

Advances in Horticulture Research and Development in Bangladesh

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Bangladesh Agriculture Scenario

Agriculture is the dominant activity in Bangladesh and regarded as the lifelines of the nation's economy. The economy of Bangladesh has grown strongly from USD 53 billion in 2000 to USD 303 billion in 2019 with population of 167million and has reached GPD/capita 2,687 USD in 2022. Substantial progress made with SDGs in terms of poverty reduction, education and health. Urbanization and industrialization trends have accelerated, with 38% of the population currently earning their income from agriculture, down from 65% in 2000. The country is now on the path to graduation from the category of LDCs by 2026. Globally, the country has moved up to the 3rd position in rice and vegetables, 2nd in jackfruit, 6th in potato, 8th in mango and guava (Bokhtiar and Samsuzzaman,2023),

In Bangladesh, an impressive agricultural growth above 3.0 per cent per year over the recent decades has proved to be the master key to generating income and employment and reducing poverty and hunger. Food grains production quadrupled since independence. Structural change in agriculture shows clear signs of shifts toward high value crops and non-crop enterprises with increasing penetration of market led production system. Production and marketing of non-cereal commodities has grown significantly during the last a few decades. Fruits, vegetables, fisheries and livestock are claiming a larger part of the incremental income. In addition, there is a growing export market particularly for horticultural commodities and shrimps (fresh, processed and frozen).

In response to the increasing demand, farmers are shifting from producing cereals to spices, fruits, vegetables, flowers and aquaculture etc. These developments have created opportunities for value addition through improved postharvest management and processing of agro-commodities into semi-finished and finished products both for the domestic and export markets.

Horticulture in Bangladesh

Bangladesh is located in the North-eastern part of South Asia, stretching between 20^o34'and 26^o38'North latitude and between 88^o01'and 92^o41'East longitude. It has a land mass of 143999 km² with a population of about 165 million. It is a tiny land of South Asia situated at the confluence of three major rivers, the Jamuna, the Meghna and the Brahmaputra (JMB) with tropical and sub-tropical climate produces a large volume of horticultural crops- fruits, vegetables, spices and ornamental plants every year.

The country is small but has diverse ecosystems like hills, planes, coastal and wet lands. The climate is mainly tropical and subtropical. Temperature ranges from 5^oC to 28^o C in winter and from 22^o C to 40^o C in the summer. Average rainfall varies from 1430 mm in the North and Northwest to 4,338 mm in the East and Southeast. Agriculture is predominant with a cropped area of 13.71 million hectare and 179% cropping intensity. Agro-ecology of the country is divided in 30 AEZs. High and medium high lands are mostly suitable for horticultural crops production. Rapid urbanization and climate related challenges made a new and complex situation, where availability of arable land is declining @ 1% per year and population increasing rapidly with additional demands of food and nutrition. In the aforesaid situation, horticultural crops production with high production capacity per unit area compared to other field crops are the suitable alternative.

Horticultural crops cultivation is playing economically important role as garden crops by providing food and improving cereal-based diet in a land hungry and densely populated country like Bangladesh. According to DAE sources Bangladesh produces about 150 different vegetables with production of over 23.5 million tons annually. More than 60 different types of fruits are grown in Bangladesh and annual production is over 14.3 million tons. Fruits occupied about four percent of the total cultivable land and earn about 15 percent of the national income.

Overview of Production Fruits, Vegetables & Potato (2001-2019)

Fruits and vegetables contribute to 4.6 % of the agricultural GDP of Bangladesh covering horticulture farming in 4% of total land areas (8,73,000 ha) of the country. Horticulture production comprises 7% of total crops production in Bangladesh. The area of vegetable cultivation increased from 1.6mn to 4.37mn ha and production increased from 1.6mn MT and 4.37 mn MT. Area of fruits cultivation increased from 0.19 ha to 0.60mn ha, while production increased from 1.56mn MT to 4.95mn MT. Area of potato cultivation increased from 0.16mn ha to 0.19mn ha while production increased 8.60mn to 10.90mn MT.

Production Trend of Horticultural Crops

The area and production of vegetables during 50 years (1970-71 to 2020-21) are presented in Figure 1. which shows that the area under vegetable cultivation increased from 0.05 to 0.46 million ha (820 % increase. Figure 2 shows that, the area under fruits cultivation increased from 0.6 to 19.72 million tons (3186%).

