



ISLAMIC REPUBLIC OF MAURITANIA

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Ministry of Economy and Finance

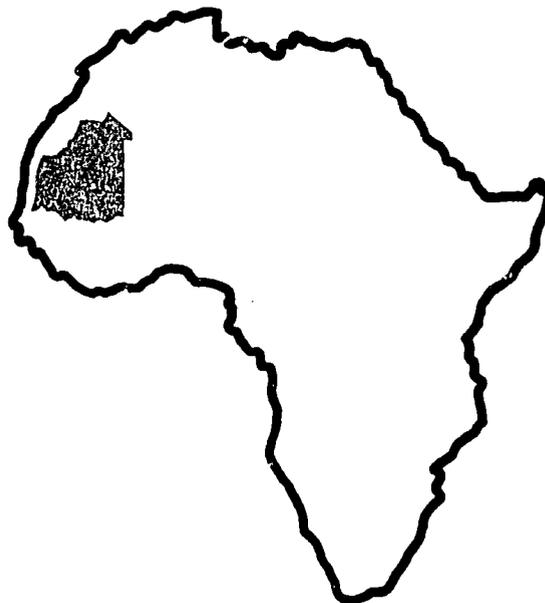
**Directorate of Studies and
Programming**

RAMS PROJECT

Rural Assessment and Manpower Surveys

**The Food and Nutritional Situation
in Mauritania**

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THE FOOD AND NUTRITIONAL SITUATION IN MAURITANIA

PART ONE

ANALYSIS OF EXISTING DATA

Data concerning production, availability and consumption of food in Mauritania, are, at present, quite elementary. This is also true for data on nutritional and sanitary conditions. It is thus difficult to obtain an exact picture of the food and nutritional situation.

However, after a brief survey of the main geo-demographical characteristics of the country, this study will analyze the different aspects of the food and nutritional situation on the basis of comparative study of the different data collected.

1 - GENERAL

Mauritania is located between 15° and 27° latitude North. The total population (including 67 000 emigrants) was 1 420 000 inhabitants, as of the last census (January 1, 1977). 63,8 % of this population was sedentary and 36,2 % nomadic. This population is very young; 44 % is aged 0 to 14 years old, and only 4,9 % of the population is over 60. Youth of population is a characteristic of populations in developing nations.

Seventy percent of the population earns its livelihood from agriculture (livestock, cultivation, fishing). However, the growth rate of towns is quite high, especially that of the capital, Nouakchott (average annual growth rate of 22,5 % between 1961 and 1977 (1)).

(1) Source: seconds résultats provisoires du recensement général de la population, Bureau Central de Recensement de la Population, Ministère du Plan et des Mines.

The population growth rate is estimated at 2,4 %. The infant mortality rate is estimated at 169 per thousand (United Nations Demographic Statistics Bulletin).

It should be noted that the results of the 1977 census would tend to indicate that there was no marked decrease in infant mortality since the preceding census in 1964.

Mauritania can be divided into two large natural regions:

- 1) A sahelian Zone in the south, which extends from the Senegal River valley up to an imaginary line running approximately through Nouakchott and Néma. Annual rainfall is greater than 100 mm. The vegetation consists of shrubs and grasses which furnish pasture for cattle and sheep; the Senegal River valley possesses good alluvial soils, traditionally cultivated in millet.
- 2) A Saharan Zone in the north, having irregular rainfall which does not exceed 100 mm per year.

It should be noted that in spite of Mauritania's straight coastline, access is difficult. Only one deep, usable bay is to be found - the Lévrier Bay (Port of Nouadhibou).

The mountainous massives of the Adrar (500m) and Tagant (300m) receive greater rainfall than the rest of the Saharan zone and oasis and palmgroves are found in these areas.

Five ecological zones will be studied separately within the framework of the RAMS Project (2):

- ZONE I : Senegal River Valley : 650 to 300 mm rainfall
- ZONE II : Rainfed Agriculture : 600 to 300 mm rainfall; extends between 16° and 16.5° latitude and eventually up to the isohyet 350.
- ZONE III : Floodland Agriculture: 350 to 100 mm rainfall
- ZONE IV : Oasis (Palm Groves)
- ZONE V : Pastoral Zone : 200 to 0 mm rainfall.

With the exception of the "empty quarter" in the eastern center of the country and the zones defined above, the pastoral zone covers all other areas of Mauritania.

A sixth modern, transitional zone is composed of new mining towns, the capital, Nouakchott, and recently paved roads along which the environment is being degraded due to human concentrations and sedentarization.

The country is divided into 12 administrative areas and one district. In this study, numbers usually refer to these administrative regions and not to agro-ecological zones.(3) Numbers and data are usually given for these areas. Throughout the study the problem of division into areas will be met.

(2) See RAMS study on the Agro-Ecological Zones.

(3) See Administrative Map in Annex.

2 - NUTRITIONAL STUDIES IN MAURITANIA

The few existing studies are not recent and do not cover the entire country. However, it is useful to survey them in order to see how the situation has evolved.

2.1. MISCES Surveys (4)

This multiple-objective socio-economic survey was undertaken in the Middle Senegal River Valley and included agricultural, household budget, food consumption (by weight) surveys. Only this 1958 survey gives precise results, and this, only for the southwestern region of the Senegal River Valley (administrative regions 4,5,6 and 10). The following table summarizes the main results:

Average intake per day per person

| | |
|---------------|-------|
| K calories | 2,380 |
| Protein/grams | 93,3 |
| Fats/grams | 45 |

These rations were deemed satisfactory. The medical survey also concluded that the nutritional condition of the population was satisfactory.

(4) France, Ministère de la Coopération, INSEE, Coopération, J.L. Boutillier et al., "La moyenne vallée du Sénégal (étude socio-économique)", Presses Universitaires de France, 1962.

It should be noted that it is the custom among the Moors to overfeed females from the age of 7 years on. This force-feeding is biologically harmful as well as economically nonsensical. This customs stems from both the Moorish standards of beauty and a certain tradition that overweight denotes "wealth"

The nutritional condition of the adult population was generally deemed satisfactory, with social and geographical variations. No serious vitamin deficiencies such as scurvy or beriberi were found; however, obesity in Moorish women was frequent.

2.3 Gendrault (6)

In 1968, considered an exceptionally good agricultural year, M. Gendrault conducted a short study of consumption. His results indicate the following consumption per person per year:

Cereals : 10.3 kg rice (however, this was mainly urban consumption)

8.7 % of the population consumed 46 % of the rice)

87 kg of millet, which corresponded at that time to a total consumption of 90 000 tons.

Such consumption is attained only during exceptionally good harvests. Even including imports, this figure appears impossible if the harvest is poor (a poor harvest is estimated at only 25 000 tons). Even when the harvest is good, the figure appears high, as "millet production" does not necessarily mean

(6) M. Genrault, "Etude sur les circuits commerciaux", SEDES, 1968.

"millet consumption". Millet also serves as a means of exchange: part of the crop is sold to pay taxes and purchase necessities other than food.

Ferro-luzzi estimated cereal consumption at 320 grams per person per day, or 115.2 kg per person per year. This consumption estimate was based on a harvest of 100 000 tons of cereal. Gendrault's results were lower: 97.3 kg of cereals per person per year for both rice and millet. Wheat and barley consumption (estimated at 5 % of millet consumption) must be added, which would bring cereal consumption to 101.6 kg per person per year.

A consumption of 280 g/person/day furnishes only 1025 K Calories, or less than half of the normal ration, which is not probable in a country where diet is based mainly on cereals. This cereal consumption is probably under-estimated. Given a sugar consumption of 17.8 kg/year/person, meat consumption of 24 kg/year/person and milk consumption of 58 liters/year/person, the ration would be around 1500 K calories a day. Even given supplementary fats and a few vegetables and fruits, the daily requirements of 2000 to 2200 K calories is only marginally met.

Although these figures appear under-estimated, it is still true that due to distribution inequalities, even in 1968, a good year, caloric insufficiency was the rule.

2.4. Sahel Nutrition Survey, May-July 1974 (7)

In each of 35 villages, statistically distributed through the

(7) Theodore K.Kloth, Medical Epidemiologist, Bureau of Smallpox Eradication, Center for Disease Control, Atlanta, Georgia.

country, 25 children of from 6 months to 6 years (65 cm to 115 cm height) were examined. These children were classified as belonging to administrative, sedentary or nomadic families. Those children whose weight/height ratio was equal to or lower than 80 % of that of the reference population (Stuart-Meredith Standards) were considered to be suffering from serious malnutrition. In a normal population, 3 % is supposed to present malnutrition syndromes (third percentile of the reference population).

Of the 875 children examined, 10 % suffered from malnutrition. The distribution was as follows:

- 41 children out of 375 sedentary (8)
- 9 children out of 75 administrative
- 37 children out of 425 nomadic.

Surveys using the same method in other Sahel countries give almost identical results for Upper Volta, Mali and Niger, and greater malnutrition in Chad..

During a similar survey undertaken one year later, 7.7 % of the children suffered malnutrition. Young children measuring less than 85 cm presented the most numerous cases of malnutrition:

| | | 1974 | | 1975 |
|--------------------------|---------------|-----------------------|---------------|----------------------|
| | <u>Number</u> | <u>% Malnutrition</u> | <u>Number</u> | <u>% Malnutritio</u> |
| Children less than 85 cm | 303 | 20.8 | 289 | 10.7 |
| Children more than 85 cm | 572 | 3.2 | 586 | 6.1 |

(8) Sedentary families were defined as farmers without livestock. Nomads have livestock, but do not practice agriculture. Administrative covers not only government officials, but merchants and employees.

2.5 Nutritional Condition of Young Children in Nouakchott
RAMS Survey 1980

This study was based on the files of the Maternal and Infantile Protection Center of the 5th Arrondissement of Nouakchott.

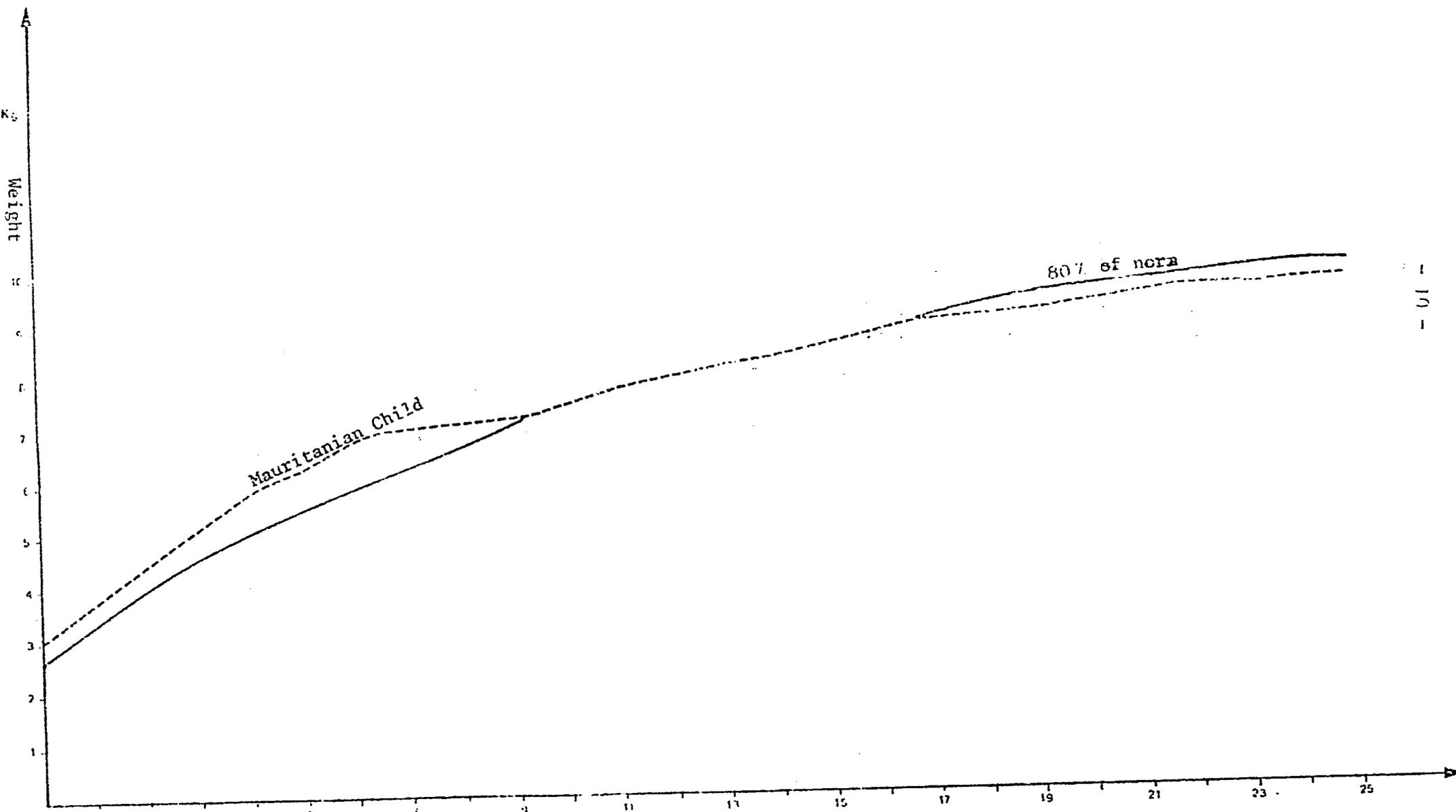
2.5.1 Weight Curve: -24 Months

The weight curve could only be determined up to the age of 24 months. The distribution table of children according to age shows that:

- regularity of weighing decreases with the age of the child. The children are weighed fairly regularly until 24 months; after this age, a significant sample cannot be obtained. This may be explained by the mother's close-set pregnancies; these mothers do not follow up weighing programs for their older children in order to care for the youngest. As this PMI Center is quite overworked, the mothers must spend a great deal of time waiting; therefore, they bring only the youngest, instead of having all their pre-school children examined.

On the following graph, the weight curve obtained was compared to the curve representing 80 % of normal weight by age (reference weight according to document AFE/NUT/84, Rev. 2 by WHO).

Instead of the average, the weight of the largest number was employed. The curve obtained clearly shows that the children's growth slows at about 6 months. It follows the reference curve (80 % of norm) from age 6 months to 17 months and remains slightly under this curve until 24 months.



Conclusions : The growth rate of children is satisfactory as long as maternal milk alone suffices. Growth slows as weaning begins and becomes insufficient when the child no longer suckles or the mother has little milk. The diet received by the weaned child is often deficient.

2.5.2 - Rate of Malnutrition

Those children having weights less than 80 % of the normal weight for their age were considered to be suffering from malnutrition.

This study was difficult to conduct, as the children seen by the PAI services do not retain the same identification number for weighing and for medical consultations. The names and birth dates of each child were taken from the weighing sheets and compared to the consultation files and the nutritional recuperation and education files.

450 children were studied in this manner:

- a) 292 children (65%) suffered no malnutrition, as their weight was never lower than the standard weight.
- b) 74 children (16.5%) suffered malnutrition
- c) 84 children (18.5%) suffered acute malnutrition and were treated by the Nutritional Recuperation and Education Center. Explanations in the children's files were often : "low birth weight" or "infectious disease". Most of these children were between 1 and 16 months old. It is difficult to separate the two causes of malnutrition: insufficient diet and weight loss due to disease.

Conclusions :

35 % of the children studied suffered from malnutrition: in more than half these cases, malnutrition was severe. The weight curve shows that the children's growth is slow (80% of the norm after 6 months).

It must be noted that this study was conducted in the 5th Arrondissement, which includes a large part of the population having migrated to Nouakchott since the drought began. These families continue to live in precarious conditions; most depend on food subsidies. Thus, this study may be considered representative of the most poorly nourished populations of Nouakchott.

3 - CEREAL SITUATION

3.1 Cereal Availability at the National Level

Given the lack of precise data, it may appear useless at this stage to formulate estimates of the national cereal situation. We hope that the consumption surveys undertaken by the RAMS project, although modest, will provide increased knowledge of the dietary situation in Mauritania.

However, as cereals represent at least 75 % of the calories consumed by Mauritians, it is necessary to attempt an analysis of the cereal situation, taking into account both production and imports (whether purchases or donations). The production level will be deduced from cultivatable surface areas.

TABLE 1 : PRODUCTION OF TRADITIONAL CEREALS
MILLET/SORGHUM - BY REGION

| <u>Region</u> | <u>Floodland</u> | | <u>Rainfed</u> | | <u>Dam</u> | |
|----------------------|------------------|-------|----------------|-------|------------|-------|
| | ha | kg/ha | ha | kg/ha | ha | kg/ha |
| 1 Hodh el Chargui | | | 6 000 | 250 | 14 000 | 350 |
| 2 Hodh el Gharbi | | | 6 000 | 250 | 12 500 | 350 |
| 3 Assaba | | | 10 000 | 250 | 4 000 | 350 |
| 4 Gorgol | 14 000 | 400 | 21 000 | 400 | 2 500 | 400 |
| 5 Brakna | 20 000 | 400 | 13 000 | 350 | 3 000 | 350 |
| 6 Trarza | 7 500 | 400 | 2 000 | 350 | 6 000 | 350 |
| 7 Adrar | | | 2 000 | 350 | | |
| 8 Dakhlet Nouadhibou | | | | | | |
| 9 Tagant | | | 4 000 | 400 | 4 000 | 350 |
| 10 Guidimaka | 6 500 | 400 | 28 000 | 450 | | |

Source: Ministère du Plan et des Mines
Ministère du Développement Rural

Production would be as follows :

| | |
|-------------|-------------|
| . floodland | 19 200 tons |
| . rainfed | 33 350 tons |
| . dam | 16 225 tons |
| | <hr/> |
| TOTAL | 68 775 tons |

In addition to this, small quantities of millet, wheat and barley are grown in oases, mainly in the Adrar.

Potential production (68 000 tons in an average year) is lower than the 100 000 tons indicated for preceeding years by Ferro Luzzi (1962) and SEDES (1968). In addition to the drought, birds and grasshoppers may destroy part of the crop, as was the case in 1974, 1975 and 1976. From 1970 to 1978, the following rural production figures were supplied by the Ministry of Rural Development.

| | | |
|------|-------------|---|
| 1971 | 57 000 Tons | near normal year |
| 1972 | 47 000 Tons | poor rainfall distribution |
| 1973 | 15 000 Tons | scant rainfall |
| 1974 | 50 000 Tons | birds |
| 1975 | 45 000 Tons | grasshoppers - birds |
| 1976 | 36 000 Tons | grasshoppers - birds - rats |
| 1977 | 50 000 Tons | scant rainfall |
| 1978 | 55 000 Tons | irregular rainfall |
| 1979 | 28 000 Tons | (First estimate) scant and irregular rainfall |

The 1977 harvest of irrigated rice was evaluated as follows (9) :

| | |
|--------------------------|------------|
| - Pilot farm at Gorgol | 542 tons |
| - State farm at M'Pourié | 2 295 tons |
| - Small FAC perimeters | 1 500 tons |
| - Small FED perimeters | 1 227 tons |
| - M'Pourié farmers | 1 718 tons |
| - Private farmers | 1 000 tons |
| | <hr/> |
| TOTAL | 8 282 tons |

This production is equivalent to 4 920 tons of hulled rice (10).

Even in normal agricultural years, the availability of cereals is about 77 000 tons (corn and wheat production should be added; according to some data, they equal about 5 % of millet production. As seeds and loss have not been subtracted from millet tonnages given above, there is no underestimate).

The availability of cereals produced in Mauritania thus ranges about 57 kg per person per year (11). During an average year, availability is 48 kg per person per year. During a drought year, availability is only 26 kg.

(9) Source : SOMADER

(10) Paddy production less 10 % (loss and seeds), transformed to hulled rice at rate of 66 %.

(11) Population censused on 1.1.1977 in Mauritania : 1 353 000 inhabitants.

