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EAST GODAVARI BANANA MARKET 2019-2022

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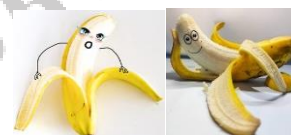
Abstract

From 2019 onwards till 2022 the banana farming business has really been through a roller coaster ride. COVID-19, US Elections in the first week of January 2020, Ukraine War Feb 2022 onwards and just around 7 Cyclones! touch-based Andhra Pradesh. So, you can imagine all possible damages and may be a few highs too. April 20th is named Banana Day, and as an ode to the contributions of banana the fruit we have written this paper. There was in fact rise in production during this period. Even then farmers earned a meagre 1/3rd the usual profits. The market had a lot of changes. Information, technology and distances started making a heavy dent on prices.

Keywords Banana Markets Cost Benefit Analysis, Banana Farmers Income during disasters

The Business of Bananas!!!

At the outset the paper starts by apologising to all bananas. English language has decided to go on a trip of offence. It uses terms like “Go Bananas”, “Banana Republic” and “Second Banana”, “Slip on Banana” wow and on and on and none of them are positive. But Bananas never choose to hurt the humans.



Banana farming is beneficial not just because it serves as a source of food but it has a range of uses from the head to toe all parts of the plant are useful and above all world over just, I repeat just, 31,504,000 metric ton from an area of 157,561 hectares were produced in India, making us the world's leading producer of bananas, accounting for nearly 26.3% of the total production. It is the highest traded fruit in the world, worth USD \$15 Billion!!! And imagine all the derogatory use of its name.

The banana cultivation happens in rich loamy soil of pH value in between 6 - 7.5. The soil should have adequate nitrogen, potash, phosphorus & some organic contents. 40% Clay, 75% silt and 85% loam make the soil bed perfect. Saline, Calcareous & Sandy soil, and too much alkaline or acidic don't suit Banana plantation. The tropical climatic conditions are conducive for productivity as this tree loves wet soil, no matter the weather. Banana Farming generates better profits on use of a very good package of management practices. Mostly bananas grow in temperature ranging from 26 ~30°C. The growth begins at 18°C and then at reaches optimal growth at 27°C and growth stops if temperature reaches 38°C. Bananas don't tolerate water logging and hence they need a raised bed.

A high-profit yield with low investment objective of any farmer may be obvious in this crop because uses of banana plant as a whole are plenty. World over people have been increasingly aware of the health and nutritive benefits of eating fresh fruits as meals, during, meals and after meals. Eating Banana, a day surely can KEEPS THE DOCTOR AWAY as it has preventive value against the following disease and dispositions.

Edible uses of Banana Plantation

Edible bananas are commercially, classified as dessert types and culinary types. The culinary types have starchy fruits and are used in the mature unripe form as vegetables. Banana provides rich nutrition of potassium, vitamins, fibre, calcium and iron. In fact, it contains natural sugars that instantly give energy. It has minerals (K, Mg, P, Ca, Na, Mn, Fe, Zn, Cu); Vitamins (B4, C, B2, B6, E, A). This apart it has carbohydrates and proteins in all providing energy of ~90kcalories. Raw and ripe bananas, fruit peels, stems, flowers are all edible items. This apart the plant rhizomes are used for making medicines.



