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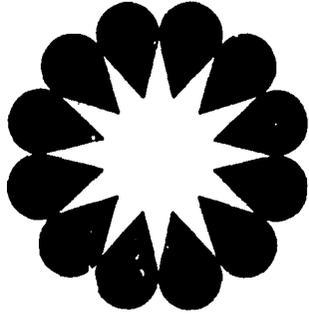
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**Protein Foods
for National
Development:**

**Operation
Marketing**

Report on Workshop I

held at the
Ashoka Hotel,
New Delhi
on December 18/19, 1969



प्रधान मंत्री

Message

We are within sight of self-sufficiency in food grains.

But this does not mean that the battle against hunger has been won. Even in affluent countries there are groups of people who are undernourished. In our land the proportion of those who suffer from dietetic deficiencies is much larger. It is not enough for a larger quantity of food to be placed at the people's disposal. The quality of their diet must also be improved.

We need more research in the field of developing low-cost protein foods and more initiative in producing such foods on a large scale.

My good wishes for the success of the conference which is being organised in Delhi by the Protein Foods Association of India.

Indira Gandhi.
(Indira Gandhi)

New Delhi,
December 5, 1969.

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The Background

In our country today, millions of children are a prey to food deficiency and the number is growing daily. They are physically under-developed, mentally retarded. Too many of them do not live beyond their childhood, victims to diseases which need not be fatal. In adults, malnutrition is directly related to low per capita productivity, hence their inability to break the vicious circle of economic stagnation. This is the spectre which haunts us today—one that threatens to prevent us from ever reaching our goals of economic well-being and renders quite meaningless the values of the egalitarian society that we have set before us.

The war has to be fought on all fronts. Its success requires a comprehensive joint effort by industrialists, scientists, Government, international agencies and communication experts.

The Protein Foods Association of India is the forum for such a cooperative venture where leading members of the food, chemical, pharmaceutical and packaging industries, Government departments, research laboratories and international agencies have together committed themselves to the task of providing commercially viable nutritive foods for the Indian people. This means the creation and marketing of the right foods to the right people at the right price. There is no doubt that the right markets exist and will continue to grow. Industry's involvement in this operation is thus two-fold: the opportunity to play a pivotal role in national development and the opportunity to avail of a marketing situation of high potential, especially concerning protein foods.

The First Protein Marketing Workshop was the culmination of the first major marketing research activity of the Protein Foods Association of India, namely, a Food Habits Survey in the States of Maharashtra and Gujarat. It was believed that a Total Marketing Strategy for new products was required for introducing new protein products. This required obtaining information on food habits, tastes and preferences, income, education and social attitudes of people in various socio-economic strata. To obtain these vital facts, Operations Research Group, Baroda, was contracted by the Protein Foods Association of India to conduct a comprehensive Food

Habits Survey in Maharashtra and Gujarat. The survey was based on a random sample of 3,000 households and employed well-established interviewing techniques to measure food intake in families.

The survey was conducted during July to October, 1969. The data gathered were programmed and tabulated by Operations Research Group with special reference to calories and proteins. The final report of the survey was ready by November, 1969.

It was decided to make a presentation of the data at a workshop to all those involved in the nutrition problem of the country. This workshop was held at the Ashoka Hotel, Delhi, on December 18 and 19, 1969.

Technical and Marketing Managers of the member companies of the Protein Foods Association of India, Government officials connected with nutrition programmes, international agencies, research institutes and selected food and pharmaceutical companies who were not members of the Protein Foods Association of India were invited. The food habits data from Gujarat and Maharashtra that were presented at the workshop were not merely a jungle of figures. Tables were analysed and interpreted. Broad trends and possible areas of action were highlighted. To supplement all this, background papers based on the survey data were sent to the workshop participants well in advance.

Workshop Plan: The survey data, analysed and interpreted, were considered the ammunition for the commercial campaign against malnutrition and the presentation of the data was the starting point of the workshop. The workshop was conceived not as a platform for speeches but rather as a forum where the participants could really get down to practical business for two days and come out with product profiles. The intent was that after listening to the presentation of the data, participants should carefully sift through them, examine the trends and opportunity areas highlighted and come out with specific plans for marketing action. In order to facilitate intensive discussions, the workshop was broken up into separate groups each entrusted with a distinct area of enquiry.

The title of the exercise was 'Operation Marketing: Workshop I', and, fittingly, the theme for the workshop was 'Protein Foods for National Development.'

Welcome Address by MR. A. V. MODY, Chairman, Protein Foods Association of India

I have great pleasure in welcoming you to this meeting. When we have concluded our two-day activity, I think you will find that we have come a long way since the Bangalore meeting at which the Protein Foods Association was born. At that time our interest in nutrition carried with it many doubts. We may now have well reached a stage where nutrition could evolve as a public policy issue.

For success in the battle against malnutrition, a comprehensive joint effort is needed by industrialists, scientists, Government, international agencies and communication experts. Our Association has succeeded in spearheading such a cooperative movement. The present workshop is the culmination of one of the first projects which the Association undertook after its inception. It was realised that many facts are vital to developing new food products. Food habits, tastes and preferences, income and education levels, and attitudes and social customs of the people are all important parameters to be considered before deciding what products will be consumed and, in consequence, can hope to be successfully marketed. A lot of ammunition in the form of food habits in two states has been gathered and analysed, and is now supplied to you for deliberation at this Workshop. We have no platforms for speeches at this meeting but only conference rooms, where we must get down to practical business for the next two days and come out with specific plans of action. The ground plan is ready and the opportunity is now open to effect a fruitful follow-through with action plans.

All these are very necessary. Without a new nutrition strategy, at least a generation must pass before many in the country can afford a proper balanced diet. But even at present the maldistribution of available food within the family, particularly to pre-schoolers, is disturbing. Another point is that there is no guarantee that an increase in income (even admitting that it is slow) will always be used to buy a better diet: people may switch as status symbols from home-pounded rice to polished rice, from milk to tea, and so on. The influence of urbanisation on malnutrition also deserves more attention than it has yet received. Thousands of people

who move to large cities become subject to a number of factors which contribute to malnutrition—poor living conditions, more expensive food, less home-grown free food and so on. The side-effects of such malnutrition—social instability, greater susceptibility of the hungry to manipulation as political weapons, and the consequent intellectual decline—could affect the very quality of human life.

What role could the industry play in this situation? In business terms, the food industry has a highly stable, assured and growing market as urbanisation progresses. What we need is innovative management and pragmatic programming for food development on a large scale. Such programmes have to be built on the solid rock of economically viable enterprises rather than on the quicksands of subsidised or unprofitable production which weaken the recipients and dissipate the strength of the providers. To penetrate a developed market is one thing, to penetrate a new food market with new technologies, particularly in marginal-economy contexts like ours, is quite a different challenge, but one which we must face.

We, rather than the customer, must adjust to the operations. The potential sources of supply of new food are considerable. Proteins from oilseeds have already moved ahead and in a few generations direct synthesis of proteins is not impossible. But such technological advances have to be brought into our country in a smooth, evolutionary manner. Just now, the immediate possibilities of application in food of protein sources such as groundnuts, sesame and cottonseed, should be urgently explored. There is considerable potential here for a good return.

When I spoke earlier of innovative management, I had in mind both Government and the industry. Each will have to accept a complementary role in combating the grave national nutrition problem. Government is concerned with social problems, education, health, national productivity, etc., each of which is interlinked with nutrition. It is not primarily a producer in the field of food. Industry is that producer, and clearly both have to help build new working partnerships to get the jobs done in the nutrition field. There are encouraging signs that both the Government and the industry see this situation in our country in this light, and our experience in the last couple of years has confirmed this new concept about government-industry relationships. Nutrition may well prove to be the platform where industry and Government will evolve the smoothest and most meaningful partnership and collaboration, if for no other reason than that neither industry nor the government can thrive under the burden of a people crippled by malnutrition.

We shattered the atom, flew to the moon, and though the challenges were far greater than those posed in providing food. This is because the objectives were clear, the

organisations for execution were rigidly defined and not dissipated over many agencies, lassitude of performances was not permitted, and the necessary funds were made available. These conditions have all to be met if we want breakthroughs on the food front. Any organisational gaps must be recognised and corrected with skills of persuasion, and efficient performance must be ensured.

We have with us today a doyen of our great civil service who has played a unique role in the food and nutrition area, Mr. A. L. Dias, the Food Secretary. He combines in himself both compassion and a deep understanding of the complementary roles of various sectors in fighting this battle against hunger. During the famine in Bihar, a near disaster whereby millions of lives would have been lost was averted under his leadership, and large-scale feeding programmes for millions of hungry children in the pre-school age were initiated. Thanks again to his vision and leadership, we have in India the largest fortification programmes for manufactured food items such as bread and food staples like atta. From fortification to nutrition education, the entire range of nutrition programmes needed to tackle the problem of malnutrition have received constant and expert attention from him. The 20-minute film that you will see very soon was born of an idea that Mr. Dias proposed at the time the Association was formed. We earnestly hope that his departure from all of us upon retirement is only transient—that it will be only in the nature of a short vacation, and that he will get back to the nutrition movement very soon. I have great honour in requesting him to accept a small memento as a token of our deep appreciation and on behalf of the millions of children in India whose faces he helped to brighten.

Following the speech, Mr. Dias was presented a memento by Master Rahul on behalf of the Protein Foods Association of India.

Inaugural Address by MR. A. L. DIAS

Mr. Mody, Master Raval, Ladies and Gentlemen,

At the outset I would like to express my deep appreciation of the gesture of the Protein Foods Association in asking me to address this distinguished gathering, which you have called a Marketing Workshop Conference. When Dr. Krishnaswamy phoned me from Bombay a few days ago I readily consented to avail of the opportunity to renew my contact with a problem which has assumed staggering dimensions and of which unfortunately there is little public awareness. I must say that I am overwhelmed and rather embarrassed by the tribute which your Chairman has just paid to me this morning, a tribute which I hardly deserve. I am greatly touched also by the beautiful memento which has been given to me on behalf of the Association. My small contribution arose from the fact that I was privileged to be Food Secretary during a rather critical period. My involvement, I should say my emotional involvement, in the problem of nutrition really began with the Bihar drought. The saga of that challenge, and the response of Government and the people in meeting it, yet remains to be told. But there is one feature of those two dark years which warms the cockles of one's heart and that was to see the fine physical condition of the children during this famine period. It showed what could be done for relief of malnutrition among millions of children—in Bihar actually we catered to two million children—now exposed to all its evils. To this well-informed assembly it will not be necessary for me to dilate on the evils of malnutrition. Public attention must, however, be focussed on the crucial aspect of the problem, the effects of protein-calorie malnutrition in the most vulnerable groups, who are the pre-school children. The other vulnerable groups that require immediate attention are the pregnant and nursing mothers. Our endeavour should therefore be to cater to these most vulnerable groups before meeting the needs of other segments of the under-nourished population.

There is another aspect to which I would like to invite your particular attention. There is a danger that some euphoria may have been generated by the green revolution and the near prospects of self-sufficiency in foods. There

may be a tendency therefore in some quarters to consider that the solution of the nutritional problem is in sight. This would be a grave error. Sufficiency of cereals, as you all well know, will not by itself correct nutritional deficiencies. The task therefore of educating the public on the need for a balanced diet still remains. It is because of the Government's awareness of nutritional problems that for the first time the clear contours of a nutritional plan have emerged in the 4th plan. Nearly 6 crores of rupees have been earmarked for programmes which, though modest in their objective, mark a significant advance in many directions. I hope that I am not revealing any official secret when I mention that the importance attached to nutrition is the direct result of the personal interest of our Prime Minister. Several months ago a note from her was received in the Ministry highlighting the urgency of initiating programmes in this direction on the nutritional front and this made possible the inclusion of a meaningful nutritional programme in the 4th plan.

One feature of the national nutritional plan to which I would like to draw particular attention is not just the extension of child-feeding programmes to cover nearly 15 million children, but the use of indigenous material for the manufacture of Bal Ahar. This is important, since till 1967 the child-feeding programmes had been provisioned by imported material. While we are grateful to the international agencies for the generous help which they have extended to this country, the point I wish to make this morning is that no national programme of any importance can be sustained over any length of time unless it is indigenous.

I hope that in your deliberations over the next few days you will pay particular attention to this aspect of the question. There are sufficient protein resources within the country to implement programmes for relief of the more vulnerable groups. I am glad that increasing use of local resources is now being made both in the public and private sectors. I would go a step further and say that bearing in mind the magnitude of the task and the limitations of the financial resources, the nutrition policy must aim especially in the rural areas at educating the people to use foods locally produced for purposes of a balanced diet. I was very happy to learn some time ago from Dr. Gopalan, of the National Institute of Nutrition in Hyderabad, of the experiments that he had been making in this direction.

There has also been acceptance by Government of the principles of fortification. You are familiar with what has been done to put across to the public a nutritious bread loaf especially to cater to the low income brackets in the urban areas. Work continues on the production of a cheap enriched bun or a janata loaf to cater to the school-feeding programmes and the common man. I understand that the proposal for the fortification of atta supplied through the public distribution system by the

Government will soon be initiated. Spectacular results have been achieved by Dr. Swaminathan and his colleagues in evolving high-yielding varieties of wheat with a higher protein content. Considering that a sizable percentage of the population is wheat-consuming, attafortification and a better wheat can signify a big breakthrough.

In rice-breeding much remains to be done, but in the processing of paddy significant progress has been made which would eliminate waste, lead to the utilisation of byproducts and increase the availability of cereals. Useful work has been done in Mysore and also at Hyderabad for the processing and use of these great sources of protein, dals and oilseeds, and I hope this conference will suggest a programme for adoption by the trade, Ministry and the public, of the results of the research in this field

Work continues on the fortification of salt and tea, two commodities of universal consumption. In fact one of the last steps I took before laying down office was to bring about better coordination of the various agencies handling the technical problems of the fortification of salt.

This brings me to the role of industry in the battle for nutrition. There is no doubt that it has a great part to play not only in supplementing the programmes in the public sector but also in initiating programmes of its own. Much pioneering risk-entrepreneurship is involved. Quick dividends may not follow But I am sure that industry's active involvement in this field can in the long run bring about a perfect coincidence between self-interest and public interest. Industry's main preoccupation so far has been with the manufacture and marketing of the more sophisticated food products which are well beyond the price range of the low-income brackets There is crying need and a boundless market for cheaper pre-weaning and post-weaning baby foods. There is a vast scope for fortification of a whole range of food products and beverages. I hope that the conference will suggest ways and means to enable the industry to meet this challenge.

Finally a word about the Protein Foods Association of India. I must confess that when the Association was first formed I was sceptical whether the initial enthusiasm which brought it into being would be sustained My doubts have been dispelled and I take this opportunity of congratulating the Association on its excellent performance. It has got the industry actively involved. I have just completed reading the survey of food habits made in Maharashtra and Gujarat. This makes fascinating study and provides invaluable data to both the Government and the private sector. I thank the Association for the honour it has done me today and I hope that the deliberations of the conference will lead to purposeful action.

Thank you.

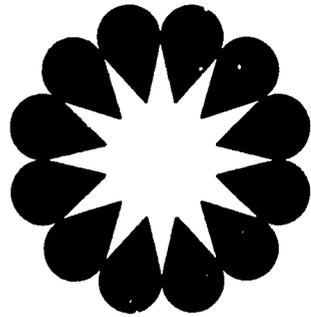
MR. MATHRANI'S Speech

MR. CHAIRMAN, MR. DIAS AND FRIENDS,

You will forgive me if I do not have to say much on this occasion, because it was only a few minutes ago that I was honoured with an invitation to come to the dais and participate in this function. I could not refuse the invitation particularly because of my relations with Mr. Dias, whom I have known since the day I joined service 23 years ago. We have worked together in many capacities and I deem it an honour that I have to take over from him in the department of food. Mr. Dias's performance in the department has been ably described by the Chairman and is already well known to you. I would like to echo the sentiments of the Chairman, and to thank him for his thoughtful speech. The present made to him just now has been a token of affection from all of us. Mr. Dias, both because of the position he was placed in at the time, and because of his deep interest in the welfare of the community wherever he has served, did a very noble job in not merely feeding, but feeding well, the children and mothers in those critical years. In a larger sphere he succeeded in building a good buffer stock of food grains. Attention will now have to be given to the question of nutritious diets which he initiated. It will be the task of the department of food, with which I am now entrusted, to attend to this and to continue the good work that Mr. Dias has done.

We are very grateful to this Association for organising this workshop. This is a first step towards understanding the nutritional needs of the country, starting with Maharashtra and Gujarat. These studies should help us to focus our attention in a more practical manner on our action programme for the future.

I thank you, Mr. Chairman, and assure you that we will try our best to help in every possible way in your laudable endeavours.



Chapter I
Objectives and
Procedure
of the Workshop

Objectives and Procedure of the Workshop

The theme for the first Workshop under Operation Marketing was: New Foods for National Development.

The acceptance of this particular theme shows that the focus of the workshop was on the future. In effect the workshop was the first tangible effort by the private food industry to take a concrete step in the battle against malnutrition. The objective of the workshop was to identify opportunity areas where private industry could play a part. Obviously this would be in the area of developing new low-cost foods which would be acceptable to the vast segments of the people suffering from malnutrition.

New products, whether food or any other product of manufacture, cannot be developed in a vacuum. New products must be firmly based on a proper identification of consumer needs. This is particularly true in the case of food products. Experience with new food products developed all over the world clearly shows that success or failure of the product has to a great extent depended on the marketing inputs made. As a result it was realised that what was needed for new protein food products in India was a Total Marketing Strategy.

The first step in this Total Marketing Strategy was the Food Habits Survey conducted in Maharashtra and Gujarat by the Protein Foods Association of India with the help of the ORG, Baroda. This survey identified the food habits of the people in these two states broken down into various socio-economic segments, their tastes and preferences, their attitudes and inhibitions and their market behaviour. Such a comprehensive survey fulfilled the need of identifying the nutritional gaps present and the opportunities available for bridging these gaps. New product development therefore was to be based on the results of the Food Habits Survey.

Having identified the opportunity areas for developing new products the survey data could be utilised for further developing these opportunity areas into full "product profiles". Data from the Food Habits Survey regarding the penetration in the population of the particular food item, quantities consumed, percentage of income spent, frequency and quantity of purchase and beliefs associated

with the item, would help to produce a Total Marketing Strategy for the new product.