In 1977, 40 652 tons of cereal were probably distributed under the emergency plan and 40 000 additional tons imported by the SONIMEX.

Thus, cereal availability must have been:

| | |
|--------------|----------------|
| 36 000 tons | harvest |
| 7 200 tons | irrigated rice |
| 40 652 tons | emergency plan |
| 40 000 tons | imported |
| <hr/> | |
| 123 852 tons | |

For greater precision, private imports must be added to these figures. Private imports were mainly bread flour (12 000 to 15 000 tons) (Central Bank data) and flour distributed by the school feeding assistance project (about 260 tons).

Cereal availability would thus be on the order of :

$$\frac{139\ 112}{1\ 420} = \text{or } 98 \text{ kg per person per year.}$$

A daily ration of 265 grams of cereal does not even furnish 950 K calories.

It should be emphasized again that in a country such as Mauritania, cereals represent at least 70 % of the caloric ration. The percent is even higher for sedentary population, more than 75 %, whose subsistence diet is still based mainly on consumption of their own crops. Surveys of the nomads show that cereals also are important in their diets.

A dietary ration based on such an estimate would provide less than 1 350 K calories a day. This is surely an under-estimate.

The SONIMEX imports appear to be fixed at 40 000 tons/year, as this same figure is indicated for 1977, 1978 and 1979.

In the prospective study for agricultural development of Sahelian countries, the dietary calories from cereals are estimated at 60 %. This rate gives an average dietary ration of 1583 K calories per day, which is still insufficient.

During the RAMS surveys at different times of the year, it was seen that calories furnished by cereals usually represent between 65 and 70 % of the ration; however, this percentage may vary from 60 % to an occasional 80 %.

The regional data furnished by the Commissariat à l'Aide Alimentaire, as well as figures from other sources (donors), show cereal distributions of about 40 000 tons: 40 652 tons in 1977 and 50 000 tons in 1978.

The 1978 figures are slightly higher, but still quite improbable :

| | |
|-------------------------|--------------------|
| Production (1977) | 50 000 tons |
| SONIMEX imports | 40 000 tons |
| Donations | 46 899 tons |
| Irrigated rice | 8 282 tons |
| Private imports (flour) | <u>15 361 tons</u> |
| TOTAL | 160 542 tons |

or a cereal availability of 113 kg/year/person.

It is difficult not to assume that production has been under-estimated, even considering unregistered cereal imports from neighboring countries, particularly Mali. (The exchange rate between the Malian franc and Mauritanian currency is advantageous for the Malians).

If one uses the above figures, given the unequal distribution of cereals from one region to the next and the different distributions according to social classes, one would have to assume that a large portion of the population is famished. However, according to Mauritanian doctors interviewed during various RAMS missions, the population does not show such a dire state of dietary deficiency. (The figures given above have already been corrected from the original 1977-78 estimate by the multidonor mission of a harvest of 26 000 tons. It was later estimated that the correct figure was more on the order of 50 000 tons.)

TABLE 2 : AVAILABILITY OF LOCAL CEREALS BY REGION
AND INHABITANT AFTER A GOOD HARVEST

| <u>Region</u> | <u>Traditional cereals tons</u> | <u>Modern rice tons</u> | <u>Total tons</u> | <u>Inhabitants (thous.)</u> | <u>Availability Kg/year</u> |
|---------------|---|---------------------------------|-----------------------|---------------------------------|---------------------------------|
| 1 | 6 400 | | 6 400 | 156 | 41 |
| 2 | 5 875 | | 5 875 | 124 | 47 |
| 3 | 3 900 | | 3 900 | 128 | 30 |
| 4 | 21 700 | 998 | 22 648 | 150 | 151 |
| 5 | 12 950 | | 12 950 | 151 | 86 |
| 6+12+Nkt(12) | 5 700 | 4 106 | 9 806 | 367 | 27(45) ⁽¹³⁾ |
| 7 | 700 | 0 | 700 | 55 | 13 |
| 8 | 1 400 | 0 | 1 400 | 24 | 58 |
| 9+11 | 3 000 | 0 | 3 000 | 99 | 30 |
| 10 | 15 200 | 0 | 15 200 | 83 | 183 |

(12) Nkt = Nouakchott

(13) Availability per person per year for the Trarza alone.

This table, based on production of the different regions, shows that even during a normal year, there is a deficit for all regions except the Gorgol and Guidimaka. The Gorgol Region has sufficient production to feed itself; the Guidimaka has a slight excess.

The SONIMEX distributes 3 328 tons of cereal a month. The distribution by region is given in Annex II.

TABLE 3 : CEREAL AVAILABILITY
KG/YEAR/PERSON - 1978 (14)

| <u>Region</u> | <u>Production</u> <u>tons</u> | <u>SONIMEX</u> <u>tons</u> | <u>Donations</u> <u>tons</u> 1978 | <u>Total</u> <u>tons</u> | <u>Availability</u> <u>kg/yr/pers.</u> |
|---------------|----------------------------------|-------------------------------|---|-----------------------------|---|
| 1 | 4 800 | 2 640 | 3 400 | 10 840 | 69 |
| 2 | 4 406 | 2 400 | 2 700 | 9 506 | 77 |
| 3 | 2 925 | 2 400 | 4 300 | 9 625 | 75 |
| 4 | 17 023 | 2 880 | 4 450 | 24 353 | 161 (15) |
| 5 | 9 713 | 1 920 | 4 715 | 16 348 | 108 |
| 6+12+Nkt | 7 355 | 19 680 | 20 464 | 47 498 | 129 |
| 7 | 525 | 1 440 | 2 000 | 3 440 | 63 |
| 8+Ndb | 1 050 | 1 800 | 1 000 | 3 850 | 160 |
| 9+11 | 2 250 | 2 760 | 4 500 | 9 510 | 96 |
| 10 | 11 400 | 1 200 | 2 000 | 14 600 | 176 (15) |

(14) Source : Commissariat à l'Aide Alimentaire

(15) For regions 4 and 10, part of the cereal harvest is usually sold; thus these figures are over-estimated.

These calculations are quite approximate, as for each region they are based on 75 % of an average year's harvest. However, by comparison with Table 2, these calculations show that the distribution of cereals through both commerce and donations does not reestablish the equilibrium between regions. Towns are markedly favorized and those regions having the lowest cereal availability remain the lowest.

Whatever the exactitude of these calculations, they clearly show the increasing deficit of production compared to demand. The joint multidonors/Government mission to evaluate the agro-pastoral situation of the 1979-80 campaign estimated that this harvest was about 28 000 tons (16).

An almost generalized rainfall deficit (40 to 60 % according to region), together with rainfall irregularity, is mainly responsible for the poor harvest. However, it must be noted that the harsh drought years have made life very difficult for rural populations, many of which have migrated to towns. This rural exodus, while not a new phenomenon, has increased since the 1972-73 drought and has caused considerable decrease in the surface of cultivated areas (17).

(16) As previously mentioned, the 1977-78 and 1978-79 harvests were originally evaluated at 21 000 and 30 000 tons; these figures were later reevaluated at 50 000 and 55 000 tons respectively.

(17) Elizabeth Dussauze-Ingrand, "Une capitale de la Sècheresse investie de Bidonvilles", UNICEF, Les Carnets de l'Enfance N° 26, April - June 1974, Pages 73-89.

4 - FOOD AND DIETARY HABITS

As in other Sahel countries, the Mauritanian diet is based on cereals. The kind of cereal consumed differs from region to region and the quantity of cereal consumed decreases from south to north, as the livestock raisers use more milk and meat and less cereal than the sedentary farmers.

Traditionally, the Moors eat mainly wheat couscous; the Negro-africans eat millet couscous and rice with fish. However, at present, all ethnic groups eat rice with meat. The largest rice consumption is found in towns and presumably in the Rosso and Kaedi regions among farmers who produce it.

In principle, there are three meals a day: breakfast, lunch and dinner.

The Moorish breakfast consists of a gruel made from flour and water, to which milk is added. The quantity of milk employed depends on the season and the family's wealth (as is also the case for use of sugar and local cow butter). The Moor drinks tea with his breakfast.

In noble families, especially among the Moors, young girls are "force-fed" from about 6 to 8 years on. They are obliged to drink large quantities of milk (6 liters a day). It would be interesting to study whether this practice has survived the drought years (18) and the desire of the more modern young women to remain slender. (Young secretaries in the towns and high school girls read the fashion magazines and disseminate new ideas when they visit their families in more remote regions.)

(18) However, during a march 1979 nutritional survey conducted in the Assaba, (KIFFA), Dr. Siddat noted that after 12 years of age, the girls appeared overweight. "The custom is that Moorish families raise their sons harshly, while coddling their daughters, force-feeding them from 12 years on in preparation for marriage".

We have no precise information on milk production (19). Pastures were deficient in 1979 in the Assaba, Guidimika, Tamchakett Region, Gorgol, Brakna, and the Regions of Akjoujt and Atar. This was due to both insufficient and irregular rainfall : the late rains in November and December 1978 and February 1979 seriously decreased the nutritive value of the pastures. Cattle mortality rates were from 5 to 35 %, according to region. In such poor conditions, normal lactation is hardly likely.

The author of the FAO Mission to Save Livestock (May 13 - Aug 25, 1979) writes that "desertification with displacement of sand dunes and destruction of vegetation appears irreversible in the immediate future: during at least the next ten years instead of temporary or localized actions, an organized policy must be conceived to establish more watering holes, to alert remote herdsmen in order to save livestock, to prevent migrations towards Senegal". Given these conditions, it is doubtful that milk consumption can compensate for the low cereal rations of the herdsmen and continue to permit "fattening" of their daughters.

In drought periods, there is only one daily meal. Tea may replace the breakfast.

(19) The only figures available for head composition, milk production, meat consumption and livestock sales date from 1967 and 1969.

Large scale tea consumption is relatively recent; it may have negative effects on nutritional conditions. Tea only became popular around 1945-50. Before this time, it was reserved for nobles and special guests; women and children were not allowed to drink it. As it is rich in sugar, the Mauritanian mint tea is caloric. However, its cost, added to that of the sugar, undermines the budget, especially when tea is consumed in place of more nutritious foods. This is especially true among the lower-salaried employees of the towns. In addition, tea becomes a kind of "drug" to those who drink it regularly. The maximal dose of theine is soon exceeded (the toxic dose of theine is attained about 6 to 7 series of 3 glasses of tea per day, per person - See Annex 3).

Vegetables are consumed with couscous and rice with fish dishes. More vegetables are eaten in the towns and those regions where water resources permit gardening. Vegetable consumption also depends on social class, income and education of consumers. (Raw vegetable salads are eaten only by the more educated class).

Dates are the main fruit consumed, especially by the Moors. The harvest season for the "Guetna" date is a special event not unlike the old-time olive harvest in Provence. Fresh date cures are very important for nutrition as they permit storage of Vitamin C. Unfortunately, dates are harmful to the teeth, as they attack the enamel.

At meals, the men are often served the choicest morsels, especially of meat. It must be remembered that among farmers, men must furnish intense labor during the cultivation season; if the harvest is poor, the entire family will suffer. Although very fond of meat, most Mauritanians do not consume it regularly; herds are sign of wealth and are not

always rationally exploited. Meat is reserved for special occasions and holiday feasts (births, weddings, funerals, religious holidays) or when an important guest is honored by killing an animal.

There are few dietary taboos in Mauritania, with the exception of religious restrictions, which in no way disturb the dietary ration.

The typical main dishes according to region and ethnic group are given in Annex 4.

5 - DIET AND PURCHASING POWER. PRICING POLICIES

Until the consumption surveys have been analysed, it is not possible to know the extent of monetarization (taxes, non-food purchases) of subsistence consumers. Therefore, at this time, this subject will be treated only on the level of urban populations.

5.1 Income

The minimum guaranteed wage (SMIG) is set at 150 UM a day or 4500 UM a month. The take-home pay of a lower-salaried government employee is about 4000 UM a month, after various deductions.

5.2 Expenses

- Monthly rent is from 500 to 1500 UM, according to whether or not the house is cement. Due to this cost, many people prefer to set up tents or construct huts themselves.

- Food expenses

Given current food prices, it is impossible to satisfy a family's dietary rations on such a salary (a family = persons living on at least one salary). The 3000 remaining after rent are greatly insufficient. As writes Dr Randrianama, many would not survive without food subsidies.(20)

- Other expenses

On such a salary, other expenses must be practically non-existent even for clothing. Often, each family member possesses only the clothing purchased or received as a gift for the yearly feast of Tabasky.

According to Dr Randrianama's Nouakchott polls of minority women, nurses and midwives, and women of the 5th Arrondissement (10 women in each category), the food intake is deficient for the poorer people : 1 820 calories, 37 g protein (cereals only) and 44 g fats.

Food rations are still relatively deficient among the average-income families. Although the caloric ration is sufficient, the

(20) Dr Randrianama, "Situation Nutritionnelle en Mauritanie"
WHO project MAU/HSD/CC1/NUT March 1979

protein ration is not.

Diet is satisfactory only among the higher income population, having about 2550 UM per person per month for purchase of food.

5.3 UM Prices of main Foodstuffs at Nouakchott

| Products | Unit | February(21) | February(21) | February(22) |
|----------------|---------------------|---------------|---------------|---------------|
| | | 1977 | 1978 | 1979 |
| Broken rice | Kg | 14 | 14 | 15 |
| Corn (grain) | Kg | 25 | 13 | |
| Millet (grain) | Kg | 17,5 | 20 | 30 |
| Millet (flour) | Kg | 40 | 40 | |
| Bread | 350 g | 8 | 8 | 8 |
| Wheat flour | Kg | 18 | 14 | |
| Potatoes | Kg | 29 | 35 | 30 |
| Sweet potatoes | Kg | 30 | 30 | |
| Lettuce | Kg | 80 | 252,5 | |
| Tomatos | Kg | 40 | | 60 |
| Turnips | Kg | 27,5 | 60 | 60 |
| Carrots | Kg | 35 | 70 | 60 |
| Onions | Kg | 39 | 30 | 30 |
| powdered milk | Kg | 100 | 100 | 120 |
| Fresh fish | Kg | 40 | 40 | 40 |
| Dried fish | Kg | 180 | 260 | |
| Meat : Beef | Kg | 100 | 100 | 90 |
| Meat : Camel | Kg | 100 | 90 | 90 |
| Meat : Sheep | Kg | 110 | 110 | 110 |
| Eggs | unit | 10 | 10 | 10 |
| Peanut oil | liter | 40 | 45 | 55 |
| Butter | package of 250 g | 45 | 45 | 45 |
| Salted butter | 1 liter | 300 | 400 | 400 |
| Local dates | Kg | | | 100 |
| Sugar | Kg | 43 | 55 | 55 |
| Tea by weight | Kg | 400 | 400 | |
| Wood charcoal | sack of 25 kg | 175 | 190 | |

Sources : (21) Nouakchott Statistics Service

(22) C.N.S. Report, "Situation Nutritionnelle",
op. cit.

This table shows that millet has become quite expensive as compared to rice; this is probably because millet is scarce. Urban populations consume more and more rice. Its price, as well as the price of sugar and tea, are in principle the same throughout the country.

The price of dried fish seems to have increased considerably. Although vegetable gardens have been created, fresh vegetables are also becoming more expensive, which limits consumption (most consumers cannot afford vegetables at all). It would be interesting to study the phenomena causing this price increase, such as the number of middlemen between producers and consumers (owners of vegetable gardens, laborers farming the garden, wholesalers (usually women), etc...).

Given the increasing rise of retail prices, whereas it is impossible to raise salaries, the government is attempting to control the merchants. The January 16, 1969 decree determining price regulation methods was repealed and new regulations (under study in October 1979) classify products into different categories.

Category I : Basic products for which prices will be established by the government and the prefects.
(List given in Annex 5)

Category II : Products having a fixed profit margin

Category III : The salary for services and benefits will also be regulated by the government and the prefects

Category IV : Products which will have free pricing, products considered as luxury items.

In addition to these regulations, the government will also establish control methods for attribution of commercial and import licenses.

A corps of price controllers is being created.

The officials of the Commerce Department know how difficult it will be to control commerce in Mauritania. There are a multitude of small businesses in the towns ; even the women are beginning to sell (mainly cloth, as a few meters of mélafe or boubou fit easily into a suitcase).

It is likely that the retail price of rice will increase, unless subventions are provided, as the 1979-80 raw rice will be purchased at 10 Ua per kg from the producer (processed rice will cost 17 Ua).

This problem of the price to the producer is very important, given the high production costs. Although it is technically possible to obtain 3 harvests a year, this is not the case at present. Even 2 harvests a year is rare, due to the lack of pumps, as indicated by the FAO expert in charge of the irrigated rice cultivation project in the Kaedi region, the average yield is thus often only 3.5 to 4 tons rice/hectare.

In this experimental zone, the surface areas allocated for rice cultivation are small (12 to 15 acres per family -- a family usually having 7 to 8 members). This leads to underemployment, about which the farmers are dissatisfied. There is a contradiction between the above and the multidonors mission conclusions that greater surface areas could have been cultivated but for a lack of labor.

The costs of fertilizers, water, motor-pump repairs and diesel fuel are high, so high that between 50 and 70 % of the harvest must be sold to cover the expense (the rate varies according to location and yield per hectare).

6 - NUTRITION PROGRAMS IN MAURITANIA

6.1 The School Nutrition Bureau

The oldest nutrition service in Mauritania is a program to assist secondary, as well as certain primary, boarding schools and lunch rooms. Over the past 15 years, these establishments have received food from the World Food Program (PAM Project 55 originally, and at present, PAM Project 55, Extension II. Extension III is under study).

The distribution of this food is the main activity of the Bureau of School Nutrition, which is currently part of the School Hygiene Service of the Ministry of Primary and Secondary Education. The School Hygiene Service will soon become part of the Ministry of Health, whereas the Bureau of School Nutrition will become a School Nutrition Service remaining part of the Ministry of Primary and Secondary Education.

From 1965 to 1974, this bureau benefited from the assistance of FAO nutritionists.

This service was more active in the past than at present, supervizing the diets of secondary establishments, providing nutritional training to school treasurers and managers of primary school kitchens, to teaching and inspection students, and elaborating nutritional curricula.

Due to lack of funds, the activities of this bureau are now confined to Nouakchott. Its operating budget is 2 700 000 UM, of which 1 600 000 are used for transport of PAM food supplies.

The staff comprises, in addition to the Head, a nutritionist and an assistant nutritionist.

The nutritionist continues to conduct courses at the State Nursing and Midwives School. It is possible that a nutrition course may be reinserted in the science programme of the Teachers School.

Besides secondary boarding schools, a certain number of school kitchens and primary boarding schools also receive food furnished by the World Food Programme.

The daily allocation per child consists of :

| | |
|-----------------|-------|
| - butter | 10 g |
| - powdered milk | 30 g |
| - powdered eggs | 5 g |
| - flour | 100 g |
| - oil | 20 g |
| - canned fish | 30 g |
| - rice | 100 g |
| - sugar | 10 g |

Whether or not a school kitchen or boarding school receives World Food Program supplies, the subvention per region is the same (from 8 to 16 Ua per child/day). It is usually about 12 Ua per day. At times, the subvention is not received, but the establishment continues to function - either the parents pay or credit is extended. In principle, the subvention allocated to a boarding school is higher than that for a lunch room, although no general regulations cover this. This subvention permits, at the most, to pay the cook's salary and the fuel costs (wood or charcoal). The average salary of a cook is 5000 Ua per month. The primary boarding schools may have very large numbers of students, especially in urban centers : Néma : 300 ; Tibedra : 300 ; Afounville : 300 ; Tamchekett : 120 ; Boghé : 200. As government controls of these establishments are not effective, it is possible that some figures are swollen. There even exist some fictitious school kitchens. The new policy will attempt to eliminate these problems.