Medicinal Uses of Banana

1. Anaemia -Iron content in banana works against anaemia.
2. Blood Pressure - High potassium and low salt content act against blood pressure.
3. Memory loss - Potassium boosts the memory and enhances brain functioning. Students should eat bananas during their exams.
4. Prevents Cancer and Heart diseases as the carbohydrates in banana makes is a very good and cheapest food as a source of energy, for labourers, sports athletes and other vocations with physical activity.
5. Depression - Tryptophan is a protein available in bananas which helps produce serotonin that can relax human body and remove stress and anxiety and improve mood and move out of depression. Also, vitamin B6, in banana calms the nervous system.
6. Gastric ulcer and diarrhoea- Vitamin A, in bananas and plantains help in digestion. Banana flowers are cooked and eaten by diabetics or used for bronchitis, dysentery and ulcers
7. Hangovers- Banana milkshake with honey gets rid of headaches after alcohols. Banana has the power to calms the stomach, honey builds up depleted blood sugar levels and milk soothes and re-hydrates your system
8. Heartburn - Banana has natural antacid which works very well against Heartburn.
9. Morning Sickness - Pregnant women will be able to avoid the early morning empty vomits and heaving.
10. Mosquito bites - Rubbing the inner side of banana skin reduces swelling and irritation due to bites. Plant sap can be taken internally or applied externally to stings and bites. It also can work against skin warts.
11. The roots, ashes of peels and leaves and seed mucilage are also of medicinal value.

Animal Feed

It is the most cheap and best animal feed with no effort. Rejected ripe bananas, supplemented with protein, vitamins and minerals, and are commonly fed to cattle. Because of the fruit's deficiency in protein a dehydrated green banana meal has been developed. Urea is used at the rate of 8.8 lbs (4 kg) per ton.

Non-Edible uses with commercial value

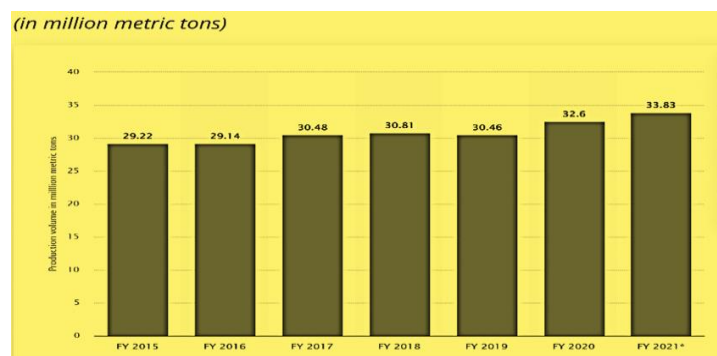
Banana cultivation as an intercrop gives shade to other plantation crops like coffee or cocoa. The trunk of the banana plant denotes good luck and prosperity and two plants are placed with all fruits, flowers and leaves decoration at the entrance during festivals and marriage ceremonies in Hindu culture. The leaves of the banana are used for thatching, packing and as cigarette wrappers.

Banana pseudo stems provide fibre. The pseudo stem pulp is used to make rope, fishing lines, paper, plates, mats and handicraft and art in baskets, carpets and so on. The pseudo stem that remains are chopped and left in a field for its organic value and converted into vermicompost and fertilizer. Banana fibre is woven a thin, transparent fabric from which sarees are woven. A good quality paper is made by combining banana fibre with betel nut husk. Dried banana peel, because of its 30 to 40% tannin content is used to blacken leather. The ash from the dried peel of bananas and plantains is rich in potash and used for making soap. The burned peel of unripe fruits of certain varieties is used for dyeing.

This banana production never stopped and also did not reduce during the period of 2019 – 2022 and then how did this industry get on a roller coaster ride?

Check the table below. In Andhra Pradesh the Banana belt is Cuddapah, Guntur, East & West Godavari, Vijayanagaram, Vishakhapatnam, Kurnool, Krishna and Prakasham. As apparent from the graph-1 below there has been an increase in production volume even through the period of pandemic 2019 -2021.

Graph1 Banana Production Volume in the last 7 years



Objective of the Study

Has the increase in production volume from 2019 – 2022, paid off well to the Banana Farmers during pandemic, Ukraine war, and over a dozen cyclones?

Has there been an increase in income for banana farmers during 2019 - 2022?