Hence the starting point of the workshop, whose objective was to develop new foods for national development, was the Food Habits Survey in Maharashtra and Gujarat. The workshop started with the presentation of the survey data by the Operations Research Group, the research organisation. The data was presented in such a way as to further the marketing objectives of the workshop. Chapter II contains the presentation of the survey data. Once the data had been presented to the participants, what was needed was that these should be studied in depth so that product profiles could be developed. This objective could be furthered by having small groups in working sessions. In order to narrow down the area of enquiry for each group so that each area could be discussed in greater depth, the workshop was divided into three broad groups based on the possible area of activity in the nutrition field. These were Fortification, Special Foods (to meet weaning, pre- and post-pregnancy needs) and new processed foods. Since the number of participants at the workshop was quite large there were two groups in each of these areas. Each group consisted of approximately 12 people. The groups were organised in such a way that the participants had a special interest in that area of activity (for example a representative from a flour mill was put in the Fortification group). It was also ensured that various experts needed to develop a complete product profile were represented in each group. Each group also had a Government of India participant or a representative from an international agency. The list of participants in the various groups is given in Appendix I.

At the end of the presentation of the survey data these groups adjourned to different rooms for in-depth discussions. The brief given to them was that by the end of the day (after about 5½ hours of discussions) they would come out with a set of recommendations. These recommendations from the 6 groups were to be discussed in detail at a plenary session on the following day. Based on the points made at the plenary session the final recommendations of the workshop were to be made.

In order to assist the participants in discussing the relevant issues involved in each group, a list of questions pertinent to that group was addressed to them. These lists are included at the end of this Chapter. Further a set of guidelines were also set for the various group chairmen so that the discussions would be properly focussed and would be relevant. The guidelines for group chairmen are also included at the end of this Chapter.

There was a Coordinating Committee for the workshop. This Committee consisted of two programme coordinators and 15 resource personnel. The programme coordinators were Mr. M. Mathias of Hindustan Lever and Mr. T. S. Nagarajan of Brooke Bond. These programme

coordinators were in overall charge of the discussions. As their designation suggests these programme coordinators were meant to coordinate the activities of the various groups. They were in overall command of the working sessions. They explained the mechanisms of the workshop to the participants, clarified the objectives and detailed the briefs to the various groups. At the plenary session the next day they guided the discussions on the draft recommendations of the individual groups and drew up the final recommendations of the workshop.

The resource personnel were drawn from various disciplines such as industrial consultancy, food development technology, advertising, systems analysis and marketing research. The representatives from ORG were also among the resource personnel. The role of these people was to visit the various groups by rotation and solve any technical problem pertaining to their discipline in any particular group. For example, the ORG personnel were circulating among the groups in order to make clarifications on any points of the Food Habits Survey, advertising personnel were available to suggest sales promotional inputs in the Total Marketing Strategy being developed by the group. The list of the Coordinating Committee is given in Appendix I.

The recommendations of the various groups form part of Chapter IV. The final recommendations of the workshop are given in Chapter V.

Group Questions Fortification

1. What are the staples which can be fortified (technical)?
2. What are the staples which can gainfully be fortified to reach the largest number?
3. What staples or other items can be identified as the most suitable to reach the segments which need solutions most?
4. Can other major food ingredients such as besan, and any other minor ingredients (e.g. spice, flavour) be considered for fortification?
5. Among various cereals, wheat products offer the greatest potential for fortification at present because this is the only cereal which undergoes central processing in mills to a degree. Therefore, is it possible to fortify by mandate all wheat products (suji, maida and atta, both whole meal and resultant)? How should one proceed if this concept is accepted? What kind of research should be initiated on fortification of other cereals (rice, jowar, bajra etc.)?
6. What are the obstacles to fortification (e.g. lack of central processing industries for grains) of various staples like jowar, wheat, rice, bajra etc.? How can they be overcome?
7. What are the economics (extra cost due to fortification, packaging, if necessary, distribution, etc.) of fortification?
8. How to distribute and how to promote?
9. What should be the national policy on fortification—mandatory or otherwise? What are the pros and cons of mandatory or limited fortification?
10. What are the alternate vehicles to be considered for fortification?
11. In view of the feeling that atta is not bought for fear of adulteration, what are the ways through which you can assure the consumer of the quality of the product?

Special Foods

This category may be sub-divided into:

- (a) Weaning foods.
- (b) Pregnancy, lactation and school lunch foods.

The survey reveals that weaning habits (introduction of solid foods after the age of six months) is almost non-existent.

1. How can a product concept evolve? Is the observation that there are special needs for mothers during pregnancy and lactating periods useful here?
2. How can the concept be introduced? What should be the promotional/educational strategy and inputs? How can we measure the effectiveness?
3. Is it possible to adopt one or more family foods now accepted into a weaning/lactation/pregnancy food? What are the advantages and disadvantages of this approach?
4. What further research is needed on this subject?
5. Can action in regard to these product categories be undertaken in the following two spheres?
 - (a) Government
 - (b) Industry.

Such consideration arises out of the observation that the most vulnerable segments may not always be the most marketable in so far as processed, packaged products are concerned. To alleviate the nutritional status of these groups (children), a programme with Government support and industry collaboration may be warranted.

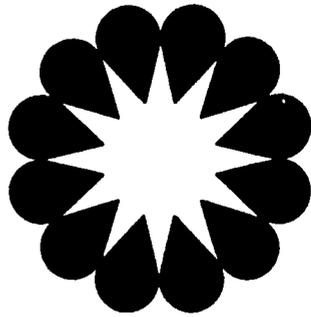
6. What strategies should be evolved to ensure a large enough market for new weaning/pregnancy/lactation foods, so that a large volume operation may ensure lower prices?

New Processed Foods

1. How can products be identified in this category? On what basis should identification take place? What are these products?
 - (a) What are the market potentials?
 - (b) Do usership profiles indicate possible nutritional benefits? If so, to whom in the family?
2. After the products are identified, how can one generally approach building a nutrition content in these items?
3. What should be the 'basic appeal' in the marketing of these products: convenience? quality? with nutrition as a bonus? Discuss alternatives.
4. Does the socio-economic profile of consumers of these products indicate that an impact on 'nutrition awareness and improvement' can be achieved?
5. If one reaches the less vulnerable groups initially,
 - (a) Is it possible to reach the other segments eventually (trickle down effect)?
 - (b) If so, how?

Guidelines for Group Chairmen

- 1. Chairmen will make opening remarks on the tasks of the groups with respect to the particular product category they will be discussing.**
- 2. They will set down the guidelines for discussions (Guidelines = Answers to questions enclosed + aspects governing items under 3.)**
- 3. The discussions should cover the following aspects of the product category:**
 - (i) Identification of products (such as fortification carriers, special foods and new processed foods) based on survey data.**
 - (ii) Development of these product concepts.**
 - (iii) Technical know-how and equipment needs.**
 - (iv) Market identification for these products in total terms and segmented by socio-economic categories.**
 - (v) Marketing parameters for identified items such as:**
 - (a) Pricing**
 - (b) Packaging**
 - (c) Advertising**
 - (d) Distribution.**
 - (vi) Role of Government in the development of commercial efforts in this field. Possible incentives regarding:**
 - (a) Food laws**
 - (b) Subsidies**
 - (c) Concessional freight rates**
 - (d) Excise duties.**
 - (vii) Need for any further market research and recommendations thereon.**



Chapter II–The Survey

**a) Objectives and
Methodology**

**b) The Data—
Product Possibilities
and Marketing
Potential**

Objectives and Methodology

Introduction

1. Protein Foods Association (PFA), having recognised the problem of protein gaps in the normal Indian diets, has taken upon itself as one of its functions to identify and develop protein foods of the right kind. One important requirement is that these products fall within the range of acceptable food items of the population. Further it is necessary to develop a number of such products, each one varying in its characteristics, so that the needs of different population sub-groups can be effectively met. PFA has proposed to achieve this by conducting a comprehensive consumer study and following it up with a marketing workshop.

2. The major objectives of the consumer study will be to find out:

- (i) the food items taken by members in different age groups and socio-economic levels,
- (ii) taboos and preferences regarding food items and ingredients,
- (iii) extent of awareness of nutrient value of food,
- (iv) the protein deficiency, both quantitative and qualitative, in different age groups and socio-economic levels.

Food technologists drawn from national institutions will be associated in the study to give the required technological content to the survey and to help in the interpretation of the results. As a next step, a marketing workshop, lasting for 2 or 3 days, will be conducted among executives and marketing officials of member industries. In this workshop the findings of the consumer study will be reviewed from the production and marketing angles. It is expected that at the end of the workshop a few definite 'product concepts' will emerge with all the marketing variables clearly defined. This will help the food industry to move with a certain degree of confidence into the development and marketing of protein foods.

3. Due to the vastness of the country, it is proposed to conduct the survey and workshop on a regionwise basis. To begin with, the region comprising Gujarat and Maharashtra has been taken up and the present report pertains to the study conducted in these two states.

4. Operations Research Group (ORG) was contracted by PFA to draw out the plan of the survey and conduct the necessary field work. ORG was also made responsible for the analysis of the data and for preparing the final report incorporating the survey data and recommendations resulting from the workshop.

Methodology

5. Based on the brief given by PFA, ORG drew up the following programme for the consumer study in Gujarat and Maharashtra.

(i) *Free Interviews*. At the first stage, 32 free interviews, 16 in each State, will be conducted among housewives belonging to different economic levels. In these interviews, conducted in the mother-tongue of the respondent, information will be elicited on eating habits, taboos and preferences, awareness of nutrient concepts and of the nutrient value in food and the extent of recall of the items taken. A close study of these interviews will help in formulating a questionnaire for the large scale consumer survey.

(ii) *Pilot Study*. The questionnaire, developed on the basis of the findings of the free interviews, will be tried out among 100 families to assess the validity of the questions framed. The questionnaire for the final study will be modified according to the pilot study findings.

(iii) *Consumer Survey*. It is proposed to survey a sample of about 3,000 households in the two States together. Of this, the urban sample will be 2,610 and the rural sample 390. The urban sample will be spread over all the size-classes. Probability sampling techniques will be followed in the selection of households.

In each household three interviews will be conducted— one with the housewife to know the family consumption and habits, another with a family member, selected at random from among those aged 6 and above, to know his/her eating habits and a third one with the mother of a child, aged between 6 months and 5 years, to know the feeding habits for the child.

Free Interviews

6. Even though quite a few food items are generally taken by a family, it is not exactly known whether the choice is merely traditional and taste-based or is influenced by the nutritional value of the food item. It is not also known as to how the nutrient composition of a food ingredient is understood and interpreted by the housewife and to what extent preferences and taboos have a part to play in the inclusion or omission of food ingredients. It was felt that once the attitudes and opinion on these questions were ascertained, the questionnaire for the large scale survey could be properly constructed so as to avoid any vague answers from the respondents. With this in view, it was proposed to conduct a few free interviews before starting off with the large scale survey.

7. As stated above, the main objective of the free interviews has been to ascertain the attitudes towards different food items and ingredients. The interviews were done by senior research staff of ORG in a free way, viz., without the use of a constructed questionnaire. A guideline was prepared for the free interview and the same is given in Appendix IV

In all 32 free interviews were conducted with 16 each in Gujarat and Maharashtra. The respondents were housewives chosen from all economic levels. The number were as under:

Gujarat		Maharashtra	
Town	No of Interviews	Town	No of Interviews
Ahmedabad	6	Bombay	8
Baroda	4	Nasik	4
Nadiad	4	Manmad	2
Chota Udaipur	2	Malavi	2
	16		16

The field work for this was carried out during March-April 1969

8. The findings from the free interviews are as follows.

- (a) There is a definite choice in the food items taken for snacks and main meals, even in the main meals there is a difference in the items taken for lunch and dinner. Thus in order to have correct enumeration of food items, it is necessary to ask about each eating occasion.
- (b) Taste and tradition seem to be the major governing factors in relation to the choice of common day-to-day items. A few families separated out green vegetables as those with higher nutritional value
- (c) 'Nutrition' is interpreted more in terms of physical effects on the body than in terms of actual nutrient content in the ingredient.
- (d) Even strict vegetarian families are not totally averse to the idea of consumption of animal foods. While some have attributed better nutrient value to animal foods, others practise giving eggs to children during winter, in particular.
- (e) Quite a few items have been mentioned as special food items taken during feast days, holidays and fast days. It was observed that fast day items were distinct from feast day items.
- (f) Housewives tend to remember more the special food taken during nursing period than food taken during pregnancy.

- (g) Great care is taken towards starting semi-solid food for infants. Many mothers prefer to start the same only after the infant learns to walk as otherwise they fear the infant may develop a pot-belly.
- (h) A proper recall of the items taken in the family can be made only for the day preceding the date of interview rather than for any longer period.
- (i) Adulteration, rather than cost, is the over-ruling factor in deciding preferences for buying food ingredients. Many prefer to put in some more labour to get their wheat ground rather than buy wheat flour directly. For a similar reason, packaged butter is preferred to loose butter.

Pilot study

9. A questionnaire was then constructed based on the findings from the free interviews. This questionnaire was tested by carrying out interviews among 75 families in Bombay and 25 in Baroda. The following are the two major findings of the pilot study:

- (i) Among the nine physical effects considered for association with different food ingredient groups, association exists only for six, viz. easy digestion, bone development, strength, disease resistance, keeping one active and blood purification. Very few associate negative attributes to food ingredients. Providing a list of ingredients to the housewife helps in eliciting better information.
- (ii) There is a general awareness of the nutrient terminology, though the specific advantages and significance of each nutrient is not clearly understood.

Consumer Study

10. The final questionnaire has been formulated incorporating the modifications arising out of the pilot study. As stated earlier, the questionnaire has been divided into three parts, to be addressed to three members of the family as follows.

Part I — *Family* to housewife for obtaining information on the total family consumption and on attitudes towards foods.

Part II — *Individual* to a member of the family selected at random from among those aged 6 years and above in order to obtain information on his or her personal consumption.

Part III — *Child* to the mother of a child aged between 6 months and 5 years to obtain information on food items given to the child.

A copy of the questionnaire is appended at the end.

11. The reference period for getting the quantum of consumption has been taken to be the day preceding the date of interview. While the housewife (Part I) will be

asked to give the quantity consumed by the family of both the food items and the corresponding food ingredients, the respondents for the other two parts will be asked to give only the quantity of food items consumed by them. The reference day for all the three interviews in a family has been kept the same. This will help in arriving at the consumption of food ingredients by the individuals and children. This technique is being adopted in the surveys conducted by the Nutrition Research Laboratories (NRL), Hyderabad*.

This one-day reference period helps in reducing considerably the recall lapse. In order to avoid any bias arising due to weekly habits in taking food items, care has been taken to see that the interviews are equally spread over all the days of the week.

Based on the surveys carried out by NRL, it has been shown that the average intake of protein and calories estimated from single-day observations, the day being selected at random, is not significantly different from the intake obtained from the 7-day method. Further, in the current survey itself, the housewives were asked at the end of the interview their purchase pattern and quantity bought at a time of different food ingredients. The monthly purchases estimated through this question are broadly in agreement with the consumption estimates based on the single day reference period.

Comparison of monthly purchase and consumption estimates. Unit: Tonne

Food ingredient	Gujarat		Maharashtra	
	Purchase	Consumption	Purchase	Consumption
Rice	27,577	34,080	51,824	63,120
Wheat	66,171	76,590	102,063	93,930
Bajra	38,770	70,650	41,301	54,360
Jowar	23,806	49,560	167,677	226,770
Adad	2,616	690	6,990	4,260
Chana	4,932	2,340	18,932	12,540
Mung	8,760	9,390	12,834	5,250
Tuvar	13,248	15,120	22,094	24,960
Tea	2,076	1,560	3,082	2,010
Sugar	18,240	10,440	26,485	16,800

12. The selection of households has been done as follows: In each state in the urban sector, all the towns have been grouped into 5 classes according to their population and from each class one or more towns have been sampled with probability proportional to population. Within each town, the municipal wards are sampled, in some cases at random and in other cases with probability

* Now the National Institute of Nutrition

proportional to the number of voters in the ward. In Bombay, Ahmedabad, Poona and Baroda, due to larger sample size and availability of more reliable information, stratification of wards was done before selection of wards. Within each selected ward, voters were selected systematically with a random start. The household to which the selected voter belongs is taken to be the sampled household.

In the rural sector, the selection of villages is done in three stages, first the districts, then taluks within the districts and then villages within taluks have been selected. The villages are selected only from among those with population above 1,000. This has been done to ensure accessibility. Within each sampled village voters were selected systematically with a random start.

The list of sampled towns and villages and sample size (proposed) within each are given below:

Town/Village	1961 Census Population	Sample Size
Gujarat:		
Ahmedabad	12,06,001	400
Baroda	2,98,398	240
Bhavnagar	1,76,473	120
Patna	51,953	100
Mangrol	21,089	100
Vyara	15,273	100
Broach Dist: Jambusar Taluk		
Ankh: Village	1,909	15
Kavi Village	6,698	15
Broach Dist: Amod Mahal		
Amod Village	8,970	15
Sanhan Village	2,914	15
Junagadh Dist: Koshod Mahal		
Badodar Village	1,483	15
Kevdra Village	2,369	15
Junagadh Dist: Manavadar Taluk		
Pajod Village	2,163	15
Sultanabad Village	1,421	15
Maharashtra:		
Bombay	41,52,056	800
Poona	7,37,426	300
Sholapur	3,37,583	120
Nasik	2,15,576	120
Jalgaon	80,351	100
Ratnagiri	31,091	100
Osmanabad	18,868	100

<i>Town/Village</i>	<i>1961 Census Population</i>	<i>Sample Size</i>
Maharashtra—Contd.		
Dist. Jalgaon. Taluk Jalgaon		
Idgaon Village	1,115	15
Mumrabad Village	3,784	15
Dist. Nasik. Taluk Nasik		
Adgaon Village	4,207	15
Lakhalgaon Village	1,305	15
Dist. Nasik. Taluk Malegaon		
Tehre Village	2,470	15
Umrane Village	5,739	15
Dist. Ratnagiri: Taluk Ratnagiri		
Mirya Village	3,003	15
Pali Village	1,477	15
Dist. Ratnagiri: Taluk Malwan		
Pendur Village	6,569	15
Warad Village	3,655	15
Dist. Osmanabad: Taluk Osmanabad		
Sanja Village	2,001	15
Tair Village	5,725	15
Dist. Osmanabad: Taluk Ahmedpur		
Chakur Village	6,123	15
Chapoli Village	2,099	15
Dist. Parbhani: Taluk Kalamnuri		
Akhadabalapur Village	2,800	15
Warrangapata Village	1,342	15
Dist. Parbhani: Taluk Partur		
Kendhal Village	1,747	15
Mantha Village	3,637	15

	Gujarat	Maha-rashtra
Part I — Family		
No. sampled	1,180	1,910
No. interviewed	1,170	1,910
Part II — Individual (6 years & above)		
No. sampled	1,180	1,910
No. interviewed	1,098	1,568
Part III — Child (6 mths. - 5 yrs.)		
No. sampled*	642	887
No. interviewed	625	838

* This is less than the total number of sampled families since not all families will have a child in the age group 6 months to 5 years

13. In the sampled family, members are divided into two categories—one aged 6 years and above and the other (children) aged between 6 months and 5 years. One in each category is selected at random. A suitable selection procedure has been developed which will avoid any bias on the part of the investigator in selecting an individual and at the same time is easy to be carried out in the field.

14. The field work for study was done during July-August, 1969. The number sampled and number responding for the three parts of the enquiry are as under:

The Data—

Product Possibilities and Marketing Potential

1. Product Possibilities and Marketing Potential

This chapter analyses the survey data with the object of describing certain product profiles and identifying markets for these products. The products have been grouped into three broad categories as given below:

- (i) Basic food ingredients;
- (ii) Special foods — foods for pre-school children and for women during pregnancy and lactation;
- (iii) General processed foods.

Each of these categories can be discussed by individual groups in the workshop. The discussion can centre around the technical feasibility for processing these items and the commercial viability in manufacture and distribution

For more details on the survey findings reference can be made to the tables and notes presented in Chapter III of the full survey report

2. Basic food ingredients

This section deals with the consumption and buying for patterns of major food ingredients. The possible action with this category of products will be fortification While

the technology of fortification is generally known, commercial success of any fortification project will depend upon evolving the current marketing strategy Some of the marketing factors which will have to be determined are economic packaging and suitable distribution channel.

2 1 Rice, wheat, bajra and jowar are the most used cereals in both Gujarat and Maharashtra. The total monthly consumption of these is estimated at 79 and 66 per kg. per month per family in Gujarat and Maharashtra, respectively. Of these rice and wheat are consumed at a higher rate and by more families as the income increases. Bajra is seen to be more popular in Gujarat than in Maharashtra. Jowar usage increases as the town size and income decreases.

	No. of families (in '000) taking the cereal			Family Monthly Income			Per family monthly consumption (kg)
	Total	Urban	Rural	Upto Rs. 200	Rs. 201 -Rs. 500	Above Rs. 500	
Gujarat							
Rice	1816	673	1143	644	989	183	11.6
Wheat	1733	654	1079	737	841	155	26.2
Bajra	956	260	696	349	543	64	24.0
Jowar	912	192	720	703	181	28	16.9
Total families	2943	1005	1938	1529	1209	205	78.7
Maharashtra							
Rice	3593	1735	1858	2163	995	435	9.5
Wheat	2679	1554	1124	1525	751	405	14.0
Bajra	799	74	725	553	215	31	8.1
Jowar	3467	561	2907	3026	393	48	33.9
Total families	6693	2061	4632	4981	1231	481	65.5

Excepting rice, the other three cereals are ground into flour before being used. However, only very few families directly buy the cereal flour. Almost all buy cereals in grain form only. The free interviews conducted earlier show that buying of wheat flour is not preferred for fear of adulteration. Price is not mentioned as a deterrent factor.

In Gujarat monthly buying seems to be the most common habit. In Maharashtra, however, no such definite pattern exists. The fortnightly buying of wheat and rice is relatively high in Maharashtra mainly because of this habit being prevalent in Bombay city due to rationing.

	Total families buying the cereal ('000)	Percent families buying the cereals once in a				
		Day	Week	Fort-night	Month	Year
Gujarat						
Rice	2528	1.9	2.0	5.8	76.9	12.0
Wheat	2305	0.2	2.9	4.9	74.6	15.8
Bajra	1498	0.3	4.4	1.1	62.4	31.7
Jowar	1262	4.3	13.3	6.7	61.5	14.1
Total families ..	2943	—	—	—	—	—
Maharashtra						
Rice	6116	1.3	14.1	27.9	35.2	21.6
Wheat	5849	1.0	14.4	28.9	34.7	21.0
Bajra	1566	3.1	14.9	6.1	27.2	44.2
Jowar	4182	15.0	24.3	20.4	28.2	12.1
Total families ..	6693	—	—	—	—	—

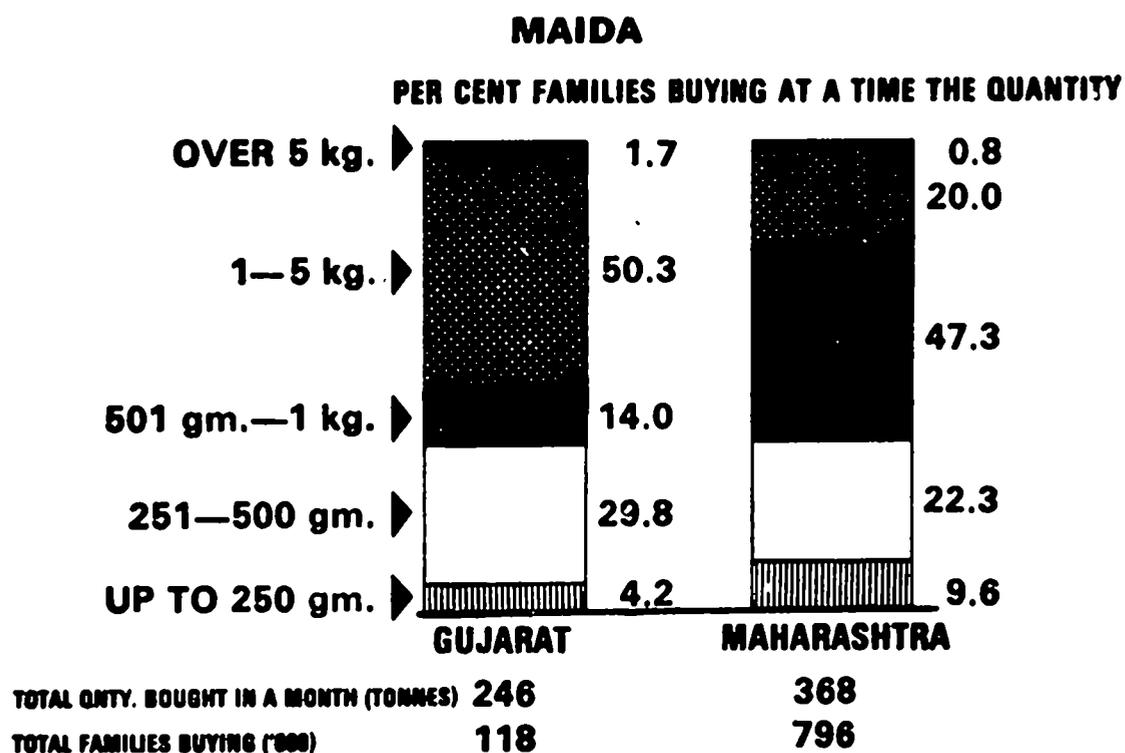
In Gujarat half the families buy rice in quantities ranging from 1 to 5 kg. at a time, but buy other cereals above

10 kg. at a time. Again in Maharashtra no definite pattern regarding quantity bought at a time exists.

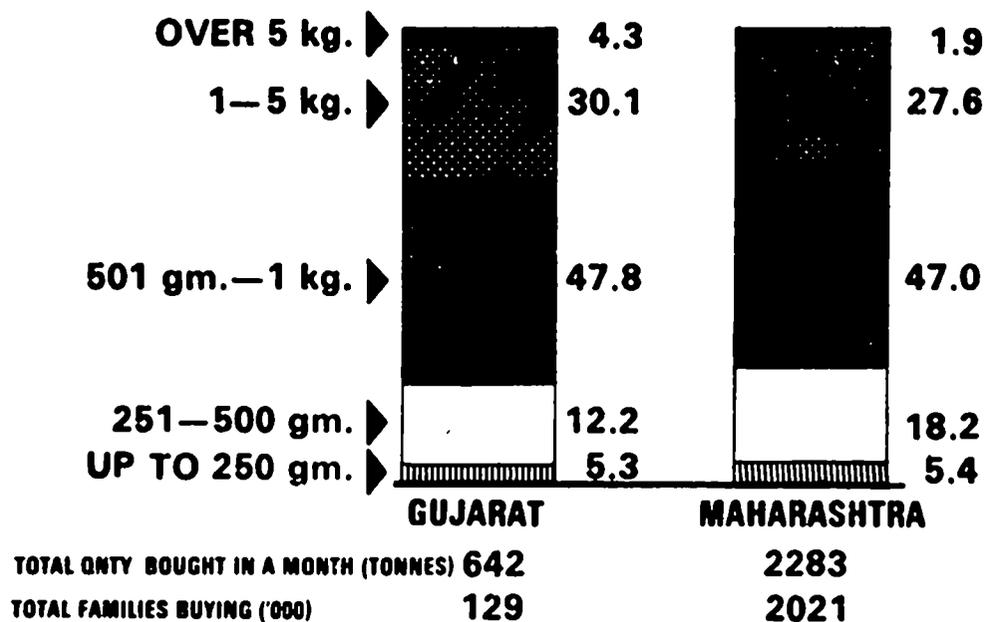
	Total families buying ('000)	Percent families buying at a time quantity				
		Upto 500 gm	501 gm - 1 kg	1-5 kg	5-10 kg	Over 10 kg
Gujarat						
Rice	2528	3.8	7.4	45.3	17.0	26.4
Wheat	2305	0.1	0.8	12.5	16.5	70.0
Bajra	1498	—	0.7	19.8	12.9	66.6
Jowar	1262	0.3	1.4	30.0	21.6	46.6
Total families ..	2943	—	—	—	—	—
Maharashtra						
Rice	6116	6.5	16.9	39.5	20.0	17.2
Wheat	5849	2.5	4.4	31.7	22.3	39.1
Bajra	1566	1.0	7.3	34.0	8.9	48.6
Jowar	4182	2.4	5.0	33.7	22.5	36.4
Total families ..	6693	—	—	—	—	—

It is also observed that in both the states rice and wheat are considered as most responsible for many of the positive physical effects considered in the survey. Opinion is divided over bajra and jowar between the states. In Gujarat, bajra and in Maharashtra, jowar are held more responsible for the physical effects. However, in both the states only a small number consider bajra and jowar as sources of vitamins or protein (refer Tables 4.2 and 5.2 of Chapter III of the full survey report).

2.2 Maida and Suji are the cereal flours bought by a large number of families in Maharashtra. In both the states half the families buy at a time quantities ranging from 1 to 5 kg.



SUJI
PER CENT FAMILIES BUYING AT A TIME THE QUANTITY



2.3 Among pulses, tuvar, chana and mung are the most commonly used ones in both the states. The total per family monthly consumption of these pulses is estimated at 9 and 6 kg. in Gujarat and Maharashtra, respectively.

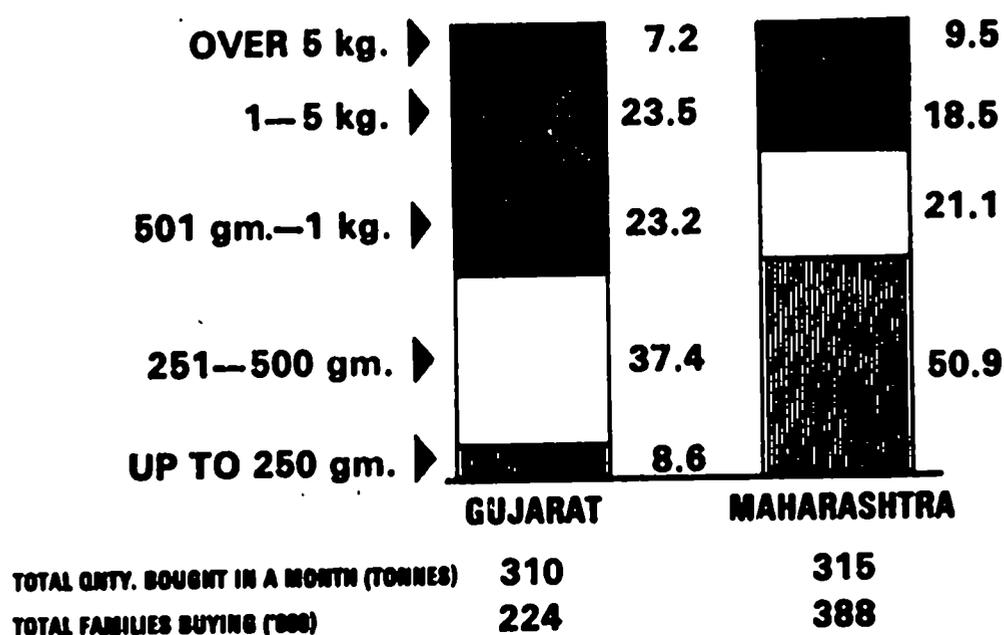
	No. of families ('000) taking the cereal			Family Monthly Income			Per family monthly consumption (kg)
	Total	Urban	Rural	Upto Rs. 200	Rs. 201 Rs 500	Above Rs. 500	
Gujarat							
Chana	469	140	329	162	238	69	0.8
Mung	662	230	432	343	270	49	3.2
Tuvar	1417	543	864	525	734	158	5.1
Total families ..	2943	1005	1938	1529	1209	205	—
Maharashtra							
Chana	1807	459	1348	1253	405	149	1.9
Mung	850	352	498	615	134	101	0.8
Tuvar	3875	1247	2628	2832	735	288	3.7
Total families ..	6693	2061	4632	4981	1231	481	—

Less than 20 percent of families in the two states buy these pulses more than 5 kg. at a time.

These pulses are used as such in the daily cooking. Only in case of chana 50 percent of the consumption is in the form of flour (besan). In both Gujarat and Maharashtra, 5 to 8 percent of the families buy besan (chana flour) directly. This habit is seen even in rural areas.

BESAN (CHANA FLOUR)

PER CENT FAMILIES BUYING AT A TIME THE QUANTITY



2.4 Among the other items, sugar, tea, milk and vegetables are bought and used by most of the families.

Per family monthly consumption (kg)

	All State	Urban	Rural	Monthly Family Income		
				Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Gujarat						
Sugar	3.5	3.5	3.3	2.6	4.2	6.9
Tea	0.5	0.5	0.6	0.3	0.6	1.5
Milk	26.4	25.0	27.1	15.9	32.8	66.9
Vegetables	19.9	21.4	19.1	16.8	22.1	28.9
Total families (in '000)	2943	1005	1938	1529	1209	205

	Per family monthly consumption (kg.)					
	All State	Urban	Rural	Monthly Family Income		
				Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Maharashtra						
Sugar	2.5	3.7	2.0	1.4	3.8	10.3
Tea	0.3	0.4	0.2	0.2	0.5	0.6
Milk	16.2	25.3	12.1	8.8	30.3	56.2
Vegetables	9.4	14.5	7.1	6.7	13.5	27.3
Total families (in '000) ..	6693	2061	4632	4981	1231	481

More than half the families buy at a time 1 to 5 kg. of sugar. In case of tea the quantity bought at a time ranges only upto 1 kg.

2.5 The number of families taking egg, fish or meat regularly i.e. at least once a week, constitute 12 and 35 percent of the total families in Gujarat and Maharashtra, respectively. However, including those who take either of the three even less frequently it is seen that the families exposed to the animal foods form 30 percent in Gujarat and 60 per cent in Maharashtra. The egg consumption is much higher in Maharashtra as compared to Gujarat.

	Gujarat	Maharashtra
Total families (in '000)	2943	6692
No. of families (in '000) where egg/fish/meat is taken at least once a week	366	2360
Total monthly consumption of		
Egg ('000)	690	32070
Fish (tonnes)	595	2397
Meat (tonnes)	2239	5491

Chicken (poultry) buying is practically non-existent in Gujarat. However, in Maharashtra, one-fourth of the families in urban and one-tenth of the families in rural areas buy the same.

Taboo regarding not eating some type of fish/meat is only with regard to beef and pork. However, only 30 percent in Gujarat and 5 percent in Maharashtra of fish/meat eating families expressed any such taboo.

3. Special foods for children, and pregnant and nursing women

This section deals with foods for a specific purpose, viz. weaning foods, foods for pre-school children (upto 5 years of age) and foods for women during pregnancy and post pregnancy period. It is seen from the survey that there is practically very little usership of any packaged food, if at all available for any of these purposes, in these two states. However, there is an awareness for taking some special food items during post pregnancy period and these are mostly traditional home-made ones. Hence in all these cases the required action will be to develop suitable foods based on the present habits and nutrition requirement.

3.1 Foods for children

In both the States, the feeding habits for children above one year of age differ widely from those for children aged between 6 months and one year. Only 25 percent of the children in the age group 6 months to one year are given solid foods made of cereals. After one year, the children are given all the food items prepared at home. The same is seen to be the case with regard to dal (pulse preparation).

	Percent taking the item			
	Families	Children in age group		
		6 months-1 year	1-3 years	3-5 years
Gujarat				
Rice preparation	63.7	14.3	60.5	67.7
Wheat preparation	57.4	9.3	42.9	78.3
Bajra preparation	35.5	—	20.3	28.5
Jowar preparation	29.0	1.0	16.1	17.3
Dal	43.8	6.3	30.2	57.2
Total families/children (in '000) ..	2943	400	1175	997

						Percent taking the item			
						Families	Children in age group		
							6 months- 1 year	1-3 years	3-5 years
Maharashtra									
Rice preparation	..	..	..	..	..	53.6	10.3	40.9	43.2
Wheat preparation	..	..	..	..	..	37.3	3.9	18.3	26.4
Bajra preparation	..	..	..	..	..	10.5	1.3	16.0	8.9
Jowar preparation	..	..	..	..	..	52.3	2.3	43.1	56.9
Dal	..	..	..	..	..	77.9	7.6	60.7	72.3
Total families/children (in '000) ..						5693	1064	2511	2408

The above observation is better seen by quantifying the intake of the various ingredients by children in different age groups. There is a sharp rise in the intake of cereals, pulses and vegetables when the child crosses one year of age. After the first year, the relative importance of cereals, pulses and vegetables in a child's diet is the same as that of other members; however between 6 months and one year, the intake of pulses and vegetables is relatively lower as compared to cereals intake. The milk consumption is more or less at the same level for all the children aged 6 months and above.

