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Short and Long-term Measures for Agricultural Development in Myanmar

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Introduction

Agriculture plays a major role in the national economy of Myanmar and in consequence has a direct bearing on all other socio-economic developments. As a general vehicle for development, agriculture has received strong support through appropriate long and short-term plans, with objectives such as domestic self-sufficiency in food requirements, the adequate production of raw materials for local agro-based industries, and the generation of surpluses for export.

The population of Myanmar was 39 million in 1989, and with an annual growth rate of 2 per cent, is expected to reach 50 million by the year AD 2000.

The Union of Myanmar is basically endowed with favourable conditions for agricultural development. The potential for bringing additional fallow and cultivable wasteland under cultivation remains substantial. The presence of perennial sources of water also offers the means for establishing increasing levels of irrigation support. At the same time, the availability of a sufficient rural labour force and the existence of a receptive and fairly enlightened peasant community serve as viable complementary assets. Agriculture has to continue as the prime mover in national economic development. As the basic resources for expanding agriculture remain conducive, it is a matter of

national economic necessity to take measures for stepping up production and modernizing Myanmar's agriculture.

In developing and modernizing Myanmar's agriculture, it will be necessary to improve productivity through the following measures:

1. To expand current areas under crops, by bringing additional fallow and cultivable wastelands under cultivation, since the current cropped area remains inadequate for population growth;
2. To increase per acre crop production, with the introduction of high yielding varieties, appropriate technology and the provision of adequate chemical fertilizers and pesticides;
3. To provide and encourage the increased use of tractors and farm machinery for expanded multiple cropping and increasing yields; and
4. To provide increased irrigation networks, reservoirs, etc. in order to expand irrigated cultivation.

Investment in agriculture normally generates quick returns with only nominal investments. The problems of modern agriculture, however, have become more complex. The need for sustained agriculture, the problems of identifying and

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* Myanmar Agricultural Service. The material presented here is extracted from the full paper presented at the seminar on Changes in Food Consumption: Effects on Production and Use of Upland Crops in Asia, Kandy, Sri Lanka, October 6-9, 1992.

developing new land, the appropriate distribution of the means of production and the need to remain competitive in international markets all require considerable capital investment and long-term planning. The long-term development measures are the main subject of this report.

Modern agriculture has many facets. Although increased production of principal food crops and industrial raw materials and promotion of exports form the main objectives in Myanmar, overall development depends on proper land use, mechanization, irrigation support and appropriate technology. The need for sustained agriculture and the problems of preventing soil degradation and environmental damage, also need consideration. Agriculture sector development will, accordingly, have to embrace all these aspects.

Production of sufficient food and surpluses

The basic objectives will be domestic self-sufficiency in major crops such as paddy, other cereals, oil seeds, peas and beans, culinary crops and the generation of surpluses for export.

Paddy

It is estimated that a total of 744 million baskets (1 basket = 21 kg) of paddy will be required (a) to meet the needs of a population of 50 million, at 12 baskets per head per annum for consumption, and 1 basket per head per annum for general purposes, (b) to allow for 2 baskets of seed per acre, (c) to cover a loss of 2 baskets per acre and (d) to provide a surplus of 42 million baskets (0.9 million tons of rice) for export. Therefore, it will be necessary to increase the current 12.3 million acres to 13 million by bringing a further 0.7 million acres under paddy. The arable land presently available for paddy stands at 15 million acres, and the most agro-ecologically suitable areas will have to be selected regionally for purposes of expansion. These measures should be undertaken in conjunction with steps for sustaining production in existing areas, with increased provision of appropriate cultivars, chemical fertilizers and technology to promote increased yields.

Wheat

Unlike rice, wheat is not a staple food in Myanmar. The current per capita consumption is

only 11 pounds. Since wheat is only used as a snack or a supplement in the diet, it cannot aspire to become a staple food. However, it is estimated that 14 million baskets of wheat (292 thousand tons) would be required if present levels of consumption were to rise 1.5 times. Thus, there is a need to double the area under wheat to 0.6 million acres from the current 0.3 million. Wheat is as nutritious as rice and has considerable scope for further expansion. As suitable areas for the extension of paddy become limited, it is important to extend wheat cultivation, so that in the years following AD 2000 wheat can partially serve as a staple food.

Maize

Under present trends of use, maize in combination with rice serves as a basic food in some rice deficit areas. The rest of the production is mainly used for animal feed. There is a dual need to meet the requirements of rice deficit areas and, at the same time, ensure increased availability for the rising demands of animal feed. The long-term objectives in maize production will be to ultimately meet at least 30 per cent of animal feed requirements. On the basis of 3 viss (1 viss = 1.634 kg) of meat per head per annum, it is estimated that 0.245 million tons of meat will have to be made available, for which 0.882 million tons of animal feed will be needed. Since 30 percent of this is maize, the share of maize for animal feed will amount to 0.265 million tons. To meet this objective, the annual production of maize will have to be brought up to 20 million baskets by increasing acreage from the current 0.49 million acres to 0.65 million. In conjunction, it will also be necessary to improve yield performances of existing areas.

Sorghum

To a certain degree, sorghum also substitutes for rice as a staple food in some rice deficit areas. It also contributes towards total animal feed requirements and the stalks serve as important fodder for farm animals. The strategy in sorghum production will be to maintain the present levels of cultivated acreage with strong support for increased production, so that after meeting food requirements, there would be a surplus of about 0.17 tons for animal feed, representing approximately 20 per cent of total animal feed requirements.

Editorial

Strategic Plan for the CGPRT Centre

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In recent years in Asia, agriculture has been undergoing a fundamental transformation. Growing urban markets coupled with a general increase in income and the consequent shift of demand to high-valued and "superior" foods have been providing opportunities for income improvement through diversification and commercialization. This process has involved farmers not only in areas close to major markets but also those in remote areas where semi-subsistence agriculture has been practiced for a long time.

A prevailing concern today is sustainable development. The objective is reflected in the aspiration for equitable development of the entire economy as indicated by poverty alleviation. Poverty alleviation advocates the notion that the benefits of growth must be distributed in a balanced manner to achieve sustained economic development, human development and preservation of the environment.

In January 1993 the Centre concluded a two-year round of deliberations by senior officials and scholars from throughout the region on its "Strategic Plan for the CGPRT Centre in the 1990's and Beyond". Major themes of the Strategic Plan, derived from the recognition of the above new paradigm, such as market development, diversification, poverty alleviation, sustainable agriculture and regional

cooperation were discussed at the recent seminar on "Upland Agriculture in Asia" held in 6-8 April 1993 at the Centre.

A host of region-wide and country-specific research results presented at the seminar confirmed the significance of the linkage between equitable development and increasing market opportunities in upland areas where these issues are more prominent. It was perceived that there is no dichotomy between poverty alleviation and market development, rather their problems and constraints can be resolved and overcome by pursuing efforts at both fronts simultaneously. The Centre's activities, focusing on CGPRT crop-related farmers and agriculture, will be structured to translate that perception into operation.

Oil Crops

After rice, oil forms the most important item in Myanmar's diet and nutritional requirements. Although groundnut, sesame and sunflower constitute the major oil seed crops at present, mustard, niger and palm oil also contribute towards national requirements. Currently, the combined output, after deduction of use for seeds and other purposes, furnishes for consumption about 4.5 viss (1 viss = 1.634 kg) of oil per head per annum. Consumption will continue to increase, and could rise to at least 5.5 viss per head by AD 2000. To achieve the required availability of 0.45 million tons of edible oil, it will be necessary to carry out the following measures:

- maintain the present acreage under groundnut and sesame, minimize crop failures and raise production,
- expand sunflower, mustard and niger cultivation in the successful regions,
- maintain the present acreage under oil palm, and increase production of refined edible oil,

Peas and Beans

Peas and beans are almost as significant as oil in the Myanmar diet, serving as important sources of vegetable protein. Slightly over 2 million acres are presently put under 17 kinds of peas and beans annually (Table 1). The crops fulfil national

consumption requirements at about six and a half pyis (lbs) per head, and also provide a surplus of about 80,000 tons for export. Prospects for expanding exports remain favourable, and international prices continue to be stable. The long-term aims in this sector will be for the assurance of adequate supplies at present consumption levels for a population of 50 million and the provision of a surplus of about 0.2 million tons for export, including new varieties of peas and beans. This will have to be undertaken mainly through increases in acreage, and it is estimated that the area under cultivation, currently at 2 million acres, will have to be increased to 3.2 million. The expansion in area will principally be through development of new farm lands and second cropping on upland and paddy fields.

Table 1 Area under peas and beans.

