

# Organisation structure of banana supply and marketing in India—a case study

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## Résumé – Organisation de l’approvisionnement et des circuits de commercialisation de la banane en Inde — étude de cas

*La banane est une importante culture fruitière en Inde avec une production annuelle de 13,2 millions de tonnes. Compte tenu de sa nature très périssable, la banane doit avoir un système de commercialisation organisé afin de limiter les pertes post-récolte. En Inde, la commercialisation coopérative de la banane est en plein essor, mais il existe plusieurs circuits de commercialisation selon les besoins spécifiques du lieu.*

*Une étude de cas a été réalisée sur la commercialisation de la banane Poovan (Mysore) par les cinq circuits existants. L’efficacité commerciale des circuits individuels, la marge de profit des opérateurs à différents niveaux dont celui du cultivateur, le coût sur le marché, la marge commerciale, les fluctuations des prix, la fourchette des prix, l’efficacité des prix etc. sont discutés dans l’article en rapport avec les contraintes de production et de commercialisation.*

**Abstract** – *In India, banana is a major fruit crop with an annual production of 13.2 million tonnes. Being highly perishable in nature, banana needs an organized marketing system in order to reduce the postharvest losses. In India, cooperative marketing of banana is gaining momentum, but a number of marketing channels exists according to location specific needs.*

*A case study was conducted involving the marketing of Poovan (Mysore) banana through five different channels. Marketing efficiency of individual channels, profit margin of operators at different levels including the grower, market cost, market margin, price fluctuations, price spread, price efficiency etc. are discussed in the paper with respect to production and marketing constraints.*

## Introduction

Banana is widely grown in India and has great socio-economic significance interwoven with the cultural heritage of the country. India is credited with being the largest producer of bananas in the world. They cover an area of 400,000 ha. with an annual

production of 13.2 million tonnes and form an important crop for the farmer, providing security of food and income (Negi *et al.* 1998). Over the last decade India has witnessed unprecedented growth in production and productivity owing to the adoption of improved production technology (Singh and Uma 1996). With the growing population and enhanced awareness among the masses about health and nutritional aspects of banana, the country's requirement in the next 20 years is expected to be 25 million tonnes. This enhanced production must be achieved through increased production and reduced post-harvest losses. In India, post-harvest losses amount to more than 30% (Anon. 1978) owing to a number of factors including poor banana supply channels and untimely marketing. This paper provides an overview of the banana industry, the main commercial varieties, organisational structure and banana supply channels.

## The banana industry

In India, there has been a spectacular increase in production, which has risen from 1.5 million tonnes/annum in 1955 to 13.2 million tonnes for 1995-96. Thus banana has emerged as the country's number one fruit with respect to production. It contributes 31.05% of the total production from 12.28% of the area under fruit crops. The area under production has grown from 210,000 ha. in 1962 to 400,000 ha. in 1995-96. The traditional banana growing states are Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Maharashtra, Bihar and North-eastern States, while Uttar Pradesh, Gujarat, Orissa, Rajasthan, Andaman & the Nicobar Islands are the states which ventured into banana cultivation recently. These regions have varying agro-climatic conditions suited to banana cultivation and with a wide choice of cultivars, productivity has taken a leap.

India is a vast country with a large area under commercial banana cultivation and it enjoys varied agro-climatic conditions. Being one of the centres of origin for *Musa*, a wide array of cultivars belonging to various genomic groups are under commercial cultivation (Uma and Singh 1996). The growers range from rich commercial entrepreneurs to poor backyard growers. Though in this paper efforts are made to discuss organisational structure of banana supply and marketing within the country as a whole, production sites and destinations vary with variety.

## Cultivars of commerce

**Cavendish clones (AAA)** are the extensively grown clones in the country catering to the banana needs of the people. They contribute 48.4% of the area under banana cultivation and 68.29% of its total production. All banana growing states invariably have an area under Cavendish cultivation and the clones include mainly Robusta and Dwarf Cavendish with various synonyms. To this group Grand Naine is a new introduction with an increasing trend in area owing to its high productivity. Distribution of Cavendish clones is restricted to the dry tracts of western India, Maharashtra, Gujarat, parts of Madhya Pradesh, Central Andhra Pradesh, Tamil Nadu, Bihar and Northern Karnataka