Data & Methodology

The study highlights one East Godavari from Selected over 450 farmers, 50 wholesalers, 50 retailers, 50 agents from 65 villages of this district by following the simple random sampling method. Semi-structured questionnaire has been used for collecting qualitative and quantitative data from banana growers particularly on marketing of banana, labour costs, transportation costs, buyers, support from govt., etc all during the period of 2019 to 2022 with pandemic and lockdown and Ukraine war and so many cyclones.

The Cost Benefit Analysis of Banana Cultivation on one hectare land

Karpura Chakkerakeli, Amruthapani, Tella Chakkerakeli, red banana, Amruthapani (Budidalu), Budida Chakkerakeli, Sugandhalu (Karpura), Karpuravali (Budida Arti) Banana varieties are the most popular banana varieties in East Godavari district. The working s are on an average across all varieties.

No of plants planted on 1 hectare land = 2500~3000

Cost of Suckers/Ratoon planted based on variety range from 15 to 20 INR per piece

Total plantation purchase cost = INR 45000 ~ 60000

Transportation cost = INR 1500

Total cultivation cost for the whole period of 12 to 14 months

(De-suckering, propping, mulching, pruning, covering, tagging and others) = INR 3.8 Lakhs ~ 4 Lakhs

Yield per plant = 25 ~ 40 kg

Produce per hectare = 100 tonnes

Farmer Price = INR 10 ~15 per kg

Average turnover = INR 10 ~15 lakhs

Profit = INR 6 ~ 10 lakhs

No of Leaves per week per plant is 10 hence 2500 plants * 5 leaves * 5 leaf cycles = 62500 leaves in the complete period.

Banana Leaves cost per piece INR 10 ~ 15 but due to cyclones winds we take a very humble count

So total income from banana leaves = 62500 * INR 5 = INR 3,12,500

Income from banana flowers 2500 * INR5 = INR 12500

Income from banana stems 2500 * INR 20 = INR 50000

Banana plant waste and animal feed sales = 75 tonnes per hectare sales @ INR 1per kg = INR 75000

Additional Profits = INR 4,50,000

On applying Acharya Approach, we may compute the modified measure of marketing efficiency as

$$\text{MME} = \text{FP} + (\text{MC} + \text{MM})$$

where FP = Prices received by the Farmer, MC= Marketing Costs, MM= Net marketing margins and RP is price paid by consumer.

In all we see that a well-managed hectare = 2.47 acres which is less than 3 acres and the most common size of land with banana plantation can give a very good income/profit of 10 to 15 Lakhs after deduction of expenses.

Actual Average for 3 years	= 2220 planted and survived
Actual Plantation cost 3 years Average	= INR 55000
Actual Cultivation cost 3 years Average	= INR 4,00,000
Actual Gross Income 3 years Average	= INR 8,80,000
Actual Income 3 years Average	= INR 4,80,000 Profits reduced to less than 50%

From 2019 onwards till 2022 the banana farming business has really been through a roller coaster ride. COVID-19, US Elections in the first week of January 2020, Ukraine War Feb 2022 onwards and just around 7 Cyclones! touch-based Andhra Pradesh. So, you can imagine call possible damages and may be a few highs too. April 20th is named Banana Day, and as an ode to the contributions of banana the fruit we have written this paper. There was in fact rise in production during this period. Even then farmers earned a meagre 1/3rd the usual profits. We find that the Banana produced during 2019 and 2020 were having a tough time finding the market as the lockdown was severe. The problems were therefore not just for the farmers but also for agents, wholesalers and retailers. Every person in the supply chain had different kinds of issues.

Banana being a perishable commodity they are sold/disposed within 7 to 10 days of harvesting. Once the bunches are lowered and plucked from the plant, the farmer has to dispose all his yield within 24 hours to wholesaler/retailer/agent. Majority of banana growers do not have market power in setting the price. Pre-Harvest Contractors became very important during lockdown even if they undervalued the products to rock bottom prices because they placed liquid cash immediately on hand right at farmgate.

Understanding the Inflows and Outflows in Banana Market

In Andhra Pradesh these are the various market participant chains.