						Per capita daily consumption (gm)			
						All Persons	Children in age group		
							6 months- 1 year	1-3 years	3-5 years
Gujarat									
Cereals	..	..	..	..	..	395.0	41.5	120.2	164.4
Pulses	..	..	..	..	..	49.0	3.0	15.4	21.1
Vegetables	..	..	..	..	..	100.0	0.9	38.7	49.8
Milk	..	..	..	..	..	132.0	48.1	123.1	96.0
Total persons/children (in '000) ..						19557	485	1175	997
Maharashtra									
Cereals	..	..	..	..	..	362.9	12.7	109.1	122.7
Pulses	..	..	..	..	..	45.8	0.9	15.3	25.6
Vegetables	..	..	..	..	..	48.0	1.0	10.6	19.7
Milk	..	..	..	..	..	89.0	80.7	119.2	95.3
Total persons/children (in '000) ..						40658	1064	2511	2408

The variation in the consumption of different ingredients by the children is the same as that seen in the family. That is to say, the intake of cereals decreases as the income increases and that of pulses, vegetables and milk increases with the income.

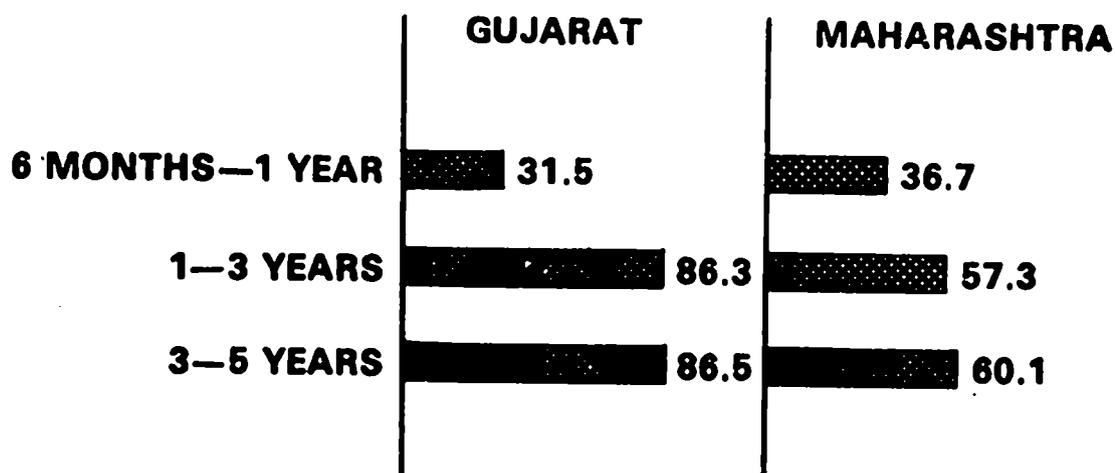
Per capita daily consumption (gm) among children in the different income groups

	All income groups	Monthly family income		
		Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Gujarat				
Cereals	124.6	146.8	104.1	92.5
Pulses	15.6	11.8	12.3	49.5
Vegetables	37.1	37.3	32.7	56.7
Milk	101.0	73.5	126.6	143.5
Total children ('000) ..	2572	1163	1175	234
Maharashtra				
Cereals	97.5	107.1	67.7	78.0
Pulses	17.0	18.2	12.5	17.3
Vegetables	12.4	8.5	19.3	38.7
Milk	102.8	73.8	190.1	201.5
Total children ('000) ..	5983	4426	1208	349

It is also observed that mother's milk is given to almost all children upto one year of age. While in Gujarat almost all stop giving mother's milk to children after the second year, in Maharashtra even in age group 3 to 4 years nearly 15 percent of the children are being given mother's

milk. Giving tea to children, even in the youngest age group, has become quite an accepted practice.

PER CENT CHILDREN BEING GIVEN TEA AMONG DIFFERENT AGE GROUPS



In both the states the usership of packaged baby food has not penetrated much. Even in the uppermost income group in Maharashtra it is estimated that only 20 percent of the children in the age group 6 months-2 years are given one or other of the packaged baby foods. It is also noticed that there is a complete absence of giving strained foods like mashed vegetables to the weaning children.

Based on the retail store audit conducted by ORG, the total annual consumption of packaged baby foods, including both milk and weaning foods, is estimated at 267 and 1,367 tonnes in Gujarat and Maharashtra, respectively.

		Towns with population				
		All State	Over 10 lacs	1 - 10 lacs	Below 1 lac	Villages
Gujarat						
Annual consumption (in tonnes)						
Milk food	.. .. .	263.2	82.4	89.6	64.8	26.4
Cereal food	.. .. .	4.2	1.4	1.3	1.0	0.5
No. of children taking ('000)	.. .. .	23.0	10.0	4.0	9.0	—
Total children ('000)		2572	257	176	430	1709
Maharashtra						
Annual consumption (in tonr. ,						
Milk food	.. .. .	1312.7	543.4	481.4	165.6	122.3
Cereal food	.. .. .	54.0	24.9	17.8	6.6	4.7
No. of children taking ('000)	.. .. .	58.0	40.0	10.0	8.0	—
Total children ('000)		5983	542	330	543	4568

3.2 Pregnancy Foods

Only five percent of the housewives in the two states take some special food item during their pregnancy period. In Gujarat apart from milk, methi pak and shira are the popular items among pregnancy foods. In Maharashtra, milk and fruits are the only popular items.

Nearly 80 percent of the housewives mentioning shira and 40 percent of those mentioning methi pak state taking the same for six months or less during pregnancy period.

		No. of housewives (in '000) mentioning the item as special pregnancy food					
		All State	Urban	Rural	Monthly family income		
					Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Gujarat							
Methi Pak	.. .. .	53	30	23	35	12	6
Shira	.. .. .	19	19	—	5	13	1
Total families		2943	1005	1938	1529	1209	205

3.3 Nursing foods

In contrast to the pregnancy foods, 60 percent of housewives in Gujarat and 50 percent in Maharashtra have taken one or other special food items during their nursing period. Shira, gunder pak, sevapuri, methi pak, masala vasana and sunthgal are the popular nursing period items in Gujarat; shira and ladu methi are popular in Maharashtra. Sunthgal also is mentioned by a few housewives in Maharashtra.

		No. of housewives (in '000) mentioning the item as special nursing period item					
		All State	Urban	Rural	Monthly family income		
					Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Gujarat							
Shira	.. .. .	932	354	578	345	522	66
Gunder pak	.. .. .	563	204	359	185	316	62
Methi pak	.. .. .	395	91	304	65	264	66
Sunthgal	.. .. .	354	93	261	132	190	32
Masala vasana	.. .. .	274	79	195	96	154	24
Seva puri	.. .. .	220	87	133	79	132	9
Total families ..		2943	1005	1938	1529	1209	205
Maharashtra							
Shira	.. .. .	1357	288	1069	940	324	92
Ladu methi	.. .. .	1692	573	1119	982	555	155
Total families ..		6693	2061	4632	4981	1231	481

4. General processed foods

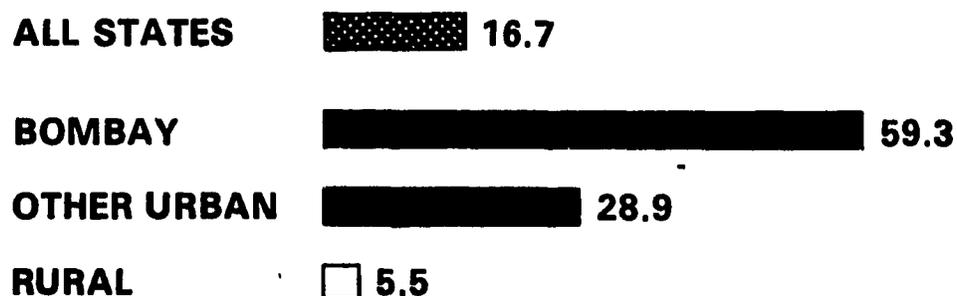
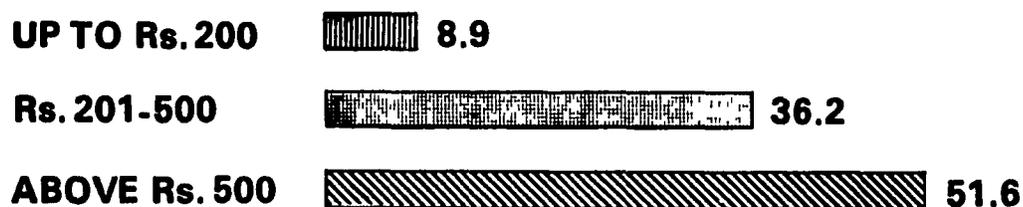
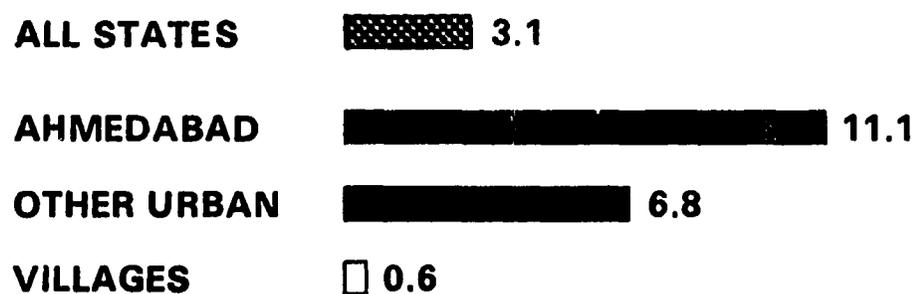
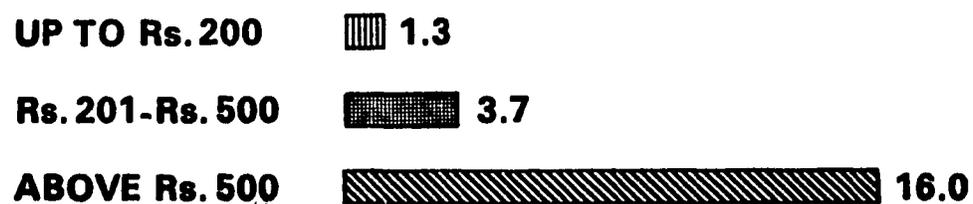
This section deals with processed foods that are either daily items or items taken during feast, fast and holidays. The survey has indicated that these items hold good marketing prospects in the two states due to their high usership. Also these products may hold possibilities of being fortified with protein and other nutrients. Price will be an important factor in achieving the necessary penetration to meet the nutrient needs of different socio-economic strata. Most of the food items discussed herein, excepting for bread and beverages, are traditional items and new technologies have to be developed to adapt them for large scale manufacturing.

The modern processed foods like jams, sauces, syrups, soft drinks are consumed by relatively few families and hence do not get mentioned in this report (for an idea on their penetration reference can be made to the detailed tables available with the PFA office). Nevertheless, it may be mentioned that these hold promise of larger markets as the urbanisation extends. This is seen from the fact that in Bombay the usership of such items is much higher than in the other towns, including Ahmedabad.

4.1 Bread

Bread as a food item has penetrated quite well among the urban families of Maharashtra. As much as 42 percent of urban families buy the same and of these 40 percent have it as a daily item. In families with monthly income more than Rs. 500, half the families buy bread. The situation in Gujarat is quite different.

Only 8 percent of the urban families buy bread and even among these only 13 percent have it daily. Even in the highest income group, only 16 percent families buy bread. Similarly as against 60 percent families buying bread in Bombay city, only 11 percent buy bread in Ahmedabad city.

USERSHIP OF BREAD**MAHARASHTRA****PER CENT FAMILIES BUYING BREAD****MONTHLY FAMILY INCOME****USERSHIP OF BREAD****GUJARAT****PER CENT FAMILIES BUYING BREAD****MONTHLY FAMILY INCOME**

Here again it can be mentioned that the market for preservatives like jams and sauces can go up along with the 'bread' habit.

4.2 Rice khichdi

Rice khichdi is a regular food item in Gujarat and has been found to be equally popular among families of all socio-economic classes. In rural areas and lower income groups this is prepared by more families than the plain cooked rice. In Maharashtra, however, this preparation is not so popular.

	No. of families ('000) taking rice khichdi					
	Total	Urban	Rural	Monthly family income		
				Upto Rs. 200	Rs. 201 -Rs. 500	Above Rs. 500
Gujarat	1042	306	736	486	495	61
Maharashtra	266	173	93	95	110	61

4.3 Chappati, rotli and bhakri

Chappati/rotli is the form preferred by families in Gujarat, whereas, in Maharashtra bhakri is preferred over chappati. However, wheat bhakri is again preferred more in Gujarat than in Maharashtra.

	No. of families ('000) taking chappati/bhakri					
	Total	Urban	Rural	Monthly family income		
				Upto Rs. 200	Rs. 201 -Rs. 500	Above Rs. 500
Gujarat						
Chappati	2764	919	1845	1452	1144	169
Bhakri	597	246	351	203	309	85
Total families ..	2943	1005	1938	1529	1209	205
Maharashtra						
Chappati	2339	1515	824	1339	642	358
Bhakri	4285	594	3691	3540	624	121
Total families ..	6693	2061	4632	4981	1231	481

4.4 Feast day items

More than 95 percent of the families in both the states mentioned preparing some special item during feast days and holidays. In both the states, quite a few items have been mentioned and many items are seen to be common between the states. In all ten items turn out to be more popular than the rest. The number of housewives mentioning each of these items in the different socio-economic classes is given below.

No. of housewives (in '000) mentioning the item as a special item for feast days.

	State	Urban	Rural	Monthly family income		
				Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Gujarat						
Shira	1314	490	824	694	563	56
Ladu	1395	339	1056	520	742	134
Dudhpak	871	235	636	242	481	147
Lapsi	711	210	501	383	272	57
Vedmi	646	236	410	185	350	111
Shrikhand	472	281	191	114	264	93
Kansar	353	22	331	290	60	3
Bajiya	467	186	281	147	269	51
Total families	2943	1005	1938	1529	1209	205
Maharashtra						
Shira	2229	734	1495	1404	648	177
Ladu	2474	897	1577	1616	654	204
Dudhpak	101	101	—	8	42	51
Wadmi	4882	1164	3718	3757	880	245
Shrikhand	713	495	218	267	263	182
Khair milk	1959	503	1456	1351	501	106
Ghugra	1536	556	980	1011	426	99
Bajiya	1162	271	891	823	226	113
Total families	6693	2061	4632	4981	1231	481

In Gujarat as much as 90 percent of the families take these items, excepting bajiya, less often than once a month. Bajiya is prepared by 50 percent of the families at least once a month. In Maharashtra, on the other hand, the items are prepared generally more frequently. 35 percent of the families mentioning shira, dudhpak, lapsi and bajiya take the same at least once a month.

Excepting for shrikhand, all the other items are prepared mostly at home in both the states. In case of shrikhand, 54 percent families in Gujarat and 28 percent families in Maharashtra buy their requirements from outside.

4.5 Fast day items

Comparatively fewer families mentioned special fast day items. Apart from fruits, bataka katri, chivda and shira are popular items in Gujarat and sabudana khichdi and khir milk in Maharashtra.

	No. of housewives (in '000) mentioning the item as a special item for fast days					
	All State	Urban	Rural	Monthly family income		
				Upto Rs. 200	Rs. 201- Rs. 500	Above Rs. 500
Gujarat						
Bataka katri	328	96	232	79	217	32
Chivda	200	98	102	70	112	18
Shira	139	66	73	42	67	31
Total families ..	2943	1005	1935	1529	1209	205
Maharashtra						
Sabudana khichdi	3761	1006	2755	2704	831	226
Khir milk	526	165	361	345	169	22
Total families ..	6693	2061	4632	4981	1231	481

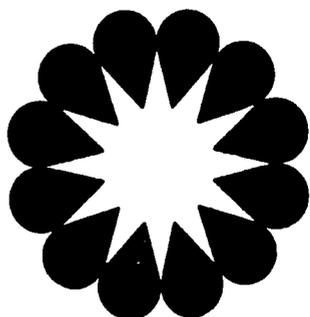
Even though only fewer housewives have mentioned these items, the frequency of preparation of these items is much higher. In Gujarat, both shira and bataka katri are taken by 70 percent and chivda by 40 percent of families at least once a month. In Maharashtra, sabudana khichdi is taken by 65 percent and khir milk by 40 percent families once a month or more frequently.

In this case also, all the items are prepared only at home and few families buy them from outside.

4.6 Beverages

As in the case of packaged baby foods, the usership of packaged beverages also has not penetrated much in the two states. In Bombay city, the percent families using beverages is seen to be only 6.2 percent and in the highest income group only 13 percent of families take the same. Based on the ORG retail store audit data, the total consumption of beverages (excluding tea and coffee) is estimated at 89 and 418 tonnes per annum in Gujarat and Maharashtra, respectively.

	Towns with population				
	All State	Over 10 lacs	1-10 lacs	Below 1 lac	Villages
Gujarat					
Annual consumption (in tonnes)	88.7	33.5	25.5	22.4	7.3
Families taking one or other beverage (in '000)	7	2	2	3	—
Total families (in '000) ..	2943	263	237	505	1938
Maharashtra					
Annual consumption (in tonnes)	418.5	206.7	128.1	52.0	31.7
Families taking one or other beverage (in '000)	62	54	3	5	—
Total families (in '000) ..	6693	873	481	707	4632



Chapter III

**Protein Marketing--
Introduction by
Mr. T. S. Nagarajan,
Programme Co-ordinator**

Protein Marketing— Introduction

Protein Marketing — A Few General Remarks

1. The marketing of protein foods—what do we mean by this? Is it in any way different from marketing as such? — I do not think so

Viewed as a process involving gathering, analysis and interpretation of information about the consumer and the market place in relation to a particular product and thereafter basing policy and action on these exercises — the functions of marketing — its objectives are essentially the same.

2. The object of the exercise lies in determining as far as possible what the return on investment in marketing action will be or may be expected to be — immediately and in the future. Just as with any other business action marketing also requires planning. If you examine the history of most products marketed in this country, you will find that by and large these products are based physically and metaphorically on Western civilisation. For the first time really we are going to Indians as such because of the maturity of our economy as compared with the situation at the turn of the century.

Therefore, the questions that will have to be answered are—Is my product good? Is the packaging right? Can it be made more right?

3. We must begin with an open mind. And the object of keeping an open mind is to absorb the information, analyse and interpret it and then take action.
4. The starting point is the gathering of information. The O.R.G. Report does this. The objective is to uncover as much as possible about the market, the product in relation to the consumer, distribution channels in relation to the market and product, channels of communication as well as responses to the message communicated to the target audience. Only after all the information has been collected can the opportunities be placed on a *time-scale of return on investment*.

A point often overlooked is that marketing in India is like a one-nation company contemplating a multi-national situation.

Once the basic decision to market a product has been made and the product itself has been evolved, once the distribution system has been set and the availability of the product on a continuing and convenient basis assured, the task of communication begins.

