

Opportunities of horticulture and horti-business in India

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Respected Dr M.S. Swaminathan, Member of Parliament (Rajya Sabha), Shri A.K. Thakur, Additional Secretary-Agriculture, DAC, Government of India, Dr S. Ayyappan, Secretary, DARE and Director General ICAR, distinguished members on the dias, very distinguished DDGs, Vice Chancellors, directors, speakers, delegates, Scientists from the National Agricultural Research system and CGIAR Institutes, representatives from the industry, co-sponsors, students, farmers, representatives from electronic and print media, ladies and gentlemen. A warm welcome to each one of you.

As the President of the Horticultural Society of India and Chairman of the Organizing Committee, I am indeed privileged to extend a very warm welcome to Dr M.S. Swaminathan who is responsible for bringing Indian Agriculture to the fore globally. Sir, you have been associated with the HSI and have been constantly blessing the activities of the Society. You were kind enough to grace the First Horticulture Congress held in 2004 in this very auditorium six years ago. Sir, you have been instrumental in igniting the growth of horticultural industry in India by recommending the establishment of National Horticultural Board, promoting R&D in horticulture as DG, ICAR; Deputy Chairman of the Planning Commission, Chairman of National Commission on Farmers and now as M.P. in Rajya Sabha and Member of the Committee constituted by the Prime Minister to overview the Agriculture policy and programmes. Sir, you have been an ardent promoter of expanding horticulture activity in the country to achieve dual objectives of food and nutritional security of the malnourished population of India besides, better employment generation and livelihood security. I heartily welcome you Sir!

We are fortunate to have Shri A.K. Mathur, the Additional Secretary (Agric.), Government of India, who has kindly agreed to deliver the Keynote Address of Sh. P.K. Basu, Secretary (A&C). We greatly appreciate the guidance, encouragement and financial support given by the Ministry in organizing

this congress. I welcome, you to this congress heartily.

I have great pleasure in extending a hearty welcome to Dr S. Ayyappan, Secretary, DARE and DG, ICAR who has endeared himself to all the cadres of NARS in a very short span of time due to his humble, honest and humanitarian approach. He has been providing dynamic leadership for the effective implementation of research programmes in the NARS and for aging international Co-operation in emerging areas of research. The Horticultural Society of India places on record his generous gesture of co-sponsoring the congress with adequate financial support and agreeing to be the Guest of Honour.

Finally, I welcome all the senior officers from various Ministries and ICAR, Vice Chancellors, Directors of ICAR, CSIR and other institutes, industry leaders, Chairmen and Co-chairmen of various sessions, invited speakers, delegates, scientists, fellows, and awardies research scholars, farmers, students and exhibitors who have graced this function. The success of the congress lies in your active participation. I appreciate your over whelming response and enthusiasm and welcome each one of you cordially.

1. WHY HORTICULTURE?

“Blessed are the fruit eaters” goes a saying which was very much true when India became independent during 1947. The fruit production during that era was negligible to meet the demand of the population. The nation had the priority to feed the 30 crore population inherited by Independent India. The primary focus was on attaining self-sufficiency in food grain production. The situation on food front improved over the Plan periods and the horticulture got due attention during VII Plan period. I am fortunate to have been associated with this industry all along since then. Significant changes have been witnessed during the intervening period. The strategy for the development of horticulture has been virtually a repeat of the spectacular Green Revolution that took place during early 60's. The reasons which paved the way for primacy to horticulture have been many:

- Fatigue in rice-wheat based crop system.
- Increase in small holdings and small holders

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- making such holdings economically non-viable.
- Recognition of importance of crop diversification globally to enable remunerative, viable, sustainable alternate production systems in agriculture.
- Shift from production of bulk/staple commodities to high value produce and products.
- The comparative advantages offered by horticulture crops in employment through higher labour requirement and providing newer opportunities.
- The rapid change in demographic profile of the country resulting in increased consumption of high value food items like fruits and vegetables.
- The increased realization about the role which fruits and vegetables can play in health and nutrition.

2. THE PATHWAY

The horticulture sector attracted the attention of Government of India in 80's after the initial focus on food security. I am fortunate to have been closely associated with this sector with the developments all along. Significant changes have been witnessed during the intervening period. The path way for the development of horticulture has been virtually a repeat the way green revolution took place in early 60's. The following initiatives require mention:

2.1. Increased Financial Allocation

- The financial allocation for the horticulture sector rose tremendously from a meagre Rs 24.7 crores in IV Five Year Plan to Rs 16,000 crores in XI Plan period besides the allocation for tea, coffee and rubber.

2.2. Strengthening Infrastructure

- The horticultural R&D infrastructure in India today is one of the best in NARS compared to several of the advanced countries. At present there are 10 Central Institutes, 13 Project Directorates, 13 AICRPs, besides the separate Horticultural Universities in Himachal Pradesh, Andhra Pradesh and Karnataka and separate colleges for horticulture indicate the growing requirements of specialized man power in this sector. Other R&D establishments like CSIR, DBT, DRDO, IITs and BARC also support research in horticulture.
- Separate Departments/ Commissionrates of horticulture have been established in most of the states. Separate ministries have been carved out of agriculture in some of the horticulturally important states.
- A large number of organizations have been established to promote the horticulture development in the country by Govt. of India. Notable among them are the National Horticulture Board, APEDA,

NCDC, NAFED, NHRDF, SFAC, Bee Board, Coffee Board, Tea Board, Rubber Board, Coconut Development Board, Spices Board etc., to name a few.

- Several Central and State funded institutions have been established like Institute for Organic Farming, Ghaziabad, Central Institute of Horticulture, Medziphema, Nagaland, International Horticulture Innovation and Training Centre (IHITC), Jaipur etc.

2.3. Status of Developmental Activities

- The horticulture sector witnessed the launching of a large number of central sector schemes in the near past namely National Horticultural Mission, Technology Mission for North Eastern and Himalayan States, Bamboo Mission, Construction, expansion, modernization of cold storages, Micro-irrigation, Use of Plastics, PFDCs, National Agriculture Insurance Scheme (NAIS), NAREGA etc.
- There is the world's largest network ToT network, *i.e.*, Krishi Vigyan Kendras (554), Kissan Call Centres etc. for the technology demonstration and transfer, information sharing etc.
- Market Information System has been launched by the National Horticulture Board.
- Development 54 AEZs for different agricultural produce in 20 states of which about 30 are devoted to horticultural commodities.
- Development of Crop Clusters in major horticultural production belts (end-to-end system) for farm-to-fork chain.
- Human Resource Development forms the major activity of all horticulture related development programmes at all levels, growers, progressive farmers, nursery men, entrepreneurs, primary and secondary processing sectors etc.
- Several NGOs, SHGs and farmers' cooperatives have been established for horticultural crops and produce.

2.4. Innovative Technologies

- Several new technologies have been developed and adopted to improve the production, productivity and post-harvest management of horticultural crops:

2.4.1. Introduction of New Crops

- While continuing to grow the traditional fruit crops new crops, namely, Kiwi, passion fruit, Leh berry, oil palm, noni, etc. have been introduced on a commercial scale. Many exotic temperate vegetables are now a part of Indian cuisine.
- Non-traditional fruits like papaya, custard apple, *aonla*, *ber*, papaya, *kokum* etc. now occupy a large area in different parts of the country.
- Limes and lemons have revolutionized the citrus production thereby ensuring year round

availability.

- Mushrooms have become a part of Indian cuisine and are well accepted both in urban and rural areas.
- A large number of exotic flower crops have been introduced in the country notably lilliums, tulips, alstromeria, zerbera, lisianthus, besides the leading flowers viz., rose, carnation, and chrysanthemum are now grown under protected structures.
- Massive area expansion has been planned in bamboo under the National Bamboo Mission launched by the Government of India.

2.4.2. New Varieties

- A number of improved varieties have been developed in horticulture crops with better productivity, good quality, pest and disease resistance and tolerance to abiotic stresses.
- Hybrid vegetables have saturated the vegetable sector in the country resulting in significant increase in production and productivity.
- New varieties of medicinal and aromatic crops have been evolved to minimize the over exploitation of the natural wealth available in the forests thus, leading to commercial production of several medicinal and aromatic crops in the horticulture-based cropping systems.

2.4.3. Planting Material

- Significant development has taken place in planting material of fruit and plantation crops with the registration of nurseries to ensure quality, authenticity and traceability.
- Micropropagation particularly in banana has made significant difference in production, productivity and availability of its produce.
- Development of diagnostic techniques has paved the way for production of disease-free planting material in the country hitherto plagued by a number of viral diseases.

2.4.4 Production Technology

- Technologies of canopy management and high density planting have resulted in higher productivity of better quality fruits in apple, mango, guava, pineapple and cashew.
- Tissue culture plants coupled with micro-irrigation and fertigation have increased per ha yields in banana in Maharashtra and Karnataka
- Balanced use of inputs coupled with proper choice of varieties, salt and drought tolerant root-stocks have revolutionized the grape production in the country.
- Promotion of beehives in the fruit and vegetable plantations has enhanced productivity of crops.

- Organic Farming and Conservation Horticulture have emerged as viable alternatives in areas with depleted natural resources.
- Hi-tech horticulture has become popular with the progressive orchardists. Protected cultivation has become the order of the day for commercial cultivation of a number of Hi-value vegetables and flowers.

2.4.5. Post Harvest management

- Post harvest management in mango through Vapour Heat Treatment has made the Indian mango exports to US, EU and Japan a reality.
- Tremendous improvement in packing and packaging technology is evident from the product range available in the retail chains, super markets and hyper markets.
- The storage capacity of horticultural produce in country has increased over the years with the establishment of a large number of produce specific cold storage units, CA storage, bulk storage facilities.
- State-of-the-art irradiation facilities for potato and onion for long duration storage has become a reality.
- Pigment extraction from flowers especially marigold, calendula etc. has assumed commercial proportions leading to exports of nutraceuticals. A large number of florist shops have mushroomed both in metropolitan cities and small towns.

2.4.6. Value Addition

- A number of processed fruit and vegetable products have become popular within the country. Frozen peas, mixed vegetables, easy-to-use condiments, ready-to-cook items, baby corn, sweet corn etc. have invaded the Indian kitchens.
- Farmers as well as the consumers have started realizing the importance of primary processing, grading and quality both for enhanced returns and consumer satisfaction respectively.

2.4.7. Horti-Business

- Indian retail market for fresh fruit and vegetables is estimated at \$35 billion. The organized retailing is of \$73 million and growing at a rate of 30 percent p.a. At present India tops the list of most attractive countries for international retail expansion.
- FDI in processing and food chains is increasing in horticulture and allied sectors.
- Several national and international retail giants like Wal-mart, Reliance, Unifruitt, Godrej, Birlas, Bharthi, Spencers, Nilgiris, ