

India's Phytonutrient Report

Executive
Summary



*A Snapshot of
Fruits and Vegetables Consumption,
Availability and Implications for
Phytonutrient Intake*

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Executive Summary

Objective of the Study:

- To understand the 'actual' consumption patterns of fruits and vegetables in India and compare this to the World Health Organization (WHO) 'recommended' quantity for an adult.
- To find out the reasons for the shortfall wherever they exist and make policy recommendations.

Advantage India

Fastest growing economy with a rising middle class

India is one of the fastest growing economies in the world. According to the International Monetary Fund (IMF), India will outgrow China (growth projected at 6.3 per cent) with a GDP growth rate of 7.5 per cent during the period of 2015-16. With a middle-class population of about 23.6 million people, India ranks 8th among 215 countries in terms of the number of middle-class adults in 2015.¹ McKinsey & Company (2007) predicted that if the Indian economy grows at 7.3 per cent between 2005 and 2025, the share of the middle class in the population will increase from 5 per cent to 41 per cent, and it is this group that will drive future demand and consumption patterns in India.



Large consumption base, increasing share of fruits and vegetables in consumption basket

The World Bank estimates that 59.2 per cent of the Indian GDP was consumed in 2013. Food and groceries constitute a substantial part of India's



consumption basket. Out of the total private final consumption expenditure, about 28 per cent was on food alone and around 30 per cent on food and beverage combined in 2013-14.² This compares to only 9 per cent in the United States (US), 17 per cent in Brazil and 25 per cent in China.³ The composition of the food basket is likely to change from cereals and pulses to fruits, vegetables, milk and milk products, and meat.

Availability is likely to increase

India is one of the largest producers and a net importer of many fruits and vegetables. It is likely that with liberalisation, globalisation and easing of trade restrictions, different types of fresh and processed food will be more readily available in the country. Today, fruits and vegetables are available in different forms (such as fresh, frozen, juices and chopped), through multiple retail channels and in different formats (such as branded, non-branded, organic and inorganic).

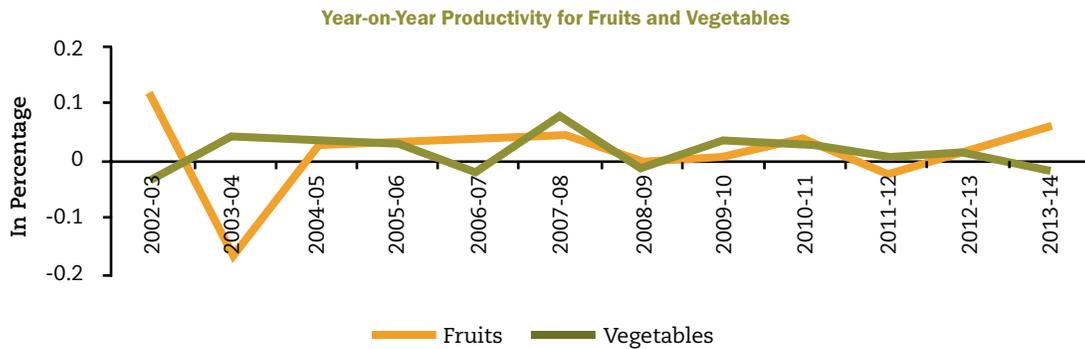


The WHO panel on diet, nutrition and prevention of chronic diseases recommended a daily intake of at least 400 grams (or five daily servings with an average serving size of 80 gm) of fruits and vegetables, excluding potatoes, cassava and other starchy tubers, to prevent diet-related chronic diseases and micronutrient deficiencies.

1. Credit Suisse (2015).

2. Images Multimedia Private Limited (2015).

3. The Boston Consulting Group (2012).



Source: Compiled from National Horticulture Board (2014), Page 2, Table titled: "Indian Horticulture Production at a Glance". Available at: http://www.nhb.gov.in/area-pro/NHB_Database_2015.pdf (accessed on 30 November 2015).

The actual consumption of fruits and vegetables depends on various supply and demand factors.