**Table 1. Area and production of fruits in India (1995-96).**

Sl. No.	Fruits	Area (ha)	Production (tonnes)
1.	Apple	217 146	1 214 652
2.	<b>Banana</b>	<b>433 019</b>	<b>13 095 087</b>
3.	Citrus	454 062	3 798 271
4.	Grapes	35 620	603 596
5.	Guava	131 625	1 501 296
6.	Litchi	48 570	364 613
7.	Mango	1 283 030	10 810 957
8.	Papaya	60 921	1 329 668
9.	Pineapple	71 275	1 071 168
10.	Sapota	47 735	569 651
11.	Others	574 280	7 148 052
<b>Total</b>		<b>33 57 283</b>	<b>41 507 011</b>

where Sigatoka incidence is low. In other states it is cultivated with a mild compromise with the season. The northern Indian banana market is catered mainly for by southwestern India, especially the Maharashtra, Bhusawal, Jalgaon belts, growing mainly Dwarf Cavendish, which is also supplied to the Bombay market. Bunches are assembled at various centres covering 3-5 villages and taken to the nearest railway station for transporting to New Delhi wholesale market. This acts as a transit market from where bunches are shifted to Himachal Pradesh, Haryana, Western Uttar Pradesh, Punjab and Northern Rajasthan. Ethylene-induced ripening may or may not be imposed before sending the bunches to the above-mentioned final markets depending on the need.

**Poovan (AAB-Mysore)** is the second largest dessert cultivar after Cavendish group of the Indian banana industry, with 18.42% of the area under cultivation and contributing 17.44% of total banana production. Unlike Cavendish clones, the sweet/sour fruit of Poovan has a restricted, region-specific demand and market. The largest area of 83,000 ha. is in Tamil Nadu followed by Bihar, Andhra Pradesh, Kerala and North-Eastern States which are also the traditional Poovan cultivation belts of the country. Karnataka has Poovan cultivation in some parts of Coorg, South Canara and North Canara.

Poovan grown in Tamil Nadu is largely consumed within the state especially for offering to god, with surplus production moving to the Bangalore market in Karnataka and other major fruit markets of Kerala. Poovan grown in Andhra Pradesh (Karpura Chakkarakeli) has statewide distribution. Similarly Cheeni Champa (Poovan) produced in Northern Bihar caters to its own state needs and the surplus is also sent to West Bengal and Eastern Uttar Pradesh. Assam and Arunachal Pradesh (N-E States) have a few commercial plantations located around specific demand-orientated markets.

**Nendran (AAB-Plantain)** is the largest dual-purpose cultivar, grown exclusively in southern India. Its share is 6.43% of the total area and 5.87% of the total production. Although it is grown both in Kerala and Tamil Nadu, its main consumption is in Kerala.

But some is also transported to Bombay and Bangalore markets and exported to Arab countries either as fresh fruit or as processed products like chips to cater for the needs of Keralites settled in these places.

**Rasthali (AAB-Silk)** is another elite cultivar of commerce fetching premium prices in the market. Its production is fairly evenly distributed in all southern and eastern states catering to the specific needs of the local markets. In Tamil Nadu, Kanyakumari, Trichy and Tirunelveli districts contribute most of the Rasthali production, which finds its market in Chennai and other Northern districts. In Karnataka, southern districts especially Mysore and Bangalore produce Rasabale (Silk) which gets distributed to central and eastern districts. As Amrithpani, its production is distributed in pockets of Andhra Pradesh and consumed locally. Bihar has its restricted cultivation in its northern districts by the name Malbhog and caters to local needs.

**Ney Poovan (AB-Safed Velchi)** is the only diploid cultivar under commercial cultivation in the southern states of Karnataka, Kerala and parts of Tamil Nadu. Cultivation in south central Karnataka is on par with Cavendish clones fetching better prices of Rs 10-15 per kg in the market and most of its production is marketed locally.

**Monthan and Bluggoe (ABB)** these culinary cultivars do not have any specific area under commercial cultivation, but all the orchards and homestead gardens have sufficient plants whose bunches are sent to village or local markets depending on the demand.

