
The Economics of Fruit and Vegetable Marketing by Smallholder Farmers in Murehwa and Mutoko Districts in Zimbabwe

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Abstract: *The study assessed the nature of marketing chain of fruits and vegetables in Murehwa and Mutoko Districts in Mashonaland East Province in Zimbabwe. Both quantitative and qualitative data collection techniques were used. Qualitative data were collected through in-depth interviews, focus group discussions, direct observations and document reviews. A structured household questionnaire was used as the basic tool to collect socio-economic and production data pertaining to fruit and vegetable smallholder producers. The study revealed that poor infrastructure for storage, processing and marketing of fruits and vegetables contributed to losses to the farmers. Smallholder farmers generally focused on production activities and showed relatively little interest in postharvest and marketing activities. The major markets included traditional wet markets such as Mbare and Machipisa Vegetable Markets in Harare and spot selling. The presence of informal middlemen at Mbare and Machipisa Vegetable Markets had led to considerable reduction of the farmers' profit margins. The study recommended strong partnerships through commodity clusters among farmers in order to be able to supply organised markets such as food processors, institutions (hospitals, tertiary colleges and boarding schools), supermarkets and fast food shops with produce of standardised quality, meet volume requirements and assure consistency of supplies and to enhance efficiency in marketing. Buyer-supplier partnerships such as contract farming sponsored by agro-food processors also facilitated fruit and vegetable marketing while providing farmers access to skills, technologies and infrastructure. Further research should focus on value addition of fruits and vegetables produced by smallholder farmers.*

Keywords: *supply chain; smallholder farmers; vegetables; fruits; commodity clusters; market access; infrastructure*

1. INTRODUCTION

Generally, smallholder farming on its own rarely provides a sufficient means of livelihoods in communal areas in Zimbabwe. For example, rural households in Ecological Regions IV and V hardly produce above their subsistence levels owing to poor soil and low rainfall patterns [1]. As a result, most rural households engage in a diverse portfolio of activities that generate additional income. Some households are looking towards activities such as processing as a means to enhance the livelihood they can achieve from a limited area of land [1]. It is clear that income and employment, as well as nutrition and food safety, can be enhanced by the application of effective food processing technologies. Food processing may increase the value of crops to farmers, through improving shelf-life, adding value and thus yielding higher returns, and furthermore overcoming seasonal and perishability constraints [2]. However, in Zimbabwe, research has shown that a number of factors may constrain the ability of small-scale enterprises to effectively manufacture and market processed food products. These include limited access to credit and appropriate technologies, a lack of technological capability, the unreliable supply of raw materials, a lack of management know-how and poor quality control [2]. Many of these factors are production-related. Smallholder farmers also face marketing problems due to seasonality of production, poor access to markets and market information.

The interrelationship between climate and crop characteristics essentially dictates the type and variety of crops that can be grown. This means that some areas are not suitable for particular crops. Generally horticulture is a specialised form of farming that demands a fairly wet climate, good soils, relatively low temperatures and a consistent water supply throughout the year [3]. In Zimbabwe, the production of horticultural crops (on both large and small-scale farms) tends therefore to be concentrated in

Natural Regions I, II and III, which receive in excess of 500mm of rainfall per year [1]. Different types of suppliers produce and market fruit and vegetables in different ways and through different channels. Smallholder subsistence farmers produce for themselves and possibly for a local market, while small-scale commercial producers and large commercial farms produce mainly for markets both near and far.

A value chain is defined as a series of participants along the entire marketing spectrum who collaborate to satisfy market demand for specific products or services to their joint and collective mutual benefit. Wholesaling and retailing are the two main functions within the supply chain. Generally, wholesaling refers to the bulk distribution (buying and selling) of commodities. Retailing on the other hand, refers to the sale of produce to the consumer, usually in small quantities. In an agro-industry set-up, wholesalers may purchase produce directly from the farmer or through commodity brokers. The produce is then sold in bulk to food processing companies, marketing agencies, domestic retail outlets or exported directly to foreign markets.

Wholesalers and retailers play an increasingly important role in setting production, packing and distribution standards [4]. The major participants in a typical value chain system for tomatoes grown for export markets are shown in Figure 1.1.

