SOME TECHNOLOGICAL TRANSFORMATION AND RESEARCH NEEDS IN GHANA'S INDIGENOUS FOOD INDUSTRIES

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1. INTRODUCTION

The food industries have been late enteries into the commercial arena of economic activity in Ghana. A survey of the industries show that there are three main groups operating. These are:

1. Traditional or Indigenous
2. Semi-Traditional
3. Modern

1.1 Traditional or Indigenous. The main characteristic of this group is the preparation or processing of staple and semi-staple foods to meet the consumer demands of the various socio-economic units of the country. Most, if not all, the processors in this group are illiterate and they carry on their processing activities purely from experience passed on to them by close relatives. Processing techniques used are often time-consuming, uneconomical, and unhygienic. Equipment used are crude.

1.2 Semi-Traditional: This group is concerned with the processing of foods and food products by techniques which are modified versions of those used in the purely traditional preparation or of those used elsewhere. Equipment used are refined versions of traditional ones, and processing is concentrated on traditional food products which enter into sophisticated commerce to some significant degree.

1.3 Modern: In this group, processing techniques and equipment used are those known and established in the practice of modern food technology. In many cases management and technical personnel have undergone some amount of training for their job. In some cases, however, the training appear woefully inadequate to meet the demands of modern technology, the practice of which requires initiative, work programming, imagination, etc.

The problems within each group of industries are many and varied especially so in the traditional and semi-traditional groups, which form the indigenous food industries in Ghana.

2. THE INDIGENOUS FOOD INDUSTRIES

2.1 Staple and semi-staple foods in Ghana are processed and packaged by traditional techniques. Records of how these techniques have been acquired may be difficult to obtain.

Nevertheless, the techniques point to definite systems by which agricultural raw materials are turned into various consumable products and marketed. Variations in the techniques might have occured with the passage of time, although the end products are essentially the same.

A number of problems are encountered in the techniques in use. These include:

1. the time-consuming nature of the processes;
2. the lack of proper hygienic and sanitary practices in their operations;
3. the contamination of the products through unsanitary handling and adverse influences;
4. the low production efficiency generated by uneconomic utilization of energy sources;
5. the unorganised and scattered nature of the areas of manufacture;
6. the very small-scale of operation;
7. the ineffective utilization of investment capital and lack of profits plough - back systems;
8. improper and ineffective organisation of production schedules;
9. lack of proper recruitment and training of personne;
10. lack of proper specifications for raw materials and the correct scheduling of their delivery;
11. the rudimentary packaging of products;
12. the lack of suitable machines for processing and for quality control.

In fact these indigenous processing industries need the injection of suitable scientific and technological know-how in every facet of their operations.

2.2 Quality control and operations mechanization

2.2.1 In traditional processing there are no specific procedures by which the quality of the product is controlled. Often, processors hope that the way the manipulate foods in individual operations during their processing would help achieve the desired characteristics acceptable to consumers.

In many instances, therefore, absolute reliance is placed on subjective evaluation as a means of assessing quality. However, there is the need for objective appraisal.

For example, quicker and more objective controls are needed to provide checks on incoming agricultural raw materials to free them of such contaminants as pieces of wood, metal or stone chips which are likely to cause damage to machine parts and interfere with efficient operation. Limitations in machine or equipment design may also make it imperative that specifications are set for incoming raw materials. In both cases, therefore, subjective and objective assessment are needed.

2.2.2 Objective evaluation is dependent on sensory equipment. To be able to maintain quality levels at all times, rationalization of processing procedures may be necessary. Such rationalization may lead to partial or completion mechanization of operations in a processes or of a whole process. Mechanization of operations or of processes can make them more effective, or more efficient, or more economical. However, it may not improve the quality of the end product. To be able to achieve this, sampling and testing procedures for measuring quality levels may have to be set up.

2.2.3 The principles involved in mechanization are engineering ones. However, because of the peculiar structure and properties of food materials as well as their biological and microbiological characteristics, there is the need to consider biophysical principles in order to relate them to foods. For instance, in the mechanization of fufu* production, an operation is required by which the carbohydrate cells of the particular foodstuff can be ruptured to liberate starch. Such an operation may require the services of a machine able to impact sufficient energy to the starch cells to cause their rupture. The was and manner in which this energy is utilized determines to a large extent the characteristics of the end-products.

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* A cooked cassava preparation.

2.2.4 Mechanization of indigenous or traditional processes may also create some social problems. Such social problems include unemployment for family units whose livelihood depends on the job opportunities traditional processing offers. Where the operation needs of mechanization favour movement to new sites, problems of housing, accommodation and adjustment to new environmental conditions for workers might arise. Where movements to new sites are not involved, the problem of noise from machines in and around processing centres may pose further environmental problem. Overall, mechanization may disturb the cultural and sociological outlook associated with traditional food processing.

2.3 Packaging

2.3.1 The packaging of traditional or staple foods has evolved from the different traditional food preparations. Such packaging has primarily been concerned with using the materials as vehicles for their contents or as units of sale for their contents. In the practice of such packaging, however, a certain amount of protection is afforded the contents.

Materials used in traditional food packaging are of two main groups:

1. those for which the materials are used as wrappers or "trays" before being heat-processed;
2. those already heat-processed for which the materials serve as retail units of sale.

The first group consists of materials of plant origin - leaves and sheaths; and the second group newspapers, newsprint, used cement bags, etc.

2.3.2 The primary purpose of a food package, from the public health standpoint is to protect its contents from contamination. However, the necessary attributes of a satisfactory package are many. These include strength and rigidity to withstand rough handling; ability to provide a barrier against the passage of materials to and from the food; ability to be easily fabricated, assembled, filled and sealed; and above all ability to serve as a convenient unit for sale and distribution of its food content.

2.3.3 Many of these attributes are lacking in the traditional packaging materials used in Ghana. The materials of plant origin, for instance, do not lend themselves easily to fabrication because of the possession of central or lateral veins which interfere with the process. Where the materials break, there is a tendency for pin-holes to develop, consequently the contents easily pick up moisture and odour from the external environment.

2.3.4 Some of these materials tend to contaminate their food contents through the transmission of flavours, printed matter, remnants of previous contents of the materials, etc.

2.3.5 The cumulative effect from eating foods so contaminated is not known. A joint public health/food industry/research investigation is needed to assess the extend of food contamination through such packaging and wrapping materials, and their possible effects on the human body.

Performance evaluation of materials in use is also needed.

3. CONCLUSIONS

3.1 Generally, it is better to find solutions to total production problems. For this, it is necessary that the problems are studied at the inter-disciplinary level by teams of specialists whose combined efforts are apt to produce more spectacular results than approaching the same problems from narrow, restricted and individualistic points of view.

3.2 More important, is the need to solve specific problems through modification or improvement of systems and processes to provide primarily for a more economic and efficient operation and hence, eventually, provide a rationalized rather than a mechanized system. Indeed, such rationalization will, in the long run, pay richer dividends than complete mechanization. A programme envisioning ultimate sophistication in traditional processing of food is reasonable if considered on a long-term basis. Thus gradual improvement in processing techniques stands a better chance of endurance than large-scale revolutionary changes which are likely to be premature and perhaps without consequence in the long run.

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