Crop	Area ('000 acre)
Black gram	259
Chickpea	272
Garden bean	62
Mungbean	255
Pigeonpea	304
Soybean	82
Total	1,234

Culinary Crops

The acreage under important culinary crops such as chillies, onion, garlic and potatoes, at present comprises 0.29 million acres. These are mainly grown for domestic use and the per capita consumption is given in Table 2. To meet future needs at current consumption levels, it will be necessary to expand cultivation and enhance yields. It is estimated that expansion will have to take place as shown in Table 2.

Table 2 Culinary crop consumption, present and future area ('000 acres):

Crop	Per capita consumption (viss)	Acreage (1985/86)	Acreage (AD 2000)	(% Increase)
Chillies (dried)	0.50	160	175	9.4
Onion	3.10	56	100	78.6
Garlic	0.45	27	40	48.1
Potato	2.40	44	65	47.7
Total		287	380	32.4

Increased promotion of new export crops

Rice, peas and beans, and rubber are the traditional major agricultural exports, and there is need for the promotion of new crops. Under present international trends of commodity prices and demand, pepper, cashew nuts, coffee, mangoes and other fruits qualify as prospective commodities, and conditions for increasing their production remain favourable. Therefore, steps will have to be taken to encourage and assist their expansion and cultivation in both the public and private sectors. The plans should also contain provisions for the establishment of finished or semi-finished product industries in regions where the transport of fresh produce in bulk is difficult.

Development of new areas for increased crop production

The total acreage under crops during 1985/86, taken as a stable year for crop production, was 25.66 million acres, representing a net sown area and multiple cropped area of 20.69 million and 4.98 million acres respectively.

However, there has been no appreciable change since the total acreage under cultivation in 1988/89 approximated only about 25 million acres, the net sown being 20 million acres and multiple cropping, 5 million acres. The present level of production, compared to population growth, leaves little room for the generation of surpluses for export. Thus, there is a clear need to expand cultivated area. An estimated 18.59 million acres of fallow land and cultivable wasteland can be brought under crops (Table 3).

If this can be accomplished, the total net sown area, including the current 20.30 million, would add up to 38.89 million acres. Further, if cropping intensity could be increased to 40 per cent from the present 20 to 35 per cent, the gross sown area could reach 50 million acres.

Since most of the favourable lands with close access to habitation has already been brought under cultivation, new areas targeted for development are not easily accessible, constitute uneven forest-covered and at times rugged terrain. The development of the new areas will, accordingly, have to be undertaken through appropriate land clearing and reclamation schemes, substantial capital investment and irrigation supports.

The development of new crop land constitutes one of the approaches for increased production, but invariably has to be undertaken through short, medium or long-term phases and entails a long gestation period.

Table 3 Development of new crop land (million acres).

Kind of land	Existing arable land (1985/86)	Scope for expansion		
		Paddy Other	Upland	Total
Fallow land	4.59	2.13	2.14	4.27
Cultivable wasteland	21.05	0.70	13.62	14.32
Total	25.64	2.83	15.76	18.59

Increase in yields

Substantial increases in yields from each unit of land can be obtained within a short period through improved inputs and modern technology. No problems are anticipated in the wider adoption of modern technology, as the farming community has already moved forward from its traditional norms to a fairly advanced stage of agriculture.

The concept of using high yielding varieties and adoption of correct methods of cultivation is already well established in the production of some 22 principal crops. The lack or insufficiency of important inputs such as fertilizers and pesticides, however, is a serious detriment.

Peasants have become fully aware of the benefits of application of fertilizers and pesticides, and their use, in particular for cereals, fruits, vegetables and flowers has been established. The availability of fertilizers remains sufficient to meet only part of the actual requirements. Since fertilizer supplies have varied yearly, annual usage has similarly fluctuated. The figures for the past ten years (Table 4) show that fertilizer consumption declined from 1986/87 onwards. Shortage of fertilizer has become a serious detriment to increased production.

The supply of agro-chemicals for oil crops, other cereals, and peas and beans has been almost negligible, while fruits and vegetables receive none (Table 5). This serious short-coming must be overcome. Because the prices of fertilizers continue to escalate, there is no alternative but to seek measures for making available adequate quantities of fertilizers if increased production is to be attained.

Under recent trade liberalization policies, domestic as well as foreign private sectors have been permitted to engage in transactions related to fertilizers and pesticides. It is anticipated that the flow of fertilizers and pesticides will gradually increase and become regular, as their involvement strengthens. In the meantime, however, the state remains the only source of supply, and it is necessary to provide an adequate quantity annually to sustain crop production.