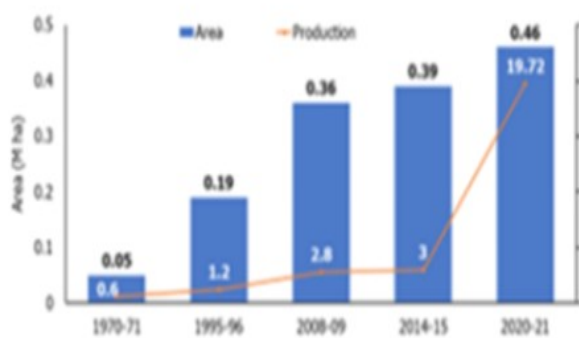


Figure 1. Production trend of vegetables

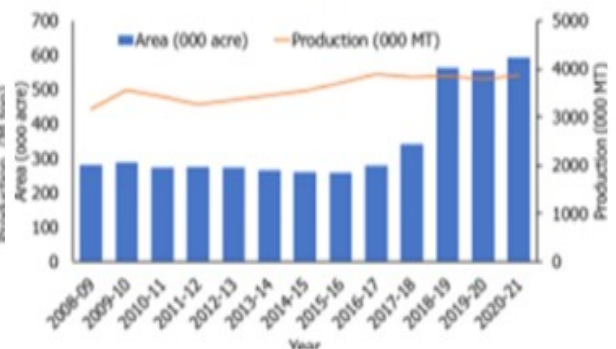


Figure 2. Production trend of fruits

The production volume was 862,000 MT in 1971 which increased to 9.606 million MT during 2119-2020 in an area of 1140,000 acres (BBS, 2020). Bangladesh became the seventh largest potato producing country, after China (99.21 million MT), India (48.61 million MT), Russia (29.59 million MT), Ukraine (22.21 million MT), U.S.A. (20.02 million MT) and Germany (11.72 million MT). The production volume of potatoes was 862,000 MT in 1971 which increased to 9.606 million MT during 2119-2020 in an area of 1140,000 acres (BBS, 2020). For potato cultivation in Bangladesh, the use of high-yield varieties is common (about 90 percent of potato production is from high-yield varieties). The yield range of varieties were 1944 to 46.67 MT/ha. The high yielding varieties cover 84.7 percent of potatoes cultivation areas while local varieties cover only 15.3 percent of lands (JICA Study.2019). The names of popular varieties are Cardinal, Granola, Mondial, Ailsa, Cleopetra, Binella, Dheera, Multa etc.

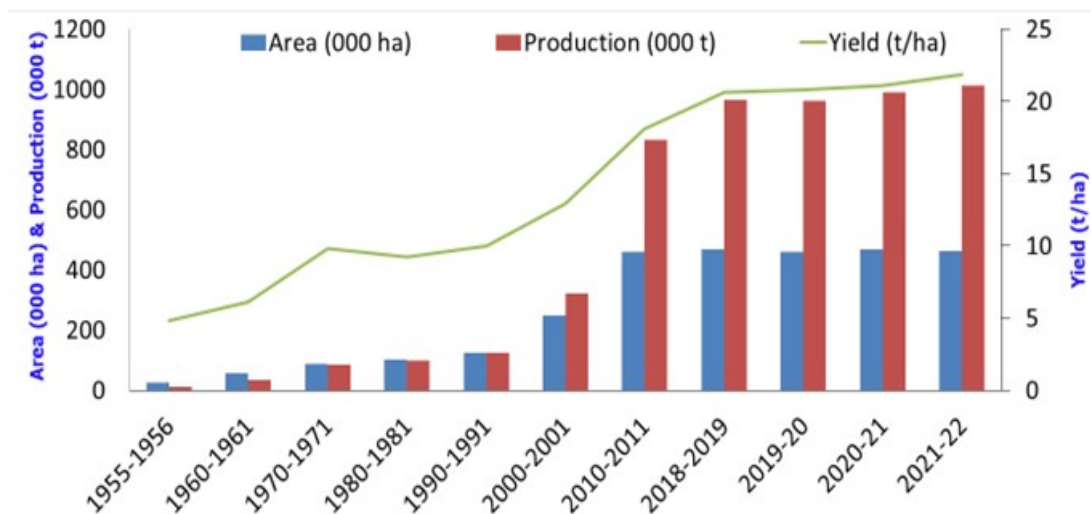


Figure 3. Trends of Tuber Crops Production in Bangladesh

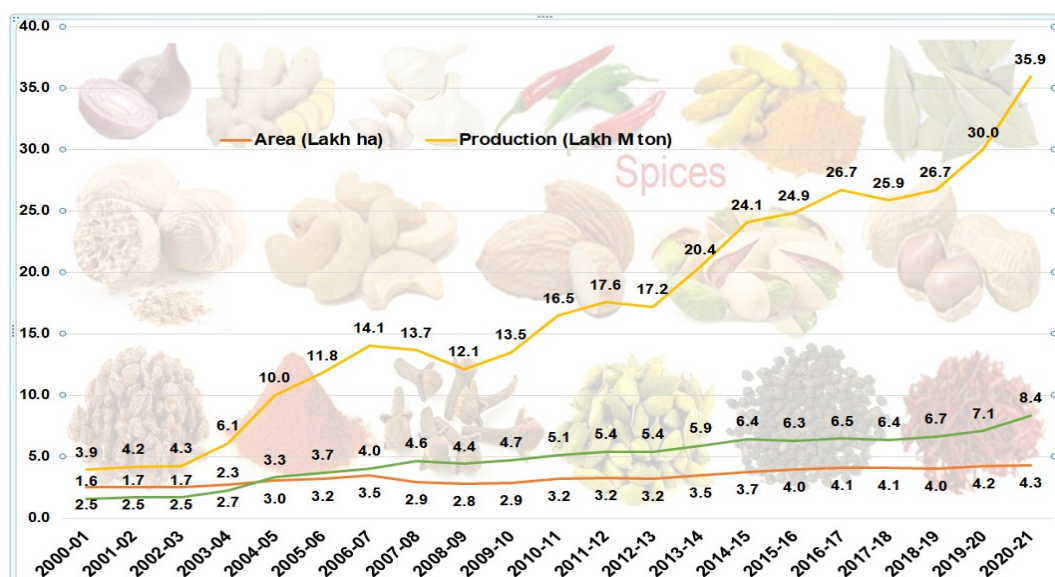


Figure 4. Trends of Spices Production in Bangladesh (2000-01 to 2020-01)

In case of both tuber crops and spices, a significant trend of increase is found in respect of both areas and production. It is observed that a strong agriculture productivity growth has been witnessed in the past few decades in the country. Factors behind the sector’s growth are facilitated by policy reforms and investments in infrastructure, agriculture research and human capital, irrigation expansion, modern agriculture technology adoption.

Achievements of Horticulture Research in Bangladesh

A good number of varieties and technologies have been developed in Bangladesh that made a revolution in increasing fruits and vegetables production in the country (Table 1).

Table 1. Numbers of vegetable varieties developed in Bangladesh during 1981-2020

Vegetables	Number of vegetable variety						Total	
	BARI		BSMARU		BAU	SAU		
	OP	Hybrid	OP	Hybrid	OP	OP	OP	Hybrid
Brinjal	13	9	-	-	-	-	13	9
Tomato	21	9	1	-	-	-	22	9
Country bean	15	-	9	-	-	2	26	-
Ladies finger	2	-	-	-	-	-	2	-
Palwal	2	1	-	-	-	-	2	1
Radish	5	-	3	1	-	-	8	1
Carrot	-	-	1	-	3	-	4	-
Cabbage	2	-	3	-	-	-	5	-
Cauliflower	3	-	1	-	-	-	4	-
Gourd	13	6	2	1	-	-	15	7
Aroid	11	-	-	-	-	-	11	-
Leafy vegetables	13	-	-	-	-	-	13	-
Others	10	-	-	-	-	-	15	-
Total	110	25	25	2	3	2	140	27

Source: Bokhtiar and Shamsuzzaman, 2023.

