Feasibility Assessment and Research Design
Household-level investigation of the impact of Title II food aid in Rwanda

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I. Introduction

Since 1963, Catholic Relief Services (CRS) operations in Rwanda have provided PL 480 Title II commodities to recipients at nutrition centers throughout the country. Although CRS has also engaged in school feeding, other child feeding, and general relief activities, delivery through the largely pre-existing system of government and mission health and nutrition centers has been the principal mechanism for provision of food aid to beneficiaries. In FY 1986 CRS plans to distribute 7500 metric tons of food aid (in the form of soy-fortified cornmeal, nonfat dry milk, and soybean salad oil) through a system of 98 nutrition centers located throughout the country. In all, 77.3% of CRS Title II food aid to Rwanda is planned to be distributed in this way. The aid thus provided constitutes less than 1% of the total food needs of the country and reaches approximately 3% of the population. Principal beneficiaries are intended to be women in their childbearing years (who in Rwanda are frequently pregnant, lactating, or both) and their children aged five years and under.

CRS programming in sub-Saharan Africa is strongly rooted in the premise that the objectives of food aid are both the direct improvement of nutritional status, and the delivery of economic aid to the recipient household in the form of food. It is argued that, given appropriate nutrition education, by making additional resources available to the household and thereby giving that household more flexibility in the allocation of all its resources, food consumption, especially among vulnerable members, will increase, and their health

and nutritional status will be positively affected. A crucial condition of such an approach is that the economic value of the food aid package be sufficiently large to have a significant effect at the household level; it is assumed that the food aid will be shared by all family members rather than reserved for the exclusive use of just some of those members. Hence, in most CRS African country programs a ration of 10 to 15 kg of food is provided to each participating household per month. Rwanda is unusual in that the standard ration provided throughout the country is 5 kg per household per month--2 kg cornmeal, 2 kg NFDM, and 1 kg oil. The provision of a so-called "multiration" or "family ration" of 10 kg or more has been discouraged by Rwandan authorities because of concerns over creating food aid dependence and that recipients might come to value the food aid more highly than concomitant services provided by nutrition centers.

CRS nutrition center programs in Rwanda do more than simply distribute food. As a means of assuring that program objectives are met, staff perform ongoing surveillance of the growth achievements of recipient children. Mothers and where possible fathers (whose participation is encouraged and in some cases mandated) are provided with general health and nutrition education and information. Food processing and cooking demonstrations utilize locally-available foodstuffs, often provided by the parents, in the preparation of suitable infant foods. Most nutrition centers have both demonstration gardens, which adult participants cultivate as a group, and small animal husbandry projects or demonstrations. These services, the salaries of some nutrition center employees (moniteurs, monitrices, animateurs) and some

transport costs are supported by the collection of a participant contribution (cotisation) of 75 FRw (US $0.81) per ration per month. The nutrition centers thus attempt to satisfy Rwandan needs by providing a program that not only addresses nutrition problems, but which also tries to integrate improvements in health, food production, and other objectives into a total program. There is, however, concern on the part of some CRS staff that a single ration of 5 kg per household per month is not a sufficiently large economic transfer to ensure that vulnerable young children obtain the necessary nutritional benefits (see CRS 1986 OPP). Accordingly, CRS supports the extension of the multiration of 10 kg or more to beneficiaries enrolled in Rwandan nutrition center programs.

As a first step, on an experimental basis, the multiration is now being provided at four of the 98 nutrition centers in Rwanda which distribute CRS Title II foods. Two of these, at Rugabano nutrition center in Kibuye Prefecture and Gatagara nutrition center in Gitarama Prefecture (see map, Annex D) have been in operation for over one year. Two others, at Rwankeri nutrition center in Ruhengeri Prefecture and Kigoma nutrition center in Gitarama Prefecture, have been implemented more recently. As of October 1985, 1778 children from 1254 families are being served by the experimental multiration program. In addition, 85 of these families are involved as well in development projects--husbandry of cattle, goats, chickens and rabbits--intended to permit them to become more self-sufficient and to maintain a higher standard of living even after their enrolled children achieve(s) the age of five years and is/are no longer

eligible to receive the ration.

Although the multiration/economic transfer concept has been widely implemented by CRS in sub-Saharan Africa, it has not as yet been validated so far as desired nutrition, consumption, participation and/or income effects are concerned; nor are the criteria used to determine the size and composition of the ration packages clearly worked out. Because of the simultaneous functioning within the country of single ration centers, multiration centers, and multiration centers where recipients are also involved in development projects, Rwanda has been suggested as an appropriate site for an attempt to assess the hypothesized differential nutrition, consumption, economic and other effects of the alternative rations and activities. Two consultants, Judy Bryson (economist) and Anne Fleuret (anthropologist) travelled to Rwanda between January 21, 1986, and February 7, 1986, with the following objectives: 1) examination of the feasibility of CRS program options, their implementation, and the likelihood of objectives being met; 2) assessment of the feasibility and potential results of household-level research to establish differential impacts of ration packages; and 3) design of a household-level study. The following report, prepared by Anne Fleuret with the assistance where noted of Raynald Pierre-Louis, encompasses the second and third of these tasks. A schedule of activities and list of persons contacted are attached as Annexes A and B; Fleuret's scope of work as Annex C.

II. Feasibility

II.A.1. Background

An assessment of the feasibility of household-level research on food aid impacts in Rwanda must begin with a consideration of the environment and setting in which such an activity would have to be carried out. The following review pays particular attention to two key areas, nutrition and consumption studies, and household budget and income studies, in an effort to define the extent of nutrition problems and the potential significance of nutrition center programs.

Rwanda is a small (26,340 sq km) landlocked country located in the Great Lakes Region of East-central Africa. It is bordered by Zaire, Burundi, Tanzania and Uganda. From 1894 until the First World War, Rwanda and the neighboring state of Burundi were part of the colony of German East Africa. German military and missionary forces were able to assume control of the territory fairly easily by negotiating an alliance with the traditional ruler (Mwami) of a large portion of the area and by implementing their administration through pre-existing lines of authority. This is significant because it ensured the continuity of certain traditional political and social institutions. After World War I the area that now comprises independent Rwanda and Burundi was detached from German East Africa and placed under Belgian authority as a League of Nations and later a United Nations mandated territory. Rwanda became independent in 1963 following a series of uprisings which disrupted both traditional lines of authority and

politico-military institutions. A coup in 1973 replaced the leadership and moved the balance of power from the south-central to the northwestern portions of the country. This latter fact in particular is one which must be taken into consideration when research and development activities are being designed and implemented.

The central portions of Rwanda have been under effective, centralized control since before the German period, although it is said (cf. Louis 1964) that the Mwami saw in the German presence a tool which could be used further to extend and consolidate his authority. In the traditional order, the dominant ethnic group of the Tutsi, comprising about 15% of the population, exercised power over the Hutu agriculturalists who make up virtually all of the rest of the population, through complex and manystranded patron-client relationships rooted in economic, political and social obligations and exchanges. The tiny Twa minority (about 1% of the total population) occupied a marginal and anomalous position in this traditional order, said by some to be protected by the authorities and by others to be victims of discrimination.

The events of the early 1960s have resulted in some alterations to this picture. Hutu politicians are now firmly in control, and the biological and cultural characteristics which previously distinguished the three ethnic groups are now blurred; intermarriage amongst them is said to be submerging their individuality. Although ethnic group membership is indicated on citizens' identity cards, it is not difficult to move from one ethnic category to another. Ethnic lines

are not as clearly drawn, then, as is suggested by the early ethnographic literature, and socio-economic status as well as disparity of interests between northern and southern parts of the country are now emerging as more significant both in differentiation and in the formation of alliances. The increasing vagueness of ethnic boundaries does not mean, however, that ethnicity is no longer an issue. Lemarchand in particular has noted that ties of patronage and clientship emanating from the old social order are of critical importance in the context of development in contemporary Rwanda (1982).