Table 4 Fertilizer consumption (t), 1980/81 to 1989/90.

Year	Urea	TSP	MOP	Total
1980/81	173,165	67,720	5,654	246,539
1981/82	200,269	64 202	8 140	272,638
1982/83	234,025	85 169	17 79	336,991
1983/84	276,828	104 65	25 16	406,656
1984/85	254,680	93 391	23 37	371,447
1985/86	287,941	103 58	23 58	415,180
1986/87	250,089	106 89	24 20	381,182
1987/88	200,062	53 443	14 71	268,215
1988/89	188,205	40 670	2 408	231,283
1989/90 (Prov.)	164,609	35,101	2,846	204,556

Table 5 Actual and planned fertilizer usage.

Crop	Fertilizer			
	So Area (⁰)	Planned Area (⁰⁰)	Planned Amount (t)	Actual usage (t)
Paddy	12,3	7,799	203,56	143,35
Other grains	1 63	281	11 997	5 613
Oil crops	5 88	818	26 283	21 334
Industrial crops	585	372	30 801	16 080
Peas and beans	1 38	289	7 225	10 432
Plantation & garden	1 20	107	14 030	7 599
Vegetables & flowers	364		6,119	156
Total	24,6	9,666	300,01	204,55

Increased agricultural mechanization

Farm mechanization is an important input in agriculture. An increase in mechanization can contribute greatly towards the expansion of area under crops and enlarge the scope for multiple cropping. The yields per acre can also be enhanced with better tillage and timely planting offered by mechanized cultivation.

Climatic and soil conditions in Myanmar are favourable for expanding multiple cropping, since there are many areas where the conditions of residual soil moisture offer possibilities for cultivation of second crops after paddy without any supplementary irrigation. A number of areas in the Bago, Yangon, Ayeyarwady Divisions and Rakhine State with paddy as the main crop, qualify in these aspects. Land preparation and planting, however, have to be accomplished before the soil moisture vanishes completely and this short period is a crucial factor. Here mechanization can play a significant role.

Animal power, especially buffaloes and oxen, is presently the main farm power source. Due to shortages, however, animal power contributions remain confined mostly for the cultivation of main crops. Since their use is over stretched by the first crops, extension of animal use for second crops is only marginal and constitutes a limiting factor in increasing multiple cropping.

The Pyithu Hluttaw Report of 1987/88, indicated that the number of buffaloes and oxen stood at 3.25 million pairs in 1985/86. With a norm of 7 acres per pair for purposes of ploughing only, it is estimated that the available animal power might satisfy land preparation for some 22.75 million acres. In practice, however, it has not been feasible since the

ratio of area under crops to animal population remains disproportionate in many divisions and states. In divisions such as Ayeyarwady, Bago, Yangon, Mandalay and Sagaing, where multiple cropping is practiced on a larger scale, a pair of buffaloes or oxen have to work up to 8 to 10 acres, including second crops. This is in addition to their use in transport of paddy sheaves, threshing and removal of paddy for storage. As all operations have to be accomplished within a space of two months, it has proved a heavy burden to the animals and also a detriment to expansion of multiple cropping. For pre-monsoon paddy, jute, cotton and other crops requiring deep ploughing, mechanized farming is the only alternative for ensuring successful and timely sowings. Nevertheless, draught animals will still have to contribute a major share of farm power needs.

It will be essential to increase draught animal populations and to put them to the most effective use. At the same time, mechanized agriculture must play an increasing role. Encouragement for private sector participation will be needed, while farmers should have access to farm machinery on easy terms.

The scope for lift irrigation will also have to be increased. Permanent irrigation networks presently cover only about 13 per cent of the sown area and are mostly located in the semi-arid zones. The presence of perennial riverines and water resources in Lower Myanmar, on the other hand, offers scope for increasing pump irrigation.

The Mechanization Department within the past 18 years has sold about 62,000 water pumps but only about 50 per cent have actually been put to use for agricultural purposes.

Meanwhile, there remain in Lower Myanmar about 0.52 million acres of land already under jute, sesame and sunflower, requiring supplementary irrigation. These requirements will be further increased as an additional area of 0.30 million acres is gradually brought under oil crops within the next 12 years according to plans.

Lift irrigation is important for increasing agricultural production. In particular, the expansion of pre and post-monsoon crops will remain dependent on the availability of lift irrigation. Since irrigation can be the dividing line between success or failure of crops, it is necessary to strengthen this sector.

