## CHAPTER VI

## PROBLEMS OF GRADING, STORING AND PREPARATION OF VEGETABLES, SWEET POTATOES AND MAIZE FOR THE MARKET

All vegetables (both leafy and non-leafy) sweet potatoes and maize have to be prepared for marketing. This preparation includes (i) harvesting, (ii) processing, and (iii) packing. Grading, an important marketing service is performed only for maize and not at all for sweet potatoes and vegetables.

### Harvesting

Harvesting is undertaken by the farmers in Block S2 as soon as the vegetables, sweet potatoes and maize reach edible maturity. However, there is an exception to this normal practice. A certain amount of chilies are harvested while they are still green and unripe. This is done to satisfy that segment of the consumer market that demands green chilies. The following table shows the length of time each of the aforementioned crops take to reach edible maturity.

TABLE 3

LENGTH OF TIME FOR VEGETABLES, SWEET POTATOES AND MAIZE TO REACH EDIBLE MATURITY

| Nature of Produce | Length of Time in Months |
|---|---|
| Chilies . . . . . | 3 |
| Long Beans . . . . . | 2 |
| Ladies Fingers . . . . . | 2 |
| Spinach Mustard . . . . . | 2 |
| Pumpkins . . . . . | 2.5 |
| Maize . . . . . | 2.5 |
| Sweet Potatoes | |
| (i) White Variety . . . . . | 3.25 |
| (ii) Red Variety . . . . . | 2 |

Source: Compiled from Information Obtained from Farmers.

Mechanisation has not yet paved its way into the field of vegetable, sweet potato and maize harvesting. Harvesting of these crops, a labour-intensive operation is largely performed by hand labour made available to the farmer either through hired workers or members of his family.

Processing

Normally chillies, ladies fingers, long beans and maize which grow on plants above the ground are not processed at all unless they are, through one way or another, splattered with mud or dirt which them requires them to be washed with water. However, for such crops as pumpkins, sweet potatoes and spinach mustard which do not grow high above the ground, processing becomes an essential marketing service.

The leaves of spinach mustard (and almost all other leafy vegetables) are washed with water to remove dirt, mud stains and soil which might be left after harvesting. In cases where the leaves contain residue of insecticides, washing becomes essential. Furthermore, the leaves are trimmed somewhat in preparation for the market. The dirty, decayed, diseased and yellowed or discoloured leaves are removed before packing. Most of these activities are done in the field while harvesting. The amount of leaves discarded due to discolouration, decay or disease is estimated to be in the vicinity of 10 katis the the pikul.

As far as sweet potatoes are concerned, some farmers do process them while others do not. Processing of sweet potatoes takes the form of washing the mud or soil off them. However, if the sweet potatoes are only thinly covered with mud washing is sometimes dispensed with.

To facilitate loading, unloading and transporting such varieties of vegetables as spinach mustard and long beans are tied into convenient size bunches weighing 40 to 50 katis while those varieties such as chilies, ladies fingers and pumpkins are packed into bamboo baskets of 80 to 100 katis capacity. Maize and sweet potatoes, too, are packed in bamboo baskets.

Packing

All the vegetables, sweet potatoes and maize are packed before they are transported to centers of consumption. Vegetables, sweet potatoes and maize for sale to hucksters and truckers are packed in the fields by the farmer sometimes with the assistance of the trucker or huckster who is buying the produce. No containers, crates or boxes are being used for packing long beans and spinach mustard. Tied into convenient size bunches of 40 to 50 katis each with ordinary tying material, they are hauled into lorries for transport.

Bamboo baskets are being made use of for packing pumpkins,

chilies, ladies fingers and sweet potatoes. These bambo baskets which are hand-made are not standardised at all. They come in all sizes and shapes from midget size ones of 30 to 40 katis capacity to king size ones which can easily accommodate 80 to 100 katis of farm produce.

Maize are packed in sacks of 400 pieces each for grade one and 600 pieces each for grade two. Hucksters and truckers make use of their own baskets and sacks for packing the produce they buy.