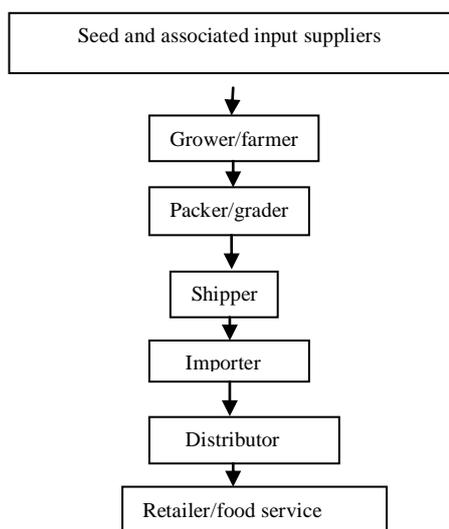


Figure 1.1. Typical value chain for tomatoes grown for export markets

Source: [5]

The advantages of being a participant in a value chain include a reduction in the cost of doing business, an increase in the bargaining power of the producer or seller, an improved access to advanced technology, information and capital as well as continual exposure to innovation which creates its own momentum [5].

But what are the features of an effective value chain? Asian Productivity Organisation identified the following as the basic features of an effective value chain: dealing in a differentiated product and thus a product more likely to achieve a higher return to the producer; continuous innovation across the spectrum of product, technology, management, and distribution; creation of higher values; formation of alliances; “truthfulness to promise” that guarantees the likes of eating quality and nutrition; food safety with integrity and traceability; in-store handling and presentation; inventory management including the quality of the inventory storage for specific food products; transport logistics and movement away from producers’ spot selling to programmed selling.

For smallholder farmers in developing countries, poor road networks and lack of market information have contributed to significant losses of horticultural products due to spoilage. For example, in Asia, hot and humid climate and poor infrastructure for storage, processing and marketing in many countries contributed to a high proportion of waste, which averaged between 10 and 40 percent [5]. In Africa, Odunfa [6] observed losses as high as 60 percent in fruits and vegetables, between 40-50 percent for roots and tubers and losses of 20 percent for grains. Considerable waste occurred due to

the fact that smallholder farmers lacked resources and were unable to market their produce and implement suitable postharvest handling practices. Due to the general increase in demand for fruits and vegetables, postharvest management and processing of horticultural produce has assumed considerable significance. That is, even in circumstances where small-scale producers can access markets, returns on unprocessed products are typically low. Processing of horticultural products using appropriate technologies is seen as a mechanism to reduce spoilage and add value and in turn, to enhance the livelihood of poor small-scale producers [1]. It has also been demonstrated that agro-processing activities are an effective way of eliminating poverty and improving the quality of life of marginalised people [1].

Meanwhile urban population especially in Harare has been increasing over the past decades. The rising population came about with increased demand for food, in particular fruits and vegetables in Harare. In addition, given the rise in popularity of convenience and fast foods in urban areas, demand must be met and that could provide opportunities for smallholder farmers in Mashonaland East Province and those in the peri-urban to benefit from using processing technologies. Despite rising volumes of vegetables and fruits, the continued depressed profit margins (returns) to the smallholder farmers remained an area of concern as that constrained growth and perpetuated poverty among the farmers. This raises the question, “Is the value chain benefitting the smallholder farmers?” Who are the main participants in the fruit and vegetable value chain system? What obstacles if any hinder beneficial value chain system for smallholder farmers in the fruit and vegetable sector?

2. RESEARCH OBJECTIVES

The primary aim of the study was to gain a fuller understanding of the economics of fruit and vegetable marketing by smallholder farmers in Mutoko and Murehwa Districts. The main areas of interest included considering markets for fruits and vegetables and the constraints to market access. The specific objectives of the study included the following:

- To identify fruits and vegetables produced by smallholder farmers of Mutoko and Murehwa districts.
- To identify distribution channels of fruits and vegetables in Mutoko and Murehwa districts.
- To identify constraints that may prevent smallholder farmers of fruits and vegetables from marketing their products effectively.

3. RESEARCH QUESTIONS

- What type of fruits and vegetables are produced by smallholder farmers of Mutoko and Murehwa Districts?
- What are the distribution channels of fruits and vegetables in Mutoko and Murehwa Districts?
- What constraints may prevent smallholder farmers of fruits and vegetables from marketing their products effectively?