The two Nouakchott school kitchens each have 100 children to feed and can be considered model establishments. The children are selected with the assistance of the Red Crescent, in order to assure that needy children benefit from the program. Experienced managers have established well-balanced menus.

However, during the Consultants mission, it was not certain that these school kitchens would reopen for the coming school year. The Governor of Nouakchott wished instead to pay a cash indemnity to the parents. This measure will not permit the children to benefit from P.A. food and nothing guarantees that the indemnity given the parents will serve to feed the school children. As of this date, the Nouakchott school kitchens are not functioning.

The P.A. evaluation mission proposed the opening of 26 additional primary establishments (lunchrooms and boarding schools). The list of these establishments is given in the Annex.

The food rations have not been changed ; a transportation allocation is given (25 dollars per child).

The Nouakchott school kitchens are operated by a manager and an assistant manager. They receive a teacher's salary plus a subvention. . In the interior, the manager may be a teacher; if the number of children is great, he may discontinue teaching to run the school meal program.

Outside Nouakchott, there is no supervision of the nutritive value of the menus. The growth rate of the children is not checked, although this could be very simply performed by the teachers using scales and a tape measure (which UNICEF would gladly furnish).

The P.A. food allocations are the same for secondary establishments with the exception of flour allocations, which are 200 g instead of 100 g. This flour is given to a baker and made into bread.

At present, this PAM Project assists 10 000 children in secondary and primary schools (a list of these establishments is given in Annex 6).

The management of secondary schools present a certain number of problems, due mainly to the frequent turn-over of managers. The corps of school managers was eliminated several years ago, and new ones have received no specialized training.

It is very difficult to evaluate the efficiency of this program as to the nutritional condition of the children (there is no follow-up). It is also difficult to know if this program attains its objective - i.e., that the savings realized by this program permit the ministry to improve classrooms, construct new classes, etc ...

However, the nutrition survey conducted in March and April 1979 by the team led by Dr Sidatt of the National Hygiene Center among 939 Assaba students (attending the Kiffa High School, three secondary schools and the Kankossa primary school (of which the boarding school was also assisted by PAM) indicates that malnutrition is quite evident among the boys and the girls before 12 years of age. At Selibaby, the same survey shows malnutrition of boys until 12 years and girls until 14 years. There was greater malnutrition among primary school children than among secondary students.

In principle, the meals of secondary schools are calorically sufficient, although they may not be well-balanced. The means of these establishments are greater than those of primary schools and the secondary students often belong to higher-income families.

The request for extension of the project, which was under study in October 1979, provided for assistance to a greater number of

establishments as well as to nursery schools (in the capital, at least). These nursery schools are not equipped to cook meals, but a snack would be provided at 10 a.m. and at 4 p.m. The following supplies were requested from PAN : milk, sugar, powdered eggs, flour (baked as bread), cheese, canned fruits. The necessity for cheese and canned fruits appears doubtful, as they are not products used locally. A piece of bread accompanied by sweetened milk would provide a better-adapted snack ; gruel would be preferable, but would require cooking.

6.2 The Nutritional Recuperation Center

Twelve nutritional recuperation centers operate in the country (23), within the framework of the Maternal and Infantile Protection Services.

Thirty more centers are planned. These centers are designed to treat children suffering from severe malnutrition (marasmus); the children must attend the center with their mothers on all working days, including Saturday, from 8 a.m. to 7 p.m.

The child must attend the center until he achieves a weight gain of 1 kg ; some children attend for 2 months. During treatment, the mother is taught to feed her child correctly. Those mothers having children suffering from severe malnutrition

(23) The 12 centers are distributed as follows :

| | | |
|------------|---|--|
| Nouakchott | 4 | 25 centers are expected to be operational by the end of March. |
| Rosso | 1 | |
| Atar | 1 | Staff : 1 nurse per center, 2 nurses aides per center, having had a refresher course in nutrition. |
| Kaedi | 1 | |
| Toutilimit | 1 | |
| Aleg | 1 | |
| Boghé | 1 | |
| n'Bout | 1 | |
| Magama | 1 | |

receive a food subsidy of 5 kg of sorghum and 5 kg of powdered milk a month.

The food used by these mothers is furnished by the Catholic Relief Services and includes powdered milk, condensed sweetened milk, flour, wheat, sorghum, corn and oil. The instruction sheets are very well written (by WHO nutritionist Dr Randratana-nama); however, it is rare that all the foods prescribed for nutritional recuperation are used. This is more assistance than an active participation of the child's family in nutritional recuperation, and these children often relapse.

The Consultant visited 2 recuperation centers in Kouakchott, one of which was attached to the PMI center of the 5th Arrondissement. In 1979, the PMI Central Center regularly treated 20 children a day, with an average length of treatment of one month per child. All the PMI Center services were visited. These visits showed that the system of files on these children is impermeable, and does not permit follow-up or collection of statistics; consequently, it is difficult to evaluate the work accomplished or to obtain valid information on the nutritional condition of the children.

The healthy child has a sheet indicating his birth date, the date of consultation, and his weight. If he becomes ill, he is seen by another service and a new sheet is established. There is no continuity of record keeping at the center. Only the child's personal health booklet, if kept by his parents, covers all consultations.

At the 5th Arrondissement PMI, the small center is literally invaded by waiting patients and the rate of consultations is such that it has not been possible to keep files since 1977.

6.3 Feminine Promotion Centers

The Feminine Promotion Centers are part of the Socio-Educational Promotion of the Social Assistance Department.

The Feminine Promotion Center of the 5th Arrondissement was visited. Women come here to learn sewing, embroidery and dyeing. They themselves manage the cooperative covering these three activities, which gives them some basic notions of budgetary management. A fee of 20 UM per month is required for use of the center's services. Women come to work at the center whenever they want; some are quite regular. The training activities of the center (besides sewing, embroidery and dyeing) consist of one hygiene course and one cooking course per week. Part of the fees go to provide cooking demonstrations. The staff of the center consists of : one director and five female instructors for a maximum of 40 women.

Absenteeism of instructors is one of the center's unresolved problems (as is the absenteeism of PMI center personnel, which was brought to our attention during our visits).

The women attend these centers in order to make clothing for themselves and their children, but mainly to produce clothing for sale.

Sale prices for embroidered layettes are as follows

| | |
|----------------------|--------|
| - Babies undershirts | 50 U. |
| - Babies vests | 100 UM |
| - Babies pants | 100 UM |

The Ministry of Health, Labor and Social Affairs may order entire "suitcases" of complete layettes for abandoned children.

The instructors are former students of the National School for Commercial and Familial Teaching (ENSCCFA). They receive good

training, including courses on nutrition, cooking and child care. The nutrition curriculum is the one we prepared in 1973. This school benefits from technical assistance by expatriate personnel.

The students in the family teaching section prepare a CAP diploma in familial and social teaching. This school is still located in a provisional building which allows only small classes; the new building was supposed to be completed since 1975.

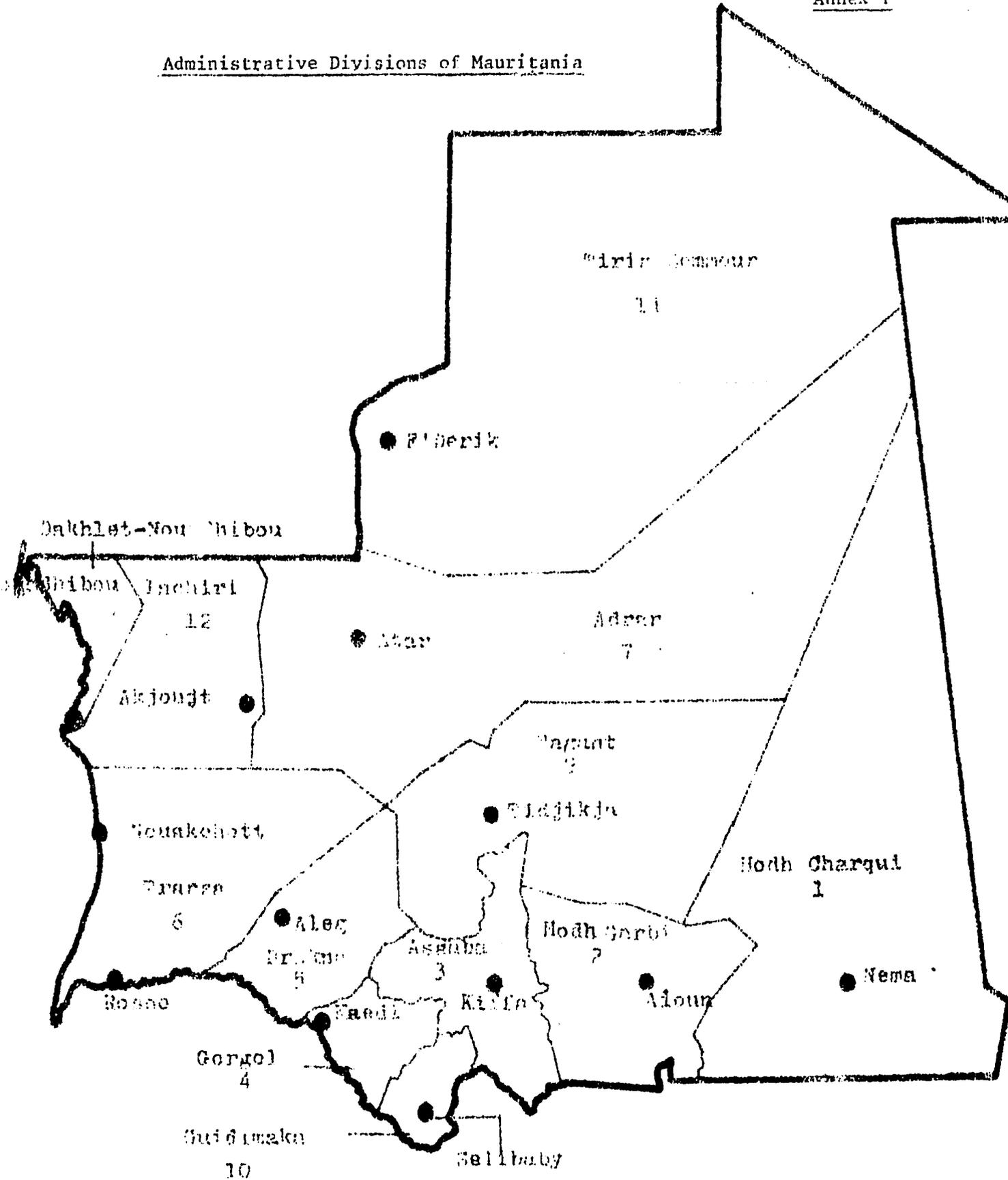
| Classes | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|-------------|------|------|------|------|------|------|------|
| Students | 4 | 7 | 5 | 6 | 6 | 4 | 6 |
| CAP Diploma | 4 | 7 | 5 | 6 | 6 | 4 | 5 |

Of the 37 students trained, 5 do not practice their profession.

During the third year, the classes have very few students. Even during the 1st year, there are few students, due to lack of motivation. The supervising ministry controls the commercial section of this school.

The School Director and vocational teachers deplore the lower level of students now entering the school. In October 1979, a second recruitment examination was required, as no candidates were able to pass the first examination. This problem is directly due to the lowering of secondary school levels. Quite often, the school receives students unable to finish 6th or 7th grades, although in principle, recruitment is at the CM2 level. This sets the problem of whether it is possible to plan nutritional education courses in primary schools, given the lack of teachers, of school rooms and the fact that 80 to 100 children are stuffed into the classes, even in Kouakohott. It is practically impossible to have a child accepted in school before age 6, no room being available.

Administrative Divisions of Mauritania



Source : Atlas Jeune Afrique

ANNEX II

MONTHLY RICE DISTRIBUTION OF SONIMEX FOR THE
ENTIRE NATION

| Region. | Tons |
|------------|--------------------------|
| 1 | 220 |
| 2 | 200 |
| 3 | 200 (170 + 30 Guérou) |
| 4 | 240 |
| 5 | 160 |
| 6 | 450 |
| Nouakchott | 1 130 |
| 7 | 120 |
| 8 | 150 |
| 9 | 150 (130 + 20 Moudjéria) |
| 10 | 100 |
| 11 | 80 |
| 12 | 60 |

Source : Direction de commerce 1979
Quantities established since 1977

MONTHLY SUGAR DISTRIBUTION BY SONIMEX FOR THE
ENTIRE NATION

| Region | Tons |
|------------|--------------------------|
| 1 | 190 |
| 2 | 150 |
| 3 | 195 (160 + 35 Guérou) |
| 4 | 180 |
| 5 | 140 |
| 6 | 240 |
| Nouakchott | 800 |
| 7 | 80 |
| 8 | 120 |
| 9 | 120 (100 + 20 Moudjéria) |
| 10 | 80 |
| 11 | 60 |
| 12 | 60 |
| Dakla | 20 |

Source : Direction du Commerce 1979
Quantities established since 1977

These quantities correspond to an average sugar consumption of 21.6 kg per person per year. However, sugar consumption is much higher in Nouakchott, ranging about 50 Kg/person/year.

ANNEX III

THEINE : TOXIC DOSE IN TEA

There is more theine in tea than there is caffeine in coffee. The quantity of theine varies from 1.5 to 4 % and is higher in young leaves. The green tea used in Mauritania is quite high in theine, up to 5 %.

The dose of theine should not exceed 0.5 g per serving. The maximum non-toxic dose for 24 hours is 1.5 grams.

Calculation of dose of theine per 3 glass serving :

In making tea for 4 persons, 15 grams of tea will be used. (24) These are usually measured as follows : 3/4 a tea glass of dry tea leaves plus half again this quantity. These 15 grams of tea contain :

$$\frac{15 \times 5}{100} = 0.75 \text{ g theine}$$

During a series of three glasses of tea, each person consumes $0.75 : 4 = 0.199$ g of theine.

The toxic dose is attained at seven series of 3 glasses of tea.

(24) verified by weighing.

ANNEX IV

MAIN DISHES IN MAURITANIA

A - Moorish Preparations

1. Moorish Couscous

Couscous has become popular over the past 20 years, mainly due to the military vegetable gardens in the Atar Region. It is made of wheat or barley flour (hand-rolled). To this is added fat meat, onions, tomato paste, fresh tomato and carrots. The couscous is steam-cooked, and Moorish butter (a liquid butter like oriental ghee) is added just before serving.

2. L'Ksour

L'Ksour are a sort of crepe made of tender wheat of the same year's crop, stone ground to a fine flour. The crepe batter is prepared with water, salted and peppered. The crepes are traditionally cooked in butter, sheep or camel hump fat, or in oil (in the towns). These crepes are served with mutton or camel meat cooked in water, with tomatoes, onion, carrots and turnips.

3. Bluckman

This is a very thick gruel of barley. Fresh barley grains are slightly roasted before being stone ground. The flour is sifted and cooked in water into a very thick paste. At the end of cooking, butter is added and the soft paste is cut into pieces.

4. Corane

Corane is made of wheat flour. The flour in large grains or semouline is cooked in water with meat. The meat is withdrawn when cooked and the wheat continues to cook until a gruel is obtained. Butter is added at serving.

5. Aïch

Aïch is a porridge of the Boutlimit region, cooked in water. Milk is added at serving.

6. Millet Couscous ("little couscous")

This is served with dried baobab leaves ; especially used for "force-feeding" of young girls. Millet couscous: larger grains dried cowpeas, leaves and cowpeas are often added.

7. Rice with Meat

The Moor couscous may be replaced by rice, cooked in water or steamed. Butter is added. It may be served with meat.

8. Meat is often dried in order to preserve it. It is then pounded into a paste : "tichter" or "marvou".

9. Zreig

A drink based on curdled milk diluted with water.

B - Dishes of the River Region

Diets are based on cereals, mainly millet and rice. However, the sauces are different from Moorish preparations.

1. Rice with fish

Rice, fresh and dried fish, vegetables, large amount of oil.

2. Rice and meat

Meat is cooked in fat, tomato, spices, sometimes vegetables.

The rice is cooked in the sauce obtained.

3. Different sauces accompany millet couscous :

- haco (Toucouleur) : niébé or cabbage leaves, potato
- déré (Soninké) : watermelon seeds (up to Boghé)
fish or meat.

- mafé querté (Toucouleur, Wolof, Soninké)
: peanut butter, gumbo (okra)
- bassi salté (Wolof) : meat, tomato, niébé.
- The Feulhs eat couscous with fresh cow or goat milk.

ANNEX V

BASIC PRODUCTS FOR WHICH PRICES WILL BE FIXED

- a - millet, rice, semoulina, flour, bread
- b - locally produced fresh fruit and vegetables, potatoes
- c - tomato paste, Maggi aroma, kitchen salt
- d - palm and peanut oil, butter, margarine
- e - fish, meat, poultry, eggs, milk
- f - sugar, tea, quinquiliba
- g - matches, wood charcoal, cooking gas
- h - Guinée cloth (all categories) ; blankets (2nd and 3rd categories).

Source : Direction du Commerce, October 1979.

ANNEX VI

LIST OF PRIMARY BOARDING SCHOOLS AND
SCHOOL KITCHENS ASSISTED BY WORLD FOOD PROGRAM

| Regions | Boarding Schools (BS) School Kitchens (SK) | | Number of Children Fed |
|--------------|---|----|---------------------------|
| I | | | |
| Hodh Chargui | AMOURJ | BS | 120 |
| | BASSIKOUNOU | BS | 120 |
| | DJEGUENY | BS | 124 |
| | NEMA Ville | BS | 300 |
| | OUALATA | BS | 65 |
| | TIMBEDRA | BS | 300 |
| II | | | |
| Hodh Garbi | AIOUN Ville | BS | 330 |
| | KOBONY | BS | 60 |
| | TEMCHEKETT | BS | 110 |
| | TINTANE | BS | 100 |
| III | | | |
| Assaba | BARKEOL | BS | N |
| | BOUNDEID | BS | N |
| | KANKOSSA | BS | N |
| | KIFFA Ville | BS | N |
| IV | | | |
| Gorgol | M'BOUT | BS | 150 |
| | DJADJIBINE | BS | 40 |
| | LITAMA | BS | 25 |
| | LAGAMA | BS | 75 |
| | BOHGUËL | BS | 110 |
| | RINDIAO | BS | 38 |

N : No information

Source : Bureau Nutrition Scolaire, October 1977

V

| | | | |
|--------|--------------|----|-----|
| Brakna | ALEG Ville | BS | 110 |
| | BARBABE | BS | 30 |
| | DARELBARKA | BS | 16 |
| | MAKAT-LANJAR | BS | 90 |
| | MAL | BS | 25 |
| | M'BAGNE | BS | 50 |
| | BOGHE 1 | BS | 200 |
| | AERE M'BARE | SK | 30 |
| | CHEGGAR | SK | 40 |
| | TANTANE | SK | 40 |
| | SARANDOUGOU | SK | 70 |
| | WALALDE | SK | 15 |

VI

| | | | |
|--------|-------------|----|-----|
| Trarza | BOUTILIMIT | BS | 142 |
| | KEURMACENE | BS | 50 |
| | MEDERDRA | BS | 120 |
| | N'DIAGO | BS | 40 |
| | R'KIZ | BS | 67 |
| | TEKANE | BS | 70 |
| | LCUBE IRED | BS | 120 |
| | TIGUENT | BS | 150 |
| | AGUELEGATT | BS | 40 |
| | BARENA | SK | 40 |
| | DARELBARKA | SK | 42 |
| | DIEUK | SK | 24 |
| | Ecole Lycée | SK | 60 |
| | KEUR MACENE | SK | 20 |
| | MATAMOULANA | SK | 20 |
| | CHARATT | SK | 100 |
| | ROSSO Ville | SK | 82 |
| | MABROUK | SK | 120 |
| | AIN SALAMA | SK | 50 |
| | TAGUILALET | SK | 30 |
| | NABAGUEYA | SK | 20 |
| | LEIT. OUNE | SK | 20 |

VII

| | | | |
|-------|------------|----|----|
| Adrar | ATAR | BS | 50 |
| | AOUJEF | BS | 32 |
| | CHINGUETTI | SK | N |
| | OUADANE | SK | N |

IX

| | | | |
|--------|-----------|----|-----|
| Tagant | M'BEIKA | BS | 40 |
| | GNOUDIA | BS | 35 |
| | LATFETAK | BS | 20 |
| | MOUDJERIA | BS | 72 |
| | RACHID | BS | 35 |
| | TICHITT | BS | 25 |
| | TIDJIKJA | BS | 130 |

| | | | |
|------------|------------|----|-----|
| Guidkimaka | SELIBABY | BS | 169 |
| | GULD YENGE | BS | 143 |

XII

| | | | |
|---------|----------|----|----|
| Inehiri | AKJOUJT | SK | 80 |
| | BENICHAB | SK | 50 |
| | PK 32 | SK | 30 |

PRIMARY BOARDING SCHOOLS AND SCHOOL KITCHENS

TO BE INCLUDED IN PAM PROJECT

| Regions | Boarding Schools (BS) School Kitchens (SK) | | Number of Children Fed. |
|--------------|---|----|----------------------------|
| I | | | |
| Hodh Chargui | ABEL BAGROU | BS | 30 |
| | BOUJTEILLA | BS | 40 |
| | FASSALE | BS | 60 |
| ----- | | | |
| V | | | |
| Brakna | DIONABA | BS | 10 |
| | M'BAGNE 2 | SK | 12 |
| ----- | | | |
| VI | | | |
| Trarza | OUAD-NAGA | BS | 20 |
| | BOERTGRESS | BS | 30 |
| | EL BADRESS | SK | 30 |
| | ZEMZEM | SK | 70 |
| | BOUSDERA | SK | 20 |
| ----- | | | |
| IX | | | |
| Tagant | SIASSE | BS | 40 |
| ----- | | | |

ANNEX VII

LIST OF SECONDARY BOARDING SCHOOLS

ASSISTED BY WORLD FOOD PROGRAM

| <u>Establishment</u> | <u>Number of Children Fed</u> |
|----------------------------------|-----------------------------------|
| NEMA | 120 |
| AIOUN | 350 |
| KIFFA | 180 |
| KAELI | 190 |
| BOGHE | 180 |
| ROSSO | 500 |
| BOUTILIMIT | 160 |
| ATAR | 150 |
| Boys High School NOUAKCHOTT | 380 |
| Girls High School NOUAKCHOTT | 80 |
| Technical High School NOUAKCHOTT | 225 |

Source : Bureau nutrition scolaire, October 1979
(School Nutrition Bureau)

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PART TWO

FOOD CONSUMPTION SURVEY - RAMS 1980

As was seen in Part One of this report, there has been no food consumption survey in Mauritania since the MISOES survey of 1958. Given the lack of data on food and nutrition, it was decided to include a food survey in the RAMS Project Consumption Survey.

During the consumption surveys, a sub-sample of 65 households was selected proportionate to the populations of the different agro-economic zones surveyed. For more details on sample selection, see the report of the RAMS Project Statistical Unit.

1 - METHODOLOGY

The food survey consisted primarily of a survey of food consumption by weight. Three main questionnaires were established :

- 1) Population Sheet : on which was noted the exact composition of each household surveyed, permitting precise calculation of their dietary needs.
- 2) List of Consumers : on this list was noted the number of persons present at each meal.
- 3) Foods Consumed : a consumption sheet for different food-stuffs was established for each meal during the day.

In addition, a special questionnaire was also prepared to determine the diets of young children (less than 3 years old). The mothers or other persons caring for the child were interviewed.

Another questionnaire on eating habits was prepared in order to determine why some foods were preferred to others. This part of the survey on the food preferences of the populations interviewed is quite important, as when promoting agricultural production corresponding to food requirements it is necessary

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to take the consumers' tastes into consideration.

The nutritionist participated in the preparation of the questionnaires. He established the methodology and tables required for analysis of the survey questionnaires. However, he did not participate in the surveys, except for several days in Akjoujt during the second run of the survey. On the other hand, he did participate in the training of the interviewers.

The preparation and realization of a food consumption survey is always delicate work. The questionnaires and scales must be prepared; personnel must be recruited and trained. The population must be informed and convinced to cooperate. All these tasks were meticulously performed by the statistical unit of the RAMS study. As it was difficult to purchase scales, they were ordered made by a blacksmith.

The survey was comprised of several runs in order that the results furnish an idea of ration variations throughout the year. The first run took place in December 1979 and January 1980, the second run in March - April 1980 and the third run in June - July 1980. The first run was considered a pilot survey; only the results of the second and third runs are given here.

A fourth and last run took place in September - October 1980, the results are given at the end of this report.

The food composition tables were prepared on the basis of different tables applicable to Mauritania from the FAO and ORANA, and tables from similar studies in Upper Volta and Mali.

Analyses of the data obtained were conducted per meal and per person; the mean daily intake was obtained by adding all food consumed during the different meals of the day. This method was selected in order to avoid attributing an arbitrary coefficient to each meal, as in different families the rations were distributed differently between the day's meals.

During each run, the survey covered 6 days of consumption. The foods were weighed as they were upon purchase (hulled rice, millet, sorghum grain, unpeeled vegetables). Wastes (such as vegetable peels) were deducted during data analysis.

It should be emphasized that the food consumption survey was only one part of the total consumption survey. Given the heavy work load of the surveyors, leftover food, food sent to other families or food received as gifts were not counted in this survey. Therefore, consumption may appear higher than it would if unconsumed leftovers were taken into account. However, these surveys accurately reflect the quantity of food products purchased by the households.

2 - RESULTS

2.1 Caloric Intake

The results are expressed as comparisons to the energy requirements calculated on the basis of FAO standards. The average weights of Mauritians, taking ethnic differences into account, were used to calculate these requirements. For children, the weights used were those for healthy children, according to age (based on results obtained by Dr Sidatt at the National Hygiene Institute).

Men were considered as being moderately active. Among women aged 15 to 60 years, half were considered as being very active and the other half as moderately active.

The results of these analyses are indicated in Tables 1(a), 1(b) and 1(c). During the March-April 1960 survey, 27 households out of 57 surveyed (or 47 %) were able to satisfy their caloric requirements. Given slight requirement differences, it can be considered that 55 % of households satisfied their requirements.

It should be noted that the sample for Region 4 includes 30 families ; results are given for 29 families. In this region, 44 % of families satisfy their requirements. For the other regions, the samples are too small to allow determination of percentages, It should be noted, however, that in the town of Akjoujt, only 1 household out of 8 satisfies its requirements. In this town, which has "died" since mining was stopped, most activities are quite reduced. To compensate, government officials have given particular attention to cereal supplies for this non-producing region. Rations are quite insufficient in villages of the 2nd, 3rd and 6th regions, with the exception of the villages of Abadah and Aleadi. The situation is satisfactory in the village of Tagilalette. There seems to be a link between ethnic groups and the level of food intake; the Moorish families have the lowest intakes. Their daily consumption by products shows that they consume about the same quantity of cereals as other groups, but far less meat, fish, bread, and especially fats. Oil is almost totally absent from the Moorish rations, whereas it comprises a large (too large, in fact) part of Wolof and Toucouleur consumption.

During the June-July 1980 survey, the general caloric coverage was better. 34 households out of 63 were able to satisfy their requirements (54 %).

Intakes were markedly better in the 4th Region, where 60 % of households satisfied their requirements, as compared to 44 % during the second run of the survey. In Akjoujt, 3 families out of 8 satisfied their needs. The intake was slightly better in Moorish families. In general, the under-nourished families determined during the second run were the same as those found during the third run.

Tables 1(a), 1(b) and 1(c) show for each run of the survey the number of persons in each household and the number of active men. In certain households, there was no active man living

with the family. Everywhere, the number of active men was quite low, especially in ~~regions~~ of intense agricultural activity (Regions 4, 5 and 6). During the months of June and July, the number of active men increased; many of these had probably returned for the agricultural season.

2.2 Protein Intake

For each household, protein requirements were calculated on the basis of FAO and WHO recommended standards. They are expressed in terms of "reference protein" (grams) - a hypothetical protein which is 100 % usable. We did not calculate the chemical index of proteins consumed as compared to the typical combinations of essential amino acids of the reference protein. However, the intake was expressed in terms of protein source (animal or vegetable).

Vegetable proteins are obtained from cereals (millet and rice), (chemical index 65) and leguminous plants and water-melon seeds (which have a high chemical index and furnish the lysine which is lacking in cereals). Animal sources (meat and fish) provide an important part of the protein intake. The chemical index of animal protein is high and meat furnishes the necessary assimilation factors. The protein requirement is therefore always satisfied. However, it should be emphasized that when the caloric intake is very low (less than 1500 k calories), which is often the case in many households, especially among the Moors, the notion of a satisfactory protein requirement cannot apply.

Comparison between Theoretical Requirements

and Observed Food Consumption, Average per Person, per Day and per Household
Kg Calories

| Agro- Eco. Zone | Region | Village | Number | Run | Ethnic Group | Number Persons | Number Active Men | Intake | Require ment | % |
|-----------------------|-------------------|---------|--------|-----|-----------------|-------------------|-------------------------|--------|-----------------|------|
| I | 04 | Kaedi | 1 | 2 | P | 11 | 4 | 2361 | 2510 | - 6 |
| | | | | 3 | T | 14 | 3 | 2001 | 2451 | - 19 |
| | " | Kaedi | 2 | 2 | P | 7 | 2 | 2766 | 2411 | + .5 |
| | | | | 3 | T | 8 | 4 | 3128 | 2533 | + 23 |
| | " | Kaedi | 3 | 2 | P | 16 | 2 | 2489 | 2320 | + 7 |
| | | | | 3 | T | 19 | 7 | 1784 | 2357 | - 30 |
| | " | Kaedi | 4 | 2 | P | 25 | 4 | 1879 | 2434 | - 23 |
| | | | | 3 | T | 15 | 3 | 3524 | 2459 | + 43 |
| | " | Kaedi | 5 | 2 | P | 9 | 2 | 2638 | 2343 | + 13 |
| | | | | 3 | T | 10 | 2 | 2419 | 2318 | + 13 |
| | " | Kaedi | 6 | 2 | W | 6 | 2 | 2292 | 2543 | - 10 |
| | | | | 3 | W | 11 | 3 | 2598 | 2497 | + 4 |
| | " | Kaedi | 7 | 2 | W | 13 | 2 | 3557 | 2396 | + 48 |
| | | | | 3 | W | 19 | 4 | 2307 | 2407 | - 4 |
| | " | Kaedi | 8 | 2 | P | 2 | 0 | 3066 | 2472 | + 24 |
| | | | | 3 | T | 3 | 0 | 3841 | 2367 | + 62 |
| | " | Kaedi | 9 | 2 | W | 12 | 2 | 2239 | 2390 | - 6 |
| | | | | 3 | W | 14 | 2 | 2928 | 2386 | + 23 |
| | " | Kaedi | 10 | 2 | W | 15 | 2 | 2551 | 2376 | + 7 |
| | | | | 3 | W | 16 | 1 | 2902 | 2333 | + 24 |
| | " | Kaedi | 11 | 2 | W | 10 | 0 | 2743 | 2253 | + 22 |
| | | | | 3 | W | 16 | 3 | 3093 | 2465 | + 22 |
| | " | Kaedi | 12 | 2 | P | 8 | 2 | 1707 | 2175 | - 21 |
| | | | | 3 | T | 4 | 1 | 2495 | 2378 | + 5 |
| | " | Garley | 13 | 2 | P | 5 | 2 | 2048 | 2600 | - 21 |
| 3 | | | | T | 5 | 1 | 2514 | 2512 | + | |
| " | Garley | 14 | 2 | P | 38 | 8 | 3338 | 2439 | + 37 | |
| | | | 3 | E | 28 | 5 | 2991 | 2456 | + 22 | |
| " | Garley | 15 | 2 | P | 10 | 0 | | 2274 | | |
| | | | 3 | T | 6 | 0 | 2435 | 2340 | + 4 | |
| " | Monguel | 16 | 2 | M | 16 | 0 | 1762 | 2357 | - 25 | |
| | | | 3 | M | 16 | 5 | 2141 | 2219 | - 4 | |
| " | Monguel | 17 | 2 | S | 7 | 1 | 3655 | 2450 | + 49 | |
| | | | 3 | S | 7 | 1 | 4041 | 2450 | + 49 | |
| " | Monguel | 18 | 2 | P | 4 | 0 | 2635 | 2247 | + 17 | |
| | | | 3 | T | 5 | 1 | 2324 | 2359 | - 1 | |
| " | Monguel | 19 | 2 | P | 16 | 2 | 2098 | 2394 | - 11 | |
| | | | 3 | T | 18 | 3 | 2565 | 2445 | + 5 | |
| " | Monguel | 20 | 2 | P | 2 | 0 | 2863 | 2314 | + 24 | |
| | | | 3 | E | 8 | 1 | 2312 | 2283 | + 1 | |
| " | Monguel | 21 | 2 | P | 7 | 2 | 1578 | 2513 | - 37 | |
| | | | 3 | E | 9 | 2 | 2363 | 2494 | - 5 | |
| " | Monguel | 22 | 2 | P | 8 | 1 | 1832 | 2425 | - 24 | |
| | | | 3 | E | 8 | 1 | 2066 | 2430 | - 15 | |
| " | Monguel | 23 | 2 | P | 6 | 2 | 3028 | 2519 | + 20 | |
| | | | 3 | E | 9 | 0 | (1167) | 2353 | - 50 | |
| " | Monguel | 24 | 2 | P | 20 | 0 | | 2257 | | |
| | | | 3 | E | 14 | 2 | 1576 | 2453 | - 36 | |
| " | Monguel Nomade | 25 | 2 | M | 11 | 2 | 3148 | 2216 | + 42 | |
| | | | 3 | M | 10 | 1 | 3290 | 2246 | + 46 | |

Comparison between Theoretical Requirements
and Observed Food Consumption, Average per Person, per Day and per Household

Kg Calories

| Agro-Eco. Zone | Region | Village | Number | Run | Ethnic Group | Number Persons | Number Active Men | Intake | Requirement | % |
|----------------|---------|----------------|--------|-----|--------------|----------------|-------------------|--------|-------------|------|
| 3 | 04 | Monguel | 26 | 2 | P | 5 | 1 | 960 | 2520 | - 62 |
| | | | | 3 | T | 7 | 2 | 3833 | 2468 | + 55 |
| | " | Monguel | 27 | 2 | M | 6 | 2 | 2181 | 2435 | - 10 |
| | | | | 3 | N | 7 | 0 | 2030 | 2222 | - 9 |
| 1 | 05 | Feralla | 28 | 2 | P | 25 | 0 | 1083 | 2316 | - 53 |
| | | | | 3 | T | 19 | 0 | 2331 | 2334 | + |
| | " | Feralla | 29 | 2 | P | 17 | 1 | 2052 | 2394 | - 27 |
| | | | | 3 | T | 10 | 1 | 2471 | 2401 | + 3 |
| | " | Feralla | 30 | 2 | P | 8 | 0 | | 2363 | |
| | | | | 3 | T | 6 | 0 | 2510 | 2233 | + 12 |
| | " | Feralla | 31 | 2 | P | 16 | 1 | 1935 | 2293 | - 16 |
| 3 | | | | T | 15 | 0 | 1768 | 2273 | - 25 | |
| " | Feralla | 32 | 2 | P | 5 | 0 | 2194 | 2376 | - 8 | |
| | | | 3 | T | 6 | 1 | 2292 | 2400 | - 5 | |
| " | Feralla | 33 | 2 | P | 12 | 0 | | 2257 | | |
| | | | 3 | T | 10 | 0 | | 2139 | | |
| 3 | 02 | Hassi el Barka | 34 | 2 | M | 7 | 1 | 1690 | 2180 | - 22 |
| | | | | 3 | M | 9 | 3 | 2136 | 2375 | - 10 |
| " | " | H. e. Barka | 35 | 2 | M | 6 | 1 | 2392 | 2225 | + 8 |
| | | | | 3 | M | 12 | 1 | 2518 | 2118 | + 19 |
| 4 | " | Gougizenal | 36 | 2 | M | 12 | 3 | 2705 | 2173 | + 24 |
| | | | | 3 | N | 19 | 6 | 2442 | 2277 | + 7 |
| 4 | 02 | Gougizenal | 37 | 2 | M | 12 | 4 | 1520 | 2188 | - 31 |
| | | | | 3 | M | 12 | 3 | 2310 | 2418 | - 4 |
| " | " | Ain Farba | 38 | 2 | M | 5 | 0 | 2051 | 2024 | + 1 |
| | | | | 3 | M | 16 | 2 | 1138 | 2277 | - 50 |
| " | " | Ain Farba | 39 | 2 | M | 14 | 2 | 1224 | 2212 | - 45 |
| | | | | 3 | M | 12 | 1 | 1375 | 2258 | - 39 |
| 5 | 03 | Legleib | 40 | 2 | M | 3 | 1 | | 2322 | + 60 |
| | | | | 3 | M | 10 | 3 | 2049 | 2209 | - 7 |
| " | " | Legleib | 41 | 2 | M | 15 | 1 | 1373 | 2194 | - 37 |
| | | | | 3 | M | 9 | 0 | 2264 | 2240 | + 1 |
| 4 | 09 | Nimelane | 42 | 2 | M | 25 | 2 | 1678 | 2183 | - 23 |
| | | | | 3 | M | 23 | 6 | 2374 | 2259 | + 5 |
| " | " | Nimelane | 43 | 2 | M | 12 | 1 | 2630 | 2233 | + 18 |
| | | | | 3 | M | 12 | 3 | 3066 | 2214 | + 32 |
| 2 | 10 | Hassi Chegar | 44 | 2 | S | 18 | 3 | 2728 | 2413 | + 13 |
| | | | | 3 | S | 25 | 4 | 2044 | 2368 | - 14 |
| " | " | Bouenze | 45 | 2 | S | | 0 | | | |
| | | | | 3 | S | 22 | 2 | 1919 | 2310 | - 17 |
| 5 | 06 | Abadah | 46 | 2 | M | 13 | 0 | 1141 | 2173 | - 47 |
| | | | | 3 | M | 12 | 0 | 1384 | 2193 | - 37 |
| " | " | Abadah | 47 | 2 | M | 15 | 0 | 1290 | 2115 | - 39 |
| | | | | 3 | M | 10 | 0 | 1368 | 2155 | - 36 |
| " | " | Alaedi | 48 | 2 | M | 11 | 1 | 1647 | 2193 | - 25 |
| | | | | 3 | M | 16 | 0 | 1605 | 2165 | - 26 |
| " | " | Alaedi | 49 | 2 | M | 7 | 1 | 1876 | 2140 | - 12 |
| | | | | 3 | M | 6 | 0 | 2431 | 2147 | + 13 |
| 5 | 06 | Tajoulabell | 50 | 2 | M | 6 | 0 | 2312 | 2181 | + 6 |
| | | | | 3 | M | 10 | 4 | 1999 | 2322 | - 14 |

Comparison between Theoretical Requirements
and Observed Food Consumption, Average per Person, per Day and per Household

Kg Calories

| Agro-Eco. Zone | Region | Village | Number | Run | Ethnic Group | Number Persons | Number Active Men | Intake | Requirement | % |
|----------------|--------|--------------|--------|-----|--------------|----------------|-------------------|--------|-------------|------|
| 1 | 06 | N'Diogo | 52 | 2 | M | 7 | 2 | 3960 | 2449 | + 62 |
| | | | | 3 | M | 19 | 5 | 1641 | 2447 | - 33 |
| | 06 | N'Diogo | 53 | 2 | M | 9 | 0 | 1777 | 2359 | + 60 |
| | | | | 3 | M | 11 | 0 | 3112 | 2327 | + 34 |
| 6 | 12 | Akjoujt | 54 | 2 | M | 15 | 2 | 1201 | 2121 | - 43 |
| | | | | 3 | M | 11 | 2 | 1873 | 2153 | - 13 |
| | " | Akjoujt | 55 | 2 | M | 8 | 1 | 2291 | 2149 | + 7 |
| | | | | 3 | M | 8 | 2 | 2387 | 2232 | + 7 |
| | " | Akjoujt | 56 | 2 | M | 5 | 2 | 2242 | 2336 | - 4 |
| | | | | 3 | M | 23 | 1 | 1348 | 2090 | - 36 |
| | " | Akjoujt | 57 | 2 | M | 12 | 1 | 1749 | 2265 | - 23 |
| | | | | 3 | M | 7 | 1 | 2808 | 2222 | + 26 |
| | " | Akjoujt | 58 | 2 | M | 13 | 2 | 1124 | 2161 | - 48 |
| | | | | 3 | M | 6 | 4 | 3239 | 2365 | + 37 |
| | " | Akjoujt | 59 | 2 | M | 14 | 1 | 1079 | 2212 | - 51 |
| | | | | 3 | M | 15 | 1 | 1270 | 2212 | - 43 |
| | " | Akjoujt | 60 | 2 | M | 9 | 1 | 2250 | 2202 | + 2 |
| | | | | 3 | M | 8 | 1 | 1896 | 2250 | - 16 |
| | " | Akjoujt | 61 | 2 | M | | 0 | | | |
| | | | | 3 | M | 10 | 4 | 1953 | 2136 | - 10 |
| 2 | 10 | Hassi Chegar | 62 | 2 | | 12 | 0 | | 2301 | |
| | | | | 3 | | 10 | 4 | | 2451 | |
| 2 | 10 | Bouenzo | 63 | 2 | | 19 | 2 | 3713 | 2380 | + 56 |
| | | | | 3 | | 24 | 1 | 2295 | 2269 | + 1 |
| 1 | 04 | Kaedi | 64 | 2 | | 8 | 0 | 1599 | 2404 | - 33 |
| | | | | 3 | | 5 | 2 | 7 | 2581 | + 8 |
| 3 | " | Monguel | 65 | 2 | M | 5 | 1 | | 2301 | |
| | | | | 3 | M | 11 | 1 | 2821 | 2087 | + 35 |

2.3 Balance of Intake

Tables 2(a), 2(b) and 2(c) show the protein calories ratio as percentage of total calories. Protein calories represent from 10 to 14% of the total caloric intake, which is satisfactory. The percentage of animal protein is quite variable. In certain households in N'Diogo or at Kaedi, for example, peanut oil is consumed at the rate of 120 to 130 grams per person per day. This leads to very high rations (more than 3000 kilocalories per person) if there is no error, and a far higher percentage of the caloric intake is provided by fats than is healthy (40 to 45 %).

