

“Ensuring Food Security Through Preserving Quality Staple Crops”

A Study on Bangladesh

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Abstract:

In the context of Bangladesh, agriculture is the foundation of economic growth and employment creation. As a developing country Bangladesh is currently facing nutrition security & food safety problems for the shortage of properly preserving the sufficient quality staple crops than to be continuing, but we cannot ensure the agricultural development besides the rural development. In the recent Phenomena we see that we cannot ensure food security in a proper way for the insufficient quality staple crops. But we know that food security is achieved when all people at all times have physical & economic access to sufficient safe & nutritious food to meet their to meet their dietary need. So far this reason in this paper we trips to build that we may ensure food security by the help of preserving the quality staple crops in a proper way. Food security is not just the physical availability of any single commodity but also in terms of affordability in adequate quantities & in terms of quality. At the micro level to ensure adequate quantities we need to describe here that to ensuring the qualityful crops preservation delivers the desired level to food safety & quality. And as a result the inadequate crops preservation that results in the insufficient development. Here we emphasis the preservation of the crops in a proper way which may ensure the best quality staple crops supplied in the society at every stages when may brings the good health of the people. But we should remember that the preservation of crops is not only a supply issue it also ensure the expectation level in a proper time, for this reason the govt. should take necessary initiative, required to establish a strong & functional preservation system in order to keep our staple crops safe.

Key Words:

Food security, preservation, nutrition, qualitiful staple crops, expectation level, proper supply, Govt. intervention.

Introduction

Bangladesh has an agrarian economy in which 46% of the country's GDP comes from its agriculture. This provides employment to 65% of the workers. Rice, wheat, potato, here the main crops and other crops are tea, Sugarcane, oilseeds, fruits, Vegetables. The agricultural sector has been showing steady growth during the past few years. Ensuring food security for all is one of the major challenges that Bangladesh faced today. For that we may ensure the stage of production to consumption sector in a proper way. Here the post production that the harvesting of crops is a very important issue. Crops can be classified into various categories based on their degree of perishability. Improvement and development of new technologies through organized efforts has become obligatory to prevent post harvest with a view to meeting the demand for food. In view of the serious nutritional deficiencies in the diet of the people. Production has led to great post-harvest losses due to inadequate capacity of farm level storage facilities, lack of modern drying methods and inefficient grain handling practices. Harvests of fruits, vegetables, are done in specific seasons, while their supply becomes limited in the off season. The situation is further aggravated by huge post-harvest losses both in quantity and quality due to improper handling, Storage and marketing. There is an urgent need to increase shelf life to extend the period of availability.

Food Security Status:

Food security situation in Bangladesh has improved, especially on average from 1800 Kcal to 3055 kcal and further improvements on access and utilization. Records say in 70% people were under the food consumption poverty line, today this is down and 35% of the population under food consumption poverty line.

It has been evident that increased domestic production, supplemented by imports and overall public food management contributed to relatively adequate availability of food at national level over the recent past years. However as has

been mentioned, the fundamental spirit of food security is to ensure availability and consumption of food at individual level. Even when aggregate food supplies are adequate, a number of factors may prevent households or individuals from acquiring enough food. The overall productivity of the poor producers may be low or their income level may be insufficient to enable them to purchase the necessary foods from the market at the ruling prices. Households may also lack the necessary assets or access to credit to overcome the period of hardship. They may also remain outside the food assistance programs that would provide them with cash or kind income to supplement their food acquisition capacity.

Measuring food security insecurity:

In order to understand better the nature and extent of the food security situation and the possible ways to improve it, it is important to distinguish between food security at the national, local, household level. The ultimate goal is to meet the food requirements of the people at all levels. Food security at the national level is determined by the availability of enough resources for the whole population. The most widely used indicators are quantities of available food compared with needs, as well as import requirements compared with the country's capacity to import. At the sub-regional levels, food security can be measured by comparing regional requirements with availability of dietary calories per head. At the household level food security is dependent on a household's access to enough food. Thus it is access, sufficiency, sustainability. At the household level food security is measured by actual dietary intake of all household members using household income and expenditure. It is important that changes in socio-economic and demographic variables be monitored continuously over time.

A food security indicator shows the number of individuals living in a household whose access to food is sufficient to provide a dietary intake adequate for growth, activity and good health of the individual which implies an intake of food and absorption of nutrients sufficient to meet an individual's needs for activity,

health, growth and development. The individuals age gender, body size health status and level of physical activity determine the level of need.

