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CAN TECHNOLOGY HELP WOMEN FEED THEIR FAMILIES?

Post Harvest Storage, Processing, and Cooking--Some Observations

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This paper sets forth issues related to technology which can help rural women in developing countries in their major task, feeding their families. Ideas have been developed with colleagues whose continued interest in this problem is acknowledged: Fred Weber, Hugh Roberts, Margot Higgins, Kenton Harris, Bob Bates, and Moussa Salleh.

Woman is the universal symbol of sustenance and nourishment. The symbol is based on reality. In the developing world especially, women have a great deal to do with food. Not only do women do the cooking, they plant the seeds, weed the fields, harvest the crops and carry them home. They are the ones who see to storage and preservation. Any processing that is done at home level is done by women. All of this is a great deal of work, especially for families who live at the subsistence level in rural areas throughout the world. A grain or starchy tuber is the staple item in the diet: corn, rice, millet, sorghum, wheat, potato, cassava, yam, taro, sweet potato. Depending on the place, one of these is the mainstay of life, to be supplemented in good times with vegetables and some animal protein, and in times of scarcity to be substituted for or simply done without.

The international perception of the problem of hunger and malnutrition has shifted since the beginning of the Second Development Decade from emphasis on lack of food in general, to lack of protein-- specifically in the "at risk" pregnant/lactating mothers and children under five--back to a lack of calories, usually expressed as an insufficiency of the staple food. If we were to have asked women, they would have told us that there was not enough food to eat, especially at certain times of the year (just before harvest when the stores run out) and under weather conditions which adversely affect the crops.

In efforts to assist in the "war on hunger," U. S. development assistance agencies, both government and private, have tried various strategies ranging from food aid to technical assistance in growing food, from assisting with capital infrastructure such as roads and dams to family planning. One of the strategies currently receiving attention is that of appropriate technology. Since women are responsible for feeding the family, and thus the nation, can technology help women with this important task?

The obvious answer is, it depends. It depends not so much on the "what" of technology but on the "how." The conscious change in terminology from "technology" to "appropriate technology" is, I believe, the signal of an awareness that the "how" is much more important than the "what." It has come about because of the failure of technology to deliver on its development promises, yet it seems that the change in thinking has not yet come the full distance. Appropriate technology is failing in its turn to the extent that it does not concentrate on the how of application.

Why have we gotten into such a bind? It is because we have excluded people in our definition of technology. We have concentrated on the hardware, sometimes to the total forgetting of the people for whose use

it is intended. If such is indeed the situation, we should not be surprised to find that the technology is not used. Even as this omission is redressed, a similar error is committed. People may be brought into the picture, but they are rarely women, the major potential users of technology related to food.

The answer to the question, "Can technology help women feed their families?" can be a positive one, given two conditions. Yes, if women perceive the technology to work for them, to deliver what they need and want. Yes, if women can pay the price, and be assured the benefit of their investment. In this regard, women of developing countries are no different from any other consumer.

Before taking a closer look at these two conditions, a note must be added. If development assistance professionals have learned anything in the last twenty years, it is that one intervention does not bring good results if other factors are ignored. Technology, even really appropriate technology, cannot be expected to result in improved quality of life, development, or even increased economic benefits if it is used as the sole intervention. Strategies for development will have greater chances of success if they provide for improved technology in a context of improving nutrition, health, education, productivity, and income. Also, we must give up the notion that there is a "quick fix" to development, a notion that is particularly attached to technology and science. Let us look at women in developing countries, most of whom live in rural, subsistence farming situations, to see how they might find technology of use to them.

Women are the most practical people in the world. They have to be, especially the women we are talking about here. There is evidence of a myth that women enjoy their role as cultivators, as carriers of water and

wood, as harvesters, preservers, preparers and servers of food. The "traditional woman" who spends long hours each day in the arduous work needed to nourish her family is well thought of. Yet if truth be told, women are human; they do not appreciate the hard work and long hours any more than men, even though social value attached to performance of these tasks is important to women. Indeed, women take the first opportunity to move into other occupations, usually small commerce, so as to escape to some degree these tasks. If they are able to earn money, they hire other women to hand pound or grind their staple food if mechanized milling is not available. They pay others to carry water and wood, to prepare meals, to care for children. Therefore, women are prime candidates for technology which helps them cut down on the work involved in the whole process of getting food to the family, or so it would seem.

What is the problem, then, with the technologies which are available, which, have been introduced in developing countries? Women have not perceived the technology to work for them, to deliver what they need and want. What good is a solar cooker to the woman who spends her time in the field from sunup to sundown? If her family doesn't like the taste of the food made as a result of applying a technology (which may range from improved seeds to various types of processing), how valuable is the technology to that woman? If improved storage has the effect of taking the staple out of the control of the woman responsible for delivering it to her family, can she be expected to embrace the improved technology? If the woman is not aware of the technology and what it can do for her as food provider because technologies have been, and continue to be, delivered to men, then how can she be expected to respond? And lastly, no one appreciates displacement, especially women who must support themselves and their children--

a significant group in developing countries. They are vulnerable to sudden loss of income-producing activities caused by improved technology. All women agree that hand pounding/grinding of staples is onerous, yet how will the woman who presently earns her keep by grinding the grain of others survive with the introduction of a mechanized mill? Technology introduced by those outside the community runs great risks of failure, since it is difficult to know and understand all the factors which condition women's perception that the technology will work for them.

Those closer to the community may also unwittingly find women "invisible" in their food-related tasks. This invisibility was marked in work on post harvest loss in Senegal and El Salvador and on rural development in Peru. In the former cases, it was extremely difficult to get accurate information about the procedures in post harvest handling, because the women, who did the tasks, were consistently ignored and the men simply did not know the answers so they "approximated" them. In the latter, although women could be observed working in the fields, the investigator was consistently told that women do not work in the fields. When a photo was produced showing both men and women in the field, with the women bent over working and the men standing upright, it was still almost impossible for women to respond with the realization that it was they who were working.