The Wolofs use very large quantities of oil when preparing rice with fish. Thus the percentage of K calories provided by fats varies from 6 to 40 %. It is very low among the Moors (often lower than 10 %), and too high among the Wolofs and Toucouleurs. However, it is rarely too low, and in general, in spite of these extremes, the percentage of K calories provided by fats is satisfactory (15 to 20 %).

Tables 3(a), 3(b) and 3(c) show the percentages of K calories of the ration provided by cereals. These percentages vary from 55 to 80 percent. Generally, cereals furnish from 60 to 70 % of the K calories of the diet. The percentage of cereals is usually higher when the caloric intake is low and only slightly differentiated. Very often, higher rations are due to large quantities of fats. The lowest intakes are also the poorest and are composed of cereals, sugar, and a little meat or milk.

2.4 Origins of Kilocalories : Subsistence, Purchase or Donations

Tables 3(a), 3(b) and 3(c) show the source of the cereals consumed : subsistence, purchase or donations. During the March-April 1980 survey, the rations of 52 out of 65 households included cereals produced by themselves.

Table 2 (a)

Protein Content of Intake in Grams
Compared with Theoretical Requirements
(Average/Person/Day)

Requirements expressed in reference proteins

| Agro-Eco. Zone | Village | N° | Run | Proteins (grams) | | | | Protein Calories % |
|----------------|----------------|----|-----|------------------|--------|-------|------------|--------------------|
| | | | | Vegetable | Animal | Total | Requirem.* | |
| 1 | Kaedi | 1 | 2 | 40,7 | 44,1 | 84,8 | 31,3 | 14,4 |
| | | | 3 | 47,4 | 15,7 | 53,1 | | 10,6 |
| | Kaedi | 2 | 2 | 45,4 | 35,6 | 81 | 31,5 | 11,7 |
| | | | 3 | 43,4 | 47,7 | 92,1 | | 11,8 |
| | Kaedi | 3 | 2 | 47,5 | 21,5 | 69 | 29,5 | 11,1 |
| | | | 3 | 35,4 | 19,7 | 53,1 | | 11,9 |
| | Kaedi | 4 | 2 | 32,3 | 16,7 | 49 | 30,4 | 10,4 |
| | | | 3 | 55,3 | 28,3 | 97,6 | | 11 |
| | Kaedi | 5 | 2 | 28,7 | 34,3 | 63 | 31,0 | 9,5 |
| | | | 3 | 30,6 | 27,4 | 58 | | 9,6 |
| | Kaedi | 6 | 2 | 31,8 | 28,8 | 60,6 | 31,7 | 10,6 |
| | | | 3 | 37,6 | 27,2 | 64,8 | | 10 |
| | Kaedi | 7 | 2 | 73,8 | 24,6 | 98,4 | 31,2 | 11 |
| | | | 3 | 36,1 | 19,3 | 55,4 | | 9,6 |
| | Kaedi | 8 | 2 | 66,1 | 11,9 | 78,2 | 30,8 | 10,2 |
| | | | 3 | 86,2 | 31,5 | 111,7 | | 11,6 |
| | Kaedi | 9 | 2 | 31,4 | 23 | 54,4 | 30,6 | 9,7 |
| | | | 3 | 41,9 | 25,9 | 69,8 | | 9,5 |
| | Kaedi | 10 | 2 | 25 | 31 | 56,1 | 30,6 | 8,8 |
| | | | 3 | 45,4 | 50,6 | 96 | | 13,3 |
| | Kaedi | 11 | 2 | 41,6 | 53,5 | 95,1 | 29 | 13,8 |
| | | | 3 | 47,1 | 20 | 67,1 | | 8,7 |
| | Garley | 12 | 2 | 37,9 | 16,2 | 54,1 | 31,4 | 12,7 |
| | | | 3 | 44,7 | 21,2 | 65,9 | | 10,6 |
| | Garley | 13 | 2 | 27,0 | 19,2 | 39,9 | 31,8 | 7,8 |
| | | | 3 | 37,5 | 32,1 | 69,6 | | 11,1 |
| | Garley | 14 | 2 | 47,2 | 55,2 | 102,5 | 30,1 | 12,3 |
| | | | 3 | 75,5 | 32,4 | 108 | | 14,4 |
| | Garley | 15 | 2 | | | | 24,7 | |
| | | | 3 | 39,5 | 33,9 | 73,4 | | 12,1 |
| 3 | Monguel | 16 | 2 | 39,0 | 4,7 | 43,7 | 28,9 | 9,9 |
| | | | 3 | 45,0 | 9,5 | 54,5 | | 10,1 |
| | Monguel | 17 | 2 | 69,1 | 42,3 | 111,5 | 30 | 12,2 |
| | | | 3 | 77,9 | 27,3 | 105,2 | | 10,4 |
| | Monguel | 18 | 2 | 51,0 | 6,9 | 58,0 | 27,9 | 8,8 |
| | | | 3 | 40,2 | 31,9 | 72,1 | | 12,4 |
| | Monguel | 19 | 2 | 41,2 | 14,3 | 55,6 | 29,4 | 10,6 |
| | | | 3 | 59,6 | 7,3 | 65,8 | | 11,3 |
| | Monguel | 20 | 2 | 64,9 | 10 | 74,9 | 27,7 | 10,4 |
| | | | 3 | 41,6 | 16,6 | 58,2 | | 10,1 |
| | Monguel | 21 | 2 | 32,4 | 11,6 | 44,0 | 32,6 | 11,1 |
| | | | 3 | 59,4 | 12,9 | 72,3 | | 12,2 |
| | Monguel | 22 | 2 | 51,4 | 1,6 | 53,0 | 29,2 | 11,6 |
| | | | 3 | 41,7 | 0 | 41,7 | | 8,7 |
| | Monguel | 23 | 2 | 72,0 | 2,6 | 74,7 | 31,7 | 9,8 |
| | | | 3 | 27,1 | 10,1 | 37,4 | | |
| | Monguel | 24 | 2 | | | | 26,7 | |
| | | | 3 | 34,3 | 4,9 | 39,7 | | 10,1 |
| | Monguel Nomado | 25 | 2 | 56,4 | 29,7 | 86,1 | 22,1 | 10,9 |
| | | | 3 | 62,9 | 29,1 | 92 | | 11,2 |

Table 2 (b)

Protein Content of Intake in Grams
Compared with Theoretical Requirements
 (Average/Person/Day)

| Agro-Eco. Zone | Village | N° | Run | Proteins (grams) | | | Requirem. | Protein Calories % |
|----------------|----------------|----|-----|------------------|--------|-------|-----------|--------------------|
| | | | | Vegetable | Animal | Total | | |
| 3 | Monquiel | 26 | 2 | 18,7 | 11,9 | 30,6 | 30,8 | 12,7 |
| | | | 3 | 51,1 | 25,0 | 76,9 | | 8,4 |
| " | Monquiel | 27 | 2 | 42,3 | 23,0 | 66,4 | 29,8 | 12,2 |
| | | | 3 | 43,1 | 7,7 | 50,0 | | 10 |
| 1 | Feralla | 28 | 2 | 24,7 | 4,1 | 32,8 | 28 | 12,1 |
| | | | 3 | 43,7 | 11,1 | 55,1 | | 9,4 |
| " | Feralla | 29 | 2 | 69,6 | 14,9 | 84,5 | 29,2 | 11,1 |
| | | | 3 | 49,1 | 17,7 | 66,8 | | 10,8 |
| " | Feralla | 30 | 2 | | 19,3 | | 30,1 | |
| | | | 3 | 57,7 | 15,9 | 73,6 | | 11,6 |
| " | Feralla | 31 | 2 | 43,8 | 24,5 | 68,4 | 28,7 | 14,1 |
| | | | 3 | 32,3 | 10,4 | 42,6 | | 10 |
| " | Feralla | 32 | 2 | 48,3 | 17,2 | 65,4 | 28,7 | 11,9 |
| | | | 3 | 44,2 | 16,6 | 60,8 | | 10,6 |
| " | Feralla | 33 | 2 | | | | 26,6 | |
| | | | 3 | 60,1 | 29,2 | 109,0 | | |
| 3 | Hassi el Barka | 34 | 2 | 48,2 | 0 | 48,1 | 27,8 | 11,4 |
| | | | 3 | 47,0 | 13,9 | 61 | | 11,4 |
| " | Hassi el Barka | 35 | 2 | 67,3 | 2,0 | 69,3 | 27,8 | 11,6 |
| | | | 3 | 59,4 | 6,9 | 66,4 | | 10,5 |
| 4 | Goujizenai | 36 | 2 | 75,8 | 7,0 | 82,8 | 28,2 | 15,2 |
| | | | 3 | 73,5 | 8,7 | 82,2 | | 14,4 |
| " | Goujizenai | 37 | 2 | 40 | 0 | 40 | 28,4 | 10,5 |
| | | | 3 | 61 | 14,7 | 75,7 | | 13,7 |
| " | Ain Farha | 38 | 2 | 34,0 | 4,3 | 38,9 | 28,9 | 12,3 |
| | | | 3 | 22,3 | 11,7 | 34 | | 11,9 |
| " | Ain Farha | 39 | 2 | 24,2 | 5,2 | 29,4 | 27,6 | 9,6 |
| | | | 3 | 27,3 | 11 | 38,2 | | 11,1 |
| 5 | Legleib | 40 | 2 | 54,4 | 36,4 | 90,8 | 28,2 | |
| | | | 3 | 53 | 1,6 | 54,6 | | 10,6 |
| " | Legleib | 41 | 2 | 27,9 | 17,1 | 45 | 26,6 | 13,1 |
| | | | 3 | 55 | 7,6 | 62,8 | | 10,6 |
| 4 | Niselane | 42 | 2 | 39,8 | 8,1 | 47,8 | 27,2 | 11,4 |
| | | | 3 | 40,7 | 34,3 | 75,5 | | 12,7 |
| " | Niselane | 43 | 2 | 60,6 | 10,4 | 71,2 | 27,7 | 10,8 |
| | | | 3 | 55 | 25,7 | 80,7 | | 10,5 |
| 2 | Hassi Chegar | 44 | 2 | 56,5 | 16,9 | 83,3 | 32 | 12,2 |
| | | | 3 | 52,2 | 17,8 | 70 | | 13,7 |
| " | Souraze | 45 | 2 | | | | | |
| | | | 3 | 53,4 | 7,4 | 60,4 | | 12,6 |
| 5 | Abouah | 46 | 2 | 28,1 | | 28,3 | 25,8 | 9 |
| | | | 3 | 16,9 | 21,7 | 38,6 | | 11,1 |
| " | Abouah | 47 | 2 | 27,4 | 10,6 | 38,3 | 25,8 | 11,9 |
| | | | 3 | 23,4 | 3,0 | 26,5 | | 7,8 |
| " | Alaedi | 48 | 2 | 34,4 | 7,4 | 41,8 | 27,5 | 10,1 |
| | | | 3 | 32,4 | 4,1 | 34,5 | | 8,6 |
| " | Alaedi | 49 | 2 | 44,1 | 2,7 | 46,8 | 27,1 | 10 |
| | | | 3 | 52,2 | 5,2 | 58,4 | | 9,6 |
| " | Tajlalette | 50 | 2 | 48 | 18,2 | 66,2 | 26,8 | 11,4 |
| | | | 3 | 43,3 | 11,5 | 54,9 | | 11 |

Table 2 (c)

Protein Content of Intake in Grams
Compared with Theoretical Requirements
(Average/Person/Day)

| Agro-Eco. Zone | Village | N° | Run | Proteins (grams) | | | Protein Requirem. | Protein Calories % |
|----------------|-----------------|----|-----|------------------|--------|-------|-------------------|--------------------|
| | | | | Vegetable | Animal | Total | | |
| 5 | Taglalette | 51 | 2 | 60,3 | 6, | 72,3 | | 11,5 |
| | | | 3 | 55,9 | 1,0 | 57,7 | | 9,7 |
| 1 | N'Diango | 52 | 2 | 50,7 | 37,3 | 86 | | 8,9 |
| | | | 3 | 51,2 | 19,4 | 39,6 | | 9,6 |
| " | N'Diango | 53 | 2 | 42,4 | 103,3 | 145,6 | | 15,4 |
| | | | 3 | 70,5 | 31,6 | 70,2 | | 9 |
| 6 | Akjoujt | 54 | 2 | 25,2 | 27 | 52,3 | | 17,4 |
| | | | 3 | 35,7 | 23,5 | 59,3 | | 12,7 |
| | Akjoujt | 55 | 2 | 50,8 | 41,1 | 92 | | 16 |
| | | | 3 | 43,5 | 40,7 | 83,7 | | 14 |
| | Akjoujt | 56 | 2 | 42,1 | 41,1 | 83,2 | | 14,8 |
| | | | 3 | 31,5 | 8,7 | 40,5 | | 12 |
| | Akjoujt | 57 | 2 | 34,0 | 35,0 | 69,4 | | 15,9 |
| | | | 3 | 41,5 | 29,1 | 90,6 | | 12,9 |
| | Akjoujt | 58 | 2 | 21,9 | 28,1 | 50 | | 17,8 |
| | | | 3 | 56,3 | 54,1 | 120,6 | | 14,9 |
| | Akjoujt | 59 | 2 | 20,4 | 24,8 | 51,3 | | 19 |
| | | | 3 | 25,8 | 15,7 | 41,5 | | 13 |
| | Akjoujt | 60 | 2 | 58,6 | 20,7 | 79,3 | | 14,1 |
| | | | 3 | 41,1 | 7,4 | 52 | | 11 |
| | Akjoujt | 61 | 2 | | | | | |
| | | | 3 | 31,1 | 10,3 | 51,6 | | 10,6 |
| 2 | Boudi Chouat | 62 | 2 | 50,3 | 16,4 | 111 | | |
| | | | 3 | 13,5 | 10,4 | 149,3 | | |
| " | Kouense | 63 | 2 | 53 | 20 | 111 | | 12 |
| | | | 3 | 59,9 | 14,4 | 74,3 | | 12,9 |
| 1 | Boudi | 64 | 2 | 41,2 | 9,5 | 40,7 | | 10,1 |
| | | | 3 | 47,2 | 23,1 | 72,3 | | 12,7 |
| 3 | Nouakchott | 65 | 2 | 139 | 4 | 143 | | |
| | | | 3 | 62,9 | 13,9 | 76,8 | | 10,8 |

However, only one household's (N° 36) was totally self-provisioning in cereals (a household in the village of Goguizemal, in the Afoun Region). 95 % of this household's cereal ration was also provided by its own production during the June-July survey. For 5 other households (including household N° 36), consumption of their own production accounted for from 70 to 100 % of their cereal rations, but only households N° 36 and 38 were still consuming their own cereals in June-July. For most of the 52 households which consumed subsistence cereals, the percentage of their rations was very low (less than 10 %).

In the months of June-July, the diets of 9 households out of 64 included cereals they produced themselves ; these 9 households were those whose subsistence percentages were the highest in March-April. Most of these families live in villages of the 5th and 6th production zones. This does not mean, however, that their cereal consumption is higher than that of other families. It should be noted that household N° 14 in the village of Garley (Region 4) declared that all the cereals of its June-July diet were produced by themselves, whereas none were during the March-April survey. In conclusion, it should be emphasized that subsistence cereal consumption is quite low.

Not only cereals, but almost all other food products, are purchased. The budget/consumption survey confirmed these results. According to the different agro-economic zones, expenses for food were from 95 to 72 % of total expenses. They range about 95 % for the modern sector (urban sector), and are lowest in the 4th agro-economic zone (particularly in Region 9, Tidjikja) where they represent from 64 to 65 %.