In addition, mechanized land clearing will increasingly have to form part of land development

operations, mainly those undertaken by the state or in co-operation with the state.

Expanding irrigation facilities

About 1.5 million acres of new arable land is to be brought under crops by the year AD 2000, constituting one approach towards increased production. However, the major share of increased production will have to be generated through cropping intensities and higher yields by optimizing the use of farmland already under cultivation.

The availability of supplementary water will be a critical factor in such measures. An adequate amount of water at the appropriate time is indispensable for crops. Irrigation has to play an important role because of climatic conditions and patterns of rainfall in Myanmar.

The major responsibility for providing irrigation in the Union of Myanmar is currently assumed by the state. At the same time, certain networks managed by local communities themselves or jointly with the state, partially contribute to irrigation (Table 6).

Irrigation facilities improved appreciably since 1961/62. However, since coverage amounts to only 2.616 million acres or 13 per cent of the net arable acreage of 20.69 million, this contribution is still nominal. Because irrigation is an important input in the quest for increased crop production, steps for expanding irrigation facilities merit serious attention.

Table 6 Area under irrigation ('000 acres).

Year	Dams & Dikes	Others	Total
1947/48	963.1	363.9	1,329.0
1961/62	1,069.2	254.8	1,324.0
1973/74	1,275.6	1,124.4	2,400.0
1985/86	1,445.8	1,170.2	2,616.0

Prevention of soil degradation and environmental damage

Interest in the prevention of environmental damage has assumed global dimensions, and Myanmar cannot remain divorced from such realities. Pollution and environmental contamination are not yet grave problems in Myanmar, but depletion of natural resources is a matter of concern. The wasteful destruction of forests through shifting cultivation, the attendant soil and gully

erosion in the hilly regions, the wind and sheet erosion and gradual desertification in the semi-arid zones are cases in point. Thus steps will have to be taken for the introduction and enforcement of terraced cropping or stripped cropping with appropriate forest belts in between in lieu of shifting cultivation in the hilly regions. Similarly, it will be necessary to establish extensive wind belts, associated with suitable cropping patterns in the dry zone to minimize soil losses and halt desertification. The shift towards permanent cultivation will invariably lead to better soil fertility and higher levels of production and prevent the destruction of timber resources. Measures undertaken in the arid zones, at the same time, can contribute towards green manure, animal fodder and requirements of fuel. De-forestation for purposes of cultivation has been a matter of survival in certain areas, and in temperate mountain zones there is no alternative at present but to live off the land for needs of fuel and energy for heating homes. However, these activities cannot be left unimpeded for long. Land, water and flora form part of the basic life supporting systems. They should not be subjected to irreparable damage. For Myanmar as an agricultural country, these fundamental issues remain important.

Rural infrastructure and proportional regional development

The different agro-climatic zones in Myanmar are fairly well defined. To promote proportional regional socio-economic development, it will be necessary to expand research to determine the most suitable crops and the most adaptable technology for each respective region. Integrated farming must be encouraged for supplementary farm incomes and providing rural employment. At the same time, adequate rural infrastructural development, in the form of roads, electricity, water, sanitation and health care will have to be offered.

Short-term approaches for immediate increased production

The preceding measures deal with the overall aspects related to appropriate short, medium and long-term approaches necessary for Myanmar's agricultural development.

As an interim measure, however, annual crops provide the best opportunity for immediate returns. As such, substantial increases in area and yield can be achieved by undertaking the following:

1. Making use of present mechanized power to full capacity on a whole year basis, with timely supply of sufficient fuel and necessary requirements;
2. Accelerating participation of private entrepreneurs and wealthy farmers by arrangements for sale of tractors and implements and assurance of energy inputs;
3. Providing adequate supplies of fertilizers and pesticides for the increased production of food, industrial and export crops;
4. Expanding multiple cropping of paddy and other crops, by making available for sale sufficient water pumps and fuel; and
5. Selecting areas with suitable climatic, soil and moisture conditions, and boosting per acre production, with the provision of sufficient tractors, lift pumps and other inputs, under special programs.

Food Consumption Patterns in Urban Areas and Consequences for Local Food Processing in Africa: A Contribution to Methodological Questions

Nicolas Bricas*

Introduction

This paper focuses on the evolution of food habits in urban areas of Africa. The urbanization phenomenon in tropical countries is remarkable: by the year 2000, there will be 79 cities in the world with more than 4 million people, or twice as many as in 1980. About 60 of these cities will be in tropical areas. Today, and even more so, tomorrow, urban demand will have a growing weight in food policies.