1. Banana Farmers, Pre-harvest contractors, Commission Agents, Retailers, Consumers.
2. Banana Farmers, Wholesalers, Commission Agents, Retailers, Consumers.
3. Banana Farmers, Retailers, Consumers.
4. Banana Farmers. Exporters
5. Banana Farmers, Whole banana plant Commission Agents, Religious and Temple Procurement Agents/Food Processing Industries/Fibre Processing Industries/Small and Medium Handicraft Market/Vermicompost & Fertilizer Manufacturers, Retailers/Exporters, Consumers.

Data Analysis and Findings of the East Godavari Banana Market

According to FAO 2020 report banana has increased significantly as global food supply in recent decades. Banana is the second most important fruit crop in India next to mango. Its year-round availability, affordability, varietal range, taste, nutritive and medicinal value make it the favourite fruit among all class of people. Banana is cultivated in an extent of 1.05 lakh hectares across the state. Kadapa, Anantapur, East and West Godavari districts top the list with the highest area under cultivation. Andhra Pradesh government had planned to achieve the target of DOUBLING THE FARMER'S INCOME by 2022-23 (base year 2014/15-16), and the planned annual growth rate was 10.4% (as per the estimates). East Godavari has a net irrigated (canals + tanks + wells + others) area of 2.83 Lakh hectares. Yes, there was surely more crop per drop in the years 2019 to 2022. Even then what finally happened was that across any and every market chain only 5 lakhs or worse even lower were farmer/producer profits in the period between 2019 to 2022. As apparent from the graph above there has been an increase in production volume even through the period of pandemic 2019 -2021. In the year 2015 it was ~ 29 million metric tonnes and now in 2022, it has turned to be ~35 million metric tonnes in almost the similar land size.

We found the data collected from the banana industry producer farmers, wholesaler, retailer and agent traders all resonating a few points very strongly. They are

- ✓ Loss of Produce
- ✓ Demand fluctuations
- ✓ Lack of Information
- ✓ Falling and Failing Prices
- ✓ Improper Logistics



We had separate schedules circulated to Producer Farmers, Wholesalers, Retailers and the Agents/Intermediaries. The study then conducted Chi Square and ANOVA amongst these four categories. The findings showed up as below.

Loss of Produce

Andhra Pradesh saw just (3) three rounds of heat waves and the resultant draught, 7 cyclones (Fani, Bulbul Amphan, Yaas, Gulab, Jawad, Asani), and (3) three floods. All this in parallel with the COVID -19. The well grown banana ready standing crops got damages each time. Unfavourable weather condition complicated the situation and compounded the losses. 53% of our sample live in villages and 47% in semi-urban locations. All the banana hectares of land held among these ~500 sample households thankfully had cows, buffalos, sheep, goat and hens. In fact, most of (67%) them are sheppard and hence they had other sources for survival.

In all Andhra Pradesh 37 crores worth of banana crop produce of leaves, raw and ripe bananas, flowers and stems were lost in between 2019 and 2022 due to various natural calamities. The sample farmers all of them had faced on an average 67 % losses per household. They survived through the disaster period because of the livestock and poultry they all owned. Most wholesalers are producing farmers themselves and hence they were all able to contain their losses. The sad thing is none of the agents chosen for the study have a secondary job occupation or financial plan and hence all agents had 100% losses and almost turned jobless.

Demand Fluctuations

There was a very strange pattern of demand fluctuation. All through the COVID lockdown and Ukraine War and even US Elections and petrol prices fluctuations there was always increased in demand for Banana but at a very cheap price. There was supply sufficient in the market but then there were no trains and ships moving to carry exports and hence all the excess produce were lying in surplus but then the lack of logistics due to COVID lockdown led to people asking for banana at throw away prices and literally one complete yield went back to ground as spoilt rotten and organic waste. All farmers could hardly see any income and they all used the organic waste to replenish the soil. This in fact did good and increased the produce on the same size of land during 2020 - 2022. The 29 million metric tonnes reached a whopping 33 million metric tonnes produce.