Since 1981, a total of 167 varieties of different vegetable crops have been developed in Bangladesh by BARI, BAU, BSMRAU and SAU. During the last 40 years of which 135 varieties have been developed by BARI, 27 by BSMRAU, three by BAU and two by SAU. Out of 167 vegetable varieties developed as of 2021, the highest number was OP varieties (140) of which 110 were developed by BARI (Table 1). The OP varieties were developed for country bean (26), tomato (22), gourd (15), brinjal (13), leafy vegetables (13), aroids (11) and radish (8). BSMRAU developed 25 OP vegetables, nine of which were for country bean. On the other hand, during 1981-2020 total 27 hybrid varieties, (nine brinjal, nine tomato and seven gourd have been developed (Bokhtiar and Shamsuzzaman, 2023).

Varietal development for fruits is also being continued mainly by BARI and a few agricultural universities including BAU and PSTU, where BAU has contributed the most among the universities. These organizations so far have developed 197 varieties of different fruit crops (Table 2). The development of fruit varieties dramatically increased from only one variety during 1971-1980 to 78 varieties during 2011-2020 peaking to 93 varieties during 2001-2010 indicating a remarkable development of fruit varieties during the two decades from 2001 to 2020.

Out of 197 fruit varieties developed (Table 2), number of mango varieties is 42 (21%), of which BAU (25 varieties) out performed BARI (17 varieties). The number of fruit varieties developed during 1971-2021 are presented in table 2.

Table 2. The number of fruit varieties developed during 1971-2021

Fruit	BARI	BAU	BSMRAU	PSTU	Total
Mango	17	25	-	-	42
Jackfruit	3	1	-	-	4
Guava	4	10	2	-	16
Jujube	5	3	-	-	8
Lemon	15	4	-	1	20
Litchi	5	4	-	-	9
Banana	6	2	-	-	8
Papaya	1	-	2	-	3
Coconut	2	-	-	-	2
Orange	3	-	-	-	3
Malta	2	2	-	-	4
Jamrul	3	3	-	-	6
Safeda	3	4	-	-	7
Kamranga	2	3	-	2	7
Strawberry	3	1	-	-	4
Pomelo	-	5	-	-	5
Dragon fruit	1	4	-	-	5
Watermelon	2	-	1	-	3
Others	22	13	-	6	41
Total	99	84	5	9	197

Source: Bokhtiar and Shamsuzzaman, 2023.

Spices are common ingredients of assorted food items in the Bangladesh food bowl. BARI, BAU and BSMRAU have developed 49 spice and condiment varieties during 1981-2021. These 49 varieties developed by different organizations during 1981-2020 were for chilli (10), garlic (9), onion (7) and turmeric (5) and most of which have been developed by BARI and BAU contributed appreciably to garlic variety development.

Floriculture a part of ornamental horticulture is gaining importance in the country. Studies have established that the income from flower production is twice as much as can be obtained from rice per unit area. The export promotion Bureau (EPB) of Bangladesh recognized the potential of floriculture as a viable export earning sector. The growth

of the trade in floriculture products has started in 1988 and it is expanding. The Horticultural Research Centre (HRC) have 133 rose varieties, 54 gladiolous, 2 tuberose, 30 chrysanthemum. The National Botanical Gardens, Mirpur (Dhaka) and Bangladesh Rifles, Dhaka, have also more than 200 rose varieties in their collections. A few tissue culture units, both in the public (BARI/DAE) and private sector (BRAC, German Krishi Foundation and Proshika) have initiated the work on micro-propagation.

Horticultural Extension in Bangladesh

Department of Agricultural Extension is the largest public sector agricultural extension service provider in Bangladesh. Its mission is to provide efficient and effective need-based extension services to all categories of farmers, to enable them to optimize their use of resources in order to promote sustainable agricultural and socio-economic development. To perform these missions, DAE has eight operational wings. Among those, Horticulture Wing (HW) is a very important one. There are 73 horticulture centers under this wing across the country. Horticulture centers play important role in providing farmers' need-based extension services for production, crop management, post-harvest handling, storage, processing and marketing of horticultural produces. It also provides training, demonstration and advisory services to the farmers, gardeners and nursery owners.

Identification of the farmer's needs and solve their problems are the main strategies to have the better production. Horticulture Wing imparts training for skill development of the stakeholders (Dhar and Alam, 2015).

The major activities of the Horticulture Wing are as follows:

- Production of improved quality grafts, saplings, cuttings, seeds and seedlings of high yielding varieties of fruits, vegetables, flowers and spices.
- Production of quality fruits, vegetables and spices at farm level and provide support services along with logistic facilities for marketing with a view to increase supply of products.
- Motivate farmers n newly selected areas to increase cultivation of vegetables, fruits, flowers and spices of modern varieties of horticultural crops.
- Transfer modern and appropriate technologies and organize trainings for the stakeholders.
- Organize/establish demonstration plots/farms in the horticultural centers and farmers field.
- Provide appropriate advice and assistance in marketing.
- Establish network with the farmers and survey owners.
- Employment opportunities of more women in horticultural activities and
- Organize interface meetings involving scientists and development officials at field level.

Remarkable achievements have been made in transferring of horticultural technologies that has increased production of horticultural crops in manifolds during the recent past.

Contribution of Semi-Government and Non-Government Organizations in Horticulture Development in Bangladesh

With a view to increase the availability of nutritious fruits, vegetables and spice in the market Bangladesh Agricultural Development Corporation (BADC), a public corporate body for agricultural input supply in Bangladesh established four Agro-Service Centers, ASCs nearest to the important cities of Dhaka, Chittagong, Rajshahi and Jessore in 1967-68. Each of the center has its own demonstration farms and a projected command area. During the Second Five Year Plan of the country, 12 more ASC were established resulting into 16 ASCs in the country. Subsequently three new ASCs were established at Barisal, Patuakhali and Noakhali and during the Third Five Year Plan another two ASCs were established at Lama and Bandarban. Again, one more center was established at Barguna. At present total ASCs are 20 spread over the country.

In order to develop horticulture in the country all the ASCs situated at different places were organized suitably. Village-based farmers' groups/ cooperatives were formed and assisted with all types of facilities like farmers' training, transfer of modern technologies, supply of quality seeds of improved varieties, saplings supply, etc. Agro - Service Centers have also arranged necessary facilities to ensure proper marketing of the products of the farmers in the project area. These activities of Agro- Service Centers have created a momentum and opened a new era of

horticultural development in the command area so far as the production of agricultural crops particularly vegetables and fruits are concerned.

BRAC started working in horticulture sector in 1988 to promote the growth of horticulture sector in Bangladesh by producing best quality saplings and making it available throughout the country. Currently BRAC operates 15 nurseries that are located across the country.

Climate Change and Bangladesh Agriculture

Bangladesh is one of the most disaster-prone country in the world and likely to be affected by sea level rise and saltwater intrusion, mean temperature increases, rainfall variability and an increase in the frequency and intensity of extreme weather events. Major weather events, for example the cyclones of 2007 and 2009 had record of tremendous losses (2 million tons) of rice, which was enough to feed for 10 million people. The south, southwest and southeast coastal regions of Bangladesh are increasingly susceptible to severe tropical cyclones and associated saltwater intrusion. In 2017, it was recorded 100 ml rainfall in a day in Barisal district, which is a record in the history of 200 years (BBS, 2016). Early rainfall in March and unexpected rainfall in November cause huge loss in rice yield every year.

A study using International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) for Bangladesh shows that, most of the production systems in Bangladesh are projected to be adversely affected by climate change. Overall yield may decline in maize, pulses, vegetables, jute and wheat by the year 2050. IMPACT shows that the average temperature of Bangladesh would likely to increase 2.1 degree by 2070 and precipitation is projected to increase 12.3%. BBS (2016) reveals that the decrease production of rice (5.3%), jute (3%), oilseeds (6.3%), vegetables (5.7%), wheat (6.4%) and pulse production (0.4%) by 2050.

Current Focus Areas in Horticultural Research

- Hybrid varieties development of fruits and vegetables
- Development of climate resistant vegetable varieties;
- Off season fruiting of mango, guava, Jujube, etc.
- Summer season vegetable variety development;
- Practices of High-Density Planting (HDP) and Ultra High Density Planting (UHDP) of Mangoes, Guava, Jujube, Litchi, etc.
- IPM practices and use of Biopesticides in fruits and vegetable farming;
- Post-harvest management and value addition of horticulture products.
- Urban horticulture
- Hi-tech horticulture
- Use of ICTs in horticulture
- Vertical farming of horticultural crops
- Hydroponic culture of horticultural crops