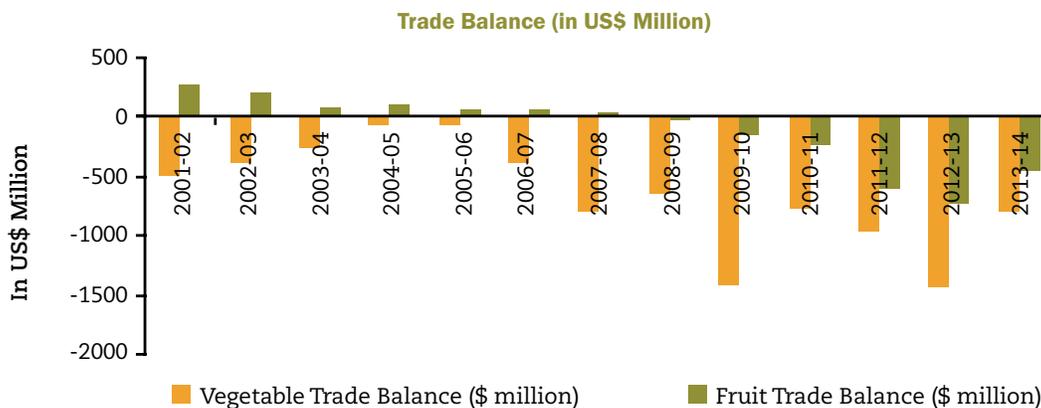
- Five states namely Maharashtra, Andhra Pradesh, Gujarat, Tamil Nadu and Uttar Pradesh accounted for 52 per cent of total fruits production in 2013-14.
- West Bengal, Uttar Pradesh, Bihar, Madhya Pradesh and Gujarat accounted for 50 per cent of total vegetables production in 2013-14.

Production

- During 2013-14, India produced 88.98 million metric tonnes of fruits and 162.89 million metric tonnes of vegetables.⁴ The year-on-year productivity of fruits and vegetables has remained more or less constant since the year 2004-05.

Trade

- India is a net importer of fruits and vegetables.
- Trade is rising and it is likely to grow further. At present, India has high tariffs on fruits and



Source: Extracted from DGFT, Ministry of Commerce and Industry. Available at: <http://commerce.nic.in/eidb/default.asp> (accessed on 30 November 2015).

- Moreover, there are variations in the production of fruits and vegetables across states.

vegetables; however, as it has entered into trade agreements, tariffs on some product categories have been liberalised under these agreements. Therefore, it is likely that India's imports may rise in these categories and the trade balance will worsen.

4. National Horticulture Board, Government of India. Available at: http://www.nhb.gov.in/area-pro/NHBDatabase_2015.pdf (accessed on 30 November, 2015).

Consumption

- Between 1993 and 2011, the proportion of household expenditure on total food items has decreased in both rural and urban households. However, the proportion of income spent on fruits and vegetables has not changed much over time. On an average, the Indian diet pattern is skewed towards cereals, and fruits and vegetables account for only 9 per cent of the total calorie intake (NSSO 2014).

Prices

- Inflation in prices of food items has played a major role in raising household expenditure. Further, there are inter-state differences in the prices of fruits and vegetables in India—this often affects the consumption pattern.

While the available secondary information broadly gives the production and consumption situation in India, it does not provide information on the detailed consumption pattern, consumer perspective, factors determining the consumption pattern and awareness about regulations. To fill this lacuna, a primary survey was conducted.

The survey covered 1,001 individuals drawn from households across five cities namely, NCR (New Delhi, Delhi; Gurgaon, Haryana and Noida, Uttar Pradesh), Mumbai (Maharashtra), Chennai (Tamil Nadu), Hyderabad (Telangana) and Kolkata (West Bengal). A stratified random sample was chosen—respondents selected were 18 years or above in age and there were 58 per cent male respondents and rest were females. The sample consisted of individuals from upper and middle income groups. Trained investigators conducted face-to-face interviews using the recall methodology. Interviews were conducted using a semi-structured questionnaire.

Survey Results

Fruits and Vegetables Intake

- The average intake of fruits and vegetables is 3.5 servings per day, which comprises 1.5 servings of fruits and 2 servings of vegetables.
- The average intake of the younger generation is even lower—for 18-25 years it is 2.97 servings per day and for 18-35 years it is 3.3 servings per day.
- The average intake among the students is abysmally low at 2.94 servings per day.
- Housewives do better in terms of fruits and vegetables intake with an average intake of 3.65 servings as compared to working persons—which is 3.5 servings per day.

Availability plays an important role in consumption. Further, there are limited options in the processed food category and prices and taxes are high—all these result in low consumption.