II.A.2. Agriculture and food production

The bulk of the Rwandan population--at least 90%--makes its living from agriculture. The country is the most densely populated in Africa, and the population, now estimated at around 6 million, is growing at a rate variously estimated at between 3.4 and 3.7% per year. Hence, the size of individual farms is quite small, slightly over 1 ha per household (the findings of the Enquete National Agricole established a figure of 1.22 ha per household). The population is differentially distributed over the country in densities per sq km from 100 in parts of Kibungo Prefecture to over 600 in parts of Ruhengeri Prefecture (see map, Annex D). Households are generally composed of a married couple and their children; they are not aggregated into villages, but stand as individual units in the hills (collines). Distribution of land is organized by patrilineal inheritance and women effectively do not own land. In the 1960s and

1970s population was to a small extent redistributed and agriculture expanded by bringing new lands under cultivation. Some settlement schemes were established in the eastern and southern regions (especially in Butare, Kibungo and Byumba Prefectures). Such expansion is essentially no longer possible; virtually all suitable agricultural land is under cultivation, most in conditions of traditional tenure, and intensification of production is held to be the direction that further agricultural development must take.

The primary unit of food production, distribution and consumption is the rural nuclear family household. Production of cash and export crops is a secondary activity. Up to the present, the agricultural system has proven capable of maintaining and even increasing per capita food production, but now that agriculture has expanded to its limits so far as land availability is concerned, development and government agencies have concluded that an approach combining family planning, agricultural intensification and employment generation must be taken.

So far as crop production is concerned, there is no doubt that the population is extremely reliant on a very few principal crops for the bulk of their food intake. Laure (1982) found that just three foodstuffs--sweet potatoes, beans, and bananas in the form of beer--provide 88% of the calorie intake for farmers in Gisenyi Prefecture. Sweet potatoes are consumed 317 days of the year. The findings of the Enquete National Agricole, based on data obtained from a random sample of 2100 active farmers in 150 rural sectors, show the

following national averages:

crop	% of farmers growing it
bananas	86.1
beans	97.9
sweet potatoes	86.4
maize	86.6
sorghum	80.5
cassava	66.1
coffee	52.2

Other principal crops--potatoes, peas, peanuts, soybeans and wheat--are each grown by fewer than 1/3 of farming households. Since most maize is eaten green, and sorghum is used to prepare beer (as are 70% or more of the bananas produced), the importance of beans and sweet potatoes as the principal foods both produced and consumed is striking.

Of the "industrial" crops, non-food items sold on the export market, coffee is the most significant: tea and pyrethrum, the other principal agricultural exports, cannot be widely cultivated because of their altitude and rainfall requirements.

II.A.3. Adminstration and services

Rwanda employs a strategy of decentralization so far as administrative structure is concerned, with the ten prefectures made upt of 143 communes and the communes comprised of sectors. Heads of prefectures and bourgmasters of communes are appointed by the

Presidency, sector and lower-level officials elected by the citizens. In the future, development activities and services are to be organized and implemented, so far as possible, at the level of the commune.

The country as a whole is characterized by the differential and largely inadequate distribution of services. Although the majority of communes have a health center or nutrition center, each facility serves a population ranging from 28,405 to 80,793 people, putting immense pressure on available staff. Health care personnel are so few that in some prefectures there are 6 to 7 thousand people per health care worker. It is thus not surprising that infant mortaliity is estimated at ca. 120/1000 (against a world average less than 100) and that life expectancy at birth is about 47 years. As well as health and nutrition centers, agricultural, veterinary, extension, and educational services suffer from shortages of personnel and inputs, and inadequate training facilities/opportunities. Primary school enrollment is estimated at around 65% of the eligible population, but fewer than half of all adults and less than 1/3 of adult women are thought to be literate. Secondary and technical school enrollment is fractionally small; trained teachers are at a premium. Although the road network is quite well developed and transport needs are served by a variety of public and private vehicles, internal communication can be very difficult.

II.A.4. Nutrition situation in Rwanda (with Raynald Pierre-Louis)

Rwanda is a poor and overpopulated country with a subsistence ceconomy

and a fragile food production system; it is not then surprising that malnutrition is among the major health problems facing the country.

Although and no national survey has been conducted and there are few other studies, so that the real extent and causes of nutritional diseases in Rwanda are not clearly understood, malnutrition was officially recognized by the government as the "first health problem" of the country in the first five-year plan (1972). The subsequent second and third plans had as a main objective the improvement of feeding and nutritional status of the Rwandan people.

Varying estimates have been made of food availability, nutrient consumption and nutritional status in Rwanda. In 1980, in a joint analysis of the food situation, Klaver et al., on the basis of FAO/WHO recommendations, estimated daily requirements for Rwandan individuals as follows:
energy needs: 2,100 kcal/person/day
protein needs: 59 g/person/day
lipid needs: 40 g/person/day.

A country-wide survey conducted during the late 1960s (Vis et al. 1975) makes a case for widespread malnutrition in Rwanda on the basis of food consumption studies carried out in 12 rural communes. The investigators worked with a number of families in each commune, some over an entire year and others at intervals. Raw ingredients used to prepare meals were weighed, as were leftovers, and from these data household calorie availability was calculated. There is no indication

that foods consumed away from home or as snacks were included in these computations. Nevertheless the results are employed to demonstrate that families in all but one of the prefectures sampled satisfy less than 83% of their daily calorie requirements. The authors feel that analyzing growth data on young children with reference to Western standards is not appropriate for the Rwandan situation; assessment of nturitional problems is thus based on proxy evidence from consumption studies, and clinical (but not anthropometric) evaluation. On the basis of a 0.5% incidence of Bitot's or "pre-Bitot's" spots in a sample of 34,000+ individuals examined, combined with the extremely low intake of fats recorded from the consumption surveys, Vis et al. also argue for widespread vitamin A deficiency in the Rwandan population. These authors also posit a significant seasonal and regional variability in protein and calorie supplies.

Vis' rather grim picture of nutrient availability and nutritional status has been somewhat revised by some recent case studies and summary reports. In a consumption study of 40 households in Gisenyi prefecture, Laure finds calorie consumption to average 1771 kcal per person per day, from a low of 1455 during August-September to a high of 1998 in February-March; over the year 88% of calorie needs are met (1982). Again there is no indication that snacking and extra-household intake entered into the calculations. Further, because of the extensive consumption of sweet potatoes, vitamin A intake exceeds recommended dietary allowances. However, the consumption data provided in the study do not provide a basis for drawing nutritional conclusions due to the small size of the sample

and the lack of supporting anthropometric data.

In a report on world food needs and availability, USDA states that "Although Rwanda's diet is composed largely of starchy foods such as plantains, sweet potatoes and cassava, which have fewer calories by weight than cereals, calorie intake per capita comes remarkably close to the FAO recommended minimum" (1983). Pointing to the flexibility and complexity of agricultural cycles and planting practices, Morris notes that "...the Rwandan farmers have developed a farming calendar that provides a relatively uniform supply of energy throughout the year, and a feasible but usually less uniform supply of protein" (1979:56).

A review of food policy issues prepared by the Royal Tropical Institute of Amsterdam summarizes food and nutrition problems as follows: "The current nutrition situation in Rwanda is characterized by a fair domestic supply of energy and protein, with clear social and regional disparities, but by an overall lack of fats" (1984:13). While domestic production alone is said to provide 95% of needed calories and 100% of the required protein, only 50% of the necessary fats are thus available. And because of seasonal, regional and socio-economic inequities, an estimated 23% of the population suffers from a moderate calorie deficiency, while 15% are severely deficient.

In its most recent country profile on Rwanda, the World Food Programme estimates the average energy requirement at 2,320 kcal/person/day. But evaluation of calorie availability in Rwanda yields an average of

2,174 kcal/person/day (94% of requirements) for 1981-83, and 2,043 kcal/person/day for 1984-85 (88% of requirements). Protein availability is estimated at 52.7 g/person/day, which is about 89% of requirements. Adequacy of fats is estimated at 35% of the amount required. The result is protein-energy malnutrition, acute and chronic, affecting an estimated 30 to 40% of young children, especially those aged two to five years, and possible, though poorly documented, micronutrient deficiencies, all affected by seasonal variation and socio-economic status. Protein-energy malnutrition also appears to be of some importance among adults, particularly in rural areas. This adult malnutrition seems to be linked with cyclical variations in household income and food supply.