Table 3 (a)

Comparison Between Zones, Villages, Households
According to the Origin of Kilocalories
 (Subsistence, Purchase, Gifts and Donations, Others)

| Cereals | | | | | | | | | |
|----------------|----------------|---------|-----|-----|--------------|----------------------------------|-------------|----------|-------------------|
| Agro-Eco. Zone | Region | Village | N° | Run | Ethnic Group | Total Cereals % in the Ration | Subsistence | Purchase | Gifts & Donations |
| 1 | 04 | Kaedi | 1 | 2 | P/T | 59 | 6 | 94 | |
| | | | | 3 | | 62 | | 100 | |
| | | | 2 | 3 | P/T | 64 | 28 | 75 | 22 |
| | | | | | | 50 | | 78 | |
| | | | 3 | 3 | P/T | 62 | 8 | 92 | |
| | | | | | | 65 | | 100 | |
| | | | 4 | 3 | P/T | 55 | 4 | 96 | 27 |
| | | | | | | 62 | | 73 | |
| | | | 5 | 3 | P/T | 42 | 11 | 89 | |
| | | | | | | 51 | | 100 | |
| | | | 6 | 3 | W | 43 | 3 | 97 | |
| | | | | | | 51 | | 100 | |
| | | | 7 | 3 | W | 77 | 20 | 80 | |
| | | | | | | 59 | | 100 | |
| | | | 8 | 3 | P/T | 67 | 12 | 88 | 6 |
| 61 | 94 | | | | | | | | |
| 9 | 3 | W | 56 | 3 | 97 | | | | |
| | | | 61 | | 100 | | | | |
| 10 | 3 | W | 31 | 14 | 86 | 11 | | | |
| | | | 56 | | 89 | | | | |
| 11 | 3 | W | 31 | | 100 | | | | |
| | | | 61 | | 100 | | | | |
| 12 | Garley | 3 | P/T | 58 | 55 | 45 | | | |
| | | | | 65 | | 94 | | 6 | |
| 13 | Garley | 3 | P/T | 60 | 42 | 58 | | | |
| | | | | 62 | | 40 | | 60 | |
| 14 | Garley | 3 | P/E | 46 | 2 | 98 | | | |
| | | | | 62 | | 100 | | | |
| 15 | Garley | 3 | P/T | 64 | 47 | 32 | 21 | | |
| | | | | | | | | | |
| 3 | | Monguel | 16 | 2 | M | 65 | 24 | 76 | |
| | | | | 3 | | 85 | | 100 | |
| | | | 17 | 3 | S | 60 | 15 | 85 | |
| | | | | | | 56 | | 100 | |
| | | | 18 | 3 | P/T | 54 | 21 | 79 | |
| | | | | | | 64 | | 100 | |
| | | | 19 | 3 | PE | 65 | 41 | 59 | 1 |
| | | | | | | 74 | | 99 | |
| | | | 20 | 3 | PE | 70 | 3 | 97 | |
| | | | | | | 65 | | 100 | |
| | | | 21 | 3 | PE | 69 | 6 | 94 | |
| | | | | | | 59 | | 100 | |
| | | | 22 | 3 | PE | 77 | 11 | 89 | |
| | | | | | | 60 | | 100 | |
| | | | 23 | 3 | PE | 64 | 4 | 96 | 26 |
| 71 | 74 | | | | | | | | |
| 24 | 3 | PE | 55 | | 100 | | | | |
| | | | | | | | | | |
| 25 | Monguel Nomade | 3 | M | 62 | 18 | 82 | | | |
| | | | | 78 | | 100 | | | |

Comparison Between Zones, Villages, Households
According to the Origin of Kilocalories
 (Subsistence, Purchase, Gifts and Donations, Others)

| Cereals | | | | | | | | | |
|----------------|--------|----------------|----|-----|--------------|-------------------------------|-------------|----------|-------------------|
| Agro-Eco. Zone | Region | Village | N° | Run | Ethnic Group | Total Cereals % in the Ration | Subsistence | Purchase | Gifts & Donations |
| 3 | 04 | Monguel | 26 | 2 | P/T | 72 | 2 | 100 | 23 |
| | | | | 3 | | 48 | | 75 | |
| | 04 | Monguel | 27 | 2 | M | 69 | 9 | 70 | 21 |
| | | | | 3 | | 70 | | 100 | |
| 1 | 05 | Feralla | 28 | 2 | P/T | 69 | 85 | 15 | 8 |
| | | | | 3 | | 68 | | 46 | |
| 1 | " | Feralla | 29 | 2 | P/T | 60 | 63 | 29 | 8 |
| | | | | 3 | | 60 | | 1 | |
| 1 | " | Feralla | 30 | 2 | P/T | 59 | | | 100 |
| | | | | 3 | | 65 | | | |
| 1 | " | Feralla | 31 | 2 | P/T | 65 | 63 | 37 | 66 |
| | | | | 3 | | 61 | | 29 | |
| 1 | " | Feralla | 32 | 2 | P/T | 79 | 93 | 6 | 1 |
| | | | | 3 | | 64 | | 92 | |
| 1 | " | Feralla | 33 | 2 | P/T | | 42 | 58 | |
| | | | | 3 | | 58 | | | |
| 3 | 02 | Hassi ol Barka | 34 | 2 | M | 79 | 2 | 87 | 11 |
| | | | | 3 | | 74 | | 100 | |
| | " | Hassi ol Barka | 35 | 2 | M | 77 | 2 | 98 | |
| | | | | 3 | | 86 | | 100 | |
| 4 | " | Gougizenal | 36 | 2 | M | 56 | 100 | 5 | |
| | | | | 3 | | 63 | | 95 | |
| | " | Gougizenal | 37 | 2 | M | 84 | 53 | 19 | 28 |
| | | | | 3 | | 74 | | 9 | |
| | " | Ain Farba | 38 | 2 | M | 73 | | 99 | 1 |
| | | | | 3 | | 73 | | 100 | |
| | " | Ain farba | 39 | 2 | M | 72 | 2 | 98 | |
| | | | | 3 | | 78 | | 100 | |
| 5 | 03 | Légléib | 40 | 2 | M | 54 | | 100 | |
| | | | | 3 | | 85 | | 100 | |
| | " | Legléib | 41 | 2 | M | 77 | 2 | 98 | |
| | | | | 3 | | 83 | | 100 | |
| 4 | 09 | Nimelane | 42 | 2 | M | 83 | 4 | 96 | |
| | | | | 3 | | 65 | | 100 | |
| | " | Nimelano | 43 | 2 | M | 80 | 10 | 98 | |
| | | | | 3 | | 84 | | 90 | |
| 2 | 10 | Hassi Chegar | 44 | 2 | S | 82 | 24 | 76 | |
| | | | | 3 | | 76 | | 100 | |
| | 10 | Bouonze | 45 | 2 | S | | | 100 | |
| | | | | 3 | | 75 | | | |
| 5 | 06 | Abadah | 46 | 2 | M | 88 | 34 | 66 | |
| | | | | 3 | | 64 | | 100 | |
| | " | Abadah | 47 | 2 | M | 80 | 22 | 78 | 95 |
| | | | | 3 | | 83 | | 5 | |
| | " | Alaedi | 48 | 2 | M | 70 | 71 | 29 | 95 |
| | | | | 3 | | 50 | | 5 | |
| | " | Alaedi | 49 | 2 | M | 56 | | 100 | 88 |
| | | | | 3 | | 65 | | 12 | |
| | 06 | Tajila-lotto | 50 | 2 | M | 72 | 72 | 28 | 3 |
| | | | | 3 | | 65 | | 1 | |

Comparison Between Zones, Villages, Households

Table 3 (c)

According to the Origin of Kilocalories
(Subsistence, Purchase, Gifts and Donations, Others)

Cereals

| Agro-Eco. Zone | Region | Village | N° | Run | Ethnic Group | Total Cereals % in the Ration | Subsistence | Purchase | Gifts & Donations |
|----------------|--------|--------------|----|--------|--------------|-------------------------------|-------------|------------|-------------------|
| 5 | 06 | Tagilallette | 51 | 2 3 | M | 73 69 | 1 | 60 73 | 39 27 |
| 1 | 06 | N'Diago | 52 | 2 3 | W | 55 58 | 13 21,5 | 87 57 | 21,5 |
| | 06 | N'Diago | 53 | 2 3 | W | 50 54 | 12 | 88 100 | |
| 6 | 12 | Akjoujt | 54 | 2 3 | M | 79 70 | 19 | 81 100 | |
| | " | Akjoujt | 55 | 2 3 | M | 67 67 | | 100 100 | |
| | " | Akjoujt | 56 | 2 3 | M | 68 81 | 2 | 98 100 | |
| | " | Akjoujt | 57 | 2 3 | M | 68 74 | | 100 100 | |
| | " | Akjoujt | 58 | 2 3 | M | 68 77 | | 100 100 | |
| | " | Akjoujt | 59 | 2 3 | M | 76 72 | 27 | 64 100 | 9 |
| | " | Akjoujt | 60 | 2 3 | M | 72 68 | 1 | 99 100 | |
| | " | Akjoujt | 61 | 2 3 | M | / | | 100 | |
| 2 | 10 | Hassi Chegar | 62 | 2 3 | S | 72 | 8 | 92 100 | |
| " | " | Bouenze | 63 | 2 3 | S | 80 75 | 3 | 97 100 | |
| 1 | 04 | Kaedi | 64 | 2 3 | P/T | 61 78 | 10 | 90 39 | 61 |
| 3 | " | Honguel | 65 | 2 3 | M | / | 90 | 7 100 | 3 |

2.5 Consumption by product

Tables 4 (a), 4 (b) and 4 (c) show consumption according to different products (25) (See pages 95, 96 and 97).

2.5.1 Cereals

As we have seen, cereals comprise an important part of the diet. During the two survey cycles, the quantity of cereals varies from one household to the other -- from 200 to 600 grams per person per day. The average is about 450 grams. During the second survey cycle in June-July, cereal consumption had decreased in the villages of Taguilalett, N'Diogo, Hassi Chégar and Akjoujt. The ration decreased in areas where it had already been low (Rosso and Akjoujt), but also in areas where it was highest, in cereal producing regions such as Selibaby.

To cereal consumption must be added consumption of wheat flour (for gruel, couscous and bread). Table 5 shows the distribution of cereals and wheat products according to region. It demonstrates that consumption of cereal-based product is about the same for all regions. It is higher in the Selibaby region and slightly lower in the regions of Akjoujt and Boghé.

Table 5 - AVERAGE CONSUMPTION PER PERSON PER REGION
(Grams/Day)

| Regions | II | III | IV | V | VI | IX | X | XII |
|---------------|-----|-----|----------|-----|-----|-----|-----|-----|
| Cereals | 455 | 457 | 369 | 407 | 361 | 478 | 573 | 264 |
| Bread | 0 | 0 | 91 | 17 | 46 | 17 | 32 | 53 |
| Flour (wheat) | 0 | 46 | 12 | 2 | 10 | 2 | 2 | 113 |
| Ethnic Group | M | M | WT PE | T | M,W | M | S | M |

(25) Main cereals consumed are rice and millet/sorghum. Insignificant quantities of corn and wheat are consumed. Table 6 shows the proportion of these different cereals in the rations per region.

Table 6 - PERCENTAGE OF DIFFERENT CEREALS IN DEET.
(excluding wheat flour)

| REGIONS | VILLAGES | RICE | MILLET/ SORGHUM | WHEAT | AGRO-ECO ZONE |
|---------|----------------|------|--------------------|-------|------------------|
| 02 | Hassi el Barka | 17 | 83 | 0 | 3 |
| | Goguizemal | 99 | 1 | 0 | 4 |
| | Ain Farba | 35 | 63 | 1,7 | 4 |
| 02 | Average | 50 | 49 | 0,6 | |
| 03 | Legleib | 41 | 31,3 | 27,6 | 5 |
| 04 | Kaedi | 55 | 42 | 3 | 1 |
| | Garley | 53 | 45 | 3 | 1 |
| | Monguel | 36 | 52 | 11 | 3 |
| 04 | Average | 48 | 46,3 | 5,7 | |
| 05 | Foralla | 24,5 | 73,2 | 2 | 1 |
| 06 | Abadah | 81 | 19 | 0 | 5 |
| | Alacdi | 93 | 7 | 0 | 5 |
| | Taguilalett | 42 | 45 | 13 | 5 |
| | N'Diogo | 89 | 3,5 | 7,4 | 1 |
| 06 | Average | 76,2 | 18,6 | 5,1 | |
| 09 | Nimelane | 40,4 | 42 | 17,5 | 4 |
| 10 | Hassichegar | 34,5 | 57 | 8,3 | 2 |
| | Bouenze | 29 | 67,5 | 3,5 | 2 |
| 10 | Average | 31,7 | 62 | 5,9 | |
| 12 | Akjoujt | 51,3 | 35 | 14,7 | 6 |

2.5.2 Bread

Bread consumption is high in urban zones (Kaedi, Akjoujt) and near urban centers in the Rosso region. It varies from 33 to 17 kg per year per person in urban and semi-urban areas. It is only 6 kg year/person in Region 9. Households surveyed in the 2nd and 3rd regions did not consume bread. There are very great differences in bread consumption between households, even in towns.

2.5.3 Sugar

Average sugar consumption per day and per person is indicated in Table 7. Sugar is largely employed ; consumption results according to household show that it is between 15 and 70 grams per day/person ; with a few exceptions (very low consumption of 2 to 5 grams or excessive consumption, more than 100 grams per person). However, this may also include the sugar used to sweeten zrig or tea offered to visitors. The average consumption is 12 kg per year per person.

2.5.4 Root Vegetables

Root vegetables are not often consumed. In the Kaedi region, cultivation of potatoes was popularized several years ago and they are consumed locally.

2.5.5 Leguminous Plants and Oleaginous Seeds

Peanuts are eaten only around Kaedi and in the Selibaby region. Watermelon seeds, which are rich in protein, were eaten in certain households during the March-April survey. Slight consumption of niébé beans was found among the Peulhs at Monguel.

2.5.6 Meat

Meat consumption is usually fairly high, but quite variable. The households surveyed at Garley did not consume meat at all; one of these households consumed no fish either. Meat is not frequently eaten at Feralla, Taguilalette and N'Diago.

Table 7 - AVERAGE CONSUMPTION PER PERSON AND PER REGION

| Agro- Eco. Zone | Regions | Villages | Sugar | Ethnic Groups |
|--------------------|---------|----------------|-------|------------------|
| 3 | 02 | Hassi el Darka | 42 | M |
| 4 | | Goguizemal | 48 | M |
| 4 | | Ain Farba | 25 | M |
| | 02 | Average | 38 | |
| 5 | 03 | Legleib | 26 | M |
| 1 | 04 | Kaedi | 30 | W-T |
| 1 | | Garley | 31 | T-PE |
| 3 | | Monguel | 40 | T-PE |
| | 04 | Average | 34 | |
| 1 | 05 | Feralla | 51 | T |
| 5 | 06 | Abadah | 13 | M |
| 5 | | Alaedi | 39 | M |
| 5 | | Taguilalett | 55 | M |
| 1 | | N'Diago | 44 | W |
| | 06 | Average | 38 | |
| 4 | 09 | Nimelane | 31 | M |
| 2 | 10 | Hassichégar | 36 | S |
| 2 | | Bouenze | 9 | S |
| | 10 | Average | 22 | |
| 6 | 12 | Akjoujt | 27 | M |

The large amount of meat (mainly beef) consumed in the Kaedi region (together with a fairly high consumption of fish) is surprising. It is possible that these households improved their rations for the benefit of the surveys. Only one family ate poultry. The main meats consumed are beef and camel, according to region.

2.5.7 Fish

On tables 4(a), 4(b) and 4(c) all fish consumed is expressed as fresh fish. Fish consumption was high in the river region, especially at Kaedi. The Moors do not eat fish.

2.5.8 Milk

Consumptions indicated on tables 4(a) and 4(b) are expressed in fresh milk equivalents. Milk is almost always present in the diet, but consumption is extremely variable from one household to the next. In general, consumption of milk was higher during the June-July survey than during that of March-April. The average consumption per village is given in Table 8. This shows that, when possible, the Moors consume the most milk. According to the villages, consumption varied from 9 to 70 kg/year. However, it was nil during the surveys of the households at Legleib.

2.5.9 Tea

Tea consumption registered during the surveys is quite small. However, much of the tea consumption was not counted during the surveys, as most tea is consumed between meals and was not always indicated to the surveyors.

2.6 Conclusions on the Value of Diets

2.6.1 - Energy intakes are slightly deficient for part of the population. However, they are much less deficient than the estimated cereal situation, based on production and import statistics, would tend to indicate.

As we have seen, the average proportion of cereals in the kcalories of the intake is from 60 to 70 %. The cereal situation estimates for the nation supposed a yearly disposibility of cereal and derived products of 113 kg/year per person, or 310 grams of cereal per day. The surveys registered a cereal consumption varying from 410 to 600 g/day.

The small sample of this survey does not permit extrapolation to the regional (or national) level. However, as an indication of survey results, the annual consumption of cereals is calculated per region in Table 8. It should be noted that the average consumption of cereal-based products (cereals, wheat flour and bread) is essentially the same throughout the different regions.

On the basis of these calculations, and supposing that Regions I and VII have the lowest consumption rates registered in rural zones (26), the average cereal availability would be on the order of 150 kg/year/person. Even if this is a slight over-estimate, since food gifts and unconsumed leftovers were not taken into account, the subsequent error can't be 30% (however, generally, there is a fairly good balance between food sent to other families as gifts and food received in the same manner).

(26) This is plausible, as it was in the town of Akjoujt that the lowest cereal rations were registered; in addition, cereal consumption is higher when the ration is less differentiated.

Table 8 - ESTIMATION OF CEREAL CONSUMPTION PER REGION
(Kg/year/person)

| REGION | TOTAL CONSUMPTION | RICE | MILLET | WHEAT |
|--------|-------------------|-------|--------|-------|
| 02 | 166 | 83 | 81 | 2 |
| 03 | 183,6 | 75,3 | 57,5 | 1,1 |
| 04 | 134,7 | 65,9 | 63,6 | 7,8 |
| 05 | 148,5 | 36,4 | 108,7 | 2,3 |
| 06 | 132 | 100,6 | 24,5 | 6,7 |
| 09 | 174 | 70,3 | 73,1 | 30,5 |
| 10 | 209 | 66,2 | 129,6 | 12,3 |
| 11 | 96 | 107,2 | 73,1 | 30,7 |

Using the same hypothesis, we calculate an average rice consumption on the order of 80 kg/year/person. Rice availability would be 108 240 tons/year, millet and sorghum availability about 86 592 tons/year. These rice and millet figures are quite a bit higher than those obtained from production statistics.

Of course, part of the millet consumed in Mauritania comes from neighbouring countries -- Senegal, and especially Mali.

However, it is difficult to believe that for a consumption of 80 000 to 85 000 tons of millet/sorghum, national production supplies only one third or one half, depending on the various estimates.

It must be remembered that these neighbouring countries have also suffered the effects of the drought.

It was noted that the children in the households surveyed were given little snacks during the day - a bit of bread or a piece of grilled meat. However, our interviews with the Maternal and Infantile Protection Services emphasized the poor condition of many of the children. Malnutrition alone is not responsible for this condition; hygiene is poor and many illnesses (respiratory tract ailments in particular) contribute to their poor health. During our surveys, we observed the lack of cleanliness care for the children (their hair, in particular).

During the Akjoujt surveys, where the lowest intakes were registered, the nutritionist did not find children in a state of malnutrition among the households surveyed (27). This is a better result than was expected.

Variations registered in the level of caloric intakes are not always due to a lack of cereal products (28). Cereal consumption is usually the same, but low intakes lack much variety in other products. The differences often depend on the variable degree of fats included in the diet, as indicated in the paragraph on diet balance.

2.6.2 Iron - The iron intakes were always satisfactory compared to average daily requirements, taking into account that absorption rates are low (about 10%), given the high cereal level of the diet.

Anemias are therefore usually not caused by nutritional factors. However, it should be noted that there is general deficiency in the intakes of Vitamins C and A. Vitamin C, and perhaps Vitamin A as well, are necessary for the assimilation of iron (29).

(27) Malnutrition serious enough to be detected on examination.

(28) Including all cereals and bread.

(29) M. Astier-Dumas and D. Rolle, "Facteurs alimentaires d'assimilation du fer", *Diététique des carences martiales. Médecine et Nutrition*, 1976, T. XXII, N° 2.

2.6.3 The calcium intakes are always satisfactory.

2.6.4 The average yearly milk consumption registered is 31 kg per person. This seems low, as Mauritania produces about 74 800 tons of milk (30), and imports 40 400 tons (31) which corresponds to an availability of about 81 kg per year per person. However, often the herds are not located near inhabited areas, and only a fraction of the population has access to fresh milk.

2.6.5 The heavy dependance of the diet on imported products is quite evident : sugar, wheat flour, rice, milk and oil.

3 - DIETARY HABITS

During the food consumption survey, a special questionnaire was employed in order to determine existing dietary habits and motivations concerning food choices. This questionnaire was divided into two parts : the first concerned existing dietary motivations, the second attempted to classify different food stuffs for which consumers would have liked to increase consumption

3.1 - Dietary Motivations

3.1.1 - Analysis Methods

Motivations were evaluated according to the following criteria :

- economic motivations (food availability and price)
- satisfaction of energy requirements and appeasement of hunger
- value judgments :
 - a) taste of food
 - b) acquired theoretical judgments (nutritional and health criteria).