5. At this point the marketing man must ask himself a set of questions:
 - (i) What kind of consumer will be buying the product? — The consumer profile.
 - (ii) What satisfactions will the consumer be seeking from the product? Do we provide these satisfactions? — Product proposition.
 - (iii) Where and when will the consumer be buying? — Area of distribution, purchasing behaviour.
 - (iv) How are we going to reach the consumer economically? — Media of communication
 - (v) Against what are we selling? — Social taboos, tribal or community tastes, prejudices and preferences.
6. Unless a relentlessly inquiring approach and a studiously open mind is preserved until specific and valid answers have been put down on paper, no meaningful communication or promotional programme can be mounted.

What we are examining therefore are:

- | | | |
|----------------|----|--|
| (i) Product | .. | Satisfaction |
| (ii) Price | .. | Value. |
| (iii) Package | . | Protection and appeal. |
| (iv) Promotion | . | Registration of message and motivation towards purchase. |

7. By and large it can be recommended that while promoting products or satisfactions to relatively unsophisticated rural populations, it is best to take a direct, uncluttered approach where product benefits are clearly stated and the exhortation to purchase or sell is made without inhibition.
8. In the field of communications, the biggest single factor — a negative one — to be remembered is that no medium in this country exists in any significant terms which helps us to hit the prospect “where he lives”. To an extent in my organization (Brooke-Bond), we have adopted our strategy to one of selling to a prospect where he congregates—at religious melas, shandies, festivals and the like.

It has also got to be remembered that for most of these consumers there is no frame of reference. An advertising or promotional campaign will have to be fully understood before it can convince or motivate.

We stand on the threshold of a new decade and a vigorous approach should be the essence. We need not be bound by the traditions of the past nor blinded by old fears, old slogans, delusions and suspicions.

The present times demand invention, innovation, imagination and decision

There is a need for much more accurate knowledge of target audiences and their motivations and for knowledge which might make those audiences more favourable to the derived action.

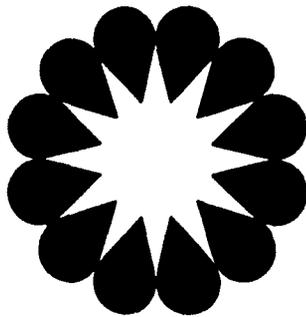
Present success alone is not enough. Institutions survive only as long as they fulfil an authentic need.

These are differing evils but they are the common works of man. They reflect the imperfections of our society, the inadequacy of human compassion and even a lack of sensibility towards the sufferings of our fellows

The cruelties and obstacles of this swiftly changing world will not yield to obsolete dogmas and outworn slogans

They cannot be moved by those who are clinging to a present that is always dying

It is a revolutionary world we live in and this generation has had thrust upon it a greater burden of responsibility than any generation that has ever lived. Let us hope we are equal to the task.



Chapter IV

Recommendations of Working Groups

- 1. Fortification Group I**
- 2. Fortification Group II**
- 3. Special Foods Group I**
- 4. Special Foods Group II**
(to meet weaning, pre- and post-pregnancy needs)
- 5. New Processed Foods Group I**
- 6. New Processed Foods Group II**

Fortification

Group I

It is now an established fact that to tackle malnutrition the Government, industry, research laboratories, scientists and technologists have all realised that an attempt should be made to fortify basic food items which could have a wide coverage touching the vulnerable sections of population. However, before identifying products and fortification carriers, it is essential to review a very basic pre-requisite of fortification of cereals, i.e. the quality of raw materials.

Pre-requisite of fortification

The quality of the raw materials to be fortified is an essential pre-requisite for any programme of fortification. If the foodgrain is infested with insects, rodents, etc., its quality deteriorates. Insect infestation leads to loss of vitamins and even proteins. Rodents and insects can add undesirable metabolisms such as excreta and pathogens and raise the uric acid contents to undesirable levels. In addition, fungus contamination can be harmful. If the food grains to be fortified can be maintained in sound condition the degree of fortification required to bring the nutrients to the required level is much less. Thus proper control of infestation to prevent deterioration of the raw materials is a most essential pre-requisite for any programme of fortification.

Seventy per cent of the foodgrains are stored and consumed in rural areas. If infestation and quality deterioration of these could be prevented, it would indirectly amount to providing better nourishment to the people through the presence of natural nutrients. In the case of the 30% of food grains which enter the normal market channel, it would be possible to make an even greater impact as these could lend themselves to fortification at centres of milling and processing.

Fortification of cereals

The survey in Maharashtra and Gujarat has revealed that the bulk of the population consume coarse cereals like jowar and bajra although there are positive indications that large consumptions of wheat and rice are expected. Possibly the same is the feature in most parts of the country. Therefore, to ascertain staples which can be fortified to reach the largest number, it is somewhat imperative to stick to cereals and their end products.

It is reasonably certain that should the immediate objective of fortification be restricted to cereal-based products, some success can be envisaged. It is essential that schemes to attack malnutrition should provide for fortification with proteins as well as vitamins and minerals.

The present status-quo of the milling industry and the restricted tonnage of cereals that are milled in central processing units restricts for the time being the scope of fortification to only wheat products. However, it is reasonably certain that about three million tonnes of wheat per year would be available to the flour mills in the country for the next couple of years. Fortification of wheat products covering perhaps this entire tonnage of wheat will be a significant beginning.

The immediate objective should be to attempt at fortifying with proper nutrients the entire quantity of milled atta with protein from vegetable sources (for the time being perhaps restricted to a recognised standard quality of groundnut flour and subsequently to include the usage of protein from other similar sources such as defatted soy flour as and when available) along with vitamins and minerals. This will roughly take care of the fortification of about one million tonnes of atta per year.

There is some prejudice by the consumers against mill-made atta owing to fear of adulteration. It is expected that a proper active promotional campaign against wrong and pre-conceived notions should change the attitudes of people.

It has been a recognised fact that besides proteins, vitamins and minerals are lacking in our diets. It may be worthwhile to fortify flour and suji made by roller flour mills with vitamins and minerals. Bread today has become an established item of diet and consumption of the same is progressively increasing at a rapid pace. Fortified wheat flour would provide bakers throughout the country with a raw material containing certain basic nutrients. Furthermore, confectioners and householders have many uses of wheat flour and suji, some of which have been found in the survey also.

It has recently been demonstrated that through the use of high-yielding varieties it would be possible to raise the production of corn, jowar, bajra, etc., substantially in the rain-fed areas of the country where irrigation facilities are not available. These food grains present digestibility problems because of the presence of coarse fibre. Recent technology has shown that with proper milling techniques the coarse fibre content can be reduced substantially and the resulting cereals can be used as substitutes for rice, wheat, etc. They have also been used successfully in the cereal-based manufacture of weaning and other baby foods. With increasing population, production of such improved quality products from coarse grain should be encouraged. They could be fortified at the appropriate stage of processing so that

the nutritive value could be raised to the required level. This of course presupposes the diversion of coarse grains from the existing marketing channels through centralised processing units

Pricing

The cost of fortification certainly requires careful consideration. It would be futile to recommend usage of nutrients in fortification and enrichment schemes which adversely affect the prices of the ultimate end products. Whatever the quantum of increase may be in the prices it should be strongly advocated that the same should be passed on to the consumers rather than be subjected to any Government subsidies which in the long run have detrimental effects

Small packs

It would be advisable to introduce a system of unit packaging for wheat flour, rice, pulses, etc. This would not only help to reduce losses due to infestation, and during handling, but could also be used as a step for enrichment and fortification. The additional cost, which may not be more than 4 or 5 paise, would bring proportionately rich results to the consumer. If the consumers were to obtain the same nutrients, vitamins, minerals and proteins through a chemist's shop, the cost would be much higher. The realisation of this benefit to the population at large could go a long way in raising productivity of the nation and even in convincing the people that the chances of the survival of their children would be much greater. This will indirectly help in family planning programmes also.

Government support and legal requirements

In order to make a success of the programme of fortification it would be advisable to make it mandatory. The Central Committee for Food Standards should immediately take action to set up a sub-committee on proteins, vitamins and minerals fortification of staple and protective foods. Where necessary the laws and standards should be amended in the national interest.

Technological improvements

A considerable amount of work has already been done in the country on the production of protein isolates and concentrates. Where necessary further research and development activity should be undertaken for the development of new and more modern processes for the manufacture of raw materials required for fortification of staple foods

It would be necessary to improve the existing facilities for milling wheat, rice and legumes. Where necessary improved machinery and equipment should be developed and manufactured in the country. Where the machinery is not available in the country facility should be given for its import. A systematic study should be undertaken to raise the productivity through improved technology and better machine utilization.

Tea

The survey of food habits has brought out that tea is consumed by 70 per cent of the population and is given to children in many areas. Tea-whitener of sufficiently high protein content could be incorporated into tea to raise the protein level of the diet.

Stretching the supply of milk

It has been shown that the protein content of baby foods based on milk could be brought down if the quality of milk could be improved. With amino acid fortification the protein efficiency ratio of animal milk can be raised to that of mother's milk. This would make it possible to bring down the protein content of baby food sufficiently and thus extend the use of animal milk to increase production of baby foods to meet the requirements of the growing population.

Salt

There is hardly any portion of the population which does not purchase salt. It therefore offers potential as perhaps the best possible vehicle for enrichment of the diet. Fortification of salt with iodine, iron and certain vitamins has been very successfully worked out. This knowledge should be used for overcoming the deficiency of many nutrients in the diet of the people.

Beverages

Dehydrated and carbonated or bottled beverages which are consumed extensively appear to be another important vehicle for raising the supply of proteins, vitamins and minerals in the diet of the consumer. Several of these have already been developed as milk substitutes and offer bases for vitamin-rich substitutes for natural juices which are not within the reach of the common man.

Training facility

Any programme of fortification requires well-trained technologists and plant operators who would be conscious of the nature of the duties involved in the manufacture of enriched or fortified foods. It will therefore be necessary to expand the existing facilities in the country for training of such personnel. This would require a collaborative effort between industry, research institutions and universities.

Promotional activities

As diet habits are hard to change, massive campaigns by the Government and industry, as also organizations like our Protein Foods Association should strongly propagate fortification efforts, not merely to enable fortified products to be sold but also to educate people. Much of our efforts to provide fortified and enriched items will be defeated without proper education to all concerned. This subject has already been discussed at this Workshop.

Fortification

Group II

I Overall Considerations

1. **Overall calorie deficiency:** The group recognised that the overall shortage of calories was probably the major nutritional deficiency in the country. It therefore recommended that urgent measures should be taken to increase the overall availability of food grains and other agricultural food products.
2. **Agricultural and genetic work:** The importance of improving both the yields per acre as well as the protein content of various food grains like rice, wheat, bajra, jowar and other common food materials like dal, chillies and turmeric was emphasized. These will go to the root of the nutritional problem, but would also be somewhat slower to exert their full effect than fortification measures which can be taken quickly. Both are necessary in the Indian situation.
3. **Educational programmes:** The importance of supporting educational programmes to ensure better nutrition was strongly stressed by the group. The following steps were considered immediately practicable.
 - (a) Half-an-hour per week to be devoted to nutritional teaching in schools for all groups above the age of seven. This is of the greatest importance.
 - (b) World television teaching *via* satellites are to take effect from 1972, and a nutritional education programme should be included for the under-developed countries.
 - (c) Nutritional standards should be enforced in all companies under the Factories Act which have canteens. Where set meals are served, a 2:1 ratio of cereal to pulses should be made obligatory. This would include institutions like hospitals, student hostels, steel mills, etc.
4. **Advertisement:** Apart from nutritional literature, films, etc., associations dealing with food products could play a vitally important role in spreading the story of good nutrition by way of product advertisement. This has already been done in certain limited cases but could be greatly extended to include protein-based foods.

II General Considerations regarding Fortification

1. It is important that the concept of fortification must to a large extent be taken on faith. It is almost impossible to prove the long-range benefits of protein fortification in quantitative terms. Of course, the particular vehicles for fortification and the materials with which they are to be fortified to make the greatest impact are matters which should be very carefully considered.
2. **Nature of fortification:** Fortification is necessary with proteins, vitamins and minerals. The present recommendations largely deal with fortification with proteins. In certain instances, fortification of minerals and vitamins is generally mentioned for further consideration by more competent bodies.
3. **Targets at which aimed:** The group recognized that fortification could be directed towards three population areas:
 - (a) Those who cannot afford to pay for any type of fortification,
 - (b) Those who can afford to pay and who are not aware of their needs; and
 - (c) Those who can afford to pay and are aware of their need and either have expressed no preference or have no goods available on which they could express a preference.

In the last category there would again be different income groups. In addition regional tastes may also have to be considered in specific instances.

4. **Economics:** The group recognised that any scheme for fortification directed to the lowest income group would necessarily involve government aid. This segment of the population could not itself possibly bear any additional burden. The Group stressed that any national fortification even by government would require the aid of the process industries and the benefit would be mutual. Conversely any profits which private technology would make would eventually pass to the public good. The group felt that the cost of fortification should be related to the benefits to the population as expressed in the national policy. Within limits, it need

not relate to the absolute cost of the material being fortified. Subsidies may be necessary, but the attempt should be to stimulate the technology to be eventually self-paying and to reach the lowest income level. Any such successful measure would constitute a great leap forward.

5. Distribution: Use should be made of established commercial organizations which have good marketing and distribution systems. These would include organizations, for example, which market soap, tobacco and cigarettes, soft drinks and tea. Use could also be made of the established milk schemes for promotion e.g. of protein-rich beverages. Other marketing agencies like super-bazars and cooperative stores should be fully utilized. The general principle should be to use the largest number of distribution points consistent with the nature of the product.

6. Should fortification be mandatory or otherwise? The group considered that in such cases where there is scope for fortification, this should be mandatory (a) where a low income group is being aimed at, (b) where the private sector cannot undertake the cost, (c) where it cannot reach the vulnerable group, or (d) where the full processing of the product can be controlled. Where a preference is possible as a result of higher purchasing power, the recommendations need not be mandatory but can be recommendatory or voluntary. The purchase of the item would therefore have to rely on the advertised increased benefits resulting from fortification. In this connection the group emphasized the strong relationship between unit packaging and fortification possibilities. Thus in course of time many more products could be fortified than is possible at present. Unit packaging should be strongly encouraged both from the point of view of purity and fortification. Quality controls such as are now being imposed by the PFA and ISI schemes should be greatly supported and strengthened as indirect stimulators of fortification programmes.

III Specific Recommendations for Fortification

1. Rice: (a) Fortification of rice with individual amino acids or with other water-soluble materials was considered rather impractical since these are likely to be washed out of the rice during cooking. Moreover rice protein was of high quality and lysine impregnation may upset the overall protein balance.

(b) The marketing of rice-dal mixtures (kichri) may be considered.

(c) Mixing of rice to the extent of say 10% with pellets of similar shape which are rich in vitamins, minerals and proteins could be done e.g. at modern processing rice mills to increase the value of the total product.

(d) In educational programmes the value of protein-rich chutneys made from coconuts, sesame, etc. to be eaten with rice could be stressed. Conserving the proteins by limited polishing could also be brought out.

2. Wheat: Some 1.8 million tonnes of what are crushed in India of which about 65 to 70% comes out as a powder like atta and maida. This forms an excellent avenue for fortification at a 5 to 10% level with edible vegetable proteins (oilseeds or dhals) of good quality. The lower level of fortification will require use of some 70,000 tonnes of vegetable proteins. The price will not rise to any considerable extent and the nutritive value will be greatly improved. This is the main mandatory recommendation of the group.

3. Wheat products: (a) *Bread:* Since the above recommendation on wheat may take time for formal acceptance the fortification of bread at 5% level with vegetable oilseed proteins is strongly recommended. The mixing should preferably be done at the mill rather than at the bakery.

(b) *Biscuits:* About 50,000 tonnes of biscuits are made annually and their fortification with vegetable oilseed proteins is recommended. The manufacturers who fortify biscuits should make the operation self-supporting by suitable pricing and advertisement.

4. Bajra and Jowar: The group strongly recommended that the objective to be aimed at is the centralised

milling of bajra and jowar as is now done for wheat. This would provide opportunities for subsequent fortification of these commodities which reach very poor income groups in certain states of the country.

5. **Besan:** The group considered the fortification of besan flour with proteins but felt that the very small benefit may not justify the cost of fortification. However, fortification of besan with minerals and vitamins was worth further consideration by expert groups.

6. **Beverages:** (a) The group recognized that two types of beverages were involved. opaque milk-like beverages and sparkling soft drink beverages. These have already been commercial successes in certain other countries. The strategy was known and should be fully capitalised upon.

(b) The group recommended that (i) the work of national institutions like CFTRI in this area should be pushed forward and carried to marketing decisions after thorough evaluation; (ii) marketing and consumer surveys for beverages in other areas could be carried out by Government or private agencies; (iii) increased research and development effort in this area was likely to be extremely important

7. **Tea:** (a) This was a fully controlled commodity and was extremely attractive as a fortification vehicle which would carry into almost every income group.

(b) Fortification with single amino acids was linked with the overall amino-acid profile of the food consumed and may pose problems. Fortification with total proteins would not have any worthwhile effect. The possibility of fortification with total protein hydrolysates should be examined with regard to taste and flavour

(c) Considerable further study of tea as a means of fortification with iron, folic acid, vitamin A, etc is recommended

8. **Salt:** (a) Fortification with amino acids will probably present considerable problems.

(b) Fortification with calcium, iron, iodine and vitamin A should be vigorously pursued with reference to odour, taste and cost considerations

9. **Chilly and Turmeric:** (a) The unit packaging industry had made a very good beginning with these two products and the group recommended that fortification of these should be kept in mind.

(b) Agricultural breeding of these commodities so as to combine high protein content with spice-qualities should be given attention.

IV Summary

While the group has presented in this report aspects primarily relating to protein fortification, it must be re-emphasized in the conclusion of this report that there are many other possibilities of fortification with vitamins and minerals, in association with proteins or separately.

The initial problem, however, finds its genesis in agriculture genetics and general breeding programmes where attention to these subjects will most effectively provide solutions for the fortification of food for the vulnerable groups.

Additionally, a fortification educational programme should be established operative both at school and at adult level. In this educational programme attention would be focussed on the need:

1. to conserve nutrients already present in food during cooking, and
2. to present various methods of cooking foods throughout the different states of India, and perhaps to exchange of information, which would then lead to foods being used in areas where they were not previously used but where the need for their inclusion in the feeding habits of that state was clearly necessary

As a first step the group recommends the mandatory addition of high quality vegetable proteins derived from oilseeds and even dals to the wheat which is milled into maida and atta

The other subjects which have been dealt with in the report are suggestions which must at this stage be recommendatory in nature.

