

NUTRITION IN AGRICULTURE\*

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Malnutrition is as much an economic problem as a nutritional one. Close liaison between nutritionists and agriculturists is essential in the planning of food supplies and in improving food production and consumption at all levels. In order to achieve this objective, the necessary technical and administrative framework need to be established in the Ministry of Food and Agriculture. Due to the importance and impact of agricultural production on food consumption levels and the health of the population, the need for integrating nutritional considerations in agricultural programmes is manifest. Human nutrition should also assume its rightful place in the training of agriculturists and appropriate training programmes need to be introduced. There is a need for national food and nutrition policy, in order to assist the economic development and improve the quality of life of the people.

INTRODUCTION

Development of agriculture is one of the keys to economic and social progress for almost every developing country. However, its value is often not fully recognized. Inadequate or unbalanced agricultural production leads to three common forms of nutritional deprivations. First, inadequacy of food intake creates the primary problem of extensive under-nourishment. Second, the extra-nutritional needs of specific population groups particularly the need for additional protein in the diets of infants and preschool children are not adequately met. Third, there exist among population groups dietary patterns which results in deficiencies of specific micronutrients such as vitamin A, iron and iodine.

It is well established that malnutrition lowers the resistance to infectious diseases leading to a high rate of mortality among children between the ages of one and five. It adversely affects mental and physical development, produc-

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tivity, and the span of working years - all of which significantly influence the economic potential of person.

One of the main factors hampering the attainment of appropriate nutrition levels is the lack of appropriate technical bodies and administrative channels to ensure that agricultural planning would include the raising of nutritional levels as one of its primary objectives.

The purpose of this paper is to focus attention on various aspects of the relationship between nutrition improvement and agriculture development.

**Nutritional Considerations in Agricultural Development Programmes :**

It is well known that poverty and under-development are the twin causes of malnutrition in the developing countries. Most of these malnourished individuals are to be found in rural areas, depending on agriculture. In the past, the approach of both nutritionists and planners to the problems of reducing deprivations has been to concentrate on maximizing the production of goods and services. Now there is growing recognition by planners that economic growth as measured by GNP does not effectively deal with the problems. When nutritional status is used as an indicator, it is found that even when third-world countries experience substantial economic growth, the proportion of malnourished people does not necessarily decline. In Chile, for example, inequalities in food consumption increased over time from 1930's to 1970, even though during that time Chile became a semi-industrialized country and per capita income more than doubled. A study in Mexico found that, while economic development led to improved nutritional status for some segments of population, it was of little or no benefit for the lowest income groups.

It is evident that, at the moment, the resources committed to agricultural development do not necessarily have a beneficial effect on nutrition, moreover any effect they do have is more by chance than intention. The failure of many agricultural development programmes to significantly reduce poverty and malnutrition has prompted increasing demands for the explicit introduction of nutrition consideration into project preparation, appraisal, monitoring and evaluation.

**Food and nutrition Policy and Planning :**

A food and nutrition policy can be defined as being a complex of educational, economic, technical and legislative measures designed to reconcile

food demand, food supply, nutritional requirements and nutritional status, at a level judged feasible by the policy maker, to insure adequate nutritional well-being of the population within a specified time. This is an inter-disciplinary exercise in which politician has the last word on the choice of priorities. Food and nutrition policies must be based on the appropriate combination of elements relating to the three microvariables i.e. (a) food demand, (b) food supplies and (c) biological utilization of foods. The policy must be an integral part of the national development plan. A successful implementation of a food and nutrition policy requires a food and nutrition planning unit in the Ministry of National Planning, to identify the measures, to coordinate the activities of the different Ministries involved and possibly propose readjustments during the development plan.

An inter-relationship between food production, processing, storage and distribution is essential for nutritional improvement. Inadequate transportation, lack of facilities for storage, marketing and processing of food have been identified as major nutrition problems. Thus a powerful factor for better nutrition might be the improvement of an interregional transport and storage system to move food supplies more easily and at lower cost from surplus to deficit areas. For example,

1. It has been observed that probably the major contribution to the solution of the regional famines in India was the construction of the railroad.
2. Peru has the largest per-capita fish catch in the world but it rarely is consumed much beyond the immediate fish-catch region. This suggests that provision of appropriate transport facilities to move the fish inland is a necessary investment for improvement of nutrition of the inland population.
3. Another example is in Korea, where there is a common seasonal shortage of certain nutrients in the diet. This has been traced to the lack of adequate storage facilities that can store the kinds of foods that carry these nutrients,

Previously, food was consumed where it was produced. Today the road it must travel from the farmer to the consumer is longer. This is due to industrialization and urbanization, which have produced new technologies, including

modern food processing techniques, storage facilities, transport, marketing and food distribution. At each step of the road which food travels from the farmer to the consumer there may be serious food losses as high as 30% with nutritional implications, such as decrease of nutritional value or contamination during processing, storage or transport. Prevention of these losses at the pre and post-harvest stages would not only increase the availability of food, but would also raise the income of the producer and the rural population substantially.