The few nutritional (as opposed to consumption) surveys or studies that have been conducted during the past ten years all seem to confirm the pessimistic estimates of the FAO and WFP. These studies measure mainly the prevalence of malnutrition in young children. Such figures can be used as a relatively sensitive indicator of the nutritional status of the sampled population as a whole, since the nutritional status of children in a household is usually the first "reflector" of any shortfall in the family food supply. The indicators of nutritional status used here are the child's weight for age and weight for height ratios as a proportion of "standard" or healthy levels. The proportion of children in a population who fall below 80% of the reference standard provides a good estimate of short-run acute and of chronic malnutrition.

In 1976, Meneus et al., in an evaluation of the nutritional status of Rwandan children from birth through five years of age, studied a sample of 3,029 children representative of Rwanda's twelve agricultural regions. The study showed (on the basis of weight for age, weight for height, and presence of oedema) that 37% of the children suffered from malnutrition, 3% with an acute form and 30.9% with growth retardation. More recently, data collected in four rural sections of Rwanda and concerning 460 children birth through five years showed that 41% of the children suffered from malnutrition; 1.7% of them were severely malnourished, 4% of the children had acute malnutrition and about 40% presented with growth deficits (Hennart 1984).

The most recent and genuine nutritional data available are found in reports from the CRS nutrition centers and in two studies conducted by the Ministry of Health. The figures provided by CRS for the months of January through September, 1985, yield a mean weight for age ranging from a low, at Mushaka, of 81.5% to a high, at Kiruhura, of 90.2% of the Harvard Standard. Mean total monthly variation for all clinics is 1.66%, suggesting little impact on child growth from seasonal fluctuations in local food supplies. There is a concentration of high weight for age means during the months of January, February, and September, and a less marked tendency towards low weight for age means in January, March, May, July and August. April and June exhibit neither highs nor lows. In sum, there is no strongly marked seasonal pattern except a tendency to slight weight gains in June and September.

For these 95 CRS centers, a mean of 31% of program participants is below 80% standard weight for age (mean calculated over nine months). Fewer than 2% of the children seen are below 60% of the standard (severe malnutrition), even in the month when mean weight for age of all recipients is the lowest. Although CRS clinic figures cannot be taken as representative of the population at large because of the bias of self-selection and the possible positive effects of duration of participation on nutritional status, these data do provide a basis for suggesting that mild to moderate protein-energy malnutrition is a problem among young Rwandan children. Apart from regional and socio-economic variations in access to the food supply, infectious disease and late introduction of solids have been implicated in this nutrition picture.

A study entitled "L'Impact des centres nutritionnels sur le developpement national et la sante familiale", presented at the Seminaire National sur la Sante Familiale/ONAPO in 1984, uses weight data from children newly enrolled in nutrition centers in 1983 compared with similar data from those already enrolled. 61.9% of new enrollees had a weight for age of 80% of the Harvard Standard or above, as opposed to 67.3% of those already registered. The author attributes the better performance of those already participating to the action of the nutrition centers (Mbonyumuvunyi 1984). Unfortunately the age profiles of the groups being compared are so dissimilar as to invalidate the comparison, but the data do again indicate that mild to moderate protein energy malnutrition affects a

substantial proportion of the young child population in Rwanda.

The reliability of nutrition data collected at the center level is questioned by the Nutrition Service of the Ministry of Health. The Service has just completed a nutritional study of 2,000 families throughout Rwanda and the results will hopefully give a more accurate picture of the national nutrition status. The analysis is expected to be completed in late March (Jean-Damascene, personal communication).

As for now, the current nutrition situation in Rwanda may be summarized as follows:

-chronic nutrient deficits in national food supplies, particularly in supplies of high-quality fat and protein;
-seasonal acute shortages of food and cyclical problems of undernutrition;
-acute and chronic protein-energy malnutrition, affecting 30 to 40% of children under five;
-widespread and serious nutritional deficiencies, especially among the rural poor, infants, and young children;
-need for more precise studies and data on the epidemiology of malnutrition.

II.A.5. Budget and income studies

Household budget data are also an essential component of the background being presented here. CRS calculates the net value of the monthly 5 kg food aid package at 500-550 FRw, giving an annual value per household among single ration recipients of 6,000 to 6,600 FRw ($65-71). Estimates of annual per capita income in Rwanda range from less than $150 to $270. More useful than such estimates are the results of household level studies of the cash value of food production and the cash generated by salaried employment and the sale of goods and services. Laure (1982), using weighed food intake studies coupled with price surveys of foodstuffs in local shops and markets, concludes that the daily value of food consumed per person in rural households in Gisenyi Prefecture is 15.37 FRw. This figure is the sum total of the value of home production, the value of food items received as gifts or exchanges, and actual cash expenditures. The annual value of food consumed per person is 5610 FRw, of which 61% represents the value of home production. Actual cash expenditures on food are only 3 FRw per day; the implication is that even a single ration valued at 500 FRw per month makes a significant contribution to the household economy.

This presumption is strengthened when the results of household-level income surveys are examined. Bart and Godding (1984) have studied the role of bananas in the domestic economy in Kanama commune, Gisenyi, by comparing two communities. In the first, near to a trading center,

monthly cash income totals 7,738 FRw per household, but 53% of the households have one or more members working at regular salaried jobs, and cash is also generated by womens' market vending and other commercial activities. The second community, more isolated and less commercialized, realizes a mean household cash income of 2,839 FRw per month. The bulk of this income is generated by sales of banana beer. In this second community the cash value of the food aid ration would increase monthly household income by over 17%. Another study, of smallholder coffee cultivation near Butare, suggests an even greater potential impact (cf. Bart 1980). In this area coffee sales are the principal source of cash income, but in 1979 the 106 growers (from a total sample of 143) earned an average of only 6,000 FRw per household from the coffee crop. Cash is also earned in this area from sales of banana beer, chickens and cassava, from casual labor at 60 to 70 FRw per day, and in just 19 cases from regular salaried employment. Total annual cash income in this group rarely exceeds 12,000 FRw per household per year. In this case a single ration represents an income increment of 50% (not taking into account the value of home-produced food). On the basis of these studies it is justifiable to conclude that even the current 5 kg single ration has potentially significant income effects which could be established in the course of a household-level investigation.

II.B. Factors facilitating the study

The introductory and background information provided on the preceding pages suggests that there are a number of features both of the CRS

program and the Rwandan environment which combine to make Rwanda an excellent, even unique, setting for the implementation of research on food aid program impacts.

II.B.1. The country setting

Despite the area's history of ethnic tension and conflict, rural Rwandan society is a good deal more homogeneous in the present day than early ethnographic sources would lead one to expect. There is a single indigenous language, Kinyrwanda, which is spoken by all regardless of ethnic identity. And, as already noted, rivalries other than ethnic ones have increasingly come to the forefront, most notably based on socio-economic factors and geographical allegiance (north vs. south). Some earlier sources contain evidence that even in pre-independence Rwanda the mass of the rural population was relatively undifferentiated as regards economic activity and food consumption. On the basis of data distilled from 48 Rwandan biographies, Codere (1973) concludes that almost every rural household subsisted on a largely agricultural diet and participated in agricultural activities. Gravel (1974) analyzes 308 Tutsi meals and finds consumption patterns virtually identical with those of his Hutu informants, despite the Tutsi ideology of meat and milk consumption. It thus seems reasonable to conclude that in rural areas ethnic identity of informants will not be a critical variable except in so far as it might limit economic opportunities, and that difficulties in communication will be minimized due to the fact that a single language is spoken.

II.B.2. Choice of study site

Potential research sites are limited because of the existing pattern of implementation of CRS multiration experiments. These activities are ongoing in three prefectures (Ruhengeri, Gitarama and Kibuye) which were chosen as a consequence of expressed interest on the part of the centers involved, and Rwandan government priorities. In order to be able to control for regional variations in economic activity, cropping patterns, social organization, local administration and the like, it is advisable to conduct the study within a single prefecture or sub-prefecture. All of the options necessary for effective examination of existing program activities are available within the boundaries of Gitarama Prefecture, and further, within particular communes of Gitarama. Both the Gatagara and Kigoma nutrition center multiration experiments are located in Kigoma commune, whose bourgmaster is noted as an exceptionally capable and interested leader. Of the sixteen other communes which make up Gitarama Prefecture, nine have single ration CRS nutrition center programs and seven have no CRS program (see Annex E). It will be necessary to find out if any other donors or PVOs have food aid activities in Gitarama and to eliminate any such activity sites as sampling areas, but given the size of the Prefecture and the number of communes involved, it seems certain that an adequate number of non-participant households can be found to permit comparison with the various categories of food aid recipients.

