Soy Products in National and International Programs: Field and Emergency Programs

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ABSTRACT

An extremely important problem in large scale feeding programs such as described here is actually getting the needy recipients to eat the new or strange food. Precooking and sweetening of soy/cereal blends has gone a long way toward making the products more acceptable.

INTRODUCTION

The inauguration of the U.S. policy of food donations to developing countries as a form of international assistance, usually referred to as the Food for Peace Program, had great implications for the voluntary agencies already engaged in relief or emergency feeding overseas. These food donations provided the voluntary agencies, particularly CARE, with a new and massive resource, and enabled them to enlarge the scope of their programs to benefit a greater number of recipients, and to undertake continuing programs, as well as those responsive to emergency situations.

At first the availability of food commodities was determined to a considerable extent by the existence of surplus stocks generated by U.S. farm production. There were variations from one year to another in the type of food available. Sometimes the voluntary agencies could get rice or beans or butter oil; sometimes they could not. In many ways, total quantity, rather than quality or appropriateness, was the chief consideration. However, as time went on more attention was given to the nutritional quality of these donated foods and their appropriateness to their intended purpose. It was realized that nutritional balance might be even more important than total bulk, and that protein malnutrition, especially among young children, might not be alleviated by providing food donations composed largely of wheat and corn. A new approach was indicated, and the idea of using soy as a good source of protein fortification was adopted.

In many parts of the world soy as a food for human consumption was unknown. It is widely accepted in various forms in Southeast Asia and the Far East but I do not think anyone could have prophesied with any certainty that it would be acceptable in Latin America, Africa, or the Middle East. Cereal foods blended with soy was a new idea, and primitive or traditional societies are unreceptive to anything which is new and different. As an old proverb so wisely says, "What little farmer don't know, little farmer won't eat."

Unless acceptability could be ascertained and ensured, the new formulations might have remained academic curiosities. No food, no matter how nutritious, does you any good if you will not eat it, and it does not do you much good if you can not or will not eat it, and it does not do you much good if you can not or will not finish it. Providing food that is disliked or rejected is a waste of money, time, and effort.

ACCEPTANCE AND POPULARIZATION OF SOY-FORTIFIED FOODS

The voluntary agencies made a real contribution to the acceptance and popularization of soy-fortified foods. The two U.S. agencies with the largest feeding programs, CARE and Catholic Relief Services, were asked to assist in acceptability tests in the field. I joined CARE in 1967 shortly after the initial field tests. I soon amassed a considerable amount of useful information about how these commodities could be used, how well they were liked, how they might be prepared and seasoned, and what the cooked preparations should be called (a local name is a strong incentive to acceptance).

Most of us, I am sure, have been told at one time or another by unenlightened people that recipients "will eat anything if they are hungry enough." This is simply not true. Human beings are not like empty measuring cups, into which you can pour a certain amount of food and know that they are then full. Even infants are capable of making a decision about eating something or spitting it out. Unless the groundwork is laid carefully, the verdict on a new food will be "What is it? I don't like it." Not only must the recipients accept the food, but the adults involved, the mothers, cooks, teachers, officials, doctors, and nurses, must be convinced too, or their feeling of rejection will be transmitted in some way to the recipients.

Fortunately there are few tabus or prohibitions relating to cereals and legumes. The same cannot be said of fish protein concentrate which is prohibited under strict Hindu principles. Even under the Yunani medical system, which persists in many parts of the world and classifies most foods as "hot" or "cold" and therefore contraindicated in a variety of situations, cereals and legumes are usually regarded as "neutral," that is neither "hot" nor "cold." In some cases modification in preparation may be required. For instance jaggery (molasses) is contraindicated as seasoning in hot weather, frying is contraindicated if the recipient is pregnant, but by and large there are no objections on principle to cereal/legume mixtures. In fact the accepted traditional diet in many countries is based on precisely this combination: dhal and chapattis, frijoles and tortillas, hummus and pita, tempe or tahu with rice. New Orleans dotes on red beans and rice, and in England baked beans on toast is favored for breakfast, lunch, or supper. In Boston, Massachusetts, where the art of baking beans has been developed to a peak of perfection, beans are traditionally served with steamed dark bread for Saturday night supper. The nutritional excellence of these combinations is a tribute to the wisdom and skill of generations of practical housewives, mostly poor and ill-educated, who would not recognize a protein, much less an amino acid, if they tripped over it.

However, there is a major problem inherent in these traditional diets. By custom and convention, sometimes by dogma or even by coercion, the adult males of the household grab the lion's share of the high protein component leaving little for women and even less for children. As the high protein component, whether it be meat, fish, egg, or legume, is usually more expensive than the basic cereal staple, it is regarded as a seasoning or side dish, and may be reduced or omitted under pressure of price or scarcity. One of the most difficult messages to get across in nutrition education campaigns is that the high protein foods should not be a male prerogative, that the head of the household needs them no more urgently than his wife and children. Daddy resents and rejects the message, Mother has no "clout," the children have no say in the matter.

So the fixed level of the high protein soy component in the new soy-cereal blends is in one way a blow for the rights of women and children, although you gentlemen may not have thought of it quite in that way.