Export Marketing of Horticultural Products

Export of fresh produce (fruits, vegetables and potatoes) was US\$18 million in 1995-96 which increased to 46.41 million US\$ in 2004-05 and significantly raised to 209.38 million US\$ in 2013-14. After that the export value of fresh produce started to decrease gradually and dropped to only 80.22 million US\$ in the year 2017-18 and thereafter started to increase the value of export 164.49 million US\$ in the year 2019-20. Figure 5 & 6. shows that in 2008-09, the quantity of vegetable export was 22791 MT which was increased to 75435 MT in 2013-14 and after that it started to decrease gradually and slowed down to 39868 MT only in the year 2017-18 and again started to increase from the next year with export quantity of 58677 MT which raised to 62767 MT in 2019-2020. In case of export of fruits, similar erratic trend is observed (Fig. 5).

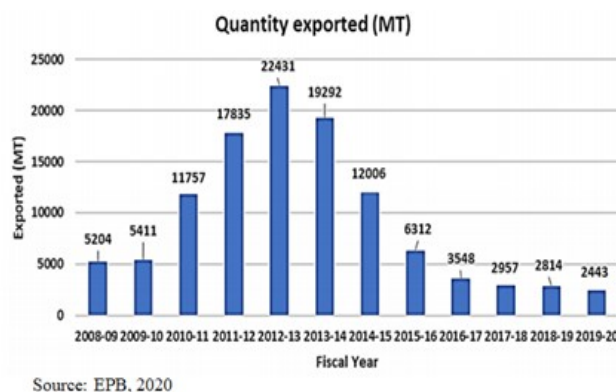


Figure 5. Export trend of vegetables in Bangladesh

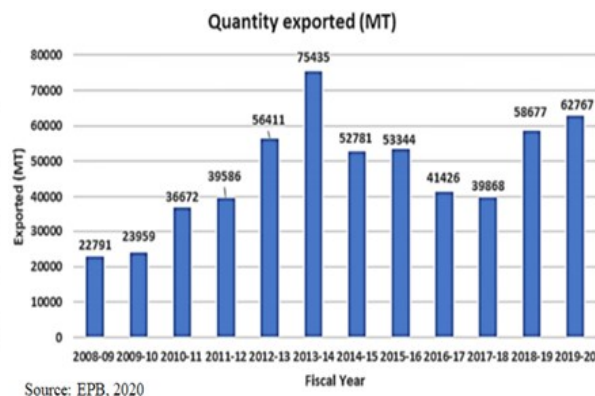


Figure 6. Export trend of fruits in Bangladesh

Similar to fruits and vegetables, the export trends of potato are also fluctuating. In 2008-09, 407 MT potatoes were exported from Bangladesh and since then it started to increase gradually and had gone peak in 2013-14 (103000MT). After that it again started to decline gradually and fall down to 34794 MT of potato export in 2018-19 but in the following year it started to increase with export of 46002 MT export potatoes (Fig. 7).