Farmers make use of their own baskets and sacks for packing the vegetables, sweet potatoes and maize which they carry on their bicycles to the collector's shop for sale. These produce are then repacked into the collector's own baskets and sacks for distribution to his various clients.

Problems Arising

Manual harvesting gives rise to two problems of marketing to the farmer namely (i) quality deterioration and (ii) mechanical injuries to produce. Both of these problems increase the chances of lower returns to the farmer.

A crop that is ready for harvesting will not wait. The quality of the produce is dependent on harvesting at the proper stage of maturity. Quality deterioration occurs under two circumstances.

1) Harvesting the crop before maturity. This usually occurs when the farmer, members of his family or his hired workers accidentally mistook an unmatured fruit or leave for a matured one.

2) Harvesting the crop after maturity. This occurs under two circumstances. Firstly, matured fruits or leaves which are unintentionally left unplucked by the farmer, members of his family or his hired workers leaving them to be plucked at some future time when they are already over-matured or over-ripe.

Secondly, harvesting after maturity is brought about by the slow and time-consuming method of plucking the fruits or leaves by hand which compels the harvesting period to be prolonged and subjecting the produce to over-maturity or over-ripeness. For example one acre of chili-plot is estimated to produce 500 katis of chilies of edible maturity per day. One man working full-time is able to pluck only about 80 katis of chilies per day. A farmer with the assistance of his wife, daughter and son is able to harvest only 320 katis of chilies per day (4 persons x 80 katis) leaving the unplucked 180 katis to over-mature or over-ripe themselves.

The crucial marketing problem faced by the farmer in connection with quality deterioration and mechanical injuries to

produce is that of wastage. Quality deterioration is one of the causes of wastage of vegetables and maize. Vegetables or maize whose quality has been lowered will not sell on a competitive market. They are either sold at half-price to collectors, hucksters or truckers or consumed by the farmer himself. This results in lower returns to the farmer for his efforts.

Quality deterioration is, however, not the sole function of harvesting but is also a function of storing. (This issue will be discussed under storing).

Mechanical injuries to produce, another factor contributing to wastage of produce, is brought about by rough and careless handling during harvesting, processing and packing. Carelessness in harvesting sometimes results in the breaking of long beans into two pieces, the tearing of spinach mustard leaves or the slicing of sweet potatoes by the changkul etc. Mechanically injured produce will not sell on a competitive market and sales can only be made at a quarter or half of the price prevailing in the market. Much loss is incurred by the farmer as a result of bruise or damage to produce due to carelessness in harvesting. It is an established fact that sales in vegetables depends just as much on their appearance as on their quality. Both factors are equally important in vegetable marketing.

Like harvesting, the service of processing, too, results in wastage of produce due to bruise or damage brought about by rough handling. This is particularly true in the case of vegetables especially spinach mustard where their delicate and perishable nature necessitates the greatest care in handling. (Even finger-nails can damage the leaves). Rough handling results in mechanical injuries to the leaves which then become unacceptable for sale in the competitive market. This poses quite a problem to most farmers in Block 8E where mechanically injured leaves resulting from the service of processing can be as high as 3 katis to the pikul as shown in Table 4. This puts the farmer in a dilemma; rough handling speeds up the processing activity but results in vegetable wastage while meticulous handling slows down processing and exposes the vegetables to other dangers of heat and cold which speed up their perishability. In both ways vegetable wastage is unavoidable.

The service of packing, too, involves a certain amount of wastage to produce especially to long beans and spinach mustard. This occurs while tying the produce in convenient size bunches. It usually happens that carelessness in tying them results in breakages of the outer vegetables into two or more pieces.

The following table gives an estimated amount of wastage of produce and loss of income to the farmer due to quality deterioration and mechanical injuries to his produce brought about by the activities of harvesting, processing and packing.