India, being one of the centres of origin, has a large number of cultivars apart from the above-mentioned commercial clones. This situation favours the selection of a variety of demands suited to particular agro-climatic situations and hence banana is made available in Indian markets throughout the year, maintaining a continuous supply chain (Table 2)

## Organisational structure of banana supply and marketing in India

This has well-defined marketing features which differ with respect to variety and other factors. The majority of banana supply and marketing is governed by the private sector except in some cases where co-operatives handle the marketing in some states (Acharya and Agarwal 1987). The perishable nature of the fruit forces the markets to be short-lived and fresh transactions are effected with daily new arrivals. Unlike for other commodities, cash sales are most common where money payment is made immediately after every transaction. In India fruits have special marketing yards and banana is no different. Banana markets are specialized markets located in all big cities and most of the marketing functions are followed in a yet to be regulated manner. The primary wholesale market is the major marketing yard for all commercial clones in the country. Irrespective of the location of the farm, the bunches are transported by the grower to the nearest town. In some cases, the bunches are sold by farmers to the preharvest contractor even before the harvest, who pays them 50% of the cost in advance. At harvest

**Table 2. Monthly spread of varieties for the banana supply chain.**

Season	Variety	Source state
<b>January-March</b>	Poovan	Tamil Nadu, Andhra Pradesh
	Nendran	Tamil Nadu, Kerala
	Ney Poovan	Karnataka
	P.P. Arati	Andhra Pradesh, Karnataka
	Dwarf Cavendish	Maharashtra
	Rasthali	Northeastern States
	Monthan	Tamil Nadu, Andhra, Pradesh Northeastern States
<b>April-June</b>	Karpuravalli	Tamil Nadu
	Poovan	Tamil Nadu, Bihar, Andhra Pradesh
	Dwarf Cavendish/ Cavendish clones	Maharashtra, Gujarath, Karnataka, Bihar
	Rasthali	Kerala, Tamil Nadu, Bihar
	Monthan	Tamil Nadu, North-Eastern States, Andhra Pradesh, Bihar.
<b>July-September</b>	Poovan	Tamil Nadu, Kerala, Bihar, Northeast
	Cavendish clones	Gujarat, Karnataka, Maharashtra
	Rasthali	Tamil Nadu, North-East, Bihar
	Ney Poovan	Tamil Nadu, Karnataka, Kerala
	Monthan	Andhra Pradesh, Bihar, Northeast
	Thella Chakkarakeli	
<b>October-December</b>	Poovan	Tamil Nadu, Kerala, Andhra Pradesh, Bihar
	Cavendish clones	Karnataka, Andhra Pradesh
	Rasthali	Tamil Nadu, Kerala, Bihar
	Ney Poovan	Tamil Nadu, Karnataka, Kerala
	Monthan	Bihar
	Bluggoe	

the bunches are transported to the primary wholesale market by the grower or by the preharvest contractors. Secondary wholesale markets are the ones located some distant away to receive the bunches from the major area of production eg. Azad market in New Delhi. Through the transit centres bunches get distributed to other northern Indian states and markets.

Procurement of bunches is usually undertaken by the producer himself or by the preharvest contractors (PHC) who bear the full responsibility for harvesting, shifting, transporting and unloading in the primary wholesale markets. In some cases, procurement from a group of producers is also undertaken by the PHCs. Grading and sorting is mainly done in the marketing yard for the convenience of price fixing. Though there is no definite yardstick for grading and sorting, the size of the bunch and external fruit appearance determine the quality of the produce. The fixing of lowest prices is done by the auctioneers in the market. Auctioning is either open, where the bids are

announced loudly, or underhand (Hatha type) where the price is communicated through defined finger signals under a cloth cover. This is usually practised in village markets and lot of malpractice occurs to exploit the grower. The lot is auctioned and the highest bidder, the commission agents or the primary wholesaler, buys the lot for which cash payment is made on the spot either to the farmer or to the PWS as the case may be. Then the deal is fixed with a secondary wholesaler located elsewhere in a distant market and on the same day, bunches are transported to their destination (secondary wholesale markets.). At the secondary wholesale market, rates are fixed depending on the demand and sold to the retailers. Second level grading and sorting is effected at this stage just before the bunches reach the consumer. The bunches move from production site to their destiny mostly by trucks, lorries and railway wagons. But at the primary assembling stage individual farmers transport the bunches either by tractor and trailer, camel carts or bullock carts without any specialised packing material (Table 3). Banana leaves and leaf sheaths are used as natural packing material and bunches are tightly packed to avoid shaking and bruising of the fruits. But still mechanical injury occurs due to compression, impact and vibrations. The movement of bunches from the primary market to the secondary market and then to the terminal market is through trucks and lorries. Seeing the demand and need, Indian railways have facilitated fruit transportation by means of exclusive wagons at concessionary rates. To reduce losses during post-harvest processes government is planning to provide refrigerated transport facilities for selected commodities including bananas.