Gitarama is also fairly close to Kigali, and it is one of the two prefectures selected as priority areas for the multiration experiments by the Rwandan government. Informants familiar with the research climate in Rwanda say that Gitarama is among the best places in the country to carry out household data collection.

Gitarama Prefecture is also more typical of patterns expressed by national averages in population density, household size, and educational attainments than either Kibuye or Ruhengeri Prefectures, the sites of the two other multiration experiments. Since Gitarama is located between Butare and Kigali, there are wage labor opportunities, but not so near as to draw many people away from rural food production activities. Additionally, Gitarama conforms more closely than either Ruhengeri or Kibuye to the national pattern of agricultural production portrayed in the results of the Enquete National Agricole.

II.B.3. Cooperation among interested agencies

All of the concerned parties--CRS, AID, and the Rwandan government--have a strong interest in making the most effective possible use of food aid resources and see a household level study as a means of contributing to the effectiveness of existing programs. Thus far these agencies have worked effectively together to bring the process to the design stage. It is critical, however, that the research itself be supervised, the data collected, and the report prepared by individuals who have no formal links with any of these organizations. In this way the objectivity of the results is more

certain and the cooperation which has thus far marked the relationship amongst the principal actors can be maintained.

II.B.4. CRS operations in Rwanda

The usefulness of the stay in Rwanda was greatly enhanced by the opportunity to visit a number of CRS nutrition centers, both "traditional" (i.e. providing a single 5 kg ration) and multiration. These nutrition centers were on the whole impressive in their efficiency, their record-keeping, and their provision of services to the client population. Although a report by Cook and Csete (1983) demonstrates that participants and nutrition center do not necessarily have congruent notions about what obligations each has to the other, the report also suggests that the participants have a positive evaluation of their relationship with the program, and feel that they do derive benefits from it. In view of the almost adversarial relations that have been observed at other food aid distribution centers (i.e. in Kenya by this author) the more harmonious relationships that seem to characterize programs in Rwanda are encouraging. It is also advantageous in a research situation in that the project personnel will not be forced into the position of serving as intermediaries between conflicting groups.

II.C. Constraints

Against these positive circumstances of language, culture, local level political organization, and cooperation must be laid a number of

factors that could conceivably make implementation of research more difficult. As Lemarchand notes, "...Rwanda suffers from a perennial demographic explosion which puts enormous pressures on land resources; soil erosion is a ubiquitous plague; the relatively poor quality of soils combined with unfavorable ecological conditions sets further limitations on agricultural development; and the scarcity of administrative skills at virtually every level inevitably affects the structure, patterns and rate of social development" (1982:7). These processes in and of themselves create a difficult research situation, as do the more specific issues discussed below.

II.C.1. Food consumption data

Despite the several consumption based studies which have been carried out in Rwanda (Leurquin, Vis et al., Close, Laure, Bart, Bart and Godding), ethnographers and others engaged in household-level data collection concerned with food issues note that the collection of such data is very difficult in Rwanda. Gravel says, "Eating to [Rwandans] is one of those natural functions of the body that is necessary but about which it is best to remain discreet..." (1974:56); at the household level, food is not usually consumed in public, and data must be collected by questionnaire and interview rather than by direct observation. Also on the nature of eating in traditional society, Codere notes that it was carried out "...in such closely-guarded privacy that it amounted to secrecy" (1973:15).

Weighed-intake data given these attitudes would be difficult to

obtain, as would data derived from actual observations of culinary techniques or collection of recipes. Investigators currently engaged in research on food consumption and nutrition in Rwanda have stressed that their ability to obtain such data is very dependent on building rapport and a relationship of trust with informants before undertaking what are to the Rwandans intrusive and/or distasteful inquiries. I should add that the situation in Rwanda appears very different from that in other East African countries, where comparative strangers may be lectured on appropriate food preparation techniques, given guided tours of the kitchen, and fully expected to join in the family meal. In Rwanda, under ordinary circumstances food sharing is limited to banana and sorghum beer, meals are not taken in public nor shared with non-family members, and people do not like to discuss what they have eaten (J. Csete and A. Haugerud, personal communications).

II.C.2. Personnel

Many people who have worked in Rwanda have commented on the paucity of educated and/or skilled individuals to fill administrative, educative and technical posts at all levels in both private and public sectors in Rwanda. According to the World Food Programme profile on Rwanda only 2% of the population is enrolled in secondary school. Of those students who complete primary school and take the secondary school entrance examination, only a fraction obtain places. This means, then, that there is a real shortage of persons available who have the necessary qualifications and experience to serve as research assistants or data gatherers for any household-level inquiries that

might be staged. It is particularly unlikely that such persons could be recruited at the commune or sector level. Laure, in describing his data-gathering efforts in Gisenyi, comments that several of the enumerators initially recruited and trained in household data collection techniques proved simply incapable of doing the job and had to be replaced, causing delays and inconsistencies between data sets. There do seem to be some ways of getting around these difficulties, but they are dependent on other factors which will be discussed in the research design.

II.C.3. Income and other economic data

The problems inherent in collecting detailed and sensitive economic data are not unique to the Rwandan setting but rather a burden shared by all investigators who are interested in socio-economic questions. Two areas are particularly troublesome: data on livestock holdings, and true figures concerning actual cash income. Gravel relates that figures obtained by surreptitiously tallying the size of goat herds as they are brought out of the compound in the morning are several times larger than figures obtained by asking individuals how many animals they own (1974). Since according to the Enquete National Agricole three-quarters or more of the households in Gitarama do not confine their cattle or small stock in enclosures, getting accurate data on stockholdings, in an area of the country where livestock are important and over 70% of households admit to having one or more animals, may be difficult.

Cash income is another notoriously difficult topic of investigation. There are at least two sources of difficulty. First of all, most rural African households try to take advantage of every cash-earning opportunity available and thus often have multiple sources of income. Varying amounts of cash may be obtained regularly for salaried employment or weekly sales of crops or manufactured items (e.g. at markets), or irregularly and unpredictably from casual labor, export crop sales, sales of livestock, or even illegal activity. Men, women and/or children may be the earners (in the households Laure studied 26 of 54 males aged over seven years have some kind of salaried work, and this includes a number in the 7-to-12-year age group). Given multiple income earners, multiple income streams, and individual management by the earner of the cash s/he generates, no single household member could give an accurate figure for household income, even if s/he wanted to. Herein lies the second difficulty: even in our own society people are reluctant to discuss their earnings, for fear the information could be used against them or simply from the feeling that one's income is a personal, confidential matter. I do not anticipate that Rwandans need necessarily feel any differently. Some ways of dealing with these problems will be discussed in the research design.

II.C.4. "Cultural" constraints

Despite the fact that ethnic identity is much less significant and prominent in Rwanda than it used to be, ethnicity is still an extremely sensitive issue and consequently discussion of it should be avoided to the extent possible. The apparently rather small effect of

ethnic group membership on economic, agricultural and food consumption behavior is something to be grateful for, since ethnic identity need not then be the subject of direct inquiry or discussion at all.

Another issue raised by several people with reseach experience in Rwanda is that of intense rivalry, competition, and suspicion between individuals and families, often expressed in the form of violence, witchcraft, and accusations of poisoning. In at least one case these have proven quite disruptive to a research project, as a successful applicant for research assistant's post fell ill and accused an unsuccessful rival of poisoning her. My sources do add, however, that such problems are likely to be much less significant in Gitarama than in those parts of the country more distant from Kigali. So long as the researchers do not violate confidences or behave in flagrantly improper ways, these interhousehold antipathies should not present insurmountable difficulties.

II.D. Reconciliation of objectives

Since a number of different parties, with different objectives, have an interest in the proposed research and what can be learned from it, it is not surprising to find a range of views as to what the goals and the outcome of such a study might be. Accordingly, before summarizing both positive and negative factors affecting implementation of such a research activity and making a judgement as to its feasibility, it is necessary to discuss these viewpoints, to see to what extent their objectives are complementary (or otherwise) and to assess the possibility that the various agendas can be satisfied.