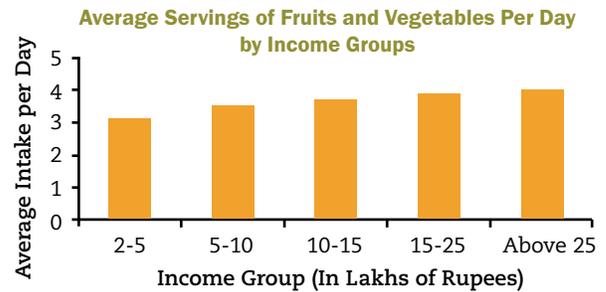
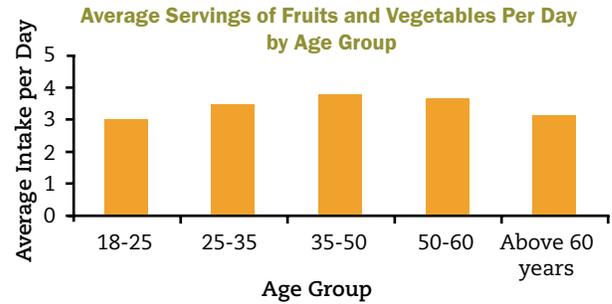
- Income plays an important role—average daily intake is higher for higher income groups.
- There is inter-city variation in consumption—it is the highest in Chennai (average intake of

4.35 servings per day) and the lowest in Kolkata (average intake of 2.81 servings per day).

Indian consumers across all income groups are consuming less than the 'recommended' quantity of at least 400 grams (or five daily servings with an average serving size of 80 gm) of fruits and vegetables.

- There are variations across diet types—the average daily intake of fruits and vegetables is 3.97 servings for a person with a Jain diet, while it is 3.87 servings for a vegetarian, 3.43 servings for an egg vegetarian and 3.2 servings for a non-vegetarian.

The level of awareness about the WHO recommendation is low—89 per cent of the respondents are not aware.



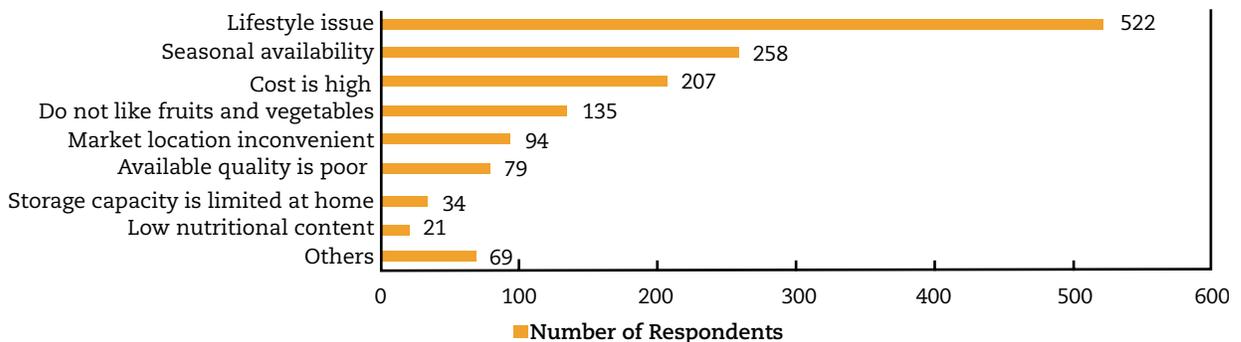
Source: Authors' calculations.

Awareness about WHO Recommendations

Lifestyle is the topmost reason provided by the survey respondents (51.1 per cent) followed by seasonal availability (25.7 per cent) and high cost (20.6 per cent) for their inability to meet the WHO recommendation. Lifestyle is a key reason for low consumption across all age groups but more so among the younger cohort (18-35 years) and respondents in the national capital region.

Around 50 per cent of those aware of the WHO recommendations have educational qualification of post graduate and above. Almost 95 per cent of the respondents are aware of the benefits of fruits and vegetables in general. Print and electronic media are the key sources of information.