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In most African countries, good statistical data on production, imports, population and prices are not available. Trends calculated from national food balance evolution can be quite different depending upon data sources. Only a few global changes can be shown from approximate data: one of the most important is that the role of imported foods such as rice, wheat, and milk is increasing while that of local produce, such as millet, sorghum, and cassava is decreasing. However, these general observations are not sufficient to determine the consequences on food processing development, research and policy.

What can be done to improve the usage of local products, to search for new markets, and to secure for farmers outlets for their production? To answer these questions, it is necessary to have more information about consumer behaviour, to understand how they make their choices, and to predict the consequences on food processing.

This paper presents an approach and a methodology for analyzing the factors of food consumption evolution in urban areas rather than detailed results from studies conducted in Africa. Four components can be distinguished:

- food availability,
- purchasing power and food budget management,
- living and consumption conditions,
- social and cultural patterns.

Food availability

What must be known about food availability to understand the effects of food availability on food consumption?

First, the trends of food balance data can be analyzed. It is important to consider the regularity of annual availability, particularly for production, when observing long or medium-term trends. For example, irregular or seasonal production will not have the same effect on the development of food processing industries as regular production. In the Sahel region of Africa, this is one of the main problems in the supply of cities with local cereal products.

The quality of raw materials, particularly for food industries, is another point that must be considered. Compared to imports, the non-homogeneous quality of local products can be a constraint for large-scale industries. In Africa this is why local production is generally processed by small-scale industries which

are more flexible and capable of adaptation to different qualities of raw materials.

Food availability must also be considered from the point of view of distribution structure, particularly in urban areas. The development of refrigerated product chains or supermarkets has a great influence on the marketing and quality of local products.

The option of buying on credit also has considerable influence on consumer choices. For example, in some countries of Africa, rice can be bought on credit because the price is guaranteed, which is not the case for millet or sorghum. As a result, people are now consistent consumers of rice, while millet and sorghum are becoming occasional foods in urban areas.

Purchasing power and food budget management

The usual method of studying purchasing power and food budget management is to calculate the per capita income and price elasticities. If these data can be combined with consumption level of each income class and the relative place of these classes in the population, some informative results can be obtained. However, the relevant household survey data are not always available.

From African survey experiences, it is clear that a classification of population by purchasing power based only on income level is not completely satisfactory. Income classes, defined by individual earnings, mask significant differences in (marginal) relations between income and expenditure among households. The African experience suggests that shifts in consumption pattern cannot be reduced to individual income levels. Other factors, such as household size, duration of residence in urban area, cultural group, and nature of income, can play important roles. An interesting method is to classify households in the survey by homogeneous elasticities groups, and then to define the characteristics of each group. Such fine segmentation must be combined with socio-economic data on the structure of the population.

Food budget management is another important topic. In Africa there are two specific food budgets. One is generally held by men, is based on salaries, and is used for monthly purchases. The other is held by women, is based on the money she can find each day, and is used for daily purchases, such as

vegetables, fish or meat, spices, etc. The sharing between these two budgets depends on the household and is not simply a question of income level. This is important because the price for a product is different if it is bought close to a wholesaler or close to a micro retail seller. In addition, for the same annual income level, a household with a salary will have a different behaviour from a household with erratic incomes, for example, working in the "informal sector".

Living and consumption conditions

Different aspects of living conditions in urban areas influence food choices and food processing; of these, household size is one of the most important in Africa. The kind of dishes and, therefore, the kind of products consumed, depends on household size. For example, in some cities rice is consumed more by large households because it is used for easily-divided dishes.

Housing conditions, the distance between home and work place, or between home and markets, may also contribute to food choices, and can explain the importance of street food in global consumption.

In several studies about food consumption in urban areas, it is assumed that people prefer more convenient products because they do not have time, or do not want to spend time, to cook. This hypothesis suggests that more highly processed products are developed to reduce cooking time. This idea is sometimes right but must be applied cautiously. In fact, the allocation of time for various activities is a cultural factor. In Africa, the cooking activity is a means of increasing the status of women, even in urban areas.

Another example of cultural factors in the evaluation of cooking activity is the difference in importance of street foods in various cities. In Bogor, Indonesia, a survey shows that there is one itinerant seller on the street for 14 householders. They sell not only snacks but also for a large part, warm meals similar to home-cooked meals. In other similar-sized cities of Asia this phenomenon is not so well developed. Is it because of different social and cultural values assigned to domestic and non domestic meals?