It should be kept in mind that increased or even adequate average *per caput* food production has, *per se*, little impact upon nutritional status, unless it is supported by proper means of distribution. The distribution of foods available in the country may not only be unequal in different regions or socio-economic groups of the society but also within the same family. It has been estimated that 20 percent of the population with the lowest income in Brazil, India and Tunisia has half the per capita energy intake of the top 10 percent. Unequal distribution of foods whereby some members, particularly the children and women of a family do not receive sufficient food to meet their energy and nutrient requirements despite availability of sufficient food, has far-reaching nutritional consequences. There is, therefore, an urgent need to give at least equal attention to these aspects of problem in order to improve the food supplies qualitatively and quantitatively as is being done to increase production.

Nutrition Unit in the Ministry of Food and Agriculture :

One of the main factors militating against Ministry of Food and Agriculture fulfilling its crucial role in combatting food and nutrition problem is the absence of the necessary technical units and administrative arrangements within its organization structure to carry out nutritional research and to advise upon the formulation of relevant policies and programmes and the supervision of their implementation.

Nutritional aspects are very often neglected in the philosophy of Ministry of Food and Agriculture, since it is traditional to believe that the main responsibility for proper human nutrition lies with the Ministry of Health. Indeed it is true that nutrition services are well advanced in the Ministry of Health with responsibilities in defining the form and extent of nutritional

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deficiency diseases and disorders in any given situation, together with deciding upon their treatment. However, Ministry of Health cannot help in the attainment of the goals of improved food supplies and food consumption levels. These solutions can only be attained through the initiative of the Ministry of Food and Agriculture together with the Ministry of National Planning, which are responsible for planning and executing food policies and programmes. The establishment of necessary technical units and administrative arrangements within these bodies is fully justified.

A nutrition unit, with technical assistance from FAO may be established in the Ministry of Food and Agriculture with the following functions:

1. Studying and analysing the available data on food consumption, nutritional status, socio-economic and agricultural surveys and to identify the nature and magnitude of nutrition problems including a functional classification of population groups at risk of malnutrition.
2. Monitoring the impact on nutrition of important agricultural and rural development programmes and, when necessary, providing advice on the inclusion of a nutrition component in such programmes.
3. Providing nutrition information, advice and training to extension workers.
4. Advising those responsible for planning and implementing agricultural programmes on nutrition.
5. Supplementing the existing nutrition education activities through agricultural and rural home economics extension workers by advising families in the traditional sector on aspects related to home food production, preservation and processing such as —
  - estimation of family food needs.
  - growing the appropriate foods and raising animals to improve the food supplies to meet their nutritional needs.
  - proper food selection for the preparation of adequate family diets.
  - food preparation and preservation.
6. Participating in joint undertakings with the other Ministries and Institutes that are concerned with the definition and solution of problems in the field of nutrition.

### Nutrition Training and Education in Agriculture

Generally speaking, there is a great scarcity of suitably qualified nutritionists possessing adequate knowledge of agriculture and agriculturists with knowledge of nutrition. Although the science of nutrition developed from the work of agricultural chemists and their feeding trials on domestic animals, it has gradually lost its importance in the training of agriculturists. It seems paradoxical that agriculturists who are familiar with nutrition of plants and animals should also know about the nutrition of man, although they are primarily responsible for producing the food necessary for maintaining the adequate state of nutrition in man. It is, therefore logical that agriculturists should be equipped to show an awareness of and an interest in food and nutrition problems in the country.

They should be familiar with human nutrition and food economics by means of various courses and, especially through the inclusion of appropriate curricula within the framework of agricultural Faculties and Institutes.

Faculties and Institutes of Agriculture Animal Husbandary and Veterinary Science are already teaching courses on the biochemistry and physiology of animal nutrition, on the chemistry of food, on the composition and economic aspects of food crops. It is necessary to rationalize such training, to co-ordinate the courses and to supplement them in order to ensure that human nutrition constitutes an integral part of agricultural education. Human nutrition content should, therefore, be integrated into the already existing syllabuses with the least possible disturbance. Similarly human nutrition should be introduced in the training of stock assistants and agricultural assistants. In service training programmes for agriculture officers and planners to equip them with the knowledge of human nutrition, should also be conducted.

These problems are of particular interest to the developing countries where the planning of food production and supply has to take account of the nutritional needs of a population subsisting on diets inadequate in both quantity and quality. But it is also of real importance to those countries where food production and consumption are satisfactory or even in excess, since they must plan to meet future internal and external demands for food.

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It must be recognized that there is a need to prepare a text book that could provide the overall basic and applied knowledge in the field of food and nutrition from which a student could obtain general orientation.

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