Road to food security:

To broadly define food security which is ensuring all people at all times physical, social and economic access to sufficient, safer and nutritious food in order to meet their dietary needs for an active, health and productive life. Essential elements of food security are availability of adequate food at the national level along with the access to required food at household and individual levels. Availability at the national level are functions of market operation, infrastructure, seasonal variation in domestic food production and efficiency of the market and the public food distribution system. While, availability of food at the household level depends on the households capacity to produce or acquire food and its availability to local market thus it may lose to ensuring the security of food which we demand for our proper dietary chart.

The food chain production to consumption linkages:

Food is a necessary of life and all creatures must eat to live. Food acquisition is therefore a major preoccupation of all. Humans are virtually in the practice of agriculture. Cultivation of the soil and domestic of plants and animals are widely recognized as major developments in the progress of human societies that have diversified their food strategies, today however many individuals and many human societies suffer from lack of food Hundreds of Millions experience retarded growth and reduction in their physical and mental abilities because of faulty or inadequate nutrition. Why should this be so? Is global food production inadequate to meet the needs of the world population?

Clearly this is not the case. If the words grain production that is available for human consumption were converted into energy and protein, the total would be significantly greater than the amount of these needed for human survival food

insecurity or lack of access to a nutritionally adequate diet in a household or community can take various forms. Low income groups, such as the urban poor, rural landless and smallholder farmers are the most of the food insecurity. Such groups often lack sufficient income and cannot produce enough food for adequate nutrition. Food insecurity occurs when there is a temporary decline in access to adequate food because of instability in food production, food prices or incomes and the shortage of the proper preservation.

Even though total food supply may be secure in a country or a region, households or individuals may not have access to adequate food. In other words, sufficient at the national level does not necessarily access at the household level. Household food security, however is only possible in a situation that ensures adequate national or local food supplies.

The Food Basket:

Consumption of staple crops or animal protein alone cannot ensure a balanced diet. The food basket of an individual should strike a balance and essentially need to be comprised of rice, wheat, vegetables, fish, meat, fruits, oil, sugar, spice, salt, eggs and safe water. Requires a concerted effort down from production, availability, distribution, enhancing purchase power and subsequent utilization of food by the households. It is to be noted here that some B.D. with its highly skilled professionals and experienced agriculture labor source may embark on such venture as a steps towards ensuring food security.

Production versus post-harvest losses of various crops in B.D.

Annual total production of different crops in B.D (2006-2010)

Table- 1

Year	milled rice	wheat	pulses	Sugarcane	oilseeds	Fruits	vegetable	roots and tubers
2006	16.86	0.89	0.53	0.75	0.45	1.43	2.67	1.90
2007	17.69	1.37	0.52	0.72	0.47	1.45	2.72	1.93
2008	18.89	1.45	0.53	0.75	0.48	1.45	2.76	1.91
2009	18.86	1.80	0.52	0.74	0.48	1.46	2.82	1.95
2010	19.98	1.91	0.42	0.70	0.70	1.42	4.96	3.15

Source- B.B.S

Post harvest loosed of different food crops in B.D. (2006-2010)

Table- 2

Food crops	Total production	Demand	Defied surplus	post harvest loss in %	Loss million Taka	U.S\$
Milled rice	19.91	24.77	- 4.86	13.52	2.69	514.07
Wheat	1.91			9	0.17	26.58
Pulses	0.42	1.48	- 1.06	21.5	0.09	32.84
Sugarcane	0.70			20	0.14	2.73
Oilseeds	0.70			7.5	0.05	21.72
Fruits	1.42	0.87	0.55	16	0.23	27.97
Vegetables	4.26	7.45	3.19	26	0.23	96.21
Roots	3.15	2.25	0.9	21	0.66	57.33
Total National				5.14	44865	779.45

Table 1 shows the annual total production of major crops for 5 years. Table 2 indicates that total production of rice and wheat urea 21-8 for the year

but demand for consumption was about 25.20. It also shows that post harvest losses for rice and wheat was 2.86. Hence deficiency of cereals could easily be reduced target extent by minimization of post harvest losses by adopting appropriate processing and preservation technologies.

Fruits and vegetables are the main sources of vitamins and minerals. However due to their unavailability, deficiency diseases are found. In the following table is shows that the post harvest loss of fruits is 16% and in the same year, total production of different kinds of vegetables was 4.26. The post harvest losses of vegetables is 26%. Therefore it may important to reduce the past harvest losses of the above mentioned crops.

