	450 103	371 260	316 501	38 870 233
1958	40 056 227	7 007 660	536 351	448 621	422 800	48 471 659
1959	55 641 253	9 729 083	728 450	578 541	540 637	67 217 964

Source: Ministry of Agriculture, Production Statistics Service.

/Table III

Table III

BRAZIL: ANIMALS SLAUGHTERED, BY SPECIES, 1948-59

(Thousands)

Year	Cattle				Pigs	Sheep	Goats	Poultry
	Total	Steers	Cows	Calves				
1948	5 829	3 881	1 689	259	5 094	1 293	1 258	3 753
1949	6 023	3 953	1 813	257	5 072	1 192	1 294	4 145
1950	5 965	4 035	1 689	241	5 408	1 284	1 216	3 814
1951	6 452	4 337	1 886	229	5 986	1 229	1 299	4 016
1952	6 003	4 074	1 725	204	6 140	1 581	1 309	3 426
1953	6 245	4 233	1 820	192	6 207	1 665	1 375	3 830
1954	6 171	4 262	1 725	184	6 328	1 516	1 378	4 951
1955	6 031	4 170	1 686	175	6 474	1 562	1 464	4 268
1956	6 574	4 522	1 838	214	6 831	1 488	1 513	4 703
1957	7 033	4 574	2 146	313	7 167	1 421	1 487	4 961
1958	7 857	4 907	2 647	303	7 480	1 491	1 553	5 774
1959	7 783	4 886	2 603	294	7 109	1 453	1 473	4 794

Source: Ministry of Agriculture, Production Statistics Service.

/Table IV

Table IV

BRAZIL: PRODUCTION OF MILK, EGGS AND WOOL, 1948-59

Year	Milk		Hen's eggs		Wool	
	Volume (thousands of litres)	Value (thousands of cruzeiros)	Volume (thousands of dozens)	Value (thou- sands of cruzeiros)	Volume (tons)	Value (thousands of cruzeiros)
1948	2 117 171	...	238 663	1 222 746	18 100	265 648
1949	2 305 600	3 367 186	258 840	1 437 155	17 580	322 973
1950	2 419 766	3 949 437	273 674	1 634 896	19 659	720 957
1951	2 485 232	4 683 309	277 437	1 858 040	20 533	934 809
1952	2 982 611	6 387 216	311 016	2 461 828	21 233	884 029
1953	3 384 561	8 154 091	352 822	3 379 860	24 199	1 347 431
1954	3 621 828	10 074 276	386 564	4 326 041	25 360	1 428 440
1955	3 866 407	13 326 846	418 943	5 383 792	27 520	1 576 580
1956	4 114 750	17 624 541	441 198	7 106 527	28 102	1 744 632
1957	4 274 482	20 738 715	470 547	8 955 632	28 289	2 261 589
1958	4 464 372	25 893 895	483 288	11 225 276	31 627	3 010 577
1959	4 648 086	33 101 479	497 015	15 643 345	30 351	3 205 162

Source: Ministry of Agriculture, production Statistics Service.

/Table V

Table V

BRAZIL: QUANTUM OF LIVESTOCK PRODUCTION, 1948-59

Year	Meat	Milk	Eggs	Wool	Total
Value (millions of 1959 cruzeiros)					
1948	48 245	15 077	7 512	1 911	66 745
1949	50 430	16 419	8 147	1 857	76 853
1950	50 789	17 232	8 614	2 076	78 711
1951	53 702	17 699	8 732	2 168	82 301
1952	52 170	21 241	9 789	2 242	85 442
1953	52 979	24 103	11 105	2 555	90 742
1954	54 415	25 793	12 167	2 678	95 053
1955	54 140	27 535	13 186	2 906	97 767
1956	58 416	29 303	13 887	2 968	104 573
1957	62 877	30 441	14 810	2 987	111 116
1958	68 984	31 793	15 211	3 340	119 328
1959	67 218	33 101	15 643	3 205	119 168
Indices (1948= 100)					
1948	100.0	100.0	100.0	100.0	100.0
1949	104.5	108.9	108.5	97.7	115.1
1950	105.3	114.3	114.7	108.6	117.9
1951	111.3	117.4	116.2	113.4	123.3
1952	108.1	140.9	130.3	117.3	128.0
1953	109.8	159.9	147.8	133.7	136.0
1954	112.8	171.1	162.0	140.1	142.4
1955	112.2	182.6	175.5	152.0	146.5
1956	121.1	194.4	184.9	155.3	156.7
1957	130.3	201.9	197.2	156.3	166.5
1958	143.0	210.9	202.5	174.7	178.8
1959	139.3	219.5	208.2	167.7	178.5

Source: Tables II and IV.