If women are not party to the development and application of both tools and methods--the hardware and software of technology--how can they be expected to think it useful to them? Developers should take a leaf from entrepreneurs. In effect, nothing has been done to match the product to the market, the specific technology to the intended user. Small wonder there is so little demand.

The other condition under which technology may be useful in helping women feed their families is if women can pay the price of that technology, and be assured the benefit of their investment. Problems with available technology can often be reduced to economics, to the fact that the technology is beyond the economic reach of those who need it. Often this most obvious factor is ignored by technology purveyors from developed countries who make an unwarranted assumption of the economic capacity of potential users, or fail altogether to take it into account.

Once an American scientist travelling in Egypt observed the laborious way in which people were lifting water from the Nile River, and had an inspiration. He thought of the principle of the drinking bird, the curio that, once set in motion, continues to bob its head up and down. Surely that simple principle could be applied inexpensively to save the fellahin from such a painful task. Some five years and one major study later, it was sadly concluded that the cost would be too high, and the project was abandoned. It might be said in praise of this effort that the project was abandoned before the lesson was learned the hard way.

The "appropriate" currently qualifying the word technology is often thought of as signifying low cost. It is time to come to the point of admitting, both intellectually and emotionally, that the cost of the currently proposed appropriate technology is not low enough to reach rural women in developing countries, who have even less access to resources than do men.

Women are not only practical, they are good managers. Again, they have to be. In the marginal circumstances of most developing people, the difference between life and death rests on the managerial talents of the women of the family. Women in Niger achieved increased status within

the family as a result of the drought. Men acknowledged that had the women not done so well in keeping goats which were sold to buy food grain, the family would have perished. (Food was scarce, but was available throughout the drought; lack of money to purchase it was the major problem.) Women can be observed to apply sophisticated scheduling and prioritizing techniques in their daily work which respond to a number of complex and changing conditions, especially in situations where resources are extremely limited. Women also devise time- and labor-saving techniques.

Daily attention is required for women to fulfill their responsibilities for feeding the family, in addition to child care and maintenance of the home. Providing food can be broken down to five major activities--farming, trading, getting water and wood, processing, and cooking. All these tasks are time- and energy-consuming and must be scheduled according to conditions affecting the optimum realization of results. Weather affecting the agricultural cycle is a major condition, and is often critical. For example, activities must be shifted suddenly to take advantage of the rains at planting season; women in the Sahel sharply curtail food processing and cooking during rainy season so they can spend more time in the fields. Water is more abundant then; thus women do not travel such long distances to get it. In Upper Volta it was reported that women stockpiled wood near their fields in advance of the rainy season so they could carry it home at the end of each day, saving the time and effort usually spent gathering it, often at considerable distances.

Women constantly operate on the basis of cost-benefit analyses. Men use these techniques as well, but women's success in seeing that the family fares well necessitates a high degree of skill in applying management techniques. In areas of Senegal where millet is the staple grain, but cash

crop peanuts can also be grown, a sensitive mechanism is evident in the allocation of labor and land between these crops. Investigators working on a methodology to assess post harvest grain loss were puzzled to find that although farmers realized that leaving millet in the field beyond the time required to dry it resulted in losses to birds, rodents and insects which could be prevented, they nevertheless persisted in this practice. Later it was found that evidently the farmers made the choice of delaying millet harvesting in order to harvest the peanut crop.

Moreover, women are sophisticated decision-makers when it comes to the question of their benefit. Women are even more disadvantaged than men in their access to money and the means to acquire it. Therefore, they make harder decisions about the investment of their resources. It has been suggested that women's consistent lack of interest in reforestation activities in Niger (and the Sahel in general) is not so much due to the traditional male-female division of labor as to the fact that women do not find it worthwhile to invest time and labor in the planting of trees which they most likely will not be able to utilize, given the system of land use.

Women's benefit from investment is a matter of women's judgment, not that of others. Although many women in a group of women extension agents in Cameroun found some aspects of polygamy undesirable, they would choose it on the basis of sharing work among wives. When it came to the holding of goods in common, the percentage of those in favor dropped sharply. Researchers commented that women in Upper Volta were engaged in income-generating activities, yet seemed to spend most of their money on festivities rather than on more "serious" investment. Upon closer inspection it was found that the festivities were important

social events which gave women status and carried economic considerations, that society's means of insurance of help in the future. In Cameroun , joining a credit union was seen by women to be a drawback, because their husbands could lay claim to a "loan" from the wife simply by asking to be shown the passbook. Some women in Senegal where a change in millet grinding from hand to machine methods is being considered raise the question of title to "waste products." It has been traditional for the women to reclaim the approximately 10% of waste and use it for various things from chicken feed to human food to scouring material. With the mechanization of milling, women will lose these materials, or so they fear.

These illustrations, which are taken from real cases, most of them in the Sahel, indicate that as currently practiced, the provision of technology from richer to poorer societies must be radically changed if there is to be any hope of success. There must be an equality between technologist and user, a joint undertaking to identify and develop methods and machines which meet the needs of users, especially women in their important task of feeding families. More of an effort must be made to begin with the technology currently in use, to operate within the context of the resources available to the user community, and to rely more heavily on the methodology, or the software, of technology.

Many appropriate technologies are in use to aid women in their task of feeding the family, or have been used in the memory of rural women. These must be consciously recovered, examined by a group made up of technologists, village women, and those who act as the bridge between. Above all, a change in attitude on the part of the technology purveyor is required. Our experience signals a need for more humility and respect for women in their role as feeders of the family than we have shown to date.