Report on Special Foods Group I

(to meet weaning, pre- and post-pregnancy needs)

1. PREGNANCY NEEDS

It is recognised that the pregnant woman, because of the needs of the growing child within her, requires additional nutrition, particularly protein and vitamin A, vitamin B-12, folic acid and calcium. Unfortunately, this additional need does not appear to be recognised. There is also the difficult problem of conveying this additional need to the mother as well as to the members of the family round her. To solve the problem, which is undoubtedly one of the most important malnutrition problems today, we need to educate the mother, the family, the doctor and the Government that malnutrition of the mother will result in the loss of the health of the mother making her less fit to feed the child, less fit to bear another child, less fit to resist disease, less fit in fact to live a healthy life for very long. We recommend the identification of the problem in terms of the recognition that the baby does not exist only from the moment of birth but from the moment of its conception. Its nourishment begins from that day from the mother. For a healthy baby, the mother must give healthy food through her. And therefore the mother's requirements must be met in her food to meet her extra needs.

We feel this a concept which has to be sold to the ones who matter most, namely, the physician, the midwife, the sister at the nursing home and through them to the husband and the mother-in-law. We also believe the mother is often well fed and sometimes even well nourished during her first pregnancy. Medical and para-medical personnel can well educate her for her second pregnancy. We feel the government should do everything to propagate the concept that there is a continuous nutrition need for the child beginning with conception and continuing through lactation and weaning and in school.

The requirements for this food for the mother are an extra 20 grams of good protein for each day and additional minerals and vitamins. The best chances of providing these, we feel, is not through any conventional foods but through some unconventional foods, preferably something akin to a pharmaceutical form. The total weight of the needs of any material which would contain

all the requirements is unlikely to exceed 50 grams per day, and the raw material costs may only be 25 paise. We could conceive of selling this for approximately 50 paise per day.

We also believe that the attack on this could be met by a well thought out and well executed advertising and promotion campaign aimed at medical and para-medical personnel and through them reaching the high and middle income groups. Once this fact is well established and the concept is understood the products can be distributed to health centres, child welfare centres and maternity homes, and can be combined with the family planning programmes. The accent should always be on the positive benefits that will accrue in the end to the child through the mother. We recognise that the benefits will also flow to the mother by way of being healthy and fit.

We also note that no agencies at the international level nor the Government in this country have taken note of this very serious malnutrition problem. Nearly a third of all children are born less endowed than they should be and many do not successfully overcome subsequent hazards. Only a small number of mothers have adequate reserves to feed the newborn child and even fewer have reserves to bear another. Until this basic problem is recognised and remedied, attention to all other problems after birth of the child will only produce smaller dividends.

We recognise that there are not sufficient studies which have adequately established the benefits that come out by giving adequate nutrition to the pregnant mother. It is recommended that every effort is now made to undertake these and to quantitatively establish the substantial benefits of such nutrition.

We also recommend that more market research is carried out by the Protein Foods Association, on attitudes in all classes to the nutrition of the pregnant mother and the motivation for providing such nutrition.

2. THE LACTATING MOTHER

First of all it is recognized the very act of giving birth to a child is a drain on the mother. She needs some extra nutrition to restore her to normalcy. Lactation, however, is a greater drain. Approximately 600 to 800 millilitres of breast milk are daily fed by the mother to a baby and these contain 12 to 13 grams of first-class proteins, adequate calories and minerals. It is known that in India the ability of the mother to produce milk is greatest in the lowest classes. Even under relatively low nutritional diets, a strongly motivated mother continues to feed the baby at the cost of her own reserves and this results in depletion of her own strength and health. It is very important that the mother is adequately compensated by diet for the milk she produces.

Her needs are certainly more than even during pregnancy, and yet there is little that is formally done to meet these needs. The O R G survey has shown that while mothers do not recognise their needs in pregnancy they do have some concept of extra requirements during lactation. It appears that the types of special foods that they eat during this period do not adequately meet their extra needs. We feel it is difficult from currently available evidence to prove that the health of the child suffers seriously by the lack of nutrition of the lactating mother. However, while she does not produce milk of lower protein, calorie or mineral content, the milk is lower in its content of vitamins and special minerals and thus the growth and the development of the child is retarded. Adequate nutrition of the mother is therefore very important. We would recommend that the products that are prescribed for pregnancy are continued but that the doses are increased. Again many of the products which are given for general nutrition such as malted milk foods are also very suitable for the lactating mother. We feel here again that the doctor can play an important role and we suggest that his attention is drawn clearly to the quantitative aspects of the drain on the mother so that he becomes responsive to the extra needs. It is therefore suggested that the concept of the continued nutrition of the mother during pregnancy through lactation is sold to the physician in terms of the good health and development of the child, rather than by emphasising the decreased health of the mother.

We believe that the currently available nutritional information regarding the lactating mother is not adequate. We feel that the Government should encourage substantial investment in research on human lactation and on the relationship between the development aspects of the child and the quality of the milk from the mother as well as the health of the mother during lactation and at its end in the absence of special emphasis on extra nutrition. We recognise we have not any original thoughts on the means of attacking what to our mind is clearly an important malnutrition problem.

We have given some attention to the fact brought out by the survey that there is some consciousness of the need for taking a special food during lactation such as "sheera". There may be opportunities to convert this popular product into a speciality requirement for lactating mothers by incorporation of additional nutrients and processing the product in a better-preserved, readily consumable form.

3. WEANING FOOD

We feel the term weaning food is not meaningful. Our own concepts are based on the fact that the child who has reasonable nutrition from mother's milk gravitates out of it to poorer diets due to ignorance or economic conditions. The child still grows at a fast rate during this period and its needs for proteins, calories and all

types of other nutrients are still high and yet it often only gets a little more of calories. We would, therefore, like to have foods which supplement the calories and provide increment in proteins and all other nutrients. Perhaps we should think in terms of incremental foods which will take the child to his full potential so that he may realise his full opportunities, and become equal to others well endowed. These are therefore opportunity foods or equality foods. We believe it is relatively easy to present these concepts of the gap between reality and potential through the doctor and by direct appeal to the parents and the family. We believe this is an area which is well understood by international agencies and by the Indian Government. The problem of malnutrition here remains to be solved. There is, however, much ignorance even among the affluent in the planning of diets, and education can produce substantial results. We feel there is opportunity for a whole variety of formulations. The product could take many forms such as powders, solid structures, beverages, toffees and sweets. There is every possibility of wide-scale marketing of these to middle income groups. The lowest socio-economic group, however, can be reached only slowly. Perhaps subsidised schemes through the existing health, maternity and child welfare agencies can be helpful. The qualitative and the cost aspects and the benefits of this investment have not been adequately recognised by the Government. Education is here absolutely vital and there can be no better agency for this than the Protein Foods Association. There is sufficient knowledge from nutrition studies already to prescribe what remedies are needed and all that is required is to apply this information widely. The motivation for use of this type of food is stronger than for any other. The costs of these foods could be lower than what they are today. The challenges clearly lie at the doors of food technologists and food marketing and advertising men.

GENERAL

We believe firstly that the development of special nutrient foods of the kind mentioned above can only take place in the context of general developments in the food industry as a whole. The process of learning about growing agricultural materials, purchasing raw materials, storing and processing these, packaging and distribution and quality control cannot be realised for these unless they are realised for the whole food industry. We, therefore, recommend that all incentives be provided for the general growth of the food processing industry.

We also believe that while the food laws of the country are not particularly inhibitory in principle, in practice they inhibit the responsible food manufacturer. It is recognised there is wide-scale adulteration in foods; lack of hygiene also leads to poor nutrition. We believe that safety in hygiene and quality in foods will only come with increased marketing of packaged and branded

goods. We recommend that the Government should recognise the quantitative aspects of food adulteration and seek remedies by encouraging such marketing. We also suggest that a more realistic approach to the administration of food laws will be helpful in giving encouragement to the responsible food processing and marketing industry. We also equally believe that the food manufacturing and marketing industry should take concrete steps to assist the Government in preventing adulteration.

For the encouragement of protein and the nutrient foods listed above we feel that the following actions will be beneficial:

- (1) There is a large difference between the raw material prices and packaged goods. Government should give help by eliminating excise duties, lowering freight rates and by giving in special cases specific extra assistance.
- (2) The raw material prices, particularly for quality materials such as oilseeds, are high in India. Government assistance in meeting the difference between cost of ordinary and special nutrient quality raw materials will be helpful in initial stages of launching nutritive products
- (3) The quality and standards of equipment required for nutritive products is very high. Since local manufacture is still at an early stage and is not economical for the qualities needed, Government should freely allow imports of food manufacturing equipment, particularly for nutritive foods. This applies even more specifically to packaging equipment as packaging under high standards of hygiene cannot be made except by sophisticated equipment.
- (4) Government should also allow liberal imports of specific small items such as vitamins, antioxidants, preservatives, emulsifiers and thickeners as high quality materials suitable for food use are not often produced in this country. Delays in imports and irksome procedures discourage new ventures
- (5) Encouragement should also be given by providing special easy-term credits either by the Government or through international agencies. The Government should also give assistance by guaranteeing minimum take off in the initial stages for certain periods. The Government may also consider the possibility of using existing established marketing organisations for distribution and development of nutrient foods. Some special grants may also be made available for meeting research and development costs.

Report of Special Foods Group II

(to meet weaning, pre- and post-pregnancy needs)

The Group having discussed the broad objectives laid down, and having identified the problems, came to the following conclusions and recommendations in consequence of the initial survey undertaken by the ORG in Maharashtra and Gujarat:—

1. The ORG Report shows that in Maharashtra and Gujarat weaning food is not used to any appreciable extent. But it is a fact that the mother does wean the child, though only unconsciously, while changing over from liquids to solids
2. In these two states a common practice is to give rice which is ground into a gruel. Either ghee or a little bit of milk is added. This replaces one milk feed, generally the morning feed. The amount of milk that is added to the gruel is limited either by reason of cost or non-availability. As a result, the total protein is very much below the standard that will be required.
3. A major change in the food habits is likely to meet with a tremendous amount of resistance. This would accentuate the problems of introducing improved nutrition. Therefore, the protein products should fit into current food habits.
4. For the purposes of cooking a new product, it was recognised that it will be necessary to have two different types of weaning/supplementary foods for the following age-groups:
 - (a) 6 months—1½ years.
 - (b) 1½ years—6 years.

The group 1½ years — 6 years could perhaps also be termed as the “pre-school” category. The product could supplement the normally consumed foods and ensure that the total diet is balanced. The Group felt that the nomenclature “weaning food” would not adequately emphasise the types of products that could apply to this age-group. It suggested the term “Supplementary Foods.”
5. For the age-group 6 months — 1½ years, it was felt that the following possibilities are available:—

- (a) The mother be educated on the use of ‘dal’. For

example, moong dal is a good source of vegetable protein and is recognised as an easily-digestible food.

- (b) Milk replacer or milk extender be formulated so that the mother could use this along with the gruel. This would have the advantage that there would be no change in the normal feeding practice.
- (c) Supplementary food be formulated. For example, rice-dal or rice-soya mixture and similar mixtures could be formulated to be used either as a supplementary food or added to the rice granule. A variety of flavours could be added.

6 For the age-group 1½ years—6 years, it was recognised that the trend is to shift over to the normal diet of the family. Therefore, in order to increase the protein intake of the 1½ years—6 years age-group, the following possibilities have been considered:—

- (a) Identify the problem areas in the commercial development of Balahar and take remedial steps to ensure public acceptance of this proven food. It was recognised that this would be a long-term project and one may be faced with a variety of problems.
- (b) Protein-fortified biscuits could be developed for consumption by this age-group. The current consumption pattern for biscuits, as brought out in the Survey Report suggests that no penetration is visibly evident. The Group is, however, of the view that this is worthy of further investigation. This would obviously be linked to the possibility of marketing such biscuits at an acceptable price.
- (c) A high-protein bread could probably be developed. This suggestion takes into consideration the fact that the pattern of consumption of bread, particularly in Maharashtra, is encouraging and the development of sales is within the realms of possibility. It was appreciated that the current scientific developments indicate the feasibility of fortification with soya or groundnut flour at very high levels using glycolipids.
- (d) A protein-vitamin supplement could be supplied for addition to home-ground cereal flour while mixing the dough. This recommendation is based on the knowledge that a very major portion of the cereal flour is home-ground.
- (e) The possibility of making a fortified maize supplement was also discussed. It was indicated in particular that maize being cheaper than wheat, with fortification the cost of the supplement may be lower than of any other acceptable alternative. Thus the net cost of the fortified dough could be lower than that of wheat. The possible effects of maize on the kneading and dough rolling characteristics were discussed.

7. In the case of food for pregnancy and lactation, the Group observed that the problem would be similar to that for weaning foods for the 1½ years to 6 years age-group. In this case too, there is no specific awareness for special foods. But the fact is that certain foods are taken particularly during lactation for benefits which are claimed, as mentioned in the ORG Report. Supplementary foods/special foods would have to be so evolved that these could be added directly into the foods normally consumed by the family.

8. The possibility of adopting one or more presently-accepted family foods into a weaning food was discussed in great detail. It was on the basis of such a discussion that rice-soya or rice-groundnut mixtures were mentioned. It is, however, to be noted in particular that when one or more of the normal ingredients adopted in the family are processed, packed and commercially promoted, the cost of the particular ingredient would be increased. Therefore, the family would tend to compare the price with the market price of the ingredient. An adverse observation would reduce the acceptability of such a product. However, there would be an advantage in the product containing ingredients familiar to the family. On further discussion, the Group felt that evolving a special food supplement to be incorporated into the normal food would be the more acceptable proposition.

9. A tremendous amount of research and development would be required to finally evolve commercial products that would meet the requirements of a large protein fortification programme. Before these products can be commercialised, it is very important to know the price at which such products would finally be accepted. Therefore, further research would be needed to determine the value that mothers would attach to good nutrition in order that the selling price is readily acceptable.

10. The type of collaboration that would be needed with Government and industry was discussed in great detail. The 'Umbrella Campaign' of the type presented by Lintas was considered to be absolutely essential. All other efforts that would create an awareness were considered desirable. The nature of support that could be sought from Government was identified as follows:—

- (a) All Government-sponsored radio programmes could include dialogues, skits, dramas and the like, which would emphasise the importance of protein in the diet.
- (b) The composition of textbooks, particularly for primary schools, is controlled by Government. Efforts could therefore be made to have the 'protein problem' clearly set down in these textbooks in a manner that would create a proper impact. In fact,

the entire series of textbooks could be fully utilised to carry the 'protein story' clearly to all age-levels.

- (c) Doctors are an important opinion-forming group. Medical education could be mobilised to lay more stress on nutrition. The 'protein story' could be communicated effectively to students of medicine in their academic curriculum.
- (d) The Health Ministry could be very closely associated with the protein programme. In particular, it was felt that the family planning programme and the protein programme could be purposefully combined. The motivation to have more children has traditionally been the high infant mortality rate and the consequent desire to ensure survival of a reasonably sized family. This is supported by studies undertaken. The ability to bring up healthier children with better protein in the food could be associated with the desirability of having smaller families. The impact of this is expected to be very effective.
- (e) Various Government distribution channels could be utilised by industry at no cost to Government. For example, maternity and child welfare centres could be fully utilised.
- (f) Special concessions like excise rebates, railway freight rates and the like should be given by Government to industry.
- (g) Of necessity the commercialisation of protein foods would have to be operated on very low margins which would barely cover costs. At the same time, the promotional efforts and the costs of educating the consuming public would be very high. Therefore, the Government should consider special tax exemptions as an additional incentive to manufacturers to attempt intensive promotional campaigns.
- (h) All school feeding programmes which are currently sponsored by Municipalities under State auspices, should also be associated with such promotional effort. More school feeding programmes should be introduced and the existing programmes revitalised.
- (i) Tremendous price fluctuations in raw materials costs make it necessary for the industry to operate on margins that cushion the effect of such price fluctuations. Instead of such 'speculative' pricing, it would be helpful if the Government could ensure that the raw materials required for the protein-food programme are made available to industry at definite pre-determined prices.

11. Having identified the problem and the possible outlets, the Group considered at some length the more

important aspects of the marketing implications associated with such a task. It seemed quite evident that the problem of attempting to market such a product/range of products would necessarily have to be aimed at a larger segment of the consuming public and in consequence the Group was fully conscious of the techniques that needed to be evolved. The view was expressed that if these products were marketed by industry, they would necessarily have to incur a significant expenditure in order to increase the awareness that was necessary and to effectively follow this up with scientific distribution and general product acceptance.

12. The Group was also conscious of the packing costs, particularly in relation to the ratio of such costs to the most acceptable unit pack. A view was expressed that a product like the rice-soya mix should conceivably be put out in a 20 gram pack at a cost of approximately 30 paise each, which on the basis of one feed a day would cost a family a total expenditure of approximately Rs 10—Rs 12 per month. This particular costing was arrived at on an assumption that in consideration of the large volume that was envisaged, certain economies and perhaps special prices for basic raw material involved in packaging could be negotiated with basic raw-material manufacturers, for example, it is not unlikely that a special preferential rate could be negotiated for polyethylene granules.

13. At this stage the Group was confronted with certain considerations which, in many ways, would highlight the complexity of this total marketing concept. For instance, the Group was in doubt whether it could assume that any undertaking in the private sector would be prepared to stake a financial investment of such a magnitude in the hope that the product would be acceptable, the volume was achievable and the market was potentially worth pursuing. It is the view of the Group that a risk in the context of the larger objective must be taken to establish a base from which we could build a higher level of acceptance and greater market potential, the emphasis being on the confidence of which industry could be assured in meeting this requirement.

14. It was also recognised that in working towards this objective the essence of industry's approach should be to consciously attempt a "commercially feasible" proposition bordering on meeting immediate social objectives."

15. Finally, in the short time available for these discussions, the Group was clearly unable to give any considered thought to aspects such as a firm price, an assessment of the market or an appreciation of preference which ought to be the subjects of further investigation and study.