The first soy-cereal blend to be tested by CARE was corn-soy milk mix (CSM), followed soon after by wheat-soy blend (WSB). Since then CARE has successfully used soy-fortified flour, bulgur, and rolled oats in feeding programs, and has also carried out trial runs with soy-fortified sorghum grits, which proved very popular in West Africa. The variety and ingenuity shown in the recipes collected from schools and MCH's is impressive. They range from beverages and soups to porridge, pilav (called uppitu or uppama in India), puddings, dumplings, fritters and a variety of bakery items, even some confections closely resembling candy, such as halvah or Sukhadi, and also a ready-to-eat snack similar to a fried noodle, very popular in India under the name of Sev. In several countries, notably Hong Kong, excellent results have been achieved in producing high-protein noodles, spaghetti or macaroni using CSM, WSB, or soy-fortified flour as an ingredient. Acceptable versions of the locally preferred types of bread, bun, or biscuit have been made using soy-fortified flour or meal for many CARE programs in India, Tunisia, Turkey, and several other countries. Bread or buns are usually made in local bakeries; cookies or biscuits by larger commercial operators. There is even a bulgur cocktail crisp, resembling the local krupuk, which is served in many of the best bars in Djakarta.

These recipes are an indication that the soy-cereal blends can be accommodated to the taste of recipients with different dietary preferences. However, there are some constraints and limitations. Complete acceptance is usually contingent on the availability of some additional ingredients, such as seasonings and condiments, and of suitable preparation facilities and equipment. You can not cook without fuel or a cooking pot, you can not bake without an oven. The blandness of the foods, which is an advantage if there is some money available for salt, chilis, onions, curry and so on, becomes a disadvantage if none of these additions is available. Some recipients have commented unfavorably on the sour, beany flavor which is characteristic of soy when prepared without any seasoning or flavoring, and one child voiced the devastating comment that it "smelled like a wet dog."

It is amazing how much can be done by a resourceful and dedicated person to overcome the difficulties due to lack of money, equipment, and facilities. I have visited some schools, in Sierra Leone for example, where excellent meals were prepared with no kitchen at all. Using the traditional three rocks and a pot, the headmaster's wife would cook CSM, bulgur, or sorghum grits over a stick fire in the school yard, sheltered from wind and rain by a piece of palm thatch. This "joloff" was seasoned with home grown onions or cassava leaves, or a bit of stockfish. The school children were often invited to bring younger brothers and sisters, and there would usually be many toddlers. However, even a program like this does depend on a measure of stability and continuity afforded by the school, and on the small contributions regularly paid by the pupils who attend it.

What can be done to make the soy-cereal foods palatable if all the other prerequisits are lacking at the local level, if there are no cooks, no condiments, and no kitchens? Prefabrication is one possibility; fully cooked meals may be prepared at a central kitchen for distribution by truck to all schools or feeding centers in the vicinity. Or they may be made into biscuits, cookies, or other ready-to-eat snacks in large-scale factories. Both these systems produce acceptable foods, but they involve large capital investment, and high operating costs. Biscuits (or cookies) in particular are disproportionately expensive because of their high content of sugar and fat.

The problem becomes more acute when there is no adequate infrastructure to provide a network of distribution points where prepared food may be consumed on site. School age children can be fed at school, but how and where can the preschool child be reached? The under-five child is usually in a more hazardous nutritional state than his school age siblings; only a very small percentage of this age group can be reached through nutrition centers or MCH centers. One hears a lot about the successes of certain showcase centers—they are the ones to which the visiting fireman is inevitably escorted—but the relative failure of such programs in reaching large numbers of children in remote rural areas is much less publicized. I can document it from firsthand observation.

I realize that an examination of the relative merits of different distribution systems is not the purpose of this conference. We are concerned here primarily with the formulation and production of soy or soy-fortified foods, and the intrinsic qualities of such foods. My function, I believe, is to provide firsthand information as to how well these foods are used and accepted in international programs at the end-use point in programs of international assistance. However, success at the end-use point depends to a considerable extent on the nature of the distribution system and how successful that is. If the distribution system is beset with apparently insoluble problems, perhaps the best approach is to modify the foods themselves in order to bypass some of the inherent programming difficulties.

Famine relief and emergency feeding programs have built-in problems of a particularly acute type. Emergencies, by definition, strike suddenly and usually unpredictably. The number of people who must be fed tends to snowball. Often recipients are refugees or displaced persons, and the community which receives them has totally inadequate facilities for housing and feeding such an influx. Feeding stations must be improvised on the spot to service an unspecified number of people. A system which might work well under controlled conditions, feeding 100 or 200 children in a school lunch program, will break down altogether in such a situation. In an emergency feeding program the pressures of time, number of recipients, and lack of facilities dictate that all complications be eliminated, and food preparation time reduced to a minimum. In order to eliminate problems of this kind, UNICEF in conjunction with the USDA, developed a fully precooked soy/cereal blend called PKFM. It was first used in the Nigeria-Biafra project. It needed only to be mixed with water in the appropriate quantities to make a beverage, gruel, or finger porridge, and, possibly most significant of all, it was presweetened to ensure acceptability without the addition of any other ingredients.

Although the production of PKFM has been discontinued, CSM and WSB are now being produced in a precooked "instant" form and approximate closely the PKFM. Instant CSM was used, along with WSB, in the UNICEF emergency feeding program, begun September 1971, in what was then East Pakistan and is now Bangladesh. Unfortunately, neither commodity was then sweetened, and we did have some problems in acceptability. It was very easy to prepare; you could mix up a batch of "finger food" in a dishpan, a cauldron, a bathtub if need be, but unless some sugar or gur (molasses) was added, the children did not find it appetizing. I could not blame them. I always ate a sample at every distribution point I visited, and although I simulated enjoyment as a matter of principle, I can not say it was really palatable without sugar. In fact, I sympathized with a small boy's explanation when I asked why he was putting his portion into a plastic bag instead of eating it on the spot. He said he was going to take it home and ask his mother to put some syrup on it. "Then I shall

like it very much," he assured me. Well, that is fine if the child has a home, and a mother, and the mother can afford to give him sugar syrup, but we can not take all those things for granted in emergency programs.

I think we may conclude that these two modifications, precooking or "instantizing" and presweetening, are highly desirable when a soy-cereal blend is to be used in emergency feeding. They are also desirable in foods which are destined to be used in a take-home dry food distribution. This system was, for many years, in some disrepute because of its relative inefficiency in reaching the intended recipient. Much of the available food went unclaimed because mothers could not or would not collect it. What was collected frequently reappeared on the black market or was consumed by adults, or was incorrectly mixed or cooked. Few mothers seemed willing to prepare meals specially for their young childen, or to recognize the advantages of doing so in light of the expenditure of time, trouble, and fuel involved.

However, the take-home distribution system has one great advantage over on-site feeding which is the potentiality of reaching a much larger segment of the population at need with a much lower per capita cost. The Planning Commission of the Government of India has recognized that take-home distribution may be the only way to reach a significant proportion of malnourished preschool children that is not prohibitively expensive. A study on the feasibility of this approach is now under way in India, assisted by UNICEF and CARE as a joint project with AID, the Government of India and the Government of Madhya Pradesh, and is known as Project Poshak. Availability of sweetened instant CSM was the basic prerequisite for this project, which it is believed will have significant implications for future nutrition programs. It is interesting to note that a preliminary acceptability study on a small scale showed that presweetening of the distributed food was essential to acceptance, but that flavoring was relatively unimportant. The children, strangely enough, were less fussy about eating unsweetned CSM than were their mothers, but as it is the mother who decides what the young child will get to eat; her acceptance is essential.

What I have said so far has been almost entirely about how to get the food into the mouths of the recipients. My concerns are those of a typical housewife, only on a larger scale. Like a housewife I look for good ingredients which when well prepared and well accepted will ensure the health of my family. I am also a good housewife, I hope, in my concern for thrift. I do not like to spend a dollar if a dime will do the job. We all know the credo that it is cheaper to avert malnutrition than to cure it, but that is largely an academic proposition. There is no way that all the malnourished children in the developing world can be identified, examined, treated, and cured; we do not have enough doctors, nurses, hospitals, drugs, or money. It is difficult even to find enough money to achieve the prevention which is alleged to be cheaper than cure, so that the cost of feeding programs should also be subject to careful scrutiny. Any extravagance or inefficiency in feeding programs is a crime—a crime against all the non-fed children who could be reached if the available money were more effectively spent. The laboratories and factories and mills which are developing and producing low-cost high-nutrition soy-based foods are helping program planners to feed more children more economically, but there is still a grievous amount of waste along the route from the factory to the feeding point. If, as is sometimes the case, 25% of available food is siphoned off by loss, misappropriation, infestation, or spoilage before it reaches the intended recipient, and another 25% may be thrown away as plate waste because it is not palatable or acceptable, the beneficiaries have received only half what they were supposed to get. Or to put it another way, the per capita cost is twice as high as it should be. All feeding systems, public or private, domestic or institutional, must allow for some margin of error, but no good housewife would persistently throw away food or allow it to spoil, and a restaurant manager who could not keep his inventory under control and his food and labor costs in line would soon be out of a job.

Some of the problems of improving efficiency and cost effectiveness in feeding programs are purely operational at the local level, but I believe some things could be done to make the local operator's job a little easier. Palatability and ease of preparation can be built into the foods themselves; infestation and spoilage can be reduced by improved packaging. When shipping and internal transportation are slow, cargo loading and unloading is careless and warehouse facilities are poor, not only packaging but stability and shelf life of the product are extremely important.

Above all we should disabuse our minds of the idea that public money is in some way more elastic than money in the private sector, that a considerable amount of waste is in the nature of the game. The taxpayer and the philanthropist alike should have the assurance that their money, whether voluntarily or involuntarily contributed, is used as efficiently as if it were invested in private enterprise. More efficiently, in fact, because what is at stake is not just a dividend expressed in dollars and cents, but the health and welfare of a new generation of children.