4. RESEARCH METHODOLOGY

This case study was undertaken with small-scale producers of fruits and vegetables in Mutoko and Murehwa Districts in Mashonaland East Province. The main areas of interest for the study included considering value chain for fruits and vegetables grown by smallholder farmers of the two districts and the constraints to market access if any. The study covered horticultural products that are income-generating. Mashonaland East Province was purposively chosen because it had the largest market share of vegetable revenues, \$1.9 million during the month of May 2014. Murehwa and Mutoko Districts are among the main horticultural areas in Mashonaland East Province. The study used both quantitative and qualitative data collection techniques. Qualitative data were collected through in-depth interviews, direct observations and document reviews. A structured household questionnaire was used as the basic tool to collect socio-economic, production and marketing data pertaining to fruit and vegetable smallholder producers of Mutoko and Murehwa Districts.

5. DISCUSSION OF RESEARCH FINDINGS

5.1. Fruits and Vegetables Produced by Smallholder Farmers of Mutoko and Murehwa Districts

The smallholder farmers of Mutoko and Murehwa Districts regarded fruit and vegetable production as a secondary activity. Their primary activity was field crop production. Generally, Zimbabwe produces a wide range of fruits and vegetables. The vegetables grown during the dry and rainy season in Mutoko and Murehwa Districts included tomatoes, cabbage, rape, covo, *tsunga*, onion, beans, cucumbers, okra, pumpkins, butternuts, cauliflower, green pepper, peas, chillies, sweet potatoes and carrots among other crops. The majority of these vegetables can be cultivated all year round (either in full or erratic supply). Tomato and rape were the most predominant vegetables grown in Murehwa and Mutoko Districts. The seasonal availability of fruits is more skewed than that of vegetables. The following fruits were produced in the two districts: mangoes, oranges, avocados, melons, nartijies, guava, *mashuku* and *masawu*. With the exception of *mashuku* and *masawu*, which grow naturally, the other fruits were grown in gardens. The fruits and vegetables were grown in homestead or non-homestead gardens. Most non-homestead gardens were cited near sources of water supply such as rivers, streams, wells, springs and dams as well as in vleis. However, the irrigation facilities were underdeveloped and this had adverse effects on the farmers' productivity. Most of the inputs including seed, fertilizers and chemical for pest control were bought in Harare after selling the produce.

5.2. Distribution Channels of Fruits and Vegetables Produced in Mutoko and Murehwa Districts

5.2.1. Packaging of Fruits and Vegetables

Packaging plays an important role in the distribution chain of a product. The main functions of packaging are protection of the content from physical, chemical and biological damage during transportation, storage, distribution and display. Packaging plays a role in promoting sales. Each type and category of fresh or processed product calls for specific packaging conditions. For example, according to United Nations [4] proper packaging for fruits and vegetables includes crates, bags, sacks, paper/paper board boxes and cartons. A majority of the farmers used proper packaging. For example, the use of crates for carrying tomatoes was seen as a way of reducing mechanical injury during transit to the markets.

5.2.2. Storage of Produce

The storage of fruits and vegetables plays a significant role in the distribution chain given the perishable nature of such produce. The farmers in Mutoko and Murehwa Districts did not have appropriate storage facilities for fruits and vegetables. Most farmers used traditional methods or facilities for storing their produce including open air sheds, kitchen, granary and traditional pit (*pfimbi*). Once harvested, fruits and vegetables were immediately ferried to markets. Harvested vegetables like rape, *tsunga* and covo were kept in wet sacks in open air sheds. For most farmers, tomatoes were kept in their kitchens or bedrooms.

5.2.3. Transportation of Produce

Many farmers faced the problem of high transaction costs due to expensive transportation and the need to pay for marketing/selling bays at Mbare or Machipisa Vegetable Markets in Harare. A lack of alternative markets made this situation all the more difficult. Various forms of transport were used to ferry the produce depending on the nature and quantity of the crop and distance to the market. Scotch carts, push carts, bicycles and wheelbarrows were relatively cheap and reliable means of transportation, especially when the quantities of produce were small and only transported over short distances. Sometimes farmers mostly women carried the fruits or vegetables on their heads to nearby markets for sale. In the case of transport to urban markets, the produce was often brought to the Harare-Nyamapanda Highway by scotch carts, push carts, bicycles and wheelbarrows from where they were ferried by buses, trucks or lorries to Harare. Where buses were used, farmer(s) personally took the produce to the market to ensure its safety in transit. However, using buses had problems. That is, buses were unable to service all routes, sometimes buses broke down and farmers were restricted on the quantities of produce they could carry on the bus. Trucks and lorries were the most common mode of transportation of fruits and vegetables from Mutoko and Murehwa Districts. Transport operators or truck drivers provided transport service to individual farmers or group(s) of farmers for an agreed fee. Commodity brokers and middlemen seldom bought produce at the farm gate, which was then sold to urban markets.