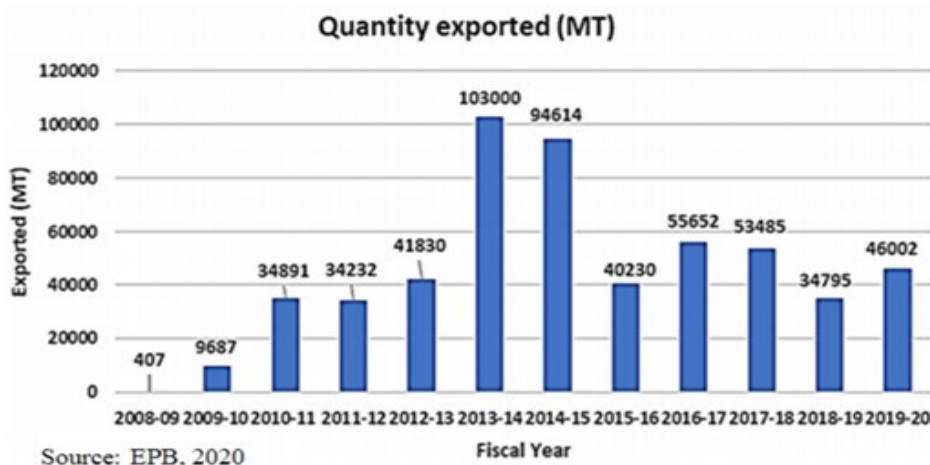


Figure 7. Export trend of potato in Bangladesh

As evident from the data presented in this section, exports of fresh produce have demonstrated fluctuations across the years. According to the insiders of export business, these erratic trends of export of fresh produces were due to non-compliances of requirements of imported countries. The main reason for the fluctuation was the ban/embargo on some products due to Bangladesh’s non-compliance with quality standards. BFTI (2016) in a study reported that importing countries, particularly the EU put embargo in export of betel leaf, lemon/citrus and cucurbits (pointed gourds, teasel gourd) to the EU markets. Russia, the major uplifting country of potatoes, imposed ban to import potatoes from Bangladesh due to presence of brown rot disease caused by *Rastonia solanacearum* a bacterial rot agent.

Market Destinations of Fresh Produce Exports

About 100 types of fresh fruits and vegetables are being exported from Bangladesh to about 40 countries. During 2018-19 total of 97,686,632 US\$ worth of fruits and vegetable has been exported. Market destinations for vegetables and fruits widely vary across the product bases. Each vegetables and fruits product has a different market concentration. Bangladeshi fresh produces are exported to over 40 international markets. It has been observed that highest export was in Malaysia (1,664 million US\$), followed by Saudi Arabia (1,582 million US\$), Qatar (1,478 million US\$), United Arab Emirates (1,258 million US\$), United Kingdom (1,061 million US\$), Kuwait (1,008 million US\$), Singapore (4.153 million US\$) and lowest in Oman (3.19 million US\$) in an analytical report on

export of fruits and vegetables highlighted that future promising markets for Bangladeshi vegetables and fruits could be Japan, Canada, Indonesia, Sri Lanka, United States, Bahrain and Australia (BARI,2021).

Agro-Processing in Bangladesh

Bangladesh's processing industry is highly fragmented and is dominated by the unorganized sector, most of the players are small, about 42% of the output comes from the unorganized sector and only 25% from the organized sector and the rest from small scale players. The organized sector is relatively bigger in the secondary processing segment than the primary processing segment. Bangladesh's agro-processing market has been growing at a rate of 15% for the last five years which is currently valued at approximately \$4.81 billion including both domestic and export market of general industrial production.

The key challenges facing the agro-processing sector are as follows:

- Irregular supply of raw materials and low quality of produces;
- Lack of efficiency of stakeholders engaged in SMEs in production, post-harvest handlings, packaging, quality maintenance, shelf life of the processed products;
- Lacks of access to finance for SMEs and export-oriented firms;
- Weak linkage between producers and processors;
- Seasonality of operations of processing factories and low capacity utilizations;
- Poor institutional supports in supply chain development;
- Shortage of skilled technicians and workers;
- Lack of accredited laboratory testing facilities;
- Inadequate focus on quality and safety standards;
- Lack of product development and innovation; and
- Insignificant efforts to engage women in export-oriented business.

Export of Processed Agro-Products

In Bangladesh about 100 types of agro processed products are gathered in export basket and major exported products are Juice, Drinks, Puffed Rice, Snacks, Spices, Chanachur, Biscuits, Mustard Oil, Pickle, Frozen Vegetable, Semai, Potato Crackers, Nuts, Jam-jelly, Candy, Meat, Mango Bar, Molasses and Flattened Rice. The Major destinations of agro-processed products are EU Countries, Middle East, South East, Africa and USA. 81per cent of Bangladesh agro processed product goes to Asian market which value is 70.13 million US\$ followed by Europe 8per cent (6.79 million US\$). Figure 4 depicts that in the year 2017-18, the spices products earned highest in value (120 million US\$) in export of processed items followed by juice/drinks with value of about 100 million US\$.

In a study made by BRCP-1 under the Ministry of Commerce, Government of Bangladesh revealed that export value of primary commodities increased from 1154.08 Mn US\$ to 40535.04 million US\$ during the period from 2014-15 to 2018-19. Export of vegetables declined from 103.24 to 99.68 million US\$ and drastically the export value of fruits reduced from 38.48 to 0.33 million US\$, while export value of spices increased from 23.24 to 41.31 million US\$ during the same period. The highest growth of export value was observed in case of dry food items from 244.4 to 227.09 million US\$. The Business Standard (2019) in a report citing the data of EPB stated that Bangladesh has seen a boom in the export of dry food in 2018-19 fiscal. The expatriate Bangladeshis are the main consumers of the dry food products. Their increasing demand for this type of product is likely to increase its export volume.