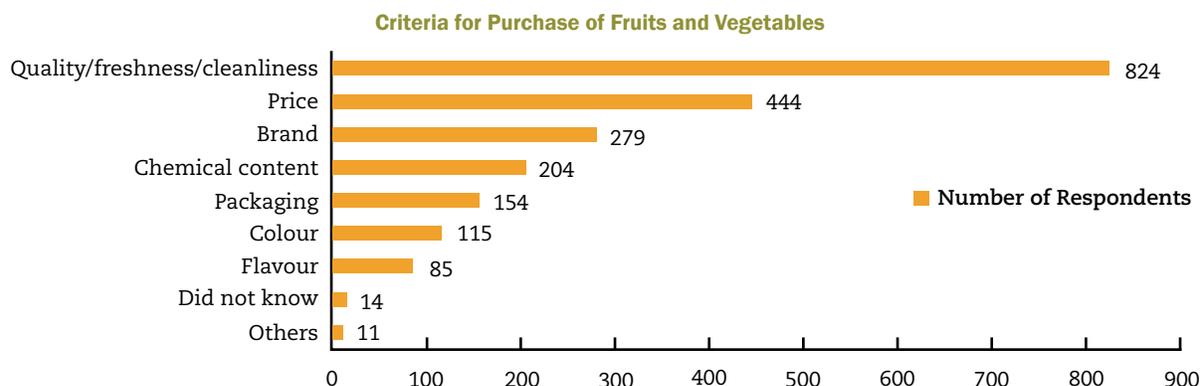
Reasons for Not Being Able to Meet WHO Recommendation



Note: "Others" primarily include strict preference for non-vegetarian food or junk food.

Source: Authors' calculations.

Quality and freshness of the product are the most important criteria based on which consumers purchase fruits and vegetables.

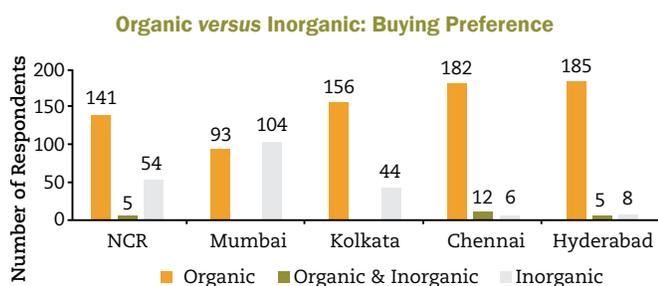


Note: "Others" primarily include nutrition content, seasonal availability.

Source: Authors' calculations.

Buying Preferences for Fruits and Vegetables

- A majority of Indian consumers (75.6 per cent) are willing to purchase organic products as they consider them to be of better quality and free of pesticides and chemicals. However, only 29 per cent of the respondents actually buy organic products.



Source: Authors' calculations.

- The gap between the willingness to buy and actual purchase is due to non-availability of organic fruits and vegetables.
- A majority (56 per cent) of the respondents are willing to purchase non-branded fruits and vegetables as they feel that branded products are over-priced, contain preservatives and are not always fresh and chemical free.

Use of Nutritional Supplements

- Use of nutritional supplements is quite low in India—only 21.2 per cent of the respondents consume nutritional supplements.

Other Survey Highlights

- Indian consumers prefer to buy fruits and vegetables from the local markets (53.3 per cent) and push carts (18.8 per cent).
- Consumers are well aware of the presence of adulterants in fruits and vegetables (97.3 per cent).
- A majority of the respondents clean and consume the fruits and vegetables (53.3 per cent), there are some who buy them from selected outlets only (38.5 per cent) while others buy only organic products (29 per cent).
- Very few consumers are aware of the regulations in India. Around 30.1 per cent are aware of the Consumer Protection Act, 1986 while 33.5 per cent are aware of the Food Safety and Standards Act, 2006.

- The consumption is relatively high in southern cities (Chennai and Hyderabad) and is the lowest in Mumbai.
- Only 12.4 per cent of the respondents in the age group 18-25 years have health

supplements and only 8.8 per cent of the students have them.

- Intake of supplements is higher among vegetarians—27.4 per cent of vegetarians consume them, while only 17.3 per cent of the non-vegetarians do.
- Respondents prefer to buy health supplements from general stores (79 per cent) and pharmacies (67 per cent).



Barriers in the Supply Chain and their Impact on Consumption

- High prices and seasonality of production are crucial barriers affecting consumption.
- Some states have not adopted the model APMC Act and, therefore, they do not allow direct sourcing—leading to a fragmented supply chain.
- There are inter-state barriers in the movement of fruits and vegetables—waiting at check-posts leads to delay and wastages.