II.D.1. CRS

Local and regional CRS personnel, particularly those from the East Africa and Indian Ocean Regional Office in Nairobi, have prepared a list of quite explicit questions which they would like to see answered by the study. This document is appended as Annex F. Both the questions posed and other information desired can be obtained by a well-designed household study. Many of the CRS concerns parallel issues explored in a previous study of food aid impacts in rural Kenya (Fleuret 1985).

The Rwanda program's interest in emphasizing the "commune initiative" may be more difficult to deal with given that just the one commune-based experiment has so far been implemented. However,

examination of that experiment would be included in the research design, so that some information on the impacts of this one program would be a product of the study.

II.D.2. CRS/New York

In a lengthy telephone conversation, staff in the Africa office of CRS headquarters confirmed that their principal concern is for a study that examines the impact of different ration packages in depth and in detail. This general objective is consistent with the more explicit questions posed by CRS/EAIO. New York also expressed as concerns the isolation of a set of criteria permitting calculation of optimal ration packages, and more focussed targeting. Discussions with CRS/Rwanda as well as the professional staff (monitrices) in the nutrition centers indicate their view: regardless of how focussed geographical or other targeting becomes, for individual nutrition center program purposes it will still be too imprecise a means of selecting beneficiaries. Hence, in Rwanda, nutrition center staff feel that they should be given some discretion in the selection of participants, and that when commune administration of programs becomes widespread, committees made up of local officials, nutrition staff and concerned community members should develop area-appropriate criteria for participant selection.

CRS/New York also wishes to learn if viewing the ration as an economic rather than a direct nutritional supplement is a realistic approach, and if so what that value should be. While it is possible to

determine the economic role of the ration within the household, it does not seem likely that one single economic value, or the development of a formula for calculating an optimum value, is a sufficiently flexible approach to satisfy all programming needs. In effect, CRS already employs a formula, albeit not an explicitly nutritional one, for creating ration packages in sub-Saharan Africa: 2 kg cereal, 2 kg milk or blended product, 1 kg oil. The actual economic value of this ration varies according to its composition, rice or wheat on the whole having a greater value than maize and NFDM a higher value than CSM (which, despite being a blended food, has a value to recipients equivalent to that of other unblended flours, such as maize, used to prepare infant foods). While it is possible that a single culturally and economically appropriate ration for a homogeneous country like Rwanda could be developed, this is not the case for an extremely diverse country such as Tanzania or Kenya, where taste preferences, incomes, and food prices vary so significantly regionally and locally.

II.D.3. AID

The scope of work prepared by FVA/PPE, plus discussions with AID/W, indicate that the primary interest is in determining differential nutrition, consumption, participation and economic effects of the single ration and the multiration. Again these concerns are in concert with, although not as specific as, those raised by CRS/EAIO. Considering what has been learned about programming in Rwanda, however, the proposition is stated somewhat too simply, because there

are more than just two variations in program structure with potential impacts on consumer behavior. The AID agenda is a starting point, but the situation on the ground and the product of the proposed research activity are more complex than anticipated in the scope of work document.

II.D.4. Bryson report

Judy Bryson's work in Rwanda was intended principally to assess the feasibility of CRS activities in Rwanda in light of stated objectives, and to make recommendations concerning CRS programming and possible research activities. On pp. 14 and 15 of her report Bryson lists a number of questions which need to be answered before such an assessment can be complete. These questions relate to the nutritional, economic and development impacts of the various rations and other activities comprising the CRS program and are not substantially different from the concerns of the other interested parties previously discussed. Since much of the data neede to answer Bryson's questions is not available but can be provided by a household study, she recommends that such a study be carried out. Beyond the immediate concerns of data needs for program review, Bryson also notes that such a study would serve the additional ends of refining the planning and decision-making process for the Rwanda program and providing information useful for CRS Africa-wide programming needs. The study is also justified, she argues, in view of the substantial contribution which CRS has made and continues to make to primary health care and health education in Rwanda.

II.D.5. Summary and conclusions

Three sets of circumstances either contributing to or working against the implementation of household-level research on the impact of food aid packages in Rwanda have been discussed in this section. From the discussion the following points can be drawn:

The questions posed by the various interested agencies [as well as the recommendations contained in the Bryson draft report] address broadly similar issues rather than seeking conflicting objectives, and most of them can be answered or refined by a household-level research activity.

The Rwandan environment presents a unique opportunity to examine, in a homogeneous situation, varying packages of Title II commodities and associated activities. The area suggested as the focus of the investigation shares a single language and set of cultural patterns and is geographically compact and of easy access. The cooperation received from CRS/Rwanda and CRS/EAIO is another positive factor.

The principal barriers to implementation of the research are in the areas of recruitment of suitable data-gatherers and the reported reluctance of Rwandans to discuss matters concerning food consumption. Several U. S. researchers currently working in Rwanda have been able to suggest some useful strategies for resolving these problems, which will be discussed in the design section of

the report.

On balance, a household-level study of differential impacts of food aid in Rwanda is feasible. Further, given the uniqueness of the situation in Gitarama Prefecture, it is an opportunity not to be missed. It is unlikely that similar circumstances, permitting the detailed examination of so many permutations on clinic-based Title II distribution, will be found in any other setting.

III. Research design

III.A. Preliminary considerations

III.A.1. Clearance or agreement

Rwanda does not seem to have any existing formal procedures for giving research permission to independent scholars. There is one anthropologist working near Butare, who was apparently advised to come to Rwanda on a tourist visa, and told that affiliation could be arranged after his arrival. Given the vagueness of information on this point, the most reasonable course is to attach the project to an existing agreement, most probably under CRS because there do not seem to be any active AID projects ongoing in Gitarama Prefecture that could serve as a suitable vehicle. It is essential that both CRS/Rwanda and AID/Rwanda confirm that such an activity can be accomodated under existing agreements with the Rwandan government, or, if it cannot, make the necessary arrangements permitting the activity to take place as soon as possible. The reasons for this will become clear in the next section.

II.A.2. Scheduling

There are essentially two strategies that can be followed when the research objective is to determine the impact of a particular

innovation on a population. One is to carry out a baseline study of the group before the innovation has been introduced, then monitor the group carefully over an adequate period of time in order to measure changes that, other things being equal, have been brought about by the innovation. In this particular case this approach is not possible because the innovation--that is, the multiration--has already been introduced and there are no suitable baseline data for comparison, and thus no way to measure the impact within the recipient population. The alternative strategy is to collect the same data simultaneously from two (or more) groups, one of which has access to the innovation and the other one of which does not, and compare the behavior observed in both the populations at a given point in time. This is the strategy which must be adopted here.

Another factor which must be considered is that CRS is currently involved in negotiations with the Rwandan government which, when completed, could mean the expansion both of the multiration itself and the re-organization of distribution through the commune rather than the nutrition center. Thus, the sooner the research is begun and the sooner the data collection is completed the better, for the simple reason that the novel situation currently found in Rwanda might not last much longer, and programming decisions might have to be made with inadequate guidance. A further consideration is that travel within Rwanda becomes extremely difficult during the rainy seasons. For logistical reasons, the only realistic time for which the research

could be scheduled is during the long dry season. This dry period lasts from approximately June through September. It is therefore proposed that the research be scheduled for a period of three months between June 1 and September 30, 1986.

II.A.3. Personnel

The following personnel will be required.

Project manager. This individual must at a minimum speak French and have experience in household-level data collection and analysis, preferably in Africa. An anthropologist, rural sociologist, or nutritionist would be appropriate. Familiarity with Kinyrwanda and/or Kiswahili would be advantageous. If at all possible preference should be given to female candidates. This is because there are still many constraints on interaction between the sexes in rural Rwanda, and most of the data collection requires regular interaction with women informants. It is unlikely that a Rwandan with the necessary qualifications would be free to undertake such an activity, since qualified people are usually permanently employed in the public sector. However, the Rwandan Embassy in Washington maintains a list of the Rwandans in the United States, many of whom are University students, and there is a possibility that a qualified Rwandan could be obtained with the help of the Embassy. There are a number of potential non-Rwandan candidates currently in Rwanda or with Rwandan experience; a list of these people is attached as Annex G.