/Table VI

Table VI
BRAZIL: PHYSICAL VOLUME OF MEAT PRODUCTION, 1948-59

Year	Cattle	Pigs	Sheep	Goats	Poultry	Total
Value (millions of 1959 cruzeiros)						
1948	40 164	6 665	591	444	380	48 245
1949	42 122	6 853	572	453	430	50 430
1950	42 179	7 162	627	425	396	50 789
1951	44 244	7 985	585	455	433	53 702
1952	43 002	7 598	742	456	371	52 170
1953	43 452	7 856	791	479	400	52 979
1954	44 273	8 310	727	489	625	54 415
1955	43 788	8 628	743	518	464	54 140
1956	47 512	9 168	690	531	515	58 416
1957	51 029	10 028	724	586	509	62 877
1958	56 704	10 357	749	609	564	68 984
1959	55 641	9 729	728	579	541	67 218
Indices (1948 = 100)						
1948	100.0	100.0	100.0	100.0	100.0	100.0
1949	104.9	102.8	96.8	102.0	113.2	104.5
1950	105.0	107.5	106.0	95.7	104.2	105.3
1951	110.0	119.8	98.9	102.5	113.9	111.3
1952	107.1	114.0	125.5	102.7	97.5	108.1
1953	108.2	117.9	133.9	107.7	105.3	109.8
1954	110.2	124.7	122.9	108.0	164.5	112.8
1955	109.0	129.4	125.6	116.6	122.0	112.2
1956	118.2	137.6	116.8	119.6	135.4	121.1
1957	127.1	150.5	122.6	132.0	134.0	130.3
1958	141.2	155.4	126.7	137.1	148.5	143.0
1959	138.5	146.0	123.2	130.2	142.2	139.3

Source: Table II.

/Table VII

Table VII

BRAZIL: INDICES OF PER CAPITA PRODUCTION OF MEAT AND MILK, 1948-59
(1948 = 100)

Year	Meat	Milk	Milk and meat
1948	100.0	100.0	100.0
1949	116.5	106.2	113.8
1950	114.7	109.2	113.2
1951	118.4	109.5	116.1
1952	112.4	128.3	116.6
1953	111.5	142.1	119.6
1954	111.9	148.7	121.5
1955	109.3	154.9	121.3
1956	114.6	161.2	126.8
1957	120.4	163.5	131.7
1958	128.9	166.8	138.8
1959	122.9	169.4	135.1

Source: Basic data obtained from the Ministry of Agriculture, Production Statistics Service.

Table VIII

BRAZIL: PER CAPITA PRODUCTION OF RED MEAT, MILK AND EGGS, 1948-59

Year	Meat (kilogrammes)	Milk (litres)	Eggs (dozens)
1948	21.3	42.7	4.8
1949	21.8	45.4	5.1
1950	21.3	46.6	5.3
1951	22.0	46.7	5.2
1952	21.0	54.7	5.7
1953	20.8	60.7	6.3
1954	20.7	63.4	6.8
1955	20.2	66.1	7.2
1956	21.3	68.8	7.4
1957	22.4	69.8	7.7
1958	24.0	71.2	7.7
1959	22.9	72.4	7.7

Source: Basic data obtained from the Ministry of Agriculture, Production Statistics Service.

Table IX
BRAZIL: RATE OF SLAUGHTER AND MEAT YIELD OF CATTLE, 1948-59

Year	Rate of slaughter	Carcass meat per animal slaughtered	Carcass meat per unit of cattle population <u>a/</u>
		Kilogrammes	
1948	11.6	156	...
1949	12.3	149	...
1950	11.3	160	...
1951	12.1	155	...
1952	10.8	162	...
1953	10.8	158	...
1954	10.2	163	...
1955	9.5	165	17.8
1956	9.9	164	19.2
1957	10.1	165	19.0
1958	11.0	164	20.6
1959	10.4	164	...

Source: Basic data, obtained from the Ministry of Agriculture, Production Statistics Service, on cattle population, slaughter and meat produced.

a/ Production of carcass beef divided by the cattle population for the year in question. Prior to 1955 no statistics were published on production of carcass meat.