



# HARTI POLICY BRIEF

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## Evaluation of the Effects of Economic crisis on Fruits and Vegetables: Production and Marketing

*This study was undertaken to assess the changes in beans, brinjal, banana (ambul and kolikuttu) and papaya production and marketing resultant in the economic crisis. Amidst changes in production and marketing strategies, several notable alterations have emerged. These include a reduction in cultivated acreage (beans - 30%, brinjal-25%, banana - 45%-60%, papaya - 20%) a shift from hired labor to family labor (in banana 60%), decreased application of fertilizers both in terms of quantity (by 10-45%) and frequency. In the case of fruits, low fertilizer application has led to a decline in the weight of banana bunches by approximately 45-65% and decline in weight of papaya fruit by around 15%. Moreover, considering banana, there has been a transition from high-input responsive, high-risk varieties (such as kolikuttu) to low-input responsive, resilient varieties like seeni kesel. Low quality of imported seeds has been mentioned as a common problem by brinjal farmers while low quality of available agrochemicals has been mentioned by all farmers. Whereas, among the banana farmers, the shortage of high-quality planting materials (both healthy suckers and tissue cultured seedlings) has significantly impeded cultivation efforts. The main marketing channels (traditional channel) for the considered vegetables and fruits remain unchanged. Yet, the volume of sales and the number of transporters and venders involved in each marketing channel has dropped in the range of 15-40% with the highest drop recorded for banana.*

*The assessment of market margins before and after the crisis indicated that, apart from banana (ambul), farmers saw their margins rise between 3.6 - 9.8%, whereas except for papaya, retailers witnessed a margin decrease ranging from 9.1 to 19.5%. An analysis of market integration between retail and farmgate prices indicated that banana markets remained integrated even after the crisis. Moreover, there exists a significant difference in mean retail prices and farmgate prices, between before and after the crisis scenarios, except for ambul banana. Post-crisis prices were notably higher compared to pre-crisis levels. Of all, ambul bananas suffered the most negative impact due to the economic crisis. Enhancing agricultural productivity through promotion of the GAP initiative and boosting export opportunities were identified as the primary strategies to mitigate the adverse effects of rising input costs. Proposed crop specific interventions included improving access to high-quality seeds for papaya and tissue-cultured banana seedlings, adopting GAP to reduce excessive agrochemical use in brinjal cultivation, and introducing durable alternatives for support stakes for bean plants.*

## Introduction

The financial crisis set off in early 2022 in Sri Lanka led to significant shifts in agricultural commodity supply and demand. It increased production costs for fruits and vegetables, potentially causing reduced cultivation, lower yields, and changes in cropping intensity and market margins throughout the supply chain.

Hence, Hector Kobbekaduwa Agrarian Research and Training Institute conducted a research aiming at examining the impact of economic crisis on fruit and vegetable supply chains. Specific objectives of the research were;

1. To evaluate changes in the supply chains of fruits and vegetables pre and post crisis situation.
2. To examine alterations in the supply chains of fruits and vegetables by comparing their post-crisis with the pre- crisis scenario.
3. To suggest policy implications aimed at reducing the expected adverse effects of the economic crisis

Based on the per capita consumption data in HIES report for 2019 (Department of Census and statistics - 2019) two main vegetables and two main fruits (beans, brinjal, banana and papaya) were selected for the **supply chain analysis** and analysis of **production alterations**. Focused group discussions were conducted in 5-10 ASC in two main districts which reported the highest number of farmers under each crop.

Secondary data analysis comprised of **calculation of market margins** before and after the crisis, analysis of **covariance of weekly retail prices and farmgate prices** and **comparison of mean farmgate and retail prices** before and after the crisis applying *ANOVA*. Further, **level of price integration** between farmgate and retail prices related to before and after crisis scenarios were calculated applying **Engle and Granger Cointegration Test**.

## Major Findings of FGDs

All the crops under consideration, including beans, brinjal, banana (*ambul*), banana (*kolikuttu*), and papaya, witnessed a significant decrease in cultivated acreage— beans by 30%, brinjal by 25%, banana (*ambul*) by 45%, banana (*kolikuttu*) by 60%, and papaya by 20%. However, the number of farmers who totally abandoned farming was less than 5%.

This dip was a result of a combination of factors: a threefold increase in production costs, scarcity of planting materials, low quality of inputs, declining demand, reduced sales volume, and consequently diminished profits. The crops relying on imported seeds faced shortages of seeds and organic fertilizer during the early stages of the economic crisis. For bananas, which relied on local seedling production, COVID-19- related movement restrictions and transportation challenges resulting from the economic crisis disrupted the supply chain. Consequently, farmers faced reduced profits and lacked sufficient financial resources for reinvestment. Meanwhile, abandoning the banana crop led to a shortage of healthy suckers for replanting. Moreover, far exceeding demand for tissue- cultured banana plants than supply (Demand – around one million seedlings/month during the planting season; supply – around 40,000- 45,000/month in 2023) further aggravated the situation.

With the reduction in cultivated extent, there was a shift from hired labour to family labour in all crops. Labour comprised of 10%- 77% of total cost in considered crops where *GAP* (good agricultural practices) - bean cultivation recorded the lowest percentage.

However, there was 42% of banana farmers who had been large-scale farmers (>5ac) before the crisis and who relied highly on hired labour, converted themselves to small-scale farmers and witnessed a considerable substitution of hired labour to family labour (60%).