Major Challenges in Export of Agro-products

- Absence of dedicated nodal agency to provide required support and services
- Weak research and development services
- Lack of established crop zones for producing exportable crops
- Absence of supervised production/contract farming system in place
- Absence of cool chain facilities
- Poor product quality and packaging system

- Absence of full-fledged accredited laboratories
- Poor handling facilities in airports and high air freights
- Weak linkages between producers and exporters
- Poor knowledge of stakeholders on produce quality standards and market information
- Competitive export markets

Major Challenges of the Horticultural Sector

- Limited availability of quality seeds of improved varieties;
- High costs of nutrients, as micronutrients are not produced locally;
- Limited access to and uptake of, quality seeds and other inputs.
- Climate change risks (floods, droughts, salinization);
- High postharvest losses due to poor postharvest treatment and transport, inadequate storage, lack of cold storage and poor market infrastructure.
- Lack of technical knowledge and low level of mechanisation.
- Lack of business models for service provision to address postharvest challenges (storage, transport, markets etc.).
- Limited availability of affordable finance and lack of agricultural insurance.
- Limited high-end market (most consumers are price sensitive, rather than quality conscious).

Major Constraints in Horticulture Development

The horticulture sector in Bangladesh is suffering a lot due to some natural, manmade, technical and economic reasons. Following are the major reasons behind the crippling growth and proven to obstruct the growth of horticulture sector in Bangladesh.

- Institutional and regulatory framework for horticultural development is not strong enough. Although a strong extension system for agriculture as a whole prevails in the country, but extension services for horticultural crops remain weak since five decades after the abolishing of Horticulture Development Board. An individual Horticulture Research Institution could not be established to generate demand led modern technologies to combat the prevailing food and nutritional insecurity in the country. Besides, Faculty of Horticulture in the Agricultural Universities could not be started to produce graduates with modern knowledge on horticulture in the country;
- Inadequate availability of disease free and high-quality planting materials;
- Slow dissemination and adaptability of improve high yielding cultivars/ hybrids;
- Lack of post-harvest management technologies and appropriate infrastructure;
- Weak database and negligible support for export development;
- Poor market intelligence, instability of prices, with no price support mechanism;
- Inadequate technical manpower / human resource;
- Poor credit supply, high rate of interest coupled with absence of crop insurance scheme;
- Weak linkage between Research and Development sectors, industries and farming communities;
- Inadequate government policies and schemes for horticulture development in general and to tap the potentials of hilly regions in particular;
- Absence of horticultural crop suitability map of Bangladesh based on agro-climatic conditions depicting most suitable areas for optimum productivity of a particular crop;
- Inadequate international coordination.

Recommendations for Horticultural Development

Meeting the above constraints would call for a major reorientation in the research and development strategies of the country at the earliest for horticulture development. The following recommendations are proposed to achieve the goals and diminish extent of the above major constraints.

- Develop target-oriented crop varieties which are commercially and industrially important
- Develop research agenda for climate change adaptation
- Increase area under cultivation of horticultural crops

- Ensure production and supply of quality seed and planting materials
- Strengthen institutional capacity for research, extension and education (e.g. establishment of Horticultural Research Institute, re-establishment of Horticulture Development Board under DAE and opening of Horticulture Faculty in Agricultural Universities).
- Enhance capacity for high-tech horticulture (e.g. hybrid tech., biotech, fruit breeding, climate resilient crop variety, post-harvest and value addition etc.)
- Minimize post-harvest losses and ensure value addition in horticulture
- Create public awareness for family nutrition
- Improve quality of products along with safety assurance for local and export markets
- Increase training of farmers and value chain actors on improved technology, farm level seed and propagule production, maintenance of mother trees, postharvest management and value addition and food safety and quality issues etc.
- Develop and implement action plan on horticulture development
- Facilitate for market development and enhancement (local and export)
- Encourage private sector entrepreneurs on horticultural research and development
- Set up Horticulture Commission for development of future strategies and plan
- Strengthen international collaborations.

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