16. The Group was, however, obliged to take due note of the emphasis that has been currently placed on the social obligations of Government/Industry to the community. It is perhaps in this area that private industry is a little apprehensive of long-term growth because of Government's recent pronouncement confining such activity on the food front to the small scale sector. Discharging such social responsibility of large magnitude involves considerable investment, technological resources and expertise. The mobilisation of such resources would seemingly be beyond the realms of the small scale sector and it is in this context that Government must declare its support to the organised industry to undertake this task. In making this comment, the Group was of the view that the organised sector of such industries would, unquestionably, be conscious of their commitment in meeting the social objectives as pronounced by Government to the community

New Processed Foods Group I

I. The following three new processed protein food products would have scope for being marketed in India:

- (a) Nutritional beverages/food drinks either in the form of liquid or powders
- (b) Finger foods/snack foods, such as biscuits, toffees, sweets—both traditional and western type. Deep fried snacks, e.g wafers, etc and extruded products, e.g. macaroni, vermicelli and chikki are also included
- (c) Textured vegetable protein foods
- (d) Convenience foods: There is scope for certain ready-to-eat foods, semi-processed foods or premixes for rice-kichidi, cakes and other such products. Sandwiches spreads such as peanut butter, chutney mixes, etc may have scope.

Nutritional beverages/food drinks could be in liquid form—either still or carbonated—or in powder form which can be reconstituted. Protein content of such drinks should be not less than 2%, paying due regard to the quality aspects of the protein.

Finger foods/snack foods should contain about 12-18% of protein paying due attention to quality of the protein.

Textured vegetable protein foods

These foods should be based on locally available material as far as possible; during the development stages, however, the raw materials may be allowed to be imported wherever necessary

The beverages would be acceptable and within the reach of all socio-economic and age groups of the population. Snack foods, convenience foods and textured vegetable protein foods are likely to be accepted in the middle and upper income groups. Snack-foods would particularly appeal also to school-going children.

Technical know-how and equipment needs

As far as possible, locally available equipment and commercially proved technology should be utilised to

the fullest extent possible. In the interest of fast development of the protein food industry, it might become necessary to import certain equipment and borrow some technical know-how. There should be no undue interference in this development

Marketing parameters

Taking nutritional beverage/food drink as an example, following are the observations on pricing, packaging, advertising and distribution

(a) Pricing

It would be possible to market the beverage at about the same price as any beverage of accepted standard currently on the market. It could even be sold at a lower price, provided the Government gave incentives in the form of tax reliefs such as exemption of excise duty on crowns, bottles, sugar, etc

(b) Packaging

Rigid, flexible or laminated cardboard containers could be used for these products

(c) Advertising

The need for advertising on a wide scale for a new processed food is essential for its success. Whilst advertising a particular brand would be the responsibility of the individual entrepreneur, protein foods as a group would have to be advertised by a body such as the Protein Foods Association of India. However, the Government should be asked to participate in the advertising expenditure for the promotion of protein foods as a whole and mount an educational campaign if need be for the purpose. The product should be able to stand on its own merits and no comparison should be drawn with any other accepted beverage like milk. In short, the product should establish its own identity.

(d) Distribution

Food drink manufacturing should be decentralised and a large number of production units located in different parts in the country.

The role of Government in the development of new processed foods

Existing food laws in the country under the Prevention of Food Adulteration Rules, AGMARK and the like should be so modified as to accommodate the new protein foods that would be developed in the country, provided they meet with standards laid down for such protein foods in respect of quantity and quality of protein. It is further suggested that the standards under PFA rules should be tentatively laid down for five years to be reviewed in accordance with developments.

Subsidies

The Government should be approached to provide relief from sales tax, excise, income tax and exemption from custom duty on imported equipment required for the processing of new protein foods.

Likewise Government should be approached for concessional freight rates on new processed foods just as is now allowed on perishable foods.

As quick development of protein foods is essential for the health of the nation, the highest priority should be accorded for production of such items and therefore this industry should be exempted from the operation of the Industries Development and Regulations Acts.

Need for further market research

It is felt that market research on a continuing basis is not only necessary but essential. It is felt that the industry should generate its own funds for this purpose and, therefore, should be willing to set aside a certain percentage of its turnover in respect of production of protein foods. Such amounts should be handed over to the Protein Foods Association of India who should in turn approach the Government of India for matching the contribution so made by the Industry. Since the Industry can make the contribution only after production has started, Government should be approached by the Protein Foods Association to make initially the funds available to continue surveys on the same lines as the one done in the States of Maharashtra and Gujarat.

New Processed Foods Group II

Objectives

The Group looked at new processed foods with the overall objective of meeting the protein deficiencies. It was assumed that this would by itself go some way towards meeting calorie deficiencies also.

In laying down criteria for identifying products in this category, the group felt it would consider products which were (1) Non-conventional. This may be in terms of non-conventional sources, or non-conventional consuming areas or income or religious groups etc. (2) Processed. This would enable producers to fortify and enrich. The Group was prepared to consider even entirely new food concepts, but it was felt that consideration should be limited to products that would be marketable, preferably on a mass scale.

Areas of interest

The group then considered various food areas and broad categories which could be included in its purview and which conform to the above criteria. These were milk foods, weaning foods, breakfast cereal foods, bread, biscuits, snacks, beverages, protein drinks, sweets including chocolates, confections, food drinks, ice creams, dehydrated vegetables, preserves, meat products including fish, and soups. This is not an exhaustive list but indicates the broad areas of interest.

The group, however, felt that this list needed to be reduced to a short list comprising products with immediate marketing possibilities.

Criteria for selection

The group therefore laid down the following criteria for selection of processed foods to meet the objectives:

1. It should be able to carry a high level of protein content;
2. It should be able to reach large sections of society i.e. it should be suitable for mass marketing;
3. It should fit into traditional food eating habits;

4. It should have greater orientation towards children, specially in the age group 1 to 6 years;
5. It should have a low unit price.

In choosing processed foods which meet these criteria, the group recognised the need for products to have mass appeal so that efforts could be concentrated on selling the protein and are not fragmented by trying to sell a new food habit too. It was also recognised that the product should be sold and not given away free since this may tend to devalue it in the eyes of the higher income groups.

Possible products

The group therefore felt that the following products were worthy of consideration:

1. Extruded puffed rice with soya incorporation.
2. Protein-enriched biscuits (as are currently being distributed in the school programme in Maharashtra).
3. Dry egg powder.
4. Soya dal.
5. Flavoured milk with protein additives.
6. Ice lollies made with soya milk.
7. Protein-enriched rolls.
8. Instant idli mix
9. Packaged, fortified suji.
10. Fortified pappad.
11. Khichri mix.
12. Oilseed-based protein concentrate.
13. Extruded snacks in different shapes and flavours made from high protein raw materials.

Basic appeal

The group felt that in marketing protein processed food, the basic appeal would essentially be that of taste. It was considered doubtful if these foods could be sold only on the basis of nutrition, though it was felt that with increasing awareness of protein malnutrition, this should be possible after a few years. The group therefore recommended that a heavy advertising campaign to create nutritional awareness should be undertaken. Branded processed foods could grow under its umbrella support.

Pricing

The group discussed at length the possibility of charging a premium for protein-fortified foods and it was felt that considerable marketing judgement will have to be

exercised in arriving at price levels. It was the general view that products would have a better chance at prices which were comparable with traditional food items in that field.

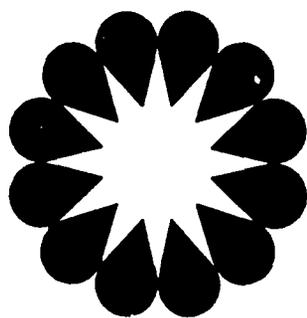
Joint effort

The group also feels that in certain sectors of food products e.g. bread, egg etc. joint campaigns should be undertaken by all producers to promote greater consumption of their products.

Overall strategy

A two-pronged strategy is suggested. The first could include marketing a high margin, high price but low volume product meeting the protein needs of the urban population and the second would consist of a low price, low margin but high volume product for the mass market. The group did not support the theory of the trickle-down effect. It was felt that in terms of realistic marketing strategy, it would be better to start from the higher income groups. However, the lower groups should be separately and simultaneously approached with differently conceived and differently marketed products.

The group would like to make an overall recommendation about popularising the utilisation of protein-bearing crops such as cottonseed, groundnut and soyabean in agro-based industry.



Chapter V

**Summing-up
of Workshop
Proceedings by
Mr. T. S. Nagarajan,
Programme Co-ordinator**

Summing-up by Mr. T. S. Nagarajan, Programme Co-ordinator

Objectives of Workshop

What were the objectives of this Workshop? In a nutshell the objective was to utilise the O.R.G. survey to tackle the protein problem. In more detailed action-oriented terms this meant.

- (a) Developing a few product profiles based on the information gathered from the survey regarding food habits of the people.
- (b) Having developed these profiles, evolving a 'total marketing strategy'.

Definition of Total Marketing Strategy

By total marketing strategy we mean defining as accurately as possible the important marketing parameters from the blueprint stage of a new product to its final consumption. These parameters are:

- (a) Target groups
- (b) Price ranges.
- (c) Promotional strategy.

All these factors will have to be integrated to government policy and action. In this connection it has to be decided what should be the policy in regard to subsidies, freight rates, taxation, food laws, etc

How far have we achieved these objectives?

The conference started with a presentation by O.R.G. which quantified the extent of the protein problem in India. Having established the problem, the Workshop then got down to analyse what market actions can be taken in order to tackle the problem.

The Workshop in line with the O.R.G. Report approached the marketing questions mentioned above under three distinct heads based on three possible areas of action:

- (a) Fortification of basic staples.
- (b) Development of foods to meet special needs such as lactation, pregnancy and weaning.
- (c) Development of new processed foods.

The Workshop broke up into separate groups to discuss these categories. There were two groups in each category. Following is the summary of the main recommendations of both the groups in each category:

Fortification

The problem was accepted and defined and the vulnerable groups were isolated

- (a) It was realised that a great deal can be done if the calorie problem is taken care of at the same time. Improving agricultural output through genetic work was a recommendation made with this idea of tackling the calorie and the protein problem together.
- (b) Success of fortification programmes will depend on intensive educational inputs. Specific programmes such as doctors' education, school schemes, reorientation of text books, etc. were recommended.
- (c) The groups were able to identify particular cereals most suitable for fortification under the present existing technology and manufacturing conditions.
- (d) It was suggested that while fortifying, minerals and vitamins should also be considered to give a total nutritional effect.
- (e) The economics of fortification were discussed and an estimate was sought to be made of the incremental price that would result from fortification.
- (f) Questions regarding Government's subsidy in the initial stages to ensure industry profitability and market penetration were considered.
- (g) It was recognised that packaging was an essential parameter in any fortification programme.
- (h) Suggestions were made for evolving a mechanism for labelling with a protein standards symbol on the lines of AGMARK, ISI, etc.
- (i) Problems regarding distribution were also emphasized. It was generally agreed that existing networks of distribution for some of the products like soaps and tea which have maximum penetration should be utilised.
- (j) The Workshop discussed the question of compulsory or mandatory fortification of cereals. The recommendations were:
 - (i) That consumer choice should be ensured in spite of mandatory fortification.
 - (ii) The economics of the industry should be considered and a rational policy on retail pricing be worked out before enforcing mandatory fortification.
 - (iii) Gradual construction of the infrastructure before considering any mandatory plan.

Special Foods

The problems were identified in the special segments in this area namely:

- (a) Pregnancy stage.
- (b) Lactation stage.
- (c) Weaning stage.

The groups based their discussion on the O.R.G. findings that there is no weaning concept in the area under study; no special foods are given to pregnant women, though there is some incidence of special foods being given to lactating mothers.

The important points discussed and the recommendations are:

- (i) The groups felt that the starting point of any programme should be educational—medical and para-medical. The P.F.A. communications programme should be geared to this.
- (ii) The possibility of a “pill approach” was discussed. By this was meant the possibility of prescribing a concentrated nutritional pill instead of extensive programme of fortifying the diets of the target groups. The difficulty seemed to be the unavailability of such a product. Technical research on this subject is still at a preliminary stage.
- (iii) The other approach discussed was the possibility of transforming presently consumed items such as “sheera” into a weaning food after adding nutritional ingredients.
- (iv) It was felt that food laws as presently administered created bottlenecks. A pragmatic approach was called for.
- (v) While agreeing that in the long run food industries should be developed on indigenous raw material and technical know-how, a flexible approach for importing these in the initial stages was necessary.
- (vi) The groups appreciated the fact that success of new products in this field depended on their being sold on the basis of taste and other acceptable product characteristics rather than on nutrition.

New Processed Products

This group discussed a wide range of products which are new only in the sense that they may be industrial adaptations of currently consumed home-prepared foods.

The criteria of selection should be.

- (a) Its ability to carry a high level of protein content
- (b) Its ability to reach large sections of society i.e. it should be suitable for mass marketing
- (c) Its ability to fit into traditional food eating habits
- (d) Its ability to have greater orientation towards children, especially in the age group 1 to 6 years.
- (e) Its ability to carry a low unit price

The important recommendations were:

- (i) Accepted product characteristic should be emphasized rather than nutritional content, e.g. kichidi.
- (ii) A gradual awakening to the nutritional problem was essential to the marketing success in the field. Hence groups suggested that saturated communications

programmes should be conducted.

(iii) Possible products were defined such as:

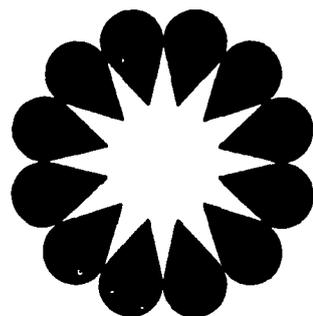
1. Extruded puffed rice with soya incorporation.
2. Protein-enriched biscuits (as are currently being distributed in the school programme in Maharashtra).
3. Dry egg powder
4. Soya dal.
5. Flavoured milk with protein additives.
6. Ice creams made with soya milk
7. Protein-enriched rolls
8. Instant idli mix.
9. Packaged, fortified suji.
10. Fortified pappad
11. Kichri mix
12. Oilseed-based protein concentrates.
13. Extruded snacks in different shapes and flavours made from high protein raw materials.

(iv) On pricing, the groups discussed the desirability of relying on the trickle-down effect to reach the most vulnerable sections with products which at the outset would reach only the upper income groups.

All the groups were agreed that the O.R.G. Report was only a starting point and that there should be continuing research.

Follow-up action

1. A working group is being constituted to study the recommendations in greater depth and produce a report incorporating the salient recommendations. This will meet in Bombay as early as possible.
2. It is also felt that to keep in continuous touch with these topics and to study the problems in closer detail, working groups should be constituted. Some of the subjects these groups can consider are.
 - (a) Packaging
 - (b) Economic evaluation
 - (c) Priority systems on licences, hierarchy of objectives.
 - (d) Fortification, mandatory or voluntary.



Appendix I

**Groups and
Participants**

Appendix II

**Product Profile
No. I—Shira**

Appendix III

Tables

Appendix I

List of Participants

PROTEIN FOODS FOR NATIONAL DEVELOPMENT OPERATION MARKETING WORKSHOP-I

Ashoka Hotel — December 18 & 19, 1969

GROUPS AND PARTICIPANTS

Category: Basic food items to be considered for protein fortification

GROUP I

<i>Name</i>		<i>Organization</i>
Mr Santanu Chaudhuri	(Chairman)	United Flour Mills
Mr. Ashok Kapur	(Recorder)	Cantor Associates
Mr. M H. Gandhi		Shalimar Biscuits
Mr. R. A. Hunt		Wheat Associates
Mr Irwin Isenberg		U.N.
Dr T. B Morgan		F.A.O.
Mr N. B Naik		Liptons
Mr. K V Natarajan		Planning Commission
Mr. Wally Paddon		U.S.A.I.D.
Dr H. A B Parpia		C.F.T.R.I.
Mr. A P Sarwan		Govt. of India (Industries)
Representative		India Foils

GROUP II

Mr. R. W. L. Callaghan	(Chairman)	Roche Products
Dr K. T Achaya	(Recorder)	R. R. L. Hyderabad
Dr B. L. Amla		C.F.T.R.I.
Mr. R. Balasubramanian		Ministry of Food & Agriculture
Mr S. daCunha		daCunha Associates
Dr. G. M. Desai		I. I. M. Ahmedabad
Mr L. R. Kandhari		Wheat Associates
Mr J. P Kapur		D.C.M. Chemical Works
Dr. K. N. Kaul		Roche Products
Mr. Charles Puttkammer		U.S.A.I.D.
Mr K. M. Shah		Unichem Laboratories
Mr. N. K. Vissanji		Wallace Flour Mills
Mr. M. A. Wadud Khan		Tata Oil Mills

Category: Special Foods (to meet weaning, pre- and post-pregnancy needs)

GROUP I

<i>Name</i>		<i>Organization</i>
Dr S. Varadarajan	(Chairman)	Hindustan Lever
Dr. K. Bagchi	(Recorder)	Food & Nutrition Adviser (Government of India)
Mr. Douglas G. Atwood		CARE
Mr. T. S. Bhat		Poysha Industrial Co
Mr. K. J. George		Govt. of India (Industries)
Mr. P. C. Joshi		Modern Bakeries
Mr. K. Kurien		A.S.P.
Mr. D. R. Mehta		Glaxo Laboratories
Mr J. Neelakanta		Food Corporation of India
Mr. R. Randhawa		Reckitt & Colman
Mr. B. B. Sardeshpande		Corn Products
Mr. S. M. Shipchandler		Shalimar Biscuits
Dr. B. N. Tandon		All-India Institute of Medical Sciences
Dr. E. M. Weber		Cantor Associates

GROUP II

Mr. V. T. Ramamurthy	(Chairman)	Metal Box
Mr. H. S. Gurudas	(Recorder)	Voltas
Mr N. J. Agrawal		Hanuman Vitamin Foods
Dr B P Baliga		Tata Oil Mills
Mr. C. A. Chandy		D.C M Chemical Works
Mr. T. Gupta		Glaxo Laboratories
Dr. Horst L. Halens		UNICEF
Dr Peter S. King		Ford Foundation
Mr. T. K. R. Menon		Roche Products
Mr. A. V. Mody		Unichem Laboratories
Mr. T. J. Prabhu		Nestle's Products
Dr. Rama Varma		Food Corporation of India
Dr. Elizabeth Reid		A F P R O
Mrs. C. K. Sinha		Clarion-McCann

Category: New Processed Foods

GROUP I

<i>Name</i>		<i>Organization</i>
Dr. D. S. Bhatia	(Chairman)	Coca-Cola
Dr. D. V. S. K. Rao	(Recorder)	Britannia Biscuits
Mr V. S. Aiyar		Aiyars Advertising
Mr. S. Chatterji		Poysha Industrial Co.
Mr R. H. du Mee		Naarden Chemical Works
Mr P. L. Garg		Hanuman Vitamin Foods
Mr. Lawrence C. Holzman		CARE
Mr. L. P. Jaiswal		Jagatjit Industries
Mr. J. Mishra		Nestle's Products
Mr. S. G. Ponda		Cadbury-Fry
Mr. S. Ramaswamy		D G T. D
Mr. S. S. Ramaswamy		D.C M Chemical Works
Mr. Z. A. Vasi		Polson Limited
Mr. S. Viswanathan		United Flour Mills

GROUP II

<i>Name</i>		<i>Organization</i>
Mr. I. Mahadevan	(Chairman)	Modern Bakeries
Mr. N. P. Singh	(Recorder)	Hindustan Lever
Mr. M. C. Bhatt		Indian Investment Centre
Mr. S. Chandrasekhar		Glaxo Laboratories
Mr. Paul R. Crowley		Cantor Associates
Mr. P. K. Das Gupta		India Foils
Mr. S. N. Gupta		Planning Commission
Mrs. Radha Kodangekar		A S P
Dr. Richard M. Matsura		U.P. Agri University
Mr. A. K. Marfatia		Hindustan Milk Food
Mr. S. H. Pherwani		Britannia Biscuits
Mr. A. Ramalingam		Nestle's Products
Mr. A. N. Sen		Voltas Limited
Dr. G. S. Sidhu		R. R. L. Hyderabad
Mr. S. Z. Varcie		Tata Oil Mills

PROGRAMME CO-ORDINATORS

Mr. M. Mathias	Hindustan Lever
Mr. T. S. Nagarajan	Brooke Bond

CO-ORDINATING COMMITTEE

Mr. N. S. Pochkhanawala	Consultant
Dr. V. N. Patankar	Hindustan Lever
Mr. D. V. N. Sarma	} O.R.G.
Mr. G. Parthasarathy	
Mr. S. Rajagopal	
Mr. R. C. Bhavsar	
Dr. Sidney M. Cantor	} Sidney M. Cantor Associates
Dr. George Shaffer	
Mr. K. B. Kothari	
Dr. J. V. Shankar	} C.F.T.R.I.
Mr. B. R. Srihari	
Mr. Gerson da Cunha	} Lintas
Mr. S. Pinto	
Dr. P. R. Krishnaswamy	} P.F.A.
Mr. Shyamal Ghose	

Appendix II

Product Profile on Shira

1. Introduction

Operations Research Group has conducted in 1969 a Food Habit Survey in Gujarat and Maharashtra States on behalf of Protein Foods Association of India. Having recognized the problem of protein gap in the normal Indian diet, PFA has taken upon itself as one of its functions to identify and develop marketing of protein foods of the right kind. The Food Habit Survey has thrown up several ideas which could be profitably exploited to achieve this objective. These ideas were discussed at the Marketing Workshop held in Delhi towards the end of 1969. One of the suggestions made at the Workshop was that product profiles on certain important items should be prepared by PFA, so that attention of research workers and marketing managers could be focussed on developing suitable products. This is our first product profile.