#### Major banana marketing channels in India:

<b>Channel 1</b>	Grower	>	Co-operative society	>	Secondary wholesaler in transit market	>	Tertiary wholesaler in terminal market	>	Retailer	>	Consumer
<b>Channel 2</b>	Grower	>	Primary wholesaler	>	Secondary wholesaler in transit market	>	Tertiary wholesaler in terminal market	>	Retailer	>	Consumer
<b>Channel 3</b>	Grower	>	Primary wholesaler	>	Secondary wholesaler	>		>	Retailer	>	Consumer
<b>Channel 4</b>	Grower	>	Preharvest contractor	>	Primary wholesaler	>	Secondary wholesaler	>	Retailer	>	Consumer
<b>Channel 5</b>	Grower's Association	>	Primary wholesaler	>	Secondary wholesaler	>		>	Retailer	>	Consumer

Transport cost of the bunches from the production site to the primary wholesale market accounts for 50% of the total marketing cost and is higher when done by hired bullock and camel carts. Farmers are forced to rely on these for want of well-developed roads and truck transport facilities in rural India.

**Table 3. Different stages of banana marketing and mode of transportation.**

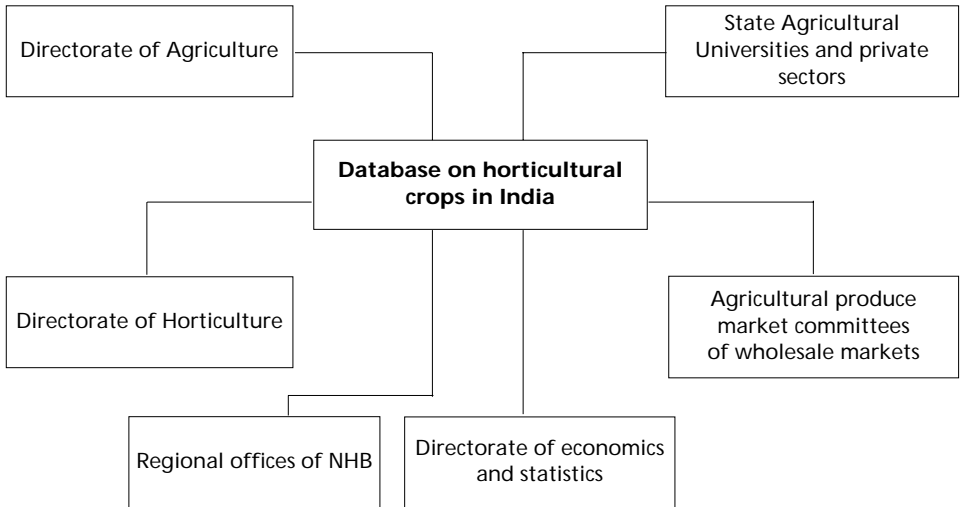
Stage of marketing	Transported by	Mode of transport
1. From field to the village market or primary wholesale market	Farmer or preharvest contractor	Head loads (8-10%), bullock cart and hand cart (60-62%), camel cart (2-3%), tractors (20-25%), Cycle trollies (1-3%)
2. From village market or primary wholesale market to secondary wholesale market	Commission agents	Trucks (25%), lorries (30%), railway wagons (30%), bullock and hand cart (15%)
3. Secondary wholesale market to consumer	Retailer or consumer	Head loads, bicycles, market, hand carts, camel or bullock carts

Though grading standards are available for a number of other perishable commodities, banana lacks definite yardsticks for grading for the local market. But compulsory grading and pre-shipment inspection have been in force since 1981 (Anon, 1980). Even though packing is considered a powerful marketing tool, it is not an important operation with respect to banana marketing. The total quantity produced is consumed internally and bunch or hand selling is in vogue. But recently polythene packing of four or six fruits is found to attract buyers' big cities like in New Delhi, Bombay, Bangalore etc. It may not be long before packed bananas are sold in India.