The study location East Godavari has Kakinada the port location. It has 19 mandalas and around 300 villages. Antarvedipalem of East Godavari is the point where the Godavari River meets the Bay Bengal. This district borders with both states of Odisha and Chhattisgarh apart from hosting Yanam of Pondicherry like the Vatican in Italy. In East Godavari there are in all 13000 hectares in all and 8000 hectares in the Konasema area. These sample farmers each have lost per year over INR 4.5 Lakhs per year for (3) three consecutive years as the demand was there but only at very low prices.

Lack of Information

Lack of Market information on prices, non-availability of credits, subsidies, waivers. The list seems unending during this period. The average age of the group studied was 46 to 52 years. They are all not so obsolete an age group. Each of these house does have at the least one common house android mobile phone. All of these phones are hooked to internet. But due to the lockdown, floods and cyclones there are was no one to pull out information from the ground and share it across. So being connected does not complete the loop. The content must also flow. That was the reason for improper communication and lack of information. One major lack was quality knowhow, Standardization, grading and best practices.

Table 1 Source Agmark Banana Standards

Grade designation	Grade requirements	Grade tolerances
1	2	3
Extra class	Bananas shall be of superior quality. They must be characteristics of the variety and/or commercial type. The fingers must be free of defects, with the exception of very slight superficial defects, provided these do not affect the general appearance of the produce, quality, the keeping quality and presentation in the package.	5% by number or weight of bananas not satisfying the requirements of the grade, but meeting those of for Class I grade or, exceptionally, coming within the tolerances for that class.
Class I	Bananas shall be of good quality. They must be characteristics of the variety and/or commercial type. The following slight defects of the fingers, however, may be allowed, provided these do not affect the general appearance of the produce, quality, the keeping quality and presentation in the package. - slight defects in shape and colour; - slight defects due to rubbing and other superficial defects not exceeding 2 sq.cm. of the total surface area. The defects must not affect the flesh of the fruit.	10% number or weight of bananas not satisfying the requirements of the grade but meeting those of Class II or, exceptionally, coming within the tolerances of that grade.
Class II	This includes bananas which do not qualify for inclusion in the higher classes, but satisfy the minimum requirements. The following defects may be there, provided the bananas retain their essential characteristics as regards the quality, the keeping quality and presentation. - defects in shape and colour provided the product remains the normal characteristics of bananas; - skin defects due to scarring, scabs, rubbing, blemishes or other causes not exceeding 4 sq.cm. of the total surface area. The defects must not affect the flesh of the fruit.	10% by number or weight of bananas not satisfying the requirements of the grade, but meeting the minimum requirements.

Falling and Failing Prices

An interesting insight we found was that age was a very good reason to delay or reduce payments. Elder the farmer the more reason they would be asked to compromise. 73% of the Delayed payment, Low price at peak period was all faced by farmers above the age of 49. Less profit margins Malpractices in Markets and lack of credit facility was mostly faced only by retailers.

During the complete pandemic and before and during any cyclones for the fear and worries of

1. Fruits spoilage by dropping due to winds/floods/cyclones leads to only a certain percentage of payment are deduction by the pre-harvest contractors but complete rejection in market.
2. Lack of assurance of higher prices from market.
3. Delay in payments from dealers.
4. Higher transportation cost.
5. Lack of the market information.