5.2.4. Supply Chain of Fruits and Vegetables

Generally, the smallholder farmers concentrated and focussed on production activities and showed relatively little interest in postharvest and marketing activities which were primarily undertaken by middlemen, commodity brokers, traders and agro-food processors. Five distribution channels were identified. First, was spot selling (or farm gate sale) where farmers sold fruits and vegetables to customers who came to the gardens. Such customers included neighbours and travelling public with cars as well as agro-food processors and institutional buyers. Only a few farmers (2.4 percent) indicated that they sometimes sold their produce to large scale food processors. This was because the farmers could not meet the large volume orders and guarantee consistent supply of the produce. The second distribution channel was where the farmers moved from one village to the other selling their fruits and vegetables. The third distribution channel involved selling fruits and vegetables to travelling public along the Harare-Nyamapanda Highway. The fourth distribution channel involved selling fruits and vegetables to local supermarkets at Mutoko Centre and Murehwa Centre. Fifth, farmers sold their produce at traditional markets such as wholesale and wet markets of Mutoko Centre, Murehwa Centre and Mbare and Machipisa Vegetable Markets in Harare, though sometimes they supplied the requirements of institutions (for example, boarding schools, tertiary colleges, Zimbabwe National Army and hospitals), supermarkets, hotels and lodges and fast food chains. At Mbare and Machipisa Vegetable Markets, the produce was sold to vegetable vendors, individual household consumers, middlemen or commodity brokers, supermarkets, fast food chains and institutional buyers. However, these traditional wholesale and wet markets were highly disorganised, overcrowded and lacked appropriate storage facilities for fruits and vegetables. In addition, the farmers had to contend with harassment by informal agricultural and vegetable middlemen at Mbare and Machipisa Vegetable Markets.

From the foregoing discussion, the main participants in the supply chain for fruits and vegetables grown by smallholder farmers of Mutoko and Murehwa Districts can be summarised as follows:

- Input suppliers
- Smallholder farmers
- Transporters
- Large scale food processors e.g. FAVCO
- Wholesalers
- Bulk buyers of fruits and vegetables e.g. schools and hospitals
- Retail outlets e.g. supermarkets
- Informal markets
- Consumer

The growing need to supply institutional markets, supermarkets, hotels and lodges and fast food chains in Harare and other urban centres with produce of standardised quality, would require the development of partnerships among smallholder farmers in order to meet volume requirements, to assure consistency of supplies and to enhance efficiency in marketing. This could be achieved through partnerships in the form of commodity clusters, farmer organizations and cooperatives. Such partnerships however, are facilitated by infrastructural support and input from governments [5]. At the national level the relevant stakeholders in promoting increased supply and demand of fruits and vegetables would include, the Ministry of Agriculture and Mechanisation (extension, marketing and irrigation departments), Ministry of Lands and Resettlement, Ministry of Health and Child Care (public health and health promotion), Ministry of Higher and Tertiary Education, Science and Technology Development (research), Ministry of Transport and Infrastructural Development (road infrastructure), Ministry of Environment, Water and Climate, Ministry of Women Affairs, Gender and Community Development, Ministry of Local Government, Public Works and National Housing, Ministry of Information, Communication Technology, Postal and Courier Services, Ministry of Small and Medium Enterprises and Cooperative Development, local authorities and municipalities (local land use planning and market organisation), private sector (for example, agricultural inputs suppliers

and agro-processors, financial institutions) and non-governmental organisations (for example, consumer groups and farmers groups). Since some of the fruits and vegetables would be exported, international organisations (for example, Food and Agriculture Organisation) and regional economic groupings (for example, Southern African Development Community) would definitely form part of the supply chain.

5.2.5. Growth of Informal Marketing Channels in the Horticulture Sector

Formal and informal marketing channels tend to have different distribution systems, carry a different range and mix of produce and tend to use different pricing and promotion strategies [1]. The literature on the extent and nature of informal marketing systems in Zimbabwe is scarce though it is prevalent in the small-scale farming areas [7]. According to Kapfuma *et al.*, informal marketing channels were stimulated by the introduction of the economic structural adjustment programme, 1991-1995 and the consequent trends of trade liberalisation, increasing commodity prices and food scarcities. Prior to the adoption of the economic structural adjustment programme in 1991, Zimbabwe's informal market was less pronounced than the formal, largely because of government pricing policies that were effected through various statutory marketing boards [1].

A majority of the vegetable farmers interviewed complained that they were being manipulated by middlemen who bought their produce at low prices, hoard the crops, put high mark-ups and then resold them to individual and institutional customers and supermarkets in Harare. The manipulation of vegetable farmers was more pervasive and more pronounced for farmers who sold highly perishables such as tomatoes, green vegetables (cabbage, *tsunga*, rape and covo), green peas, avocados, carrots, green paper, cauliflower and fruits. For example, the same unit was sold at a fixed wholesale price that was sometimes 100 percent less than the price paid to the middlemen. However, with very limited access to financial resources and technology and low returns from their agricultural production, these farmers showed relatively little interest in upgrading their traditional practices and the quality of their inputs. This meant that the farmers would continue to be exploited by the middlemen.

5.3. Impediments to Market Access and Effective Marketing by Smallholder Farmers

Proper postharvest management reduces losses and improves the competitiveness of produce in markets [5]. This implies that the farmers and all those involved in the supply chain right up to the consumer have a role to play in ensuring produce quality. Improved quality has implications for improved prices for farmers and quality produce for consumers. Unfortunately, these basic principles are sometimes not understood by stakeholders at large. Proper postharvest specific infrastructure and appropriately located markets are equally important requirements. A number of factors however impeded smallholder farmers from effectively marketing their produce. Such factors observed during the study in Mutoko and Murehwa are discussed.

5.3.1. Infrastructural Limitations

Infrastructural limitations imposed severe constraints to the distribution of fruits and vegetables from Mutoko and Murehwa Districts. The absence of appropriate postharvest infrastructure such as packing houses, pre-cooling and sorting facilities resulted in improper sorting and storage of the produce. Given that fruits and vegetables were mostly sold in Harare, this necessitated the transit of produce over long distances of between 85 km and 145 km from Mutoko and Murehwa Districts. Although the two districts are along a proper road infrastructure, Harare-Nyamapanda Highway, appropriate transportation infrastructure as well as proper packing and packaging technologies were critical to minimising mechanical injury during the transit of produce from rural to urban areas. Although sometimes the fruits and vegetables were packed in wooden or plastic crates they were transported in open trucks or lorries and buses. The trucks were not refrigerated and were not designed to carry fresh produce. Innovative transportation systems under the cold chain programmes in the Philippines, Indonesia, Thailand, South Korea and China have greatly facilitated small farmers in remote areas in overcoming infrastructural obstacles in accessing inputs and in supplying fresh produce to markets at reduced cost [5]. The lack of appropriate storage facilities both at the farms and selling points in Harare meant that the farmers were in a way forced to make a quick sale given the perishability of their produce. This made the farmers more vulnerable to informal middlemen who undercut their margins.

5.3.2. Low Returns on Unprocessed Products

Even in circumstances where small-scale producers could access markets, returns on unprocessed products were typically low. In the majority of cases, the fruits and vegetables were sold unprocessed to give the farmers quick income and return on their investment. Green vegetables like rape, covo and *tsunga* could be processed into *mufushwa* while fresh fruits could be further processed into jams, fruit juice, dried fruits and snacks. However, the smallholder farmers lacked capital and technology to further process and add value to their horticultural products which they sold unprocessed. Processing of fruits and vegetables using appropriate technologies was therefore not only a mechanism to reduce spoilage and add value but a way to enhance the livelihoods of these small-scale producers through improved incomes, employment, food availability for longer periods and enhanced nutrition.

5.3.3. Lack of Market Information

Generally, farmers were not aware of consumer demand, lacked knowledge and clear understanding of markets, market facilities, marketing niches as well as absence of market intelligence information. Lack of the vital market information on supply and demand led to commodity glut on the market leading to reduced margins to the farmers. Improved business management, training and technological update was hindered by lack of access to information. It was observed during the study that information dissemination was mostly through word of mouth and informal information networks such as the market place.

5.3.4. Lack of Education and Training

Lack of education, training and management know-how affected the ability of farmers to adopt new technologies. This meant that farmers needed basic education in order to enhance their exposure to and understanding of new technologies, technical and managerial skills. In the sample, a much larger percentage of women than men had no formal education. Although some may have benefited from advice offered from AREX extension officers, that did not compensate for the lack of formal education needed to enable them to access information.

5.3.5. Low Private Investment into Market Gardening

Most farmers indicated that their initial investment into market gardening was from own savings. This was because the smallholder farmers could not access institutional credit since they did not have fixed assets such as houses in cities which they could use as collateral security when borrowing money from the banks. The lack of credit constrained the farmers to accumulate capital and expand production and enhance productivity. For example, all the farmers in the sample did not have appropriate irrigation technologies and some of them lacked proper packaging such as crates and cartons.

A further problem which smallholder farmers faced was poor crop quality. Poor handling, poor or inadequate storage conditions and lack of ventilation caused post-harvest disease problems which reduced the quality of the crop. Related to that, the farmers had to contend with fast deterioration of produce quality owing to rough handling during postharvest operations, improper packaging and damage during transportation. When taking produce to the markets, farmers often took the maximum load possible in order to save on transport costs. These factors affected produce quality and hence reduced the farmers' bargaining power for better prices.

The following were also observed as constraints to market access and effective marketing of fruits and vegetables in Mutoko and Murehwa Districts:

- Poor networking of marketing systems which resulted in a significant share of the profit going to the middlemen.
- Lack of appropriate technical information such as knowledge on the availability and costs of inputs (for example, planting materials, pesticides and disease control chemicals and fertilizers).
- Lack of technical know-how on product processing and utilisation (value-addition)
- Low productivity owing to underdeveloped irrigation facilities.
- Absence of quality control in the production and distribution chains.

- Low organisational capacity among the farmers which led to frustration in solving problems as individuals which in turn generated a perception of helplessness and induced a dependency attitude, whereby problems were expected to be solved by the government or private investment and technical assistance provided by donors.

6. CONCLUSION AND RECOMMENDATIONS

Although horticulture is considered a secondary activity to field crop production, it is an important activity for many smallholder farmers in Mashonaland East Province as it created employment, improved household food security and nutrition and enhanced livelihoods. The study revealed that poor infrastructure for storage, transportation and marketing of fruits and vegetables contributed to losses to the farmers. The major markets included traditional wet markets such as Mbare and Machipisa Vegetable Markets in Harare and spot selling though sometimes they supplied the requirements of institutions (for example, boarding schools, tertiary colleges, Zimbabwe National Army and hospitals), supermarkets, hotels and lodges and fast food chains. The presence of informal middlemen at Mbare and Machipisa Vegetable Markets had led to considerable reduction of the farmers' profit margins. Smallholder farmers generally focused on production activities and showed relatively little interest in postharvest and marketing activities. From the study, it would appear the produce is usually intended for the local domestic markets. As such, the commodities pass through a short and simple marketing chain until they get to the final consumer.

The following specific recommendations emanated from the study.

- The government, through the Ministry of Agriculture and mechanisation, should develop local markets for fruit and vegetable farmers.
- The farmers should form gardening networks or clubs.
- The Ministry of Agriculture should organise training and extension programmes on gardening, nutrition, food safety and storage.
- Strong partnerships through commodity clusters among farmers so as to be able to supply organised markets such as institutions (hospitals and schools), supermarkets and fast food shops with produce of standardised quality, meet volume requirements and assure consistency of supplies and to enhance efficiency in marketing. Such partnerships would require infrastructural support and input from the government.
- Buyer-supplier partnerships such as contract farming also facilitate fruit and vegetable marketing while providing farmers access to skills, technologies and infrastructure.
- Value-addition via the adoption of improved and validated processing technologies, may help small-scale horticultural producers overcome some of the problems experienced in the fresh produce market, such as lack of market information and market integration, reliance on spot markets, transport constraints and wastage.
- Proper road and appropriate transportation infrastructure as well as suitable packing and packaging technologies are critical to minimising mechanical injury during the transit of produce from rural to urban areas.
- The government and non-governmental organisations should sponsor research and development into the design and use of low cost horticulture storage facilities.

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