2. Shira

Shira is a sweet dish made out of Suji (cream of wheat). Suji is fried in ghee (clarified butter), then added to boiling milk or water with sugar and allowed to solidify until granular product emerges. In the last stages, taste agents like nuts are added if necessary. Shira has a wide acceptance in all the income groups and in both urban and rural India and hence can be considered as a good protein carrier. It has universal acceptance as an item to be taken as snacks on feast/holidays and fasting days. It is also considered to be an item that is given to pregnant and lactating mothers. This can be seen from the summary table given below:—

	Gujarat	Maha- rashtra
Total No. of families ('000)	2943	6693
No. of families ('000) taking Shira		
Feast days/Holidays	1314	2227
Fast days	139	128
Pregnancy Food	19	28
Nursing Food	932	1358
No. of families ('000) taking Shira on Feast days/Holidays	1314	2227
Urban	490	733
Rural	824	1494
Family Income		
Upto Rs 100	228	740
Rs 100 to Rs 200	466	668
Rs 201 to Rs 500	563	651
Rs. 501 to Rs 1,000		135
Above Rs 1,000	56	42

3 Shira as Feast/Holiday Food

Shira is most popular on Feast/Holidays. Detailed breakdown is given in Appendix Table 1a and 1b. About half of the families in Gujarat and one-third in Maharashtra take Shira on these days. Shira's acceptance is high in the middle income group in Gujarat and Maharashtra. This is precisely the group where protein deficiency is very high but yet is not economically as worse off as the lower income group.

4. Shira as an item for fast days

About a third of the families in Gujarat observe fast days while this proportion is about three-fourths in Maharashtra. However Shira is more popular as an item for fast days in Gujarat (13%) as against in Maharashtra (only 3%). Also fasting is more common in the upper income group people in Gujarat, while it is so among lower and middle income groups in Maharashtra. Thus the use of Shira as an item for fast day is relatively restricted and thus marketing emphasis on this aspect should be less (See details in Appendix Table 2a and 2b).

5. Shira as a pregnancy food

Concept of pregnancy food is very restricted in India and that too is limited to the upper income groups and bigger towns. For example only 5% families in Gujarat and 7% in Maharashtra report any special pregnancy food. It is no wonder that Shira is taken by a very limited number

of families (19,000 in Gujarat and 28,000 in Maharashtra) as a pregnancy food. Therefore heavy promotional efforts will be needed in order to popularise Shira as a pregnancy food (See details in Appendix Table 3a and 3b).

6. Shira as a nursing mother's food

About 60% of the families in Gujarat as well as in Maharashtra report taking special food during nursing period. The proportion is high in both urban and rural areas. Also the habit is equally strong in all the income groups except the lowest, below Rs. 100 per month/per family. Shira features as an item among 50% families in Gujarat and 40% families in Maharashtra. Again Shira's popularity is among the middle income families in Gujarat and lower and middle families in Maharashtra (See details in Appendix Tables 4a and 4b)

7. Frequency and place of preparation

Shira is mostly prepared at home, very few (1.6% in Gujarat and 0.3% in Maharashtra) buy it from outside. This indicates a high domestic market and relatively smaller industrial market (hotels, restaurants, sweetmeat makers etc.) The frequency of preparing Shira is however less often than once a month. This is possibly due to high cost of ingredients like ghee, sugar and milk (See Appendix Tables 5a and 5b)

8. Number of families buying Suji

Suji is the raw material from which Shira is prepared. In Gujarat though 13 lakh families prepare Shira on feast/holidays only 1.3 lakh families buy Suji in the market, the rest preparing it at home or getting it made when they get wheat ground. This is a typical habit among Gujaratis. On the other hand, in Maharashtra 22 lakh families prepare Shira on feast/holidays, while 20 lakhs buy Suji in the market (See Appendix Table 6a and 7b). Thus selling of fortified Suji will be more difficult in Gujarat as compared to Maharashtra.

Frequency of buying Suji is mostly once a month both in Maharashtra and Gujarat (See Appendix Table 7a and b) and quantities bought at a time is mostly between 500 gms to 1 kg (See Appendix Table 8a and b).

It is estimated that 108 tonnes of Suji are bought in Gujarat every month and 2283 tonnes in Maharashtra. This of course excludes Suji made at home, which will be very high in Gujarat.

9. Marketing Implications

- (a) Market for Suji is very high in the Western Region. It is of the order of about 30,000 tonnes per annum. Most of this market is in Maharashtra, but if people in Gujarat are persuaded to buy Suji in the market instead of preparing it at home by offering them convenience, the market potential can be higher still.
- (b) The product to be sold can be either fortified Suji or readymade Shira mix. If a good product at economic price can be prepared, then it will reach the most valuable sections of populations — rural

population, lower/middle income group population, pregnant and nursing women and children—all of whom need a protein-rich diet

- (c) Shira is a very popular dish as a snack for feast/holidays, fast days; it is also taken by pregnant/nursing mothers. The consumer benefits it offers are both taste and nourishment. If convenience and purity (i.e. unadulterated Suji in packets) aspects are also added at economic price, they can be good advertising points.

10. Further Research

- (a) Technical research is needed to see if Suji can be fortified so that the dietary deficiencies of the lower sections of the population can be supplemented. Problems of production on a large scale will also have to be investigated.
- (b) Technical research is needed to see if readymade Shira mix can be manufactured so that Shira can be prepared in less time.
- (c) Marketing angles for both these products will have to be investigated — total market, cost/profit margin, advertising, packaging, distribution channels etc.
- (d) Consumer research is needed to see if the concept of fortified Suji/Shira mix can appeal to the people; what price they would be prepared to pay; whether they like the product; what consumer benefits can be suggested that will appeal to the consumers.

Appendix III

Tables

INCOME GROUP CODES

Code	Description
Gujarat	
1	Monthly Family Income upto Rs. 100
2	Monthly Family Income between Rs 101 and Rs. 200
3	Monthly Family Income between Rs. 201 and Rs 500
4	Monthly Family Income above Rs. 500
Maharashtra	
1	Monthly Family Income upto Rs. 100
2	Monthly Family Income between Rs. 101 and Rs 200
3	Monthly Family Income between Rs. 201 and Rs 500
4	Monthly Family Income between Rs. 501 and Rs. 1,000
5	Monthly Family Income above Rs. 1,000.

GUJARAT

1 (a) Shira as a special item for feast days/holidays

	State Total	Towns with population			Total Urban	Total Rural	Income Group			
		Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac			1	2	3	4
Number of families('000) reporting one or more items during feast days/holidays (% in brackets)	2856 (97 0)	244 (92 7)	232 (97 8)	477 (95 4)	953 (94 8)	1903 (98 1)	570 (89 9)	880 (98 3)	1200 (99 2)	205 (100 0)
Among these percent mentioning Shira as a special item	46 0	54 7	50 0	50 2	51 4	43 3	40 0	53 0	46.9	27.5
Number of families ('000)	1314	133	116	239	490	824	228	466	563	56

MAHARASHTRA

1 (b) Shira as a special item for feast days/holidays

	State Total	Towns with population			Total Urban	Total Rural	Income Group				
		Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac			1	2	3	4	5
Number of families('000) reporting one or more items during feast days/holidays (% in brackets)	6559 (98 0)	831 (95 1)	473 (98 3)	699 (98 8)	2003 (97 1)	4556 (98 3)	2878 (96 7)	2001 (99.8)	1216 (98 7)	330 (96 7)	134 (95.7)
Among these percent mentioning Shira	34 0	35 3	46 3	31 8	36.6	32 8	25 7	33 4	53.5	41 0	31 0
Number of families ('000)	2227	293	219	222	733	1494	740	668	651	135	42

GUJARAT

2 (a) Shira as a special item on fast days

State Total	Towns with population			Total Urban	Total Rural	Income Group				
	Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac			1	2	3	4	
Number of families ('000) reporting one or more items as special items on fast days (% in brackets)	1089 (37.0)	104 (39.5)	122 (51.4)	221 (43.7)	446 (44.3)	642 (33.1)	43 (6.7)	299 (33.4)	634 (52.4)	113 (55.1)
Among these percent mentioned Shira as a special item	12.8	15.5	7.4	18.6	14.0	11.4	7.0	13.1	10.6	27.4
Number of families ('000)	139	16	9	41	66	73	3	39	67	31

MAHARASHTRA

2 (b) Shira as a special item on fast days

State Total	Towns with population			Total Urban	Total Rural	Income Group					
	Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac			1	2	3	4	5	
Number of families ('000) reporting one or more items as special items on fast days (% in brackets)	4882 (72.9)	513 (58.7)	359 (74.6)	542 (76.6)	1414 (68.6)	3468 (74.8)	2066 (69.4)	1491 (74.3)	1001 (81.3)	246 (72.1)	78 (55.7)
Among these percent mentioning Shira as special item	2.6	8.4	0.6	1.7	3.9	2.1	2.7	2.4	3.0	2.0	3.9
Number of families ('000)	128	43	2	9	55	73	56	36	30	5	3

GUJARAT

3 (a) Shira as a special food during pregnancy period

	State Total	Towns with population			Total Urban	Total Rural	Income Group			
		Over 10 lacs	Between 10 lac & 1 lacs	Below 1 lac			1	2	3	4
Number of families ('000) reporting one or more items during pregnancy period (% in brackets)	148 (5.0)	36 (13.6)	25 (10.5)	25 (4.9)	86 (8.5)	62 (3.1)	5 (0.7)	54 (6.0)	77 (6.3)	12 (5.8)
Among these percent mentioning Shira as a special item	12.9	22.2	20.8	24.0	22.1	—	—	9.4	16.7	8.5
Number of families ('000)	19	8	5	6	19	—	—	5	13	1

MAHARASHTRA

3 (b) Shira as a special food during pregnancy period

	State Total	Towns with population			Total Urban	Total Rural	Income Group				
		Over 10 lacs	Between 10 lac & 1 lacs	Below 1 lac			1	2	3	4	5
Number of families ('000) reporting one or more items during pregnancy period (% in brackets)	490 (7.3)	176 (20.1)	47 (9.7)	66 (9.3)	290 (14.0)	200 (4.3)	42 (1.4)	129 (6.4)	187 (15.1)	85 (24.9)	47 (33.6)
Among these percent mentioning Shira as a special item	5.7	7.4	8.5	—	5.9	5.5	31.0	3.1	2.2	8.2	2.1
Number of families ('000)	28	13	4	—	17	11	13	4	4	7	1

GUJARAT

4 (a) Shira as a special food during nursing period

	State Total	Towns with population			Total Urban	Total Rural	Income Group			
		Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac			1	2	3	4
Number of families ('000) reporting one or more special foods during nursing period (% in brackets)	1835 (62.3)	171 (65.0)	144 (60.7)	313 (61.4)	628 (62.4)	1207 (62.2)	176 (27.7)	580 (64.8)	913 (65.5)	165 (80.4)
Among these percent mentioning Shira as a special item	50.8	47.1	54.9	63.2	56.3	47.9	39.1	50.6	57.2	40.0
Number of families ('000)	932	81	79	195	354	578	51	293	522	66

MAHARASHTRA

4 (b) Shira as a special food during nursing period

	State Total	Towns with population			Total Urban	Total Rural	Income Group				
		Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac			1	2	3	4	5
Number of families ('000) reporting one or more special foods during nursing period (% in brackets)	3462 (51.7)	475 (54.4)	189 (39.2)	470 (66.4)	1135 (55.0)	2327 (50.2)	1118 (37.5)	1161 (57.9)	874 (70.9)	226 (66.2)	83 (59.2)
Among these percent mentioning Shira as a special item	39.2	21.9	26.5	28.5	25.4	46.0	42.0	41.1	37.5	36.0	13.4
Number of families ('000)	1358	104	50	134	288	1070	470	477	328	81	11

GUJARAT

5 (a) Frequency and place of preparation of Shira on feast and fast days

Occasion	Number of families having shira ('000)	Percent of families having the item				Percent of families preparing it	
		Once a week	Once in two weeks	Once a month	Less often	At home	outside
Feast day	1314	3.8	3 6	7 8	84 8	98.4	1.6
Fast day	139	1.4	51.8	19 1	27.7	100 0	—

MAHARASHTRA

5 (b) Frequency and place of preparation of Shira on feast and fast days

Occasion	Number of families having shira ('000)	Percent of families having the item				Percent of families preparing it	
		Once a week	Once in two weeks	Once a month	Less often	At home	outside
Feast day	2230	6.0	14.7	15.9	63.4	99.7	0.3

GUJARAT

6 (a) Number of families buying Suji

	State Total	Towns with population			Total Urban	Total Rural	Income Group			
		Over 10 lacs	Between 10 lac & 1 lacs	Below 1 lac			1	2	3	4
Percent families buying Suji	4.4	12.2	17.3	3.5	8.8	2.1	0.8	2.6	5.4	17.9
Number of families ('000)	129	32	41	18	89	40	5	23	64	37

MAHARASHTRA

6 (b) Number of families buying Suji

	State Total	Towns with population			Total Urban	Total Rural	Income Group				
		Over 10 lacs	Between 10 lac & 1 lacs	Below 1 lac			1	2	3	4	5
Percent families buying Suji	30.2	49.0	50.9	54.2	51.2	20.8	16.8	34.7	42.3	58.8	60.7
Number of families ('000)	2018	428	245	383	1055	963	498	693	518	199	84

GUJARAT

7 (a) Frequency of Purchase of Suji

Frequency of buying							Percent families buying Suji in that frequency among those buying the item					
							State Total	Towns with population			Total Urban	Total Rural
								Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac		
Daily	..	..	..	..	..	..	—	—	—	—	—
Weekly	..	..	..	..	..	..	0.7	—	2.1	—	1.0
Fortnightly	..	..	..	..	..	..	—	—	—	—	—
Monthly	62.7	60.4	55.6	89.0	63.9	60.0
Yearly	36.1	39.6	40.6	11.0	34.4	40.0

MAHARASHTRA

7 (b) Frequency of Purchase of Suji

Frequency of buying							Percent families buying Suji in that frequency among those buying the item					
							State Total	Towns with population			Total Urban	Total Rural
								Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac		
Daily	..	..	..	..	..	..	1.1	0.9	1.0	1.5	1.1	1.0
Weekly	..	..	..	..	..	..	2.6	2.5	2.1	—	1.4	3.8
Fortnightly	..	..	..	..	..	..	2.8	7.8	1.1	2.7	4.3	1.2
Monthly	..	..	..	..	..	..	61.6	74.7	87.4	60.1	72.2	50.7
Yearly	..	..	..	..	..	..	29.8	12.4	7.3	31.0	18.3	41.8

GUJARAT

8 (a) Quantity of Suji bought at a time

Frequency of buying	Percent families, who buy at a time that quantity among those buying suji					
	State Total	Towns with population			Total Urban	Total Rural
		Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac		
Less than 250 gms	5.3	8.8	10.0	—	7.5	—
251-500 gms	12.2	21.2	19.0	7.5	17.2	—
501 gms to 1 Kg	47.8	42.2	41.2	48.0	42.7	60.0
1-5 Kg	30.1	20.0	28.3	30.2	26.3	40.0
5-10 Kg	2.6	2.6	1.6	11.0	3.8	—
More than 10 Kg	1.7	5.2	—	3.3	2.4	—

MAHARASHTRA

8 (b) Quantity of Suji bought at a time

Frequency of buying	Percent families, who buy at a time that quantity among those buying suji					
	State Total	Towns with population			Total Urban	Total Rural
		Over 10 lacs	Between 10 lacs & 1 lac	Below 1 lac		
Less than 250 gms	5.4	4.5	3.1	6.4	4.9	6.0
251-500 gms	18.2	11.9	6.1	17.6	12.6	24.4
501 gms to 1 Kg	47.0	54.8	43.5	46.4	49.1	44.7
1-5 Kg	27.6	27.9	44.2	28.9	32.1	22.5
5-10 Kg	1.8	0.6	3.0	0.6	1.2	2.5
More than 10 Kg	0.1	0.3	—	—	0.1	—