Project consultant. Since the research design is being prepared by myself, rather than the project manager, it is essential that whoever is selected as manager have an opportunity to discuss the design and the questionnaires with me as well as with CRS/Rwanda and AID/Rwanda before the data collection begins. This consultation will have to take place in Rwanda. It would also be extremely useful to have some consultation on questionnaire appropriateness and translation with Joanne Csete, a Kinyrwanda-speaking nutritionist currently conducting research in Gisenyi Prefecture. It may also be adviseable for me to assist in data analysis and preparation of the final report, depending on the experience and qualifications of the project manager.

Physician. AID/Washington in particular has stated an interest in the differential nutritional impacts of the ration packages. This requires that a thorough anthropometric and clinical assessment of all children aged 6-59 months, and if possible their mothers, should be carried out. Raynald Pierre-Louis, MD, MPH, who is bilingual in English and French and who resides in Rwanda, has indicated that he is available to manage this activity.

Data-gatherers. The June-September time period suggested for this research has another advantage in that it is the best possible time for recruiting competent field assistants. Many schools are closed during this time, so that primary school teachers are potentially available as well as students from the National University of Rwanda. Since it is strongly advised to hire women for these posts, the most useful possibility is to recruit students from the Ecole Feminine

d'Agronomie at Nyagahanga, Byumba Prefecture. Although students graduate in June, it is often several months before they are assigned their permanent duties by the government. Researchers from the National Potato Improvement Project at Ruhengeri have employed these students with great success.

III.B. Methodological considerations

III.B.1. Sample selection

It has already been argued that the only suitable place for the research to be carried out is in Gitarama Prefecture. There are four study populations which need to be included.

- -non-recipients of food aid. Several communes in the south-eastern portion of the Prefecture do not have CRS-operated nutrition centers. It is necessary to select a commune from among these that in addition has no other PVO feeding program, and from one sector in the commune draw a random sample of households from among those with one or more children under the age of five years.

- -single-ration food aid recipients. Gitarama Prefecture contains 13 CRS nutrition centers which distribute a single 5 kg ration to recipient households once a month. One of these should be selected and a random sample of participants drawn. If feasible length of program participation could be controlled for.

-multiration food aid recipients. As already noted Gitarama Prefecture has two multiration experiment nutrition centers, at Gatagara and Kigoma. A sample of multiration recipients should be drawn equally from among those at these two centers.

-multiration/project participants. A total of 61 families, 20 from Gatagara and 41 from Kigoma, are involved in nutrition center or commune-sponsored animal raising projects as well as being double ration recipients. Equal numbers of these households should be recruited to the sample.

Prior to actual sample selection, public meetings should be organized with the assistance of the bourgmaster, other local officials, and nutrition center personnel, during which the project is fully explained and all questions openly answered.

II.B.2. Sample size

The recommended size of the sample to be investigated is 120 households, 30 from each of the four categories described above. With a larger sample the project manager runs the risk of functioning solely as an administrator, rather than being able to take an active role in the research. It would be very unfortunate if management duties were excessive, because the person overseeing all of the activities and visiting all of the groups being studied is well-placed to make informal observations which may prove extremely valuable as a

source of important questions to be asked. Also, I think it is very important for the project manager to visit every household--in the company of the responsible data-gatherer--and explain the nature and purposes of the activity in detail to the household members. If the size of the sample is much larger than 120, this crucial rapport- and confidence-building activity will be very difficult to carry out.

III.B.3. Data collection strategy

Unless it should fortunately be possible to recruit a qualified Rwandan to head up the project, data collection will be almost entirely in the hands of the locally-recruited data-gatherers, since very few rural Rwandans speak French. It would be useful to seek the advice of Joanne Csete on appropriate training for the data-gatherers. The data collection will have to be done using prepared forms or questionnaires preferably printed both in French and in Kinyrwanda. Sample questionnaires used in a similar study in Kenya, which could be adapted to the Rwandan context, are attached as Annex H. It is crucial that the project manager do a running check on all completed materials as soon as they are turned in by the data gatherers so that errors and inconsistencies can be caught and remedied as soon as possible. And, if humanly possible, the project manager should endeavor to carry out preliminary analysis, or at least tabulation, of data as they become available.

II.B.4. Nutrition assessment strategy (By Raynald Pierre-Louis)

Direct measurements of weight and height and estimates of age are indispensible for gaining prevalence and distribution data on indices related to nutritional status. Indirect methods using interview techniques and observation provide necessary information on demographic, dietary, health and socio-economic factors associated with nutritional status.

Direct measurement items:

a. Anthropometry. Weight and height (or length) will be the sole direct measures to be collected in this study. Children will be measured using either a Salter or Itac spring scale and a standard portable measuring board.

b. Clinical signs. Signs suggestive of nutritional deficiency will be noted in each child. These signs will include mainly presence (or absence) of bilateral pedal oedema, thyroid enlargement, presence of Bitot's spots, to the extent possible.

c. Data collection. All children from birth to 5 years (60 months) will be measured once per month during the survey duration. Measurements will be collected at the nutrition centers for families participating in CRS programs, and in household visits, or if possible and preferably, at rally points organized for non-participating families.

d. Reference standard. For anthropometric analysis, reference data

of the National Center for Health Statistics/Centers for Disease Control will be used. These standards are comparable to the commonly used Stuart-Meredith or Harvard reference standards for weight and height, but permit improved statistical precision in describing anthropometric data.

e. Analysis. Both Waterlow and Gomez anthropometric classifications will be used for the data analysis, as follows:

Waterlow classification for weight-for-height index values:
wasting (acute malnutrition): weight for height below 80% of the reference, and height above 90% median height for age;
stunting (chronic malnutrition): weight for height above 80% of the median and height below 90% height for age;
wasting and stunting: children below the above cutoff points for weight for height and height for age.

Gomez classification for weight for age data:
first-degree malnutrition: children 75 to 89.9% of the reference median;
second-degree (moderate) malnutrition: children 60 to 74.9% of the reference median;
third-degree (severe) malnutrition: children below 60% of the reference median;
"normal" children: above 90% and overweight.

III.C. Data sets required

In order to answer all of the questions that are of interest to those involved in the planning of the research activity, a number of data sets will be required. These are briefly described below and a rationale given for each. They are presented in the order in which they should be administered, from least to most intrusive.

III.C.1. Household census

Once sample households have been identified and acquainted with the nature and purpose of the project, data collection should start with a collation of information on the household and its members, including age, level of education, type of employment, and relationship to the household head (spouse, child, other relative, non-kin). Collection of accurate age data on children is extremely important for interpretation of anthropometric data. A recent report (CDC 1983) indicates that about half of all births in Rwanda are registered. For undocumented ages, age data will be obtained on the census form and at each anthropometric assessment. If inconsistent data are obtained, a local events calendar will be used to elicit reliable month and year of birth. If the household head is a polygynous male, similar data should if possible be obtained for his other wife or wives, even though co-wives do not usually co-reside. This should be a straightforward and non-threatening activity, as Rwandans are familiar with census data collection.

III.C.2. Agriculture and food production

Rural households are probably also familiar with questions concerning agricultural activity, since the Enquete National Agricole conducted such inquiries in 150 rural sectors throughout Rwanda and since there is an active, albeit understaffed, extension service. All questions pertaining to livestock should be left aside at this point. Since Rwandan farming strategies involve the exploitation of multiple fields in differing localities, the focus of investigation should be individual farm plots. Questions concerning provenience, crops grown, inputs used, and rents paid or received are necessary. These data are crucial because agriculture is the principal source of both cash and kind income for most Rwandans. Calculations of the economic role of food aid cannot be made without knowing the amount and approximate value of production for own consumption and production for sale.

III.C.3. Health and health practices

It is important to know about the sorts of illnesses experienced, particularly by women and young children, and the sorts of treatments ordinarily employed, because illness--especially infectious and parasitic disease--can interact with nutritional status and because any illness is potentially an enormous drain on household cash resources. Both traditional practitioners, who are the most numerous category of health care professional in Rwanda, and private physicians in the modern health care sector can charge substantial sums for their

services. The questionnaire will collect retrospective data on illnesses experienced during the preceding two weeks to one month, the type of treatment(s) sought, and their cost. Data on young childrens' health status will also be collected during the course of anthropometric assessment and any active illnesses noted.