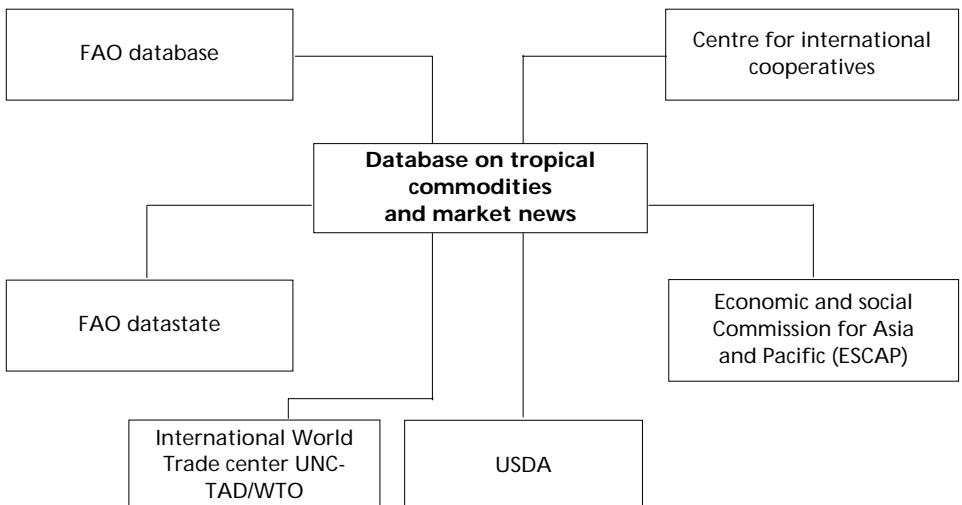
Storage is another important marketing operation whereby the bunches are stored for a short while just before being sold to the consumers. At farm level the concept of the zero energy chamber has been introduced where double lined brick structures of height 5 ft - 10 ft are raised with sand filling in between the walls. Water pipelines are run all through the structure to keep the sand wet throughout. Usually the inside temperature is 7-10°C less than ambient temperature and shelf life of fruit is enhanced by 7-10 days depending on variety. Cold storage facilities for banana are yet to be popularised because of some inherent properties of banana like susceptibility to chilling injury. At present most of the cold storage facilities are in the private sector and the National Commission on Agriculture has recommended the co-operatives and public sector undertakings initiate provision for cold storage facilities at production sites and terminal markets.

To fix fair prices for the bunches irrespective of the markets and places, the National Horticulture Board (NHB) is trying to develop good market information through market intelligence services and market news. The prices are regularly aired through All India Radio and Doordarshan. NHB has developed a database for horticultural crops (Negi *et al.* 1998) including banana from the information network received from a number of state and central government agencies to provide an overview and analyse the inherent problems in marketing.

National agencies involved in data collection and development of a horticulture database



International agencies involved in assembling data on production and trade



With all this back up, to protect the farmers from unprofitable sales and ensure better returns, channelling of banana marketing is facilitated by some of the organisations at various central, state and producer levels.



## Marketing institutions facilitating marketing in India

Some of the important institutions in the general field of agricultural marketing are

- State Trading Corporation (STC),
- Food Corporation of India (FCI),
- National Agricultural Co-operative Marketing Federation (NAFED),
- Directorate of Marketing and Inspection (Govt. of India),
- Agricultural marketing departments and Agricultural marketing boards,
- State and lower level Co-operative marketing societies and
- Consumer co-operative stores.

Of all these, Co-operative marketing societies contribute a lot towards putting right a number of marketing anomalies. These organisations are the associations of producers for collective marketing of their produce, using a capitalistic approach. Maharashtra Banana Growers Association and Gujarath Growers Association have proved successful in terms of better marketability of fruits throughout the country, with reduced marketing cost and margins. Some co-operatives extend the annual credit facilities to the growers whose paybacks are monitored either at harvest or at marketing. With better networking, up-to-date market information is made available to the farmers. Where required, co-operative societies act as government agents for procurement of bunches from their members for further distribution.