(30) Estimate by RAMS Project livestock specialist, based on number of females.

(31) According to customs import registrations.

3.1.2 - Results - Economic motivations

Out of 657 answers to the questionnaire, 31,3 % concerned economic motivations (based mainly on availability of food products).

Motivations based on satiation or taste of food

24.8 % of responses to the questionnaire were based on satiation and 26.2 % on the taste of food. It is normal that value judgments of taste predominate. The need for food is not only physiological, but psychological as well.

Acquired Nutritional Judgments

17.6 % of responses concerned nutritional judgments. Nutritional judgments were expressed most readily by the Moors ; none were mentioned by the Toucouleurs.

3.2 - Preferences

The persons interviewed classified those foods for which they would like to increase consumption. Of the 26 products on the list, a large number were not selected ; only meat, rice, fish, fresh milk, butter, tea, vegetables and oil were frequently mentioned. Leguminous plants were not cited; millet was listed only once.

The Moors wished to consume more meat (mainly camel and beef), more milk, more rice, more tea. The Feulhs would like to consume more fresh fish, more rice, more tea, but also more vegetables. The Toucouleurs would prefer to consume more rice and more chicken.

3.3 - Changes in Dietary Habits

In order to study the effect of new agricultural practices and the introduction of rice cultivation on dietary habits, the RAMS sociologists included in their work a survey of

the dietary habits of the farmers of the M'Fourié rice perimeter, as well as the villages of Magta-Lahjar, Dionaba and Oued-Amour in the Gorgol Blanc perimeters not far from Chogar-Gadel and Sangrafa. The same survey was conducted in the village of Karkossa, a small urban center of the Assaba Region (Region 3), in order to have a sample among agro-pastoral populations.

A group interview method was used for this survey. The questionnaire was designed to determine changes in eating habits, and whether these changes were beneficial or not. The questionnaires also asked which family member was responsible for selecting menus.

These surveys among rural people covered 24 families (about 400 people). While the survey has no statistical value, it permits a view of the changing eating habits and their causes.

In the three ethnic groups studied (Moors, Toucouleurs, Wolofs), consumption of fresh milk has greatly decreased. Canned milk has replaced some of the fresh milk consumed, but on the whole milk consumption is lower, due both to the cost of canned milk and the supply difficulties for populations far from market centers.

Greater quantities of meat are consumed by the Moors and Toucouleurs than by the Wolofs. A marked increase in fish consumption was noted for all three ethnic groups. Formerly, the Moors never ate fish. This change may be explained by their recent cohabitation with the other ethnic groups since they have migrated south due to the drought. It may also be explained by the increasing price of meat.

However, these changes do not mean that consumption has increased, only that one food has been substituted for another. In most rural households, meat or fish are not eaten at every meal, and are usually consumed in very small quantities.

Millet, which was the former basic food for all ethnic groups, is now being replaced by rice, either produced by the family or purchased. This is due mainly to decreased millet production (caused by the drought) and the introduction of irrigated rice cultivation. The women have found ways using rice to reproduce the traditional dishes formerly based on millet.

Rice (especially polished rice) is less rich in Vitamin B than millet. In order to balance the diet, larger quantities of animal protein are required to furnish the B Vitamins necessary for good health and assimilation of proteins.

Vegetable consumption has greatly increased since vegetable gardening was introduced in the Senegal River valley; on the other hand, gathering of wild fruits and other products has practically disappeared since the drought began. There is little fruit consumption, and since gathering of fruits like the jujube has decreased, it is to be feared that many people lack Vitamin C. However, some gathering resumes during the "hungry period".

Formerly unknown in Mauritania, bread has now become the staple breakfast food for all the ethnic groups surveyed. This creates a marked decrease in nutritive value of the breakfast, as the bread is often accompanied by tea.

Tea consumption is rapidly increasing, which further unbalances the ration for the reasons already mentioned in this study : abuse of a stimulant and the fact that too much of the family's income may be spent on tea and sugar rather than on more nutritious food products. At present, SONIMEX, imports about 1 700 tons of tea per year.

Among the Wolof and Toucouleur families, menus are always selected by the women. However, the Moors in Kankossa replied that the head of the family chooses the foods to be eaten;

his wife may do so in his absence. For the black Moors of the river region, the decision is made at times by the husband, at other times by the wife.

It should be emphasized that this survey confirms the fact that there are no very significant food taboos which affect the Mauritanian diet. However, it should be noted that eggs are not given to Wolof, Peulh and Toucouleur children, as it is believed this will cause them to learn to talk too late.

In general, the dietary errors found among these populations are due either to ignorance or supply difficulties (unavailability of certain products, or too high a price).

Origins of Foods consumed

The last part of this questionnaire concerned the origin of the food stuffs consumed, in order to determine the proportion of subsistence and of purchasing in the households' diets.

None of the families surveyed was completely self-sufficient, even for the staple cereals. This is particularly worrying, as most of these families are farmers of irrigated rice. Usually, the families produced a part of most of the food stuffs it consumed, with the exception of the Toucouleurs and Wolofs, who must purchase all of their milk, whereas the Moors and Peulhs purchase only a part of their milk.

Production never covers total consumption. The fruits produced are usually melons or watermelons. Bartering is no longer practiced.

Conclusions

These dietary changes appear to be caused by changing food availability, resulting from decreased cereal production and disappearance of gathered products because of the drought.

The populations surveyed complained of their difficulty to feed themselves and of the high cost of food. The replacement of millet by rice does not appear to bother them, as they are able to prepare the same dishes. Only two families indicated that rice is more practical. All families declared that they must purchase milk.

The nomadic camel herdsman who have recently sedentarized at Sangrafa are living in very difficult conditions and have real adaptation problems. They do not consume corn, fish, eggs and chicken (although these foods are not considered taboo). They complain of having to purchase milk. The black Moors of the Gorgol Blanc valley are cut off from any supply market and hardly manage to feed themselves. This underlines the precarious state of the present food system in Mauritania.

4 - DIET OF YOUNG CHILDREN.

Two surveys permitted studying the diet of young children; one was included in the food consumption survey described in Part Two, Section 1; the other was part of the survey of dietary habit changes among the rural populations practicing irrigated rice cultivation.

4.1 - Diet of the young child among rice farmers

The women were questioned as to the way they feed their young children. The survey covered mainly Moors, Toucouleurs and Wolofs. The results are certainly independent of the fact that the parents are rice farmers (except for the fact that millet is replaced by rice) and thus have a much more general value.

The first food given to the child besides maternal milk is fresh milk (cow, goat, sheep or camel). It is given from age 3-4 months on; it is never boiled. Around the age of 6 months,

a gruel may be prepared with this milk or milk may be mixed with dates. From the age of 7-8 months, little bits of the family dinner may be given to the child : couscous, rice, vegetables that are considered easy to digest. Only from age 12 months or so is the child allowed to share the family meal with his mother. The Toucouleurs and Soninkés do not allow their children to eat eggs, as they believe this will render them mute. Moors forbid sugar to their children, but did not furnish an explanation for this.

This survey shows that the mothers do not prepare special food for young children. This is a matter of custom, but is also due to the numerous other tasks for which the mother is responsible and the lack of cooking means (lack of fuel, only one cooking fire in the home).

4.2 - Diet and Weaning of the Young Child

During the food consumption survey, a special questionnaire concerned the diet of the young children, from birth to 36 months. This survey permits more precise information on the diet of young children. The results of the survey for June-July 1980 are given below. They concern 63 very young children from the 65 households surveyed.

The average age of weaning is 17.2 months. By weaning, we mean the moment when the child has completely stopped suckling. 4.8 % of weanings are caused by the mothers' new pregnancy.

The average age for introduction of food stuffs other than maternal milk is 6 months. This survey confirms the January-February 1980 survey of families practicing irrigated rice cultivation and the RANS survey of children from the P.M.I in Nouakchott (see Part One, Paragraph 2.5).

The first food given the young child may be cow or goat milk, around the age of 3-5 months. However, usually, the first food introduced in the child's diet is a solid one (gruel, rice, or couscous from the family meal), around the age of 7-6 months. 52.4 % of children over 6 months old also receive maternal milk (of these only 23.8 %) receive maternal milk daily). The Wolofs, Toucouleurs and Sarakolés appear to give their young children more meat and fish than do the Moors. Only a few Wolof families give their children eggs.

Meat, fish and eggs are given as follows : 3.1 times per week for meat, 2.5 times per week for fish, and 3.5 times per week for eggs.

In addition, 7.1 % of the children receive commercial baby products (powdered milk, prepared cereals).

5. RESULTS OF THE LAST RUN OF THE FOOD CONSUMPTION SURVEY

The last run of the food consumption survey took place in September and October 1960, just after the rains. The analysis of the results is compared here with the results of the earlier runs as it is necessary to emphasize that intakes differ according to seasons and peaks in production (harvesting season and lactation period of female cattle).

5.1 Value of the Diet

There is little difference in the values of caloric intake. In Legleib and Nimelane the household intakes have decreased 1,500 K calories per person and per day; a similar result had been recorded during the second run but during the third one intakes were satisfactory. The protein intake remains satisfactory but a great variety in meat consumption is recorded as before.

5.2 Origin of Kilo-calories: Subsistence Purchase or Gifts and Donations

There are more households consuming home-grown cereals than in June and July but less than in March and April. Twelve households (instead of nine in the earlier run) use their own cereals. This is to be expected as part of the cereals have already been harvested. This is the case with villages in the 4th, 5th, 9th and 10th regions. The part of home-grown cereals is more important than in the June/July survey (about 40 per cent). Only one household (number 14 in Carley as in June/July) consumes its own cereals only. Donations do not appear.

5.3 Consumption by Product

Except for milk and cereals there is little difference in food consumption.

5.3.1 Cereals

Cereals remain an important part of the diet but their consumption varies from one household to the other with greater differences than in earlier runs of the survey (from 190 to 300 grammes per person per day). However, high intakes are not the rule, the average consumption is around 450 grammes.

Table 9

Average Consumption per Person per Region
(Gr/d)

| Regions | II | III | IV | V | VI | IX | X | XII |
|----------------|-----|-----|----------|-----|--------|-----|-----|-----|
| Cereals | 309 | 284 | 443 | 479 | 270 | 496 | 569 | 190 |
| Bread | 0 | 0 | 56 | 0 | 2 | 12 | 9 | 84 |
| Flour (Wheat) | 11 | 0 | 8 | 49 | 44 | 59 | 0 | 17 |
| Ethnic Group*) | M | M | WT PE | T | M W | M | S | M |

*) M = Mossi W = Wolof T = Toucouleur PE = Peulh S = Soninké

Cereal consumption (millet consumption in fact) has increased in the 4th, 5th, 9th and 10th region as these are millet producing areas (rainfed cultivation).

On the other hand, it has decreased in the 2nd and 3rd regions, but the small sample in these two regions does not permit a definitive conclusion. As before, the cereals consumed are mainly millet and rice. Wheat practically does not appear in the diet at this time of the year.

Barley appears in Goguizemol (second region) and in Legleib (third region). Rice is consumed mainly by town dwellers as shown before.

5.3.2 Milk

Milk consumption has increased in the households where it was already significant before (a few households in every village and region in rural areas). It is higher in Hodh El Gharbi (second region): twice as much. (Average consumption 370 g per person per day.) In Tagant (ninth region) in spite of a 50 per cent increase the average consumption remains low: 35 g per person per day

It should be emphasized that in Akjoujt, milk consumption survey show that differences apply to a small number of households only and do not modify the preceding conclusions.

5.4 Results of the Survey among the Nomads - October 1980

This is a small sample of twelve households four in Tagant, four in Adrar, two in Assaba and two in Hodh El Garbi. This survey took place in October and November 1980.

5.4.1 Value of the Diet

5.4.1.1 Caloric Intake

The average intakes per person per day are expressed in kilocalories and indicated in Table 10. With the exception of Tagant, the intakes are very low. However the intakes of nomadic households in Assaba and in Hodh Chargui do not differ from those of moorish households as surveyed previously. The intakes were equally low in two of the runs (March/April and October/November).

5.4.1.2 Protein Intake

For very weak intakes and particularly for those inferior to 1,500 K calories, the protein intake can not be calculated since most proteins are used to provide the energy required.

Animal protein is scarce: five households only consume milk (numbers 69, 70, 72, 80 and 81). Meat consumption is recorded in two households only in Adrar (82, 83) where goat and camel were consumed.

5.4.1.3 Balance of Diet

The diet is also very poor in lipids. Three households only consume butter or peanut oil. The quantities vary greatly: household (83) consumes 6 g while household (92) uses 13 g butter and 20 g oil per person per day, a satisfactory lipid ration for this household.

As a conclusion, it should be noted that the diet of the nomads is very poor and ill-balanced.

Table 10Comparison between Theoretical Requirements andObserved Food Consumption

Average per person, per day, per household.

K calories

| Region | Number | Ethnic Group | Persons | Active Men | Intake | Requirements | % |
|--------|--------|--------------|---------|------------|--------|--------------|-----|
| 02 | (5) | M | 8 | 2 | 1759 | 2265 | -22 |
| " | (8) | M | 10 | 5 | 2308 | 2306 | + 0 |
| 03 | (4) | M | 10 | 3 | 1404 | 2217 | -37 |
| " | (7) | M | 5 | 1 | 2039 | 2219 | |
| 07 | (15) | M | 7 | 3 | 1833 | 2273 | -20 |
| " | (16) | M | 9 | 3 | 1917 | 2227 | -10 |
| " | (17) | M | 12 | 2 | | 2240 | |
| " | (18) | M | 12 | 3 | 905.7 | 2109 | -57 |
| 09 | (25) | M | 4 | 0 | 1341 | 2151 | -38 |
| " | (26) | M | 2 | 1 | 3209 | 2479 | +29 |
| " | (27) | M | 6 | 0 | 2201 | 2225 | - 1 |
| " | (28) | M | 5 | 1 | 2273 | 2102 | + 8 |

5.4.2 Origin of Kilocalories Subsistence Purchase Gifts or Donations

All cereals are purchased there is no donation. The remaining food (meat and milk) is partly produced by the households themselves.

5.4.3 Consumption by Product

Very little food other than cereals is consumed milk in five households meat in two only where some sugar and fat are also used. Sugar is consumed in five households oil or butter in three tea in one only In one Adrar household pastes are consumed (47 g per day per person)

5.4.3.1 Cereal Consumption

Cereal consumption is low in all the households surveyed: from 125 to 250 g per person and per day, except for three Tagant households where nearly twice as much is consumed. Average consumption recorded earlier in moorish households from regions II, III and IX were about 450/475 g per person per day. Consumption is at its lowest in Adrar. It should be emphasized that no bread consumption was noted, as would be expected, for bread cannot be preserved long. On the other hand, one Adrar household consumes pastes.

Table 11

Cereal Consumption: Nomads
(Gr/D)

| Region | Chargui | | | Assaba | | | Adrar | | | Tagant | | |
|-----------|---------|-----|-----|-----------------|-----|-----|-------------|-----|-----|------------|-----|-----|
| Household | 70 | 73 | 69 | 72 | 80 | 81 | 82 | 83 | 90 | 91 | 92 | 93 |
| Rice | 53 | | | 142 166 | | | 90.5 33 125 | | | 115 167 | | |
| Millet | 152 | | | | | | 34.5 21 | | | 77 117 237 | | |
| Wheat | | | | 250 200 105 100 | | | 94 302 | | | 222 378 | | |
| | (0) | 205 | 250 | 200 | 247 | 266 | 125 | 148 | 427 | 192 | 506 | 615 |

5.4.3.2 Milk Consumption

Surprisingly, five households only consume milk. Household (5) has a high consumption 1 913 g per person per day but no cereals are recorded. Household (80) also consumes 1 263 g per person per day. The three other households consume much less: from 30 to 570 grammes.

5.4.3.3 Conclusion

The small sample of nomadic households surveyed does not permit to draw conclusions easily. However the low caloric level of some intakes as well as the poverty of the diet are no surprise.

There is little variety in the food consumed fruit and vegetables are absent. The lack of meat and milk in the diets of some households is surprising considering that six days' menus were taken into account.

5.5 Evaluation of Cereals Consumption

Given the results of the earlier surveys conducted both in rural and urban areas the average cereals consumed were deemed to be 150 kg per person per year. It seems now possible to attempt a better evaluation. Decreasing cereal consumption is recorded during the last run of the survey in regions two and three. Moreover, nomads consume less than farmers.

On the other hand, records show that in Tagant, even if farmers consume a little more than nomads the latter consume much more than other nomads, particularly those of Adrar.

In other regions cereal consumption does not differ greatly from earlier figures.

Considering these data and regarding the respective representation of sedentary families and nomads in the different regions (31), it can be concluded that cereal consumption would be about 135/140 kg per person per year instead of 150 kg as of earlier calculations (Table 8).

These calculations are only approximately accurate and are given as indications. They show an average availability of 135/140 kg cereals per person per year.

6. GENERAL CONCLUSIONS

6.1 Summary of Results

The results providing information on the dietary and nutritional situation of the Mauritanian population are summarized below.

6.1.1 Caloric rations are sufficient in only from 55 to 60% of the households surveyed. They are especially deficient at Akjoujt. It must be noted that the activities of the Akjoujt households are quite reduced not to indicate that they have correspondingly lower energy requirements but on the contrary to show the link between unemployment of rural populations having fled to towns and the poverty of their food rations.

Caloric intake can be very low among the nomads mainly in the 2nd, 3rd and 7th regions. It should be noted that their diet is monotonous very poorly balanced and constitutes for some of them of cereals and a little sugar only. Few nomadic families do consume meat or milk.

In the Kaédi region, the caloric value of the rations hardly differs from that registered during the 1958 MISOES survey when it was 2 380 K calories per person per day. Rations are also satisfactory in Region 6. However the cereal ration has decreased - it is now only 470 g (of which 91 g of bread) at Kaédi, and 406 g (of which 17 g of bread) in Region 5, as compared to an average ration for the entire valley of 547 g (of which 3 g of bread) in the 1958 survey.

Only in the 9th Region was the cereal consumption found to be the same as in 1958.

However, these surveys show a much higher cereal consumption than present agricultural and commercial data would lead to suppose.

Intakes are always lower among the Moors than among the Negro-Africans. They are also more poorly balanced and present less variety in food stuffs. This is due partly to food habits, partly to the fact that Moors are not farmers. Final conclusions are difficult to draw as the survey covered too few households. However, it can be assumed that the diminishing consumption of meat and milk among the nomads is due to the effects of the drought on herds.

6.1.2 - The extent of rural exodus and emigration are demonstrated by the low number of active men present during the surveys. Certain men return for the agricultural season (June-July), but when cultivation is finished, depart to look for employment in the towns.

6.1.3 - The subsistence proportion of the ration is low. The volume of imported products in the diet underlines Mauritania's food dependancy (rice flour sugar milk oil). The substitution of bread for more nourishing cereals is marked and may be irreversible.

6.1.4 - The costs of modern irrigated rice cultivation as it is currently practiced are extremely high and absorb at least half of the sale price of the harvest.

6.1.5 - Malnutrition among the poorer urban inhabitants, especially recent emigrants to the towns is demonstrated by the low rations registered at Akjoujt and the survey of young children at the Maternal and Infantile Protection

center of the 5th Arrondissement at Nouakchott. This malnutrition is linked not only to the lack of sufficient income but also to socio-economic factors: lack of sanitation, ignorance of the mothers, etc.

6.2 Recommendations to be taken into account for final proposals of the Rural Sector and Human Resources Evaluation

It should be again emphasized that the nutritional problem is related not only to the availability of food but also to social and economic factors: income, sanitary environment, dietary changes. All these factors must be considered.