Social and cultural patterns

Although everything concerning food consumption may be considered to depend on social and cultural patterns, this approach makes it difficult to assess the implications of consumption changes for production, policies and research.

First, it must be noted that social and cultural patterns are not immutable. The history of food habits indicates the opposite and urbanization is an important factor inducing this change. Engel's law or Bennett's law, which state that with rising income a marginal reduction in food expenditure occurs, are applicable in most parts of the world. However, Mexico City, Lagos and Jakarta are not eating the same dishes. Social and cultural patterns can be considered as hard facts, but changes can sometimes be very rapid.

A trend towards diversification seems to be general in food consumption evolution in the cities of the world. Contrary to what a few observers think, mimetic behaviour towards the European model cannot explain African food consumption evolution. In fact, urban consumers try to diversify their dishes by alternating staple products on the same day, by new sauces, and by new behaviour, for example, eating street food. Thus, imported products must not always be considered as direct substitutes for local products but sometimes as complementary alternatives.

In the context of diversification, food consumption changes can be characterized by two opposing trends.

One trend is to maintain a "proximity" or a "closeness" with food, which can mean to produce one's own food, to use raw products to process, prepare, and cook the food oneself, to control quality oneself, or to eat with one's family and/or friends. This "proximity" is typical of traditional, rural food systems.

The second movement is to "keep aloof, at a distance from food", or to purchase products of unknown origin, to entrust to somebody or some industry the processing or quality control, to eat alone, away from home, etc. This movement seems to be specific of new urban food systems.

In fact, the relative importance of these two opposite trends is different for to each country or each city, and also for each product. In Africa, traditional food consumption evolution can be characterized by a strong maintenance of

"proximity" with the products. Therefore, processing by large-scale industries remains difficult; consumers do not trust quality and prefer to process their foodstuffs themselves through small-scale units that provide the service. For example, women bring their cereals and cassava tubers to the mill to have them hulled, ground or grated and then recover the resulting flour.

These kinds of relations between man and his food help to explain consumers' preferences and their evolution, and the specificity of development of food processing activities. The "distancing" from food that begins in urban areas is not progressing at the same rate for all products, which explains the differences of industrialization level in food enterprises.

Conclusion

The approach presented here is not really new; it has been inspired in part by the marketing approach. It has the advantage of considering food consumption as a complex system that cannot be reduced to just a combination of income, availability and price. When a food industry is prospecting a new market for a new product, it uses not only economical data but also more qualitative sociological information obtained from surveys. Perhaps socio-economists can apply this kind of approach to investigate changes in food consumption and their effects on production and use.

CGPRT Centre News and Activities

Upland Agriculture in Asia

From 6 to 8 April 1993 a seminar on Upland Agriculture in Asia was held in the CGPRT Centre in Bogor.

The purpose of the seminar was to overview upland agriculture and to address three issues in detail:

- (i) poverty alleviation
- (ii) sustainability
- (iii) the role of markets.

Upland agriculture offers many avenues of development, but there are several views on what upland agriculture is. In the agri-forestry domain, upland agriculture covers both transitional and non-transitional agricultural practices in hilly and forested areas. Another view regards upland agriculture as basically all non-irrigated agriculture. This definition is somewhat broad and draws the attention to the huge area in Asia under annual cropping for food crops and industrial crops.

Poverty alleviation

A number of cases were discussed, ranging from farming practices in poor and isolated forested areas to infra- structural investments in a broader sense. The relation between institutional improvement, the rights to land, land use rights and conditional lease were discussed in conjunction with the role of market development.

Sustainability

Sustainability is a central concept in this broad field. Techniques and low cost technologies to improve sustainability of upland agriculture were presented.

The role of markets

Numerous markets interact in upland agriculture but collection markets are of vital importance. The variability of situations is large and intervention tends to be local and therefore expensive.

The proceedings will be published.

World Soybean Research Conference V

21-27 February 1994
Chiang Mai, Thailand

The objective of WSRC V is to provide a forum for discussion on research on soybean throughout the world. The Conference will provide basic ground for exchange of ideas among scientists, industrialists, socio-economists, development agencies and other persons interested in different aspects of soybean.

Scientific Program Sessions Include:

- Genetic Improvement
- Crop Protection
- Crop Science
- Utilization
- Technology Adoption: Marketing and Trade
- Insect Pests of Soybean in Asia
- Soybean in Tropical Agriculture

Deadline for Paper/Poster Submissions is September 1, 1993.