HOPCOMS, a multi-commodity organisation in Karnataka has set a milestone in co-operative marketing. This is a semi-government organisation with a board headed by a Managing Director. This undertakes procurement of the fruit from farmers and marketing at a rate, which ensures minimum price support to the growers. Bunches are distributed and sold through the series of HOPCOM outlets which have mushroomed in residential areas in Bangalore city.

These institutions help to achieve the basic objectives of an efficient marketing system, to ensure remunerative prices to the banana growers by reducing marketing costs and margins. This enables fruit to be provided the consumers at reasonable prices and assists the country's economic development. But since a number of defects of the Indian marketing system have been understood, improvement can be implemented effectively. Some of the areas where improvement is possible are discussed below.

## Problems of the Indian banana marketing industry and potential solutions

India's banana marketing infrastructure offers poor fruit supply to consumers and low returns to the grower despite the fact that country is the largest banana producer and with higher productivity. Some basic structural deficiencies in the marketing system are found to be responsible for the present situation.

Illiterate and ignorant growers have been manipulated by the wholesalers and middlemen who determining the market and influence prices. The lack of healthy

competition in banana and plantain marketing also results in inefficient distribution and poor economic returns.

Insufficient free flow of technological achievements and improvements down to the grass-root level, or else poor monitoring by government agencies.

No control over product quality, economic transparency and prices, along with an oligopolistic and oligopsonistic market structure, have had an unfavourable impact.

## **Grower – based co-operative system – a potential solution**

Growers working as individuals lack any control over their produce and cannot determine the price, which has slipped into the hands of the wholesaler and other middlemen. Given the present scenario with limitations to India's processing industry, opportunities available to farmers are also limited. Generally the producer fails to get any economic gains with loosely knit voluntary organisations and farmer's unions.

The members of marketing co-operatives or voluntary associations or trader's unions such as the ones affiliated with the National Dairy Development Board (NDDB) in New Delhi have experienced higher gains from direct market sales of bananas along with other commodities as against the producers who operate independently. Members of NDDB do not present competition to other members and work effectively. The vertically and horizontally integrated co-operative system with the system of sharing of benefits offers better chances of prices not going below the minimum threshold level where farmers experience distress unprofitable sale of bunches. This determines the control over produce, supply, quality and price.

Viewing these advantages, banana growers are left only with the option of pooling their produce to have better marketing by establishing growers' co-operatives at grass root level. Co-operatives work with the common objective of maximising economic returns to the producer, irrespective of their way of working and organisational structure. If need be, they can be made quasi-governmental and make market regulations. This co-operative system backed by a sound market intelligence system offers a disciplined and regulated marketing channel for banana which ensures fair trading and higher returns as against the present situation of exploitation of growers and consumers. As a next course of action, co-operatives are also required to work towards the areas of banana marketing which are yet to be standardised, namely handling, grading, storage and more emphatically towards processing. This ensures price security during banana gluts in peak seasons.

## **Conclusion**

- In India, banana marketing is a multi-stage process which includes accumulation, transportation, grading, distribution etc.
- For the improvement and development of the marketing structure, a co-ordinated approach aimed at removing all the weak links in the marketing chain is essential.

- A package of improved marketing services in the form of regulated co-operative markets, facilities for grading, weighing, storing, transporting, handling and finance provision is to be made available to ensure the producer a fair return from his production effort and a better share in the price paid by the consumer by fixing an appropriate support price and procurement price etc.
- Market research programmes should be oriented to the developing of an orderly and efficient marketing system.
- Though the National Horticulture Board (NHB) has developed a very good marketing intelligence to disseminate marketing information regarding horticultural produce to the interested parties, commodity intelligence bulletins exclusively for banana need to be published.
- Now, India is entering an era of surplus banana production. Thus, it is a crucial time for developing a systematic banana marketing channel and extending its range to foreign countries by improving the shelf life period and storage and export facilities.
- In India, the National Research Centre on Banana, Trichy, has been showing keen interest in testing the zero energy chamber storage for banana for increasing shelf life at production sites. Developing new banana varieties with prolonged shelf life period and export qualities etc. are the areas of primary interest.
- In the present situation of the country, even after attaining self sufficiency in and surplus production of banana, India is not able to compete in the international market for banana export due to the presence of bottlenecks in marketing channels and gaps in production with good export quality. The responsibility for rectifying all these problems lies with scientists, government and economists working on marketing channels and post harvest technology of banana.

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