6.2.1 Food Demand and Subsistence

The results of this study permit calculation of the food demand up to the year 2000 on the basis of a satisfactory ration, which should be well balanced and take into account the local dietary habits.

Given the available data, this projection of the food demand should correspond to ecological areas, the repartition of population and its activities.

Projections of food demands are usually based on the elasticity of the demand as it takes into account the expected increase of income per person. This approach does not consider the actual nutritional requirements of population. It is clear that, for the poorer at least, the food ration instead of improving often deteriorates.

In the present study, the size of the sample does not permit the generalisation of figures. On the other hand, qualitative indications are sufficient to evaluate food habits and the deficiencies of the present diet. In order

to avoid extrapolation of the results of the food consumption survey, the projection of the food demand is based on the establishment of a target ration

6.2.2 Priority to Agricultural Production

However it is clear that improvement of agricultural potential in Mauritania will depend not only on the fight against desertification but also on the prevention of exodus of rural populations towards the towns where, in spite of food subsidies, they live under very difficult conditions and in destitution.

Farmer's incomes are directly linked to the cost of production. It is the production system most favorable to the farmer which should increase his production. In principle, the farmer should be able to satisfy his own food requirements and sell the surplus harvest to pay for his other needs. This surplus would be used to feed the urban populations.

Lower production costs will necessarily have a favorable effect on retail prices and make food products more accessible to the consumers. Only within this framework can the food and nutritional objectives of the country be attained

6.2.3 Specific Nutritional Actions Nutrition and Education

It is perhaps tempting (and classical) to recommend the introduction of nutritional education in the schools. However, realistically, one must admit that

in spite of the considerable efforts of the government to increase the school infrastructures given the present conditions (very large classes of 30 students) it is impossible to integrate nutritional education into the basic school courses.

- although nutrition was taught as part of the State Teachers School courses from 1969 to 1972, this program has since been neglected. A new such program is currently under study. It appears more logical to begin by training the teachers before introducing a new subject in the school program.

However first of all it is essential to define an education and training system conducive to the improvement of agriculture. Until now schooling has been seen as a means to leave the rural world. Education should permit not only the acquiral of basic academic knowledge but also promote the technical and manual skills necessary to the development of autonomous agriculture. It seems preferable to envisage education linked to agricultural popularization programs permitting the development in each agro-ecological zone of improved crops and livestock, which will lead to a better nutritional balance

6.2.4 Nutrition and Health

The basic health plan must include those sanitation measures necessary to improve nutritional conditions: improved hygiene, provision of unpolluted water etc.

The training of sanitary personnel must emphasize preventive measures and teach simple methods to detect malnutrition.

At present, too frequently the mothers go to the PMI Centers because food is distributed there: this practice is also used to recruit for vaccinations (at Akjoujt). Thus the population does not really feel responsible for its own health and for the health of its children. Only the active participation of Mauritians will render the health programs effective.

In fact, when distributing food, the government should ask the population to contribute services in return (cleaning the neighbourhood street in Nouakchott, for example or in rural zones, participation in the construction of dispensaries or wells).

| | | | | | Garley | | | |
|-----------|-----------|------------|------------|-----------|-----------|------------|---------|-----|
| | | | 64 T | | 12 T | | 13 T | |
| 11 W | | | 2 | 3 | 2 | 3 | 2 | 3 |
| 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| 192 28 | 29 192 | 320 122 | 103 115 | 331 86 | 75 188 | 219 167 | 303 | 334 |
| 34 254 | 221 | 442 | 218 | 417 | 17 280 | 71 457 | 303 | 334 |
| 303 8 | 107 | 179 | 82 | 119 15 | 32 | 42 | 46 | 142 |
| 30 | 137 | 11 39 | 31 | 42 | 12 17 | 71 | 23 | 42 |
| 12 | 37 | 21 | | 12 | 9 20 | | | |
| 59 | 233 | 148 | | 16 | 12 | | | |
| 480 | 250 | 42 | 53 | 80 | 83 | 121 | 45 | 281 |
| 50 | 124 | 31 | 200 | 68 | 5 | 97 | 7 | 66 |
| 71 | 56 | 77 | 36 | 66 | 35 | 45 | 73 | 64 |
| 1 | | 7 | 0,5 | 4 | 1 | 2 | 1 | 1 |

| | | | | Monguel | | | | | | | |
|---------------|-----------|---------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 14 PE | | 15 T | | 16 M | | 17 S | | 18 T | | 19 PE | |
| 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| 82 60 | 16 527 | | 229 150 | 134 94 | 135 473 | 225 300 | 222 443 | 203 125 | 237 132 | 154 149 | 155 311 |
| 89 39 | 80 623 | | 379 | 158 386 | 608 | 555 | 665 | 17 345 | 369 | 6 309 | 466 |
| | | | 88 | 64 | 41 | 169 | 123 | 60 3 | 115 | 126 | 139 |
| | | | | | | 20 | | | | 7 | |
| 8 | 40 | | 19 | 47 | 18 | 42 | 31 | 53 | 42 | 31 | 20 |
| 29 4 16 | 8 37 | | | 36 6 | | 56 | 64 | 37 | | 16 | 1 54 |
| 36 | 94 | | | 51 | 16 83 | 307 | 164 29 | 62 | | 148 | 26 |
| | | | | | | 52 | | | 141 | | |
| | | | 43 | | | 4 | 7 | 4 | 2 | 2 | 11 |
| 16 | 256 | | 32 | 33 | | 2 | 132 | 120 | 125 | 16 | 58 |
| 80 | 33 | | 65 | 15 | 2 12 | 57 | 92 | 68 | 50 | 34 | 38 |
| 0,5 | | | 2 | 1 | | 9 | | 1 | 4 | 0,5 | 1 |

Table 4 (a)

Consumption by Product
(Grams/Day)

| Village Households Ethnic Group Run | Kaedi | | | | | | | | | | | | Fao | | | | | | | |
|--|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | |
| | T | | T | | T | | T | | T | | W | | W | T | W | W | W | W | | |
| Run | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | |
| Cereals | | | | | | | | | | | | | | | | | | | | |
| 1 Hulled Rice | 177 | 182 | 222 | 238 | 211 | 131 | 174 | 292 | 204 | 177 | 183 | 157 | 157 | 172 | 105 | 240 | 278 | 273 | 106 | |
| 2 Millet/Sorghum | 103 | 112 | 118 | 121 | 103 | 189 | 75 | 302 | | 34 | | 159 | 585 | 192 | 451 | 302 | | 106 | 26 | |
| 3 Indian Corn | | | | 25 | | | | | | 31 | | | | | | 38 | | | | |
| 4 Wheat | 69 | | 37 | | 81 | | 5 | | | 24 | | | | | | | | | | |
| Total Cereals | 349 | 294 | 427 | 348 | 395 | 320 | 254 | 601 | 204 | 266 | 183 | 316 | 742 | 370 | 556 | 580 | 278 | 379 | 132 | |
| 5 Bread | 73 | 115 | 112 | 134 | 66 | 88 | 79 | 146 | 126 | 131 | 83 | 138 | 61 | 99 | 130 | 236 | 100 | 194 | 112 | |
| 6 Flour (Wheat) | | | | | | | | | | | 33 | 4 | 7 | | | | 5 | | | |
| 7 Noodles | | | | | | | 14 | | 14 | | | | | | | | | 14 | | |
| 8 Tubers | | | | | | | | | | | | | | | | | | | 6 | |
| 9 Sweet Potatoes | | | | | | | 1 | 6 | 84 | | 33 | 59 | 7 | | 3 | | 37 | | | |
| 10 Potatoes | | 21 | | 2 | | 5 | 4 | 13 | 2 | 90 | 33 | | | | | 11 | | 7 | 28 | |
| 11 Sugar | 14 | 21 | 14 | 27 | 16 | 14 | 13 | 14 | 28 | 17 | 16 | 29 | 15 | 39 | 36 | 59 | 31 | 17 | 6 | |
| 12 Pulses | | | | | | | | | | | | | | | | | | | | |
| 13 Shell Peanuts | 18 | 16 | | 13 | 19 | 5 | 20 | 56 | | | 16 | 10 | | | 10 | 38 | | | | |
| 14 Watermelon Seeds | | | | | | | | | | | | | | | | | | | | |
| 15 Cow Peas | | 3 | | 7 | | 3 | | | | | | | | | | 7 | 16 | | | |
| 16 Peas | | | | | | | | | | | | | | | | | | | | |
| 17 Meat | | | | | | | | | | | | | | | | | | | | |
| 18 Mutton | | | 16 | | | | | | | | | | | | | | | | | |
| 19 Beef | 330 | | 134 | 83 | 116 | | 37 | 85 | 246 | 101 | 196 | 182 | 201 | 177 | 38 | 16 | 114 | 101 | | |
| 20 Goat | | | | | | | | | | | | | | | | | | | | |
| 21 Camel | | | | | | 38 | | | | | | | | | | | | | | |
| 22 Poultry | | | | | | | | | | | | | | | | | | | | |
| 23 Game | | | | | | | | | | | | | | | | | | | | |
| 24 Fish | | | | | | | | | | | | | | | | | | | | |
| 25 Fresh Fish | 89 | 109 | 156 | 174 | 122 | 115 | 150 | 155 | 120 | 146 | 123 | 68 | 20 | 34 | 80 | 237 | 123 | 171 | 69 | |
| 26 Canned Tuna | | | | | | | | | | | | | | | | | | | | |
| 27 Canned Sardines | | | | | | | | | | | | | | | | | | | | |
| 28 Eggs | | | | | | | | | | | 4 | | | | | | | | | |
| 29 Fresh Milk | 34 | 37 | 22 | 87 | | 50 | 48 | 101 | | 12 | 5 | 28 | 112 | 117 | 50 | 42 | 36 | 68 | 17 | |
| 30 Butter or Ghee | | | | | | | | | | | | 13 | | | | | | | | |
| 31 Peanut Oil | 34 | 48 | 64 | 101 | 58 | 41 | 57 | 70 | 109 | 86 | 85 | 63 | 41 | 53 | 66 | 74 | 59 | 80 | 145 | |
| 32 Palm Oil | | | | | | | | | | | | | | | | | | | | |
| 33 Tea | 0.5 | 1 | 5 | 10 | 4 | | 2 | 4 | 0.5 | 7 | | 3 | 1 | | 6 | 10 | 6 | | 0.5 | |

| | | | | Monguel | | | | | | | | | | | | | | | | | | | |
|--------|-----|----------|-----|----------|-----|----------|-----|----------|---|----------|-----|---------|-----|---------|-----|---------|-----|---------|---|---------|-----|---------|-----|
| | | | | (4) | | | | | | | | | | | | | | | | | | | |
| 9 E | | 20 PE | | 21 PE | | 22 PE | | 23 PE | | 24 PE | | 25 M | | 26 T | | 27 M | | 65 M | | 28 T | | 29 T | |
| 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| 155 | 58 | 151 | 139 | 70 | 52 | 83 | 210 | 83 | | 82 | 177 | 319 | 46 | 313 | 102 | 158 | | 128 | | 159 | 95 | | |
| 311 | 455 | 330 | 133 | 119 | 206 | 113 | 248 | 113 | | 126 | | 71 | 152 | 159 | 244 | 246 | x | 339 | | 383 | 421 | | 456 |
| 466 | 513 | 481 | 272 | 339 | 110 | 48 | 41 | 48 | | 208 | 177 | 390 | 198 | 472 | 387 | 404 | 73 | 467 | | 542 | 516 | | 30 |
| 139 | 57 | 41 | 49 | 88 | 67 | 3 | 63 | 3 | | 84 | 99 | 58 | 21 | 47 | 58 | 28 | 39 | 104 | | 46 | 7 | | 6 |
| | 8 | 3 | | | | | | | | | 294 | 305 | | | 2 | | | 15 | | 12 | | | |
| 20 | 45 | 70 | 13 | 40 | 45 | 54 | 37 | 7 | | 52 | 40 | 42 | 23 | 89 | 50 | 37 | 54 | 27 | | 18 | 67 | | 59 |
| 3 | 11 | 1 | | 35 | | 19 | | 1 | | 9 | | | | | | | | 10 | | | | | |
| 54 | | 3 | 6 | 5 | 33 | 13 | 66 | 1 | | 39 | 7 | | | 15 | | | 14 | 1 | | 12 | 24 | | |
| | | | | | | | | | | 4 | | | | | | | | 29 | | 3 | | | |
| 26 | 73 | 25 | 90 | 24 | 18 | | | 20 | | 16 | | | | | 123 | | 17 | 28 | | | 35 | | 7 |
| | | 34 | 19 | 16 | | | | 19 | | | 261 | 281 | 118 | 197 | 75 | 82 | 23 | 73 | | | | | |
| | | | | 10 | | | | 12 | | 13 | | 28 | | 56 | | 2 | | 20 | | | | | |
| | | | | 20 | | | | | | | | | | | | | | 2 | | | | | |
| 11 | 9 | 14 | | 4 | | | 7 | 8 | | | | | | 6 | | | | | | 22 | 26 | 29 | 45 |
| 59 | 180 | 124 | 65 | 49 | 125 | 123 | 249 | 100 | | | 38 | 14 | 32 | 2 | 77 | 300 | 54R | 123 | | 141 | 71 | | 163 |
| 38 | 42 | 40 | 25 | 27 | 2 | | 62 | 11 | | 20 | 66 | 20 | | 132 | 1 | 21 | | 28 | | 15 | 30 | 46 | 58 |
| | | | | | | | | | | | | | | | 7 | | | | | | | | |
| 1 | 1 | 1 | | | 0,5 | | | | | | | | 1 | 3 | | 0,5 | | | | 0,5 | 0,5 | 0,5 | 1 |

| (4) | | | | | Feralla (5) | | | | | | | | alaedi (6) | | | | | |
|------|-----|------|-----|-----|-------------|-----|------|-----|------|-----|------|-----|------------|---|------|---|------|----|
| 65 M | | 28 T | | | 29 T | | 30 T | | 31 T | | 32 T | | 47 M | | 48 M | | 49 M | |
| 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | |
| 158 | | | | | | 95 | | | | | | | | | | | | |
| 246 | X | 128 | | 159 | | 421 | 456 | | 537 | 47 | 66 | | | | | | | |
| | | 339 | 182 | 383 | | | | | | 227 | 243 | 324 | 446 | | | | | |
| | 73 | | | | | | | X | | | | | | | | | | |
| 404 | | 467 | 182 | 542 | | 516 | 486 | | 537 | 274 | 309 | 105 | 446 | | | | | |
| | | | | | | | | | | | | 429 | 446 | | | | | |
| 78 | 39 | 104 | 46 | 12 | | 7 | 6 | | | 49 | | 42 | | | | | | |
| | | 15 | | | | | | | | 15 | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 44 |
| 37 | 54 | 27 | 18 | 74 | | 67 | 59 | 98 | 30 | 38 | 35 | 28 | 56 | | | | | |
| | | 10 | | | | | | | | | | | | | | | | |
| | 14 | | 12 | | | | | | | 46 | 13 | | | | | | | |
| | 29 | 1 | 3 | | | 24 | | 71 | | 3 | | 20 | | | | | | |
| | | | | | | | | | 13 | | | | | | | | | |
| 82 | 17 | 28 | | 25 | | 35 | | | | 13 | | | | | | | | |
| | 23 | 73 | | | | | | | | | | 70 | | | | | | |
| | | 20 | | | | | 7 | | | 21 | | | | | | | | |
| 2 | | 2 | | | | | | | | | | | | | | | | |
| | | | 22 | 26 | | 29 | 45 | 50 | 30 | 73 | 60 | 24 | 45 | | | | | |
| | | | | | | | | | | | | | | | | | | 14 |
| 300 | 548 | 123 | | 141 | | 71 | 163 | 171 | 24 | 24 | 42 | 70 | 115 | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 21 | | 28 | 15 | 30 | | 46 | 58 | 77 | 45 | 20 | 39 | 42 | 50 | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 0,5 | | | 0,5 | 0,5 | | 0,5 | 1 | | 5 | 1 | 7 | 2 | 7 | | | | | |

Best Available Document

Table 4 (c)

Consumption by Product (Grams/Day)

| Village Households Ethnic Group Run | Hassi el Barka | | Goguzomal | | | | Ain Farba | | | | Legleib | | | | | |
|--|----------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | 34 M | | 35 M | | 36 M | | 37 M | | 38 M | | 39 M | | 40 M | | 41 M | |
| | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 |
| <u>Cereals</u> | | | | | | | | | | | | | | | | |
| 1 Hulled Rice | 42 | 159 | 33 | 152 | | 24 | | | 132 | 89 | 119 | 101 | 253 | 151 | 105 | 235 |
| 2 Millet/Sorghum | 474 | 280 | 690 | 487 | 434 | 583 | 364 | 489 | 270 | 193 | 128 | 205 | 268 | 53 | 133 | 118 |
| 3 Indian Corn | | | | | | | | | | | | | | | | |
| 4 Wheat | | | | | | | | | 22 | | | | 11 | 305 | | 187 |
| <u>Total Cereals</u> | <u>516</u> | <u>439</u> | <u>723</u> | <u>639</u> | <u>434</u> | <u>607</u> | <u>364</u> | <u>489</u> | <u>424</u> | <u>282</u> | <u>247</u> | <u>305</u> | <u>542</u> | <u>503</u> | <u>238</u> | <u>540</u> |
| 6 Bread | | | | | | | | | | | | | | | | |
| 7 Flour (Wheat) | | 1 | | | | | | | | | | | 34 | | 59 | |
| 8 Noodles | | | | | | | | | | 9 | | | | | | |
| <u>Tubers</u> | | | | | | | | | | | | | | | | |
| 10 Sweet Potatoes | | | | | | | | | | | | | 43 | | | |
| 11 Potatoes | | | | | | | | | | | | | | | | |
| 12 Sugar | 20 | 69 | 35 | 44 | 50 | 36 | 48 | 51 | 45 | 10 | 31 | 13 | 37 | 16 | 31 | 17 |
| <u>Pulses</u> | | | | | | | | | | | | | | | | |
| 14 Shell Peanuts | | 6 | | | 120 | 1 | | | 3 | | | | | | | 6 |
| 15 Watermelon Seeds | | | | | | | | | | | | | | | | |
| 16 Cow Peas | | | | | 28 | | 16 | | | | | | | | | 24 |
| 17 Peas | | | | | | | | | | | | | | | | |
| <u>Meat</u> | | | | | | | | | | | | | | | | |
| 19 Mutton | | 17 | | 55 | | 8 | | 21 | | 21 | | 22 | 15 | | | |
| 20 Beef | | 62 | 22 | | | 1 | | | | | | 59 | 56 | | 25 | |
| 21 Goat | | | | | | | | | | | | 20 | | | | |
| 22 Camel | | 27 | | | | 4 | | 55 | 37 | 55 | 24 | | 123 | 12 | 63 | 35 |
| 23 Poultry | | | | | 43 | 40 | | | | | | | | | | |
| 24 Game | | | | | | | | | | | | | | | | |
| <u>Fish</u> | | | | | | | | | | | | | | | | |
| 25 Fresh Fish | | | | | | | | | | | | | | | | |
| 26 Canned Tuna | | | | | | | | | | | | | | | | |
| 27 Canned Sardines | | | | | | | | | | | | | | | | |
| 29 Eggs | | | | | | | | | | | | | | | | |
| 30 Fresh Milk | 300 | 130 | 415 | 80 | | (756) | 1 | 373 | 373 | 52 | 57 | 17 | x | | 1 | |
| 31 Butter or Ghee | | | | | | | | | | | | | | | | |
| 33 Peanut Oil | | 2 | | | 23 | | | | | | | | x | 24 | | 20 |
| 34 Palm Oil | | | | | | | | | 8 | 33 | 6 | | 4 | 2 | 9 | |
| 35 Tea | | | | | | | | | | | | | | | | |