For further information contact: World Soybean Research Conference V, Secretariat Office, Department of Agricultural Extension, 2143/1 Phaholyotin Rd., Chatuchak, Bangkok 10900, THAILAND

Tel. (02) 5793619; (02) 5614877
Fax. (02) 5796635; (02) 5799540;
(02) 5614877.

International Course on R & D Management

The course is designed for senior research scientists or active R & D managers from developing countries. The course approach is skill-based and intensive. Most topics include workshop sessions where participants immediately practise the principles just learned. Participants are encouraged to bring working material with them from their own countries so that new skills are applied directly to relevant situations.

Topics will include:

- Roles of research managers and leaders
- Management styles
- Team management
- Managing change
- Key management issues in CSIRO
- Research planning and evaluation
- Application and commercialization of research
- Image of science and scientists
- Presentation skills

Venue:

The course will be held November 8 - 19, 1993 at the Thredbo Alpine Resort in Australia's Snowy Mountains, two hours' drive from Canberra, Australia. The closing date for registration is September 30, 1993.

More information can be obtained from:

International Training Officer, CSIRO,
PO Box 225, Dickson ACT 2602, AUSTRALIA
Tel 61 6 2766447; Fax 61 6 2766292; Telex AA 62003.

Apex Technical Information Service

APEX, short for the ASEAN Food Post-Production Information Exchange Project, was set up in 1986 to meet the need for coordinated collection, dissemination, delivery and exchange of food post-production information. It is an integral part of the ASEAN Food Handling Project, and has its headquarters at the ASEAN Food Handling Bureau in Kuala Lumpur, Malaysia.

Information collected and organized under APEX is listed under ten broad categories of agricultural commodities and products, namely: Cereal Grains, Pulses, Root Crops, Horticultural Crops, Industrial Food Crops, Beverage and Spices, Livestock, Fisheries and Aquatic Products, Food Products, and Feeds. Each commodity is classified under the various aspects of postharvest technology, postharvest losses and postharvest facilities and systems.

For further information about APEX Information Service and on how to register as a subscriber contact:

ASEAN Food Handling Bureau,
Level 3, G14 & G15,
Damansara Town Centre,
50490 Kuala Lumpur, MALAYSIA.

International Course on Applied Plant Breeding

March 13 - June 25, 1994

The course is an in-service training course intended for university trained specialists in plant breeding, mainly from developing countries, who have not recently had the opportunity to acquaint themselves with modern plant breeding techniques.

The program comprises lectures, exercises and practicals, visits and excursions to research institutes and breeding companies.

International Agricultural Centre (IAC)
P.O. Box 88
6700 AB Wageningen, THE NETHERLANDS
Telegrams INTAS; Telex 45888-INTAS NL
Tel. + 31-8370-90111; Fax. + 31-8370-18552

AGRIMACH '93 Agricultural Machinery Exhibition and Symposium

December 6-12 1993, Jakarta

Agrimach '93 is an Exhibition of various machinery for food crops production, poultry, horticulture, agro- industry/processing, and a Symposium on business opportunities in agricultural machinery manufacture, agricultural mechanization technologies and marketing trends in agricultural machinery.

For information on details of the exhibition, attending the symposium, exhibiting products or presenting a paper, contact: Secretariate Agrimach '93. ESCAP, UN Building, Rajadamnern Ave., Bangkok 10200, THAILAND
Fax. 2829602

CGPRT Centre

The Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) was established in 1981 as a subsidiary body of UN/ESCAP.

Objectives

In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

Programmes

In pursuit of its objectives, the Centre has three programmes which are mutually supportive:

1. Research, which entails the preparation and implementation of studies covering production, utilization and trade of CGPRT crops in the countries of Asia and the South Pacific.
2. Training of national research and extension workers,
3. Information and documentation which encompasses the collection, processing and dissemination of relevant information for use by researchers, policy makers, and extension workers.

Palawija News

Contributors are invited to submit concise summaries of significant social research related to CGPRT crops for publication. Submissions should be limited to two to four double-spaced typewritten text. Two figures (graphs or tables) may accompany the article. Include only references cited. All articles are subject to editing to meet space limitations.

Please send all queries relating to articles in *Palawija News* to Head Publications Section, CGPRT Centre, Jalan Merdeka 145, Bogor 16111, Indonesia.

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