Decreased application of fertilizers both in terms of quantity (by 10-45%) and frequency was observed in all crops. However, the most severe reductions were observed in fruits, compared to vegetables. Low fertilizer application has led to a decline in the weight of (*ambuli*) banana bunch by approximately 45-65% and decline in weight of papaya fruit by around 15%.

Moreover, considering banana, there has been a transition from high-input responsive, high-risk varieties (such as *kolikuttu*) to low-input responsive, resilient varieties like *seeni kesel* as a measure of avoiding high fertilizer cost.

Threefold rise in cost of imported seeds, and agrochemicals was a challenging issue for all crops. For instance, during the post crisis scenario, in brinjal, pod rotting has been the most difficult disease to control. The cost of a bottle of the recommended fungicide rose to Rs. 40,000 /130ml. This fungicide (diluted) had to be applied once in every 15 days and around 20 tanks of 24 liters are needed for

0.2 acres during the entire harvesting period.

However, *GAP* farmers experience reduced levels of agrochemical application compared to traditional growers. In the case of beans, the expense for agrochemicals and inorganic fertilizer was approximately 20% lower in *GAP* cultivation

than in traditional cultivation. In the Nuwara Eliya district, the production cost of green beans was Rs. 66/kg for traditional farmers whereas for *GAP* farmers it was recorded at Rs. 30/kg, marking a 50% reduction. Notably, the cost of support sticks constituted the largest portion of the cost of production, accounting for 24% among traditional farmers and 54% among *GAP* farmers in Nuwara Eliya. Conversely, in the Badulla district, the cost of production for beans was reported as Rs. 73.70/kg by the last quarter of 2023 under the traditional method. This figure indicates a Rs. 7.85/kg increase compared to the recorded value in 2019 (pre crisis) in Badulla. Farmers were of the opinion that the issue of low-quality imported seeds (especially in brinjal) agrochemicals and fertilizer was observed after the economic crisis. Although the brinjal farmers used hybrid varieties, they did not adhere to recommended cultivation practices in order to fully exploit the potential yield. As a result, the reported cost for producing a kilogram of brinjals in the Anuradhapura district amounts to Rs. 82.55/kg. This value is four times higher than the value reported in 2019/Yala season, (pre crisis) (Rs. 20.62/kg). Numerous farmers have reported issues such as diminished fruiting or no fruiting at all, as well as high prevalence of damping off due to low quality of seeds and agrochemicals. Meanwhile, few unauthorized agrochemicals were still available in the Anuradhapura district.

The main marketing channels for the considered vegetables and fruits remained unchanged. Similar to the pre-crisis situation, around 75% of the total vegetable produce goes through the traditional channel of

farmer → transporter → commission agents at dedicated economic centers (DECs) → retailer → consumer.

Meantime, for banana the main channel was farmer → *kesel pola* → transporter/ wholesaler → retailer → consumer

and for papaya, the main channel was farmer → transporter → wholesaler (at Peliyagoda) → retailer → consumer.

Yet, the volume of sales and the number of transporters and venders involved in each marketing channel has dropped in the range of 15-40% with the highest drop recorded for banana.

Especially, the fruit farmers have adopted different market diversification strategies; sale of smaller quantities to various buyers such as wholesale shops, village collectors, *pola* markets, selling to companies for value addition and collectors from other provinces who purchase directly from fields.

Five processed fruit-based export-oriented factories in the considered districts were encountered. These factories usually procure grade two fruits and thereby allow farmers to receive higher prices for relatively lower-quality products. However, the scale of operation is low.

### Summary of secondary data analysis

The assessment of market margins during after (AC) compared to the before crisis (BC) indicated that, apart from banana, farmers experienced increased margins ranging from 3.6% to 9.8% in AC scenario. Conversely, except for papaya, wholesalers saw their margins rise between 2.7% and 29.4%, whereas retailers witnessed a margin decrease ranging from 2.5% to 19.5%, except for papaya. If the marketing channel does not undergo radical changes, increasing farmers' margins is normal with the increase in retail prices. An analysis of market integration between retail and wholesale prices indicated that banana markets remained integrated even after the crisis. Price variation (CV) between before and after crisis situations showed mixed results. Brinjal and banana retail prices variation was higher in after crisis situation while bananas and papaya retail

price variation was lower compared to before crisis. Regarding farmgate prices, except for ambul banana, variation in farmgate prices of all other commodities has decreased in the post- crisis scenario. Moreover, ANOVA calculations revealed a significant difference in mean retail prices between before and after the crisis scenarios. Post-crisis prices were notably higher compared to pre-crisis levels. However, except for ambul banana, farmgate prices also showed a similar price pattern. When considering ambul banana farmgate prices, post crisis prices (prices in 2022) were not significantly higher than that of the pre-crisis phase. Therefore, it is evident that ambul banana farmers suffered the worst impact due to the economic crisis.

### Policy Implications

1. Urgent intervention by relevant authorities is needed to regulate the price and quality of imported seeds, fertilizers, and agrochemicals in the market.
2. Immediate action should be taken to eliminate illegal or unauthorized agrochemicals from the market.
3. Encouraging the widespread adoption of *GAP* among farmers that could empower them by reducing production costs.
4. Promoting the export of fruit value added products is a viable solution to mitigate the drawbacks of increased prices of imported inputs due to the depreciation of the rupee.
5. Facilitate greater access to tissue cultured plants of the *ambul* variety – which has a fruiting percentage exceeding 95% compared to the 80% fruiting form suckers and *kolikuttu* variety – to avoid viral diseases.

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