TABLE 4

ESTIMATED WASTAGE OF VEGETABLES, SWEET POTATOES AND MAIZE AND LOSS OF INCOME TO THE FARMER DUE TO QUALITY DETERIORATION AND MECHANICAL INJURIES TO PRODUCE

| Type of Crop | Quantity in Kutia | Amount of Wastage in Kutia Due to Quality Deterioration (Harvesting) | Amount of Wastage in Kutia Due to Mechanical Injuries | | | Total Wastage (in Kutia) | Half Price of Produce (£) | Loss of Income if Sold at Half Price (£) |
|---|---|---|---|---|---|---|---|---|
| | | | Harvesting | Processing | Packing | | | |
| Spinach Mustard | 100 | 15 | 5 | 3 | 2 | 25 | 0.10 | 2.50 |
| Long Bean | 100 | 20 | 3 | - | 3 | 26 | 0.06 | 1.56 |
| Ladies Fingers | 100 | 15 | 3 | - | - | 18 | 0.09 | 1.62 |
| Chillies | 100 | 20 | 5 | - | - | 25 | 0.32 | 8.00 |
| Pumpkins | 100 | - | - | - | - | - | 0.04 | - |
| Maize | 100 Pcs. | 20 Pieces | - | - | - | 20 Pcs. | 0.02 | 0.40 |
| Sweet Potatoes | | | | | | | | |
| (i) White Variety | 100 | - | 6 | - | - | 6 | 0.025 | 0.15 |
| (ii) Red Variety | 100 | - | 6 | - | - | 6 | 0.02 | 0.12 |

Source: Compiled from Information Obtained from Farmers.

Grading

With the complexities of modern trade grading for both agricultural and manufactured products becomes an indispensible marketing service. Grades furnish the basis for pricing in the trade. This is true for all levels of marketing from the large auction markets to the retail store. Grades help to facilitate the marketing process. The price of any specific kind or lot of produce is determined by grade. Usually a well-graded product of inferior quality will sell more readily than an ungraded product of high quality. Yet this important aspect of marketing is missing in the array of marketing services in the marketing of vegetables and sweet potatoes in Block 32. Except for maize which is divided into 2 grades on the basis of size - Grade One for those measuring 8 to 9 inches in length and 2½ inches in diameter and Grade Two for those measuring 6 to 7 inches in length and 1¾ inches in diameter - all varieties of vegetables and sweet potatoes are not graded at all.

The fact that no grading exists at all for vegetables and sweet potatoes is itself a problem to the farmer in Block 32. The absence of grading acts to the disadvantage of the farmer in two ways.

1) It provides no financial incentive for the farmer to improve the quality of his products since all qualities of vegetables and sweet potatoes fetch a single price.

2) Tackling the different segments of the market is rendered impossible without grading. The absence of grading implies that the consumer market for vegetables and sweet potatoes is homogeneous in nature which in reality is not so. The consumer market for farm produce may be broadly classified into 3 broad segments viz. (i) The Upper Class, (ii) The Middle Class, and (iii) The Lower Class with each segment of the market possessing its own distinctive features in respect of income level, occupation, place of residence and patterns of consumption. Generally, members of the Upper Class demand farm produce of the highest grade, the Middle Class of a slightly lower grade and the Lower Class of the lowest grade. The absence of grading renders impossible for the farmer to tackle these three different segments of the market. With only a single price prevailing in the market, the product is out of reach to most of the members in the Lower Class. By adopting a system of grading and assigning different prices to different grades, the consumer market can be broadened up by bringing in more buyers from the Lower Class who previously could not afford to buy the product. In this way, the farmer is able to

reap higher returns for his product as can be seen from the following hypothetical illustration.

Under the no-grading single price system, the farmer finds that he can sell only 100 katis of spinach mustard a day at 0.20 cents per kati yielding him a total income of $20.00. But under the grading system where spinach mustard comes into the market in 3 different grades with 3 different prices the farmer finds that he is able to sell 30 katis of Grade A at 0.30 cents per kati, 70 katis of GradeB at 0.25 cents per kati and 100 katis of Grade C at 0.15 cents per kati yielding him a total income of $41.50 which $21.50 over and above his sales proceeds under the single-price system.

The system of no-grading is problematic to the farmer in that it deprives him of his opportunity to earn larger returns for his products firstly by not providing him with any incentive for quality improvement and secondly by making it impossible for him to tackle the different segments of the market.

Storing

The function of storage in marketing is two fold. Firstly it provides protection to farm produce against pests and mechanical injuries and secondly it is a device for regulating supply to demand so as to avoid violent fluctuations in price.

The farmers in Block S2 do not store their produce at all. It is not because that they do not have a need for storage but it is more due to the fact that the facilities are lacking. Storage facilities are badly needed by the farmers in Block S2 not so much for protective purposes but more for regulating supply to demand conditions to foil violent price fluctuations.

Unavailability of up-to-date storage facilities is a crucial marketing problem faced by almost all the farmers in Block S2. Vegetables, maize and sweet potatoes are perishable commodities which are unable to withstand extremes of heat and cold. Deterioration of quality, freshness and appearance - important factors in determining sales - takes place every minute during the exposure of these products to the elements. The degree of deterioration, of course, varies between one type of crop or variety of vegetable and another being much greater in such vegetables as spinach mustard and long beans, fairly greater in chilies and ladies fingers and less greater in such crops as pumpkins, maize and sweet potatoes as can be seen in the following table.

TABLE 5

APPROXIMATE LIFE SPAN OF VEGETABLES, SWEET POTATOES AND MAIZE

| Type of Produce | Life Span of Leaves or Fruits in Days |
|---|---|
| Long Beans | 1 |
| Spinach Mustard | 1 |
| Ladies Fingers | 2 |
| Chilies | 3 |
| Pumpkins | 5 |
| Maize | 5 |
| Sweet Potatoes | 7 |

Source: Compiled from Information Obtained from Farmers.

Unavailability of modern storage facilities where the produce can be preserved in good quality for several days by keeping them cool and moist acts to the detriment of the farmer in two ways.

1) He is unable to store his surplus vegetables, maize or sweet potatoes in times of abundance to be disposed of at a later date when the products become scarce. As a result in peak periods where the supply greatly exceeds the demand, for fear of quality and appearance deterioration to the products if they are not disposed of promptly, the farmer is compelled to sell his products to the truckers, hucksters or local produce collectors the very day they are harvested. This anxiety of the farmer to dispose of his products as immediately as possible coupled with the excess, of supply over demand fortifies the middleman's bargaining position and thus enables him to make purchases from the farmer at low prices.

2) Sometimes it is rather an impossible task for the farmer to dispose of all of his vegetables, maize and sweet potatoes the very day they are harvested especially during peak periods. This may be due either to late harvesting or to the

inability of the farmer to find willing buyers for the day. In either case the farmer incurs substantial losses when he disposes of his products which have deteriorated in quality, freshness and appearance at half or a quarter of the prevailing price to the intermediaries the next day. This would not have happened had the farmers possessed (individually or collectively) up-to-date storage facilities where the produce can be ice-capped so as to keep them moist and cool (not freezing) all the time in order that they may hold their quality for several days.

The following table shows losses incurred by the farmer as a result of delays in marketing their vegetables.

TABLE 6

LOSSES INCURRED BY FARMERS DUE TO DELAY IN MARKETING THEIR VEGETABLES

| Variety of Vegetable | Immediate Marketing | | One Day Delay in Marketing | | Two Days Delay in Marketing | |
|---|---|---|---|---|---|---|
| | Producer Price Per Kati ($) | Income Per Pikul ($) | Producer Price Per Kati ($) | Loss in Income Per Pikul ($) | Producer Price Per Kati ($) | Loss in Income Per Pikul ($) |
| Chillies | 0.65 | 85.00 | 0.50 | 15.00 | 0.40 | 25.00 |
| Long Beans | 0.12 | 12.00 | 0.08 | 4.00 | 0.03 | 9.00 |
| Ladies Fingers | 0.18 | 18.00 | 0.09 | 9.00 | 0.04 | 14.00 |
| Spinach Mustard | 0.20 | 20.00 | 0.10 | 10.00 | 0.05 | 15.00 |
| Pumpkins | 0.08 | 8.00 | 0.08 | - | 0.08 | - |

Source: Compiled from Information Obtained from Farmers.