III.C.4. Income generation

The purpose of this questionnaire is not to find out how much income people have, but rather to determine its sources, who earns it, and who controls it. Some estimates of total household income can be made on the basis of type of employment or cash-earning activity, the regularity with which it is practiced, and the age and sex identity of the worker. These data will further illuminate the economic role of the ration, and also permit reasonable preliminary calculations of the amount of cash that circulates through the household, and who has access to it, without asking (at this stage) the difficult question, "How much?".

III.C.5. Wealth/investment index

One of the most popular and effective ways of establishing the extent of socio-economic stratification within and among communities or other groupings of households is to employ a wealth index. Such an index calculates the extent of household investment in capital or durable goods, taking into account such things as housing, personal possessions, and livestock holdings. For example, the cheapest sort

of house to build is usually a round, thatched structure, so if tile or iron roofs, rectangular shapes, cemented floors and walls, glass windows, and other improvements are found, they represent investments of cash. The same is true of ownership of wristwatches, radios, pressure lamps, mopeds and other durable items. Livestock are a less reliable indicator of wealth, but are potential sources of income in the form of offspring and other products. When combined with other direct and indirect income data, the wealth index is an excellent way to measure the extent of stratification, which may in its turn affect food-related practices, particularly expenditures.

III.C.6. Income and expenditure

I think that it is very important to try to get some direct data on the amount of cash income that households earn, but interesting results can also be obtained from examining patterns of expenditure. People are usually more willing to talk about their purchases than their earnings, and information about sources of food and non-food items and the identity of those who make particular categories of purchases can also be obtained. I suspect that a certain amount of mystery will surround transactions involving beer, but nonetheless a combination of income and expenditure data will be very revealing. Comparing in particular the food expenditure patterns of food aid recipients and non-recipients can further clarify the economic and nutritional role of the ration.

III.C.7. Food consumption data

Data on household food consumption are the key element in the research. There is no getting around that fact that for one entire distribution period day by day data on diet, sources of foods consumed, and amounts consumed must be collected. Because this area of inquiry is so sensitive in Rwanda, it is deliberately proposed as the last component of the data collection effort, after (presumably) the project manager and data-gatherers have demonstrated their good faith and trustworthiness to the sample households. It might be useful, immediately prior to this final effort, to make a substantial contribution to the development fund of each of the communes in which research activities are taking place.

I see this activity as having four principal components:

a. Daily 24-hour recalls of household dietary intake. As with so many of the other studies previously reviewed the approach will miss extra-household consumption and snacking, but if (as expected) the project manager is an acute observer some anecdotal data will be available about these sorts of food consumption activities. The data-gatherers will also need to ask specifically about the components of each dish or meal prepared for housheold consumption: whether purchased, received in trade, from own production, received as gift, etc., as well as about the preparation of special foods for young children and ill household members.

b. Cataloguing of all foods on hand in the house: what is stored in

the kitchen or granary, or under the bed, and their sources.

c. Weighing and/or measuring of the balance of the Title II foods left each day during the distribution period, until they are gone.

d. Weighed intake studies. Such studies are difficult enough under normal circumstances, as well as being unreliable. Rather than annoying each household every day with the intrusive measurement routine, the alternative is to make random visits to households of varying size and composition within each of the four groups and request permission to weigh raw, ready-to-cook ingredients prior to their actual preparation as a dish. In these circumstances the data-gatherer does not have to be present while the dish is being cooked and does not necessarily have to invade the kitchen. The figures thus obtained (and I emphasize that for any reasonable approximation to accuracy numerous measurements have to be made; if some of the households are willing this activity can commence before the rest of the food consumption measurement activities) can be used to create a mean consumption figure for a particular food item. Since I observed women bringing samples of infant foods they had prepared to the nutrition centers, and joining in collaborative cooking activities as well, it seems reasonable to assume that after a period of adjustment the collection of such data will be possible.

III.C.8. Summation

The above data sets are the minimum required in order to answer the

principal questions posed by AID and CRS. Participation may be harder to evaluate. Most CRS nutrition center programs seem to be filled to capacity, regardless of whether a single or a double ration is offered, and attendance is remarkably high, there being very few absences among enrollees in any of the programs. A further option which might provide information about the participation and attendance impact of food distribution would be to include a fifth sample, that is, families enrolled in a government nutrition center program. If the attendance and participation are less and the only difference is in the presence or absence of food aid then it could be argued that provision of food aid is an incentive both to participation and attendance. I am not convinced, however, that the value of the information obtained would justify the additional burdens that would be placed on the project manager.

III.C.9. Data analysis

It is difficult to say anything at this point about data analysis, because much depends on the individual(s) who prepare(s) the final report. There are statistical packages for personal computers which can managed sophisticated analysis, and for many of the sample questionnaires coding and entry procedures have already been worked out. If my participation in collaborative writing of the final report is seen, then computer facilities are available. Otherwise, it may be necessary to make arrangements with AID/Rwanda or CRS/EAIO for access to computer facilities.

III.C.10. Budget parameters

It must be emphasized that this is the merest speculation about the costs of the activity. Until it is known to what extent various individuals will be involved, and until a project manager has been identified, all that can be provided are general ideas of lower and upper budget amounts.

Project manager	low	high
salary, 3-4 months	$ 4,500	$12,000
per diem, Gitarama	4,500	6,000
international travel	-0-	2,800
consultant (Fleuret)		
salary, 20-50 days	3,300	8,250
per diem	1,600	1,600
international travel	2,800	2,800
consultant (Csete)		
salary, 5 days	750	750
mileage	150	150
consultant (Pierre-Louis)		
salary, 20 days	3,300	3,300
local travel, per diem	1,000	1,000
Data-gatherers		

8 x 150/mo x 3 mo	3,600	3,600
local travel, per diem	5,000	5,000
Equipment and supplies	1,500	1,500
Computer time	-0-	?
Clerical services	500	500
Car rental and petrol (perhaps CRS could be persuaded to contribute transportation)	-0-	4,000
Contributions to commune development	1,000	1,000
Total	33,500	52,550

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Annex A. Schedule of activities in Rwanda

Tuesday 1-21:	Arrival in Kigali; consultations with AID/Kigali.
Wednesday 1-22:	Consultations with CRS/Rwanda and AID/Kigali
	Meeting with staff of Enquete National Agricole
Thursday 1-23:	Visits to Gatagara and Kigoma nutrition centers
	Home visits to project participants
Friday 1-24:	Visit to Rugabano nutrition center and market
	Home visits to project participants
Saturday 1-25,	
Sunday 1-26:	Review of documents
Monday 1-27:	Visits to Umugambi and Kiruhura nutrition centers
Tuesday 1-28:	Review of documents
Wednesday 1-29:	Visit to Rwankeri nutrition center
	Home visits to project participants
Thursday 1-30:	Meeting with Dr. Trebucq, Ruhengeri
	Visit to Gitare nutrition center
Friday 1-31	Interviews with A. Haugerud, J. Csete, A. Trebucq
through	and F. Imbs in Ruhengeri;
Sunday, 2-2:	Return to Kigali
Monday 2-3:	Interview with Jean-Damascene, Nutrition Bureau
Tuesday 2-4:	Meeting with AID and CRS to review Bryson draft
Wednesday 2-5:	Preparation of draft report
Thursday 2-6:	Preparation of draft report
	Meeting with AID and CRS to review draft