The level of food processing in India is low—2.2 per cent (MoFPI); about 18 per cent of fruits and vegetables get wasted in the supply chain (Yes Bank and MoFPI 2014).

- India imposes high import tariffs on fruits and vegetables. In 2015-16, fruits and vegetables like broccoli, carrots, bananas, pineapples, papaya, watermelon and green chillies faced 30 per cent import tariffs while garlic faced a tariff of 100 per cent. In years of drought and crop failure, imports increase.

Apples, peaches, strawberries and cucumber are some of the fruits and vegetables identified with multiple pesticides in the past.

- In India, the food and grocery sector is largely non-corporate and there are restrictions on FDI in multi-brand retail. Further, some states do not allow direct sourcing. As a result, global multi-nationals have not shown interest in investing in the food supply chain.
- High taxes on processed fruits and vegetables, and variations in taxes across states discourage processing.
- Low awareness among Indian consumers about the benefits of fruits and vegetables.
- Food Safety and Standards Authority of India (FSSAI) does not cover traceability of farmers and there is high incidence of pesticide residue.
- Consumer protection regulations are outdated and consumer courts take time to evaluate cases and pass judgement; consumer fora are not strong enough to raise their voices against quality issues.

In developed countries, the shortages are compensated by nutritional supplements.

- Indian consumers do not supplement their low intake of fruits and vegetables with nutritional supplements.
- India does not have any specific regulation for nutraceutical products and food supplements. The FSSAI has proposed a draft Food Safety and Standards (*Food or Health Supplements, Nutraceuticals, Foods for Special Dietary Uses, Foods for Special Medical Purpose, Functional Foods, and Novel Food*) Regulations, 2015. However, the regulation is yet to be finalised.

The Way Forward and Policy Recommendations

Ensure traceability back to the farm to ensure maintenance of hygiene and quality standards.	Work with farmers, support their training and share knowledge.	Cover both store and non-store retail formats under consumer protection regulations.
Generate awareness among consumers, especially students and the younger cohort regarding the recommended intake of fruits and vegetables.	Ministry of Food Processing Industries should generate awareness about the benefits of processed fruits and vegetables.	Improve availability of organic products.
Restrictions on contract farming should be addressed to attract investments at the farm level.	Private investments should be monitored to safeguard the interests of farmers, producers and consumers.	Performance linked incentives should be given to food processors to encourage food processing.
Government can help food processors by sharing information on quality, working with the private sector to have state-of-the-art product testing laboratories, etc.	Lower taxes on processed fruits and vegetables.	Government may explore the possibility of liberalising FDI (foreign direct investment) in multi-brand retail and ease conditions on foreign investors to improve access to a variety of products.
Identify gaps in food supply chain infrastructure and focus policy on the creation of the right infrastructure.	Infrastructure bottlenecks have to be addressed through right policies.	Delist fruits and vegetables from Agriculture Produce and Marketing Committee (APMC) so that there is no APMC cess and remove restrictions on inter-state movement of fruits and vegetables.

While consumption decisions are personal, the government, through appropriate policy can support the desired consumption of fruits and vegetables which, in turn, will help build a healthy nation. Most importantly, government policy has to protect the interests of consumers and provide them with a broader choice in terms of product variety and retail formats.

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IT is scientifically established that fruits and vegetables are essential sources of phytonutrients, which promote a range of health benefits. A pioneering study by the World Health Organization (WHO) on diet, nutrition and prevention of chronic diseases has recommended that a daily intake of at least 400 grams of fruits and vegetables helps to prevent diet-related chronic diseases and micronutrient deficiencies.

India is one of the largest producers of fruits and vegetables in the world. It is also one of the largest consumer markets, with food and grocery having the largest share in the consumption basket. However, a number of studies show that Indian consumers do not consume the WHO recommended quantity of fruits and vegetables. This report, based on secondary information analysis and a survey of 1,001 consumers across different states in India, tries to understand the production and availability of fruits and vegetables, consumption patterns, extent of shortfall in consumption, reasons for shortfall, implications of such shortfall for consumer health and well-being, among others. It also highlights policy issues related to food safety and standards, use of pesticides, organic products, food supply chain, foreign investment in retail, food pricing, and food supplements and nutraceuticals, among others.

The uniqueness of the report is that on the one hand, it will enable the businesses to understand the production and supply chain of fruits and vegetables and the policy environment; on the other, they will have a complete knowledge about Indian consumers.



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