The potential buyers of banana during lockdown were, NGOs, non-profit organizations, CSR units and retail-sellers (Kirana shop, street hawkers, etc.), and finally the department of horticulture. Almost all the buyers purchased banana for distributing to community and hence they sought quality bananas at low costs. This meant the actual CSR and NGO was done and paid by the producers themselves. As the CSR units and NGOs bargained and brought down the usual INR15000 per tonne to INR 3500 per tonne, **all the banana farmers became the actual heroes with a heart as they cut into their pockets and bore the burden of the lockdown. But all the large company CSR took the credit as they went around meeting the affected communities.**

Andhra Pradesh-Rythu-Bharosa (Andhra Pradesh Scheme for farmers) provides INR 13,500/- for farmers as input cost for cultivating crops. During the study period 2019 – 2021 over 60 % farmers received only INR 5000 and remaining few farmers received above ₹ 5000. Almost all farmers availed loan from bank or local money lenders. Most loan burden was provided by banks.

There are a large number of market charges viz commission, brokerage, weighment, hamali, state cess, Commission was INR 5~6 per bunch, hamali or unloading was INR 1~ 5, Packaging charges cost INR 3 ~5 per bunch and transportation charges varied from INR 3~4. Market fee had to be paid only by wholesalers. Taxes had to be paid by both Retailers and Wholesalers.

This apart usual market has Karda (impurity charges), Dhalta (excessive moisture charge), Muddat (charge for making cash payment), Darmada (charity to goshala, water pandal etc). Each region has varying rates. Karda, Muddat Dhalta and Darmada ranges from 0.5% ~ 1%. There was no scope to charge these as all the purchase was for NGO mass distribution and also the pricing was already suicidal and in complete loss to the producer. Farmers had losses. Agents and Retailers faced the lowest price at peak period. Wholesalers did not see much impact.

A widening gap in the demand and supply, higher transportation costs and delayed onset of the production cycle due to the fluctuating weather conditions have led to a sharp rise in the prices of all bananas, racing past the INR 100-mark from the beginning of financial year 2022.

Improper Logistics

- ✓ Increase in transport cost with Improper Handling and Packing
- ✓ Insufficient storage facility and Lack of processing facility



Suggestions

Farmers require Knowledge & Information on all new technology which are available on rent or subsidised purchase. They need online social media groups like WhatsApp and others for fast, free and friendly interchange of knowledge and information both between farmers and from experts in various universities, institutions and other government bodies.

Input supply Scale of operation helps in procurement and provisioning of quality inputs and production services in order to increase the scale of operations farmers have join into groups associations or form producer companies.

Price Guaranteed and fixed competitive prices happens through forward linkages for the large list of uses of banana and the plant. Instead of relying only on the fruits for income and letting them go perish, farmers should start ageing bananas and accordingly phase the uses of the fruit from one product to the next and create a continuous forward linkage down the value chain.

Long marketing channels to be reduced with buy back arrangements from farmer groups, associations or producer companies. This will increase the economies of scope and scale and help the small farmers. Direct link with buyers, Effective forward linkages, aggregation and collection from farmgate for next value chain item etc. will avoid the long marketing channels.

Prompt Payment Immediate Standardization at the farmgate with ageing analysis will alone attract prompt payment especially to elderly farmers. Then all types of unnecessary charges like Karda, Muddat, Dhalta and Darmada will not exist in the market.

Conclusion

Currently the farmers are working towards survival and bare necessary wages and incomes. In fact, the produce increased due to great efforts of the farmer and his family but market prices did not match their efforts due to a lot of market complications like COVID -19, Ukraine War and elections and fuel price fluctuations and the never-ending cycle of cyclones, floods and drought and more.

Banana producers across the globe are facing increased financial burdens amid soaring banana export costs and record low import prices, placing inordinate pressure on smallholder farmers and agricultural workers and posing a direct threat on their ability to earn a decent living.

Even now in 2022 increase of banana prices to consumers is currently due to sharp increase in the price of packaging materials, and 60% increase in transport costs and they don't benefit the farmers and producers in any which ways.

The COVID-19 pandemic and the related lockdown has affected production costs as well as ongoing measures to protect banana plantations from the devastating effects of the fusarium TR4 fungus. The banana farmers and producers as a whole need to shift to groups and collectives and increase the Scale and Scope so as to achieve sustainable farming in the long term.

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