Friday 2-7: Submission of draft report and departure from Kigali

Annex B. Persons contacted

Emerson Melaven, Director, USAID/Kigali

Rosemarie Depp, Program officer, USAID/Kigali

Michael Fuchs-Carsh, Agricultural Development Officer, USAID/Kigali

Ed Robins, Anthropologist, USAID/Kigali

Marie-Francoise Bernadel, Food for Peace Officer, USAID/Kigali

Nancy Metcalf, Regional Food for Peace Officer, REDSO/EA

Randy Harshbarger, Country Representative, CRS/Rwanda

Nelson Bindariye, Program Director, CRS/Rwanda

Thaciana Mutumwinka, Agronomist, CRS/Rwanda

Bernadette----------, Food and Nutrition Supervisor, CRS/Rwanda

Susan Igras, CRS/EAIO

Rhonda Sarnoff, CRS/EAIO

Raynald Pierre-Louis, Physician

Serge Rwamasirabo, ENA

Brook Stallsmith, ENA

Ivan De Jaegher, ENA

J.-B. Rutihunza, Gatagara nutrition center

Emmanuel Kabandana, Gatagara nutrition center

Celestin Ugirashebuja, Bourgmestre, Kigoma commune

Soeur Augustin, Umugambi nutrition center

Soeur Christiane, Kiruhura nutrition center

Dr. A. Trebucq, Medical Officer, Ruhengeri

Dr. A. Haugerud, Social Scientist, National Potato Improvement Project, Ruhengeri

Joanne Csete, Nutritionist, IFPRI, Gisenyi

Emmanuel Mporebucye, Gitare health center

Francoise Imbs, Professor of Geography, National University of Rwanda, Nyakinama campus

Jean-Damascene, Director, Office of Nutrition, Ministry of Health

Annex C. Scope of Work

Purpose:

1. To assess the feasibility and benefits of carrying out a study of the effects of the new commodity ration package in the Rwanda CRS program compared to the original, smaller ration package.

2. To design a household-level study to assess the different effects (nutritional, consumption, participation, economic, etc.) of the traditional and now larger commodity ration package in Rwanda. This study will include an administrative and implementation plan and budget.

Scope of work:

1. To review materials and documents concerning the CRS Rwanda Title II program;

2. To travel to Rwanda and carry out site visits to the CRS pilot larger-ration program as well as their more traditional projects;

3. As part of a multidisciplinary team, to assess the role of the food in the CRS traditional and pilot projects; to identify the types of effects the food may contribute to, i.e., consumption, nutrition, participation, economic, etc.;

4. To determine the feasibility of carrying out a household-level study and to assess the contribution of such a study to program operations;

5. To design a study which would evaluate the specific effects of two different ration packages, the traditional CRS ration and the larger ration. The study should control for the effects of program variables.

Study design should include sample size, sampling techniques, plan of analysis, and example tables, specific questions to be answered by study;

6. As part of the study, Dr. Fleuret should identify the possible administrative arrangements for carrying out the study, identify the types of people necessary--their skills, experience, level of effort;

7. The study should include both a budget and implementation plan for pre-start-up and for the actual implementation.

Annex E. Communes and nutrition centers in Gitarama Prefecture

Communes with multiration/projects:

Kigoma

Communes with single-ration nutrition centers:

Nyabikenke

Kayenzi

Taba

Bulinga

Rutobwe

Musambira

Mugina

Masango

Murama

Communes without a CRS nutrition center:

Nyakabende

Runda

Mushubati

Nyamabuye

Tambwe

Mukingi

Ntongwe

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Annex F. CRS/EAIO issues

I. Questions that we are interested in answering

A. Target area/population: areas where commune initiative is to begin in 1986.

Objective:

B. Develop methdology to be used by country programs to determine appropriate ration size and amount; and criteria (variables) for choosing families for the program.

1. Nutritional effect/intra-household

a. Food ration allocation

-How is food ration being allocated within the family (pre-school vs. adult women vs. men)

-Is it used as dietary substitute or supplement (by sex, age, and household size)

-Who is the decision-maker re allocation?

b. Food ration mix

-How are other, non-ration foods allocated within the family?

-Would other foods be more efficient in reaching target mothers and children? (cultural acceptability)

2. Economic effect

a. Value of package in relation to family resources

-What is perceived value of ration (not market value, but intra-household value)?

-What other mix would be more highly valued and used in the family?

-Is it an economic substitute or supplement?

Food sold vs. food consumed

Cost to go to the nutrition center to get food

(access to resources) vs. going to commune

% of total household income

% of mother's income

amount of time to use up the package/amount of time without food in the month

b. Differences by SES

II. What does CRS want to get out of this (What scope of work should cover)

A. Study design

B. Sampling methodology

C. Preliminary questionnaire design (intra-household) i.e. questionnaire objectives at a minimum

III. Miscellaneous

A. What are acceptable, alternative study designs? (Budget concerns, breaking the study into parts)

B. We want to emphasize commune initiative

C. Things not a priority in design because perceived as negligible in our program setting:

-urban vs. rural migration

-commercial agriculture development effects

-cash crop effect

Annex G. Possible project managers/consultants

Krista C. Dessert, Nutritionist
Programme d'Amelioration du Haricot
B.P. 138
Butare, Rwanda

Alphonse Rubagumya
P. O. Box 18038
Louisiana State University, Baton Rouge 70893
(Rwandan rural sociology graduate student)

Olivia Vent
c/o Project Haricot, ISAR
B.P. 138
Butare, Rwanda

Amy Vedder
c/o Project RRAM
USAID, B.P. 28, Kigali

Suzanne Chiasson
Societe de Developpement International Desjardins
150, Ave. des Commandeurs, Levis, Quebec G6V 6P8, Canada

David Cohen, Dept. of Anthropology
Johns Hopkins University, Baltimore

(Anthropologist who has done research in the Great Lakes Region of Zaire and may be able to suggest other scholars/graduate students)

Catherine Newbury, Political Science
Wesleyan University
(Political scientist who with her husband, a historian, has conducted field research on Zaire and Rwandan shores of Lake Kivu)

Annex H. Sample questionnaires

NOTE: These sets of questions were developed for use in rural Kenya and are indicative of the sorts of issues that need to be investigated; but they are not meant to be taken as definitive for work in Rwanda.

A. Household demography

1. Name of household head and spouse (if there is one living) approximate age, level of education, religion, place of residence, and father's birthplace for each
2. names, ages, levels of education, marital statusus, places of residence and occupations of all children of any woman named in 1. above
3. For male household heads, place(s) of residence and demographic data of additional wife or wives and their children
4. Similar data for any other persons, whether related or not, who live in the same house (and who are therefore household members)

B. Farm survey

For each farm plot currently under cultivation:
name of the farmplot; location (in terms of locally-recognized geographic, ecological, or soil feastures); name of owner; name of cultivator; if owner and cultivator differ, their relationship and the type of compensation paid or received.
Provenience of farm plot: inherited (from whom), purchased, rented,

borrowed, received from the government;
types of crops grown (the interviewer must elicit all crops grown, using a definitive list as a guide);
types of inputs employed: manure, commercial fertilizer, pesticides, hybrid or other improved seed, hired labor, cooperative labor;
size of plot; existence of legal title;
income received from sales of commercial and/or food crops.

C. Health survey

For designated individuals, or all household members:
Has the individual been ill in the past (two weeks) (one month)?
If yes, name of the illness (elicit in local language or using local disease concepts);
Type of treatment received: none, traditional healer, government facility, mission facility, private fee-for-service physician, purchased over-the-counter remedy;
Name of medication, if known;
Cost of treatment.

D. Income generation

For each household member:
1. Has s/he ever engaged in salaried employment; if so, where, for how long, and what kind of employment?
2. Has s/he engaged in local casual hired labor during the past (period of time: 6 months, one year); if yes, for whom, type of

work, relationship.

3. Has s/he hired local casual labor during the past (6 mos-1 yr); what sort of employment, relationship?

4. Has s/he done any of the following for remuneration in cash or kind during the past (6 mos-1 yr): cutting wood, carrying wood or water, burning charcoal, carpentry, masonry, plastering, traditional medicine, keeping a shop, guest house or eating place, teaching, agricultural or domestic work, etc.

5. Has s/he sold any of the following during the past (6 mos-1 yr); food crops, industrial or cash crops, animals or animal products, forest products, handicrafts, fuel?

E. Wealth index

Concerning the house:

Type of roof, walls, floor, windows; number of rooms; separate kitchen; other outbuildings.

For each (adult) member: ownership of radio, watch or clock, cassette player, items of furniture, kerosene lamp or stove, agricultural implements beyond hoes and axes.

Ownership of domestic animals, including cattle (dairy or other), goats, sheep, poultry, rabbits, beehives.