Types and Causes of Losses:

The total average loss in post harvest rice operation from harvesting from 1.63 to 2.84%. The parboiling loss was 1.93 to 2.75. The lightest loss occurred during milling operation varying between 3.28 percent and 4.54% (FAO/BIRRI). Post harvested losses of rice, wheat and others of major crops at farm level have been estimated to be in the range to 8-10%. It is only in recent years that post harvest losses of agricultural products mainly food items gained the attention of policy makers. Based on the report crop loss and waste assessment. During the peak season for example a huge number of crops, fruits and vegetables may lost due to inadequate processing facilities and he shortage of preservation system in Bangladesh

Bangladesh has been suffering from food loosed for a long time due to various reasons such as-

- ⇒ Inadequate post harvest activities.
- ⇒ Inefficient marketing system.
- ⇒ Absence of adequate govt. support.

Absence of adequate processing and preservation facilities all over the country particularly for crops, fruits and vegetables absence of grading especially for crops, and vegetables.

Post harvest losses also vary from season to season at different handling points. Because of the highly perishable nature of the crops and vegetables post harvest losses are incurred during handling and distribution from production areas to consumption centers. A comparison of losses at different handling points that at the wholesale level, losses are higher than thus at the retail level packing losses are attributed mainly to the type of containers and manner in which food items are packed. Because of the limited capital, rural farmers usually buy the cheapest containers in their area. The common types of containers consist of bamboo baskets and plastic pots usually without any grading which causes increased losses.

Marketing Channel from Farmers to consumers:

There are about 680000 villages in B.D. These villagers are served by Primary Markets which may be the principal center of exchange in rural areas. Next are the secondary markets which supply goods moving from the primary markets. The secondary markets also supply grains, fruits and vegetables to urban consumption centers. The final group is the terminate markets, which serve the major urban population centers of the country. They collect and assemble grains usually from the secondary markets and re-distribute these supplies to consumption areas particularly in urban regions.

Consumption of food status and socioeconomic condition:

Bangladesh is a rural agrarian country in the humid tropics of Asia. Agriculture plays an important role in the growth and stability of the country. Producing nearly one fourth to the economy's output and providing livelihoods to more than two thirds of the population. The consumption of food largely depends on the staple crops like rice, wheat, potato and other crops. Thus the food production is the most important part of the agricultural production system of Bangladesh. While it may ensure a proper supply of food in all time and all seasons. We know

that mere supply and consumption of food cannot ensure a healthy and productive nation. Food quality and safety are an important concern. We know that our socio-economic condition is not so strong to support a regular consumption level which we need. Besides here many lands are not able to cultivate in all season. As a result to provide the proper supply of food & ensuring our consumption status is a long period we need a strong preservation system for our staple crops which may ensure our consumption and supply of foods. Without a proper preservation it may quite impossible to face a long term sufficient consumption which we demand.

What is food preservation:

The dictionary meaning to the word 'preserve' is to keep safe, retain quality, prevent decomposition or fermentation. When we apply this meaning to food preservation it can be defined as-

A process by which certain foods like fruits vegetables crops are prevented from getting spoilt for a long period time. The color, taste and nutritive value of the food is also preserved.

Let us understand this definition in a little more detail. The definition says preventing foods from getting spoilt when we keep foods in the refrigerator or in a cool place, will this be called food preservation? No, because we may preserve it for a short time.

The definition of food preservation states that the preserved food should retain their color, taste and nutritive value. This means that the color and taste of food which is present at the time of preservation should not change.

Why do we need to preserve foods?

There are many several important issues that why we need to preserve foods. To provide a kind of food or fruits even vegetables in all seasons in a proper

quantity it is important to preserve foods. It means that for preserving foods is to take care of take excess produce. The another important reason for preserving foods is that they add variety to our meals. Reaches areas where the food item is not growth. Then it may help to supply of foods where needed. And it also makes transportation and storage of foods easier preservation of foods usually reduces bulk. This makes their transportation and storage easier since it requires less space.

The system of food preservation in our country:

Food preservation usually involves preventing the growth of growth of bacteria, fungi (such as yeast) or any other micro-organisms as well as retarding the oxidation of fats that cause rancidity. Food preservation can also include rancidity. Food preservation can also include processes that inhibit visual deterioration, such as the reaction in appear after they are cut, which can occur during food preparation. The main issue of food preservation is to provide the foods or crops which we may preserve a long self life that may carryon a proper consumption and which may fulfill our nutrition level. Many process designed to preserve food will involve a number of food preservation methods.

Maintaining or creating nutritional value, texture and flavor is an important aspect of food preservation. Although, historically, some methods drastically altered the character of the food being preserved.

Contents

1. Traditional Techniques.
 - (a). drying
 - (b). Refrigeration
 - (c). Freezing
 - (d). Salt
 - (e). Sugar
 - (f). Smoking
 - (g). packing
 - (h). Lye
 - (i). Canning and Bottling
 - (j). Jellying
 - (k). Jugging
 - (l). Subterranean Burial
2. Curing:
 - (a). Fermentation
3. Industrial/Modern Techniques:
 - (a). Pasteurization.
 - (b). Vacuum Packing
 - (c). Irradiation
 - (d). Modified atmosphere.
 - (e). Non thermal Plasma.
 - (f). Hurdle Technology.

The earliest methods of food preservation are still used today yet the variety of effective methods and technology has greatly expanded. Freezing, during are still among the most popular in food preservation other methods began to introduced. Pickling was amongst the most popular in this time which is a process consisting of using acids, such as vinegar to oxidize bacteria in in a food to acetic acid which will not cause illness when consumed. Canning and preserving foods with sugar or honey as well as used regularly in these time periods corning became popular in the early period. In this time period, technology has developed greatly scientific methods are continuously gaining popularity. All of those are followed when are may preserve the food But we may not sufficient still now for preserving our crops as a result we cannot provide a proper diet to the consumers.

Why we are lack behind the sufficient food preservation:

We know that the industry, regulators and consumers would favor a risk free food supply, but zero risk is neither practical nor achievable.

The twenty-first century promises technologic improvements in food production variety, handing and delivery on a global basis. Tracing the food industry to its roots helps bring the debate on the consumer biology and nature. The Twentieth Century lifestyle of town and city dowelling has led to a lack of consumer awareness about nature, approach to food. The idea that industrially processed foods are not nature, or they mechanism. In fact the food processing industry doesn't "manufacture" foods such as.

What it does is develop and use an ever increasing array of technologies to transforms and preserve natural raw materials in the form of food ingredients or finished products, packaged and ready for use. Especially in view of the inevitable increase in industrial activity in the coming decades, keeping nature in focus is important for at least two reasons the desire at the level of the consumer for more natural products and the needs to see the food industry as an integral part of a subsumable world.

Recommendations:

There is still an essential needed to develop new technologies and best practices to enrich our food preservation system. Thus we may need to give attention to the following recommendations which may bring a good results all of us-

Training and Education:

It is very important to provide the sufficient training and education to fill the knowledge gap and contribute to the validity of safe and nutritious foods at the global level.

⇒ **Food Safety regulation:**

Food safety regulation should be based on risk analysis risk assessment should be based on sound science. Food safety is an shared responsibility the national and should responsibility the national and international food regulatory framework should acknowledge the prime responsibility of the whole food chain for the producer to consumer.

⇒ **Risk Communication:**

In order to benefit from the new technologies of the information era, risk communication is an important responsibility that should be shared by stake holders clear and effective strategies need to be developed involving all stake holders. Risk communication is a constant need and should take place at all stages of the risk analysis. Process, even before a decision is taken.

⇒ **Labeling:**

Information about the use of new food technologies is essential to ensure consumer confidence and acceptance labeling is only one information tools and its role should not be overestimate.

⇒ **Capital investment and financing:**

Capital investment of some middlemen like exporters, truckers and cold storage owners is high because of high cost of building, vehicles, equipment and machinery and other related cost. A much higher capital investment is expected in the operation of cold storage facilities.

⇒ **Consumers behavior:**

It is that the higher the educational attainment of the consumer the lesser will be the food losses or vice-versa.

⇒ **Role of the mass media:**

The mass media as a strategy to minimize losses at the consumer level. Advertisements and promotion programs may help to increase the awareness of the system of preservation.

Conclusion:

In Bangladesh the staple crops like rice, wheat, potato plays a very contributing role in the agriculture economy. So food production is the most important part of the agricultural production system of Bangladesh and basically it regulates the food security. To meet the increasing food demand of the population, agricultural production need to be increased at a much faster rate- Just not to produce a huge amount not the sufficient level to achieve the expected nutrition level to provide a proper consumption and nutrition level we need to preserve our foods properly. And for doing that the Govt. should come forward to ensure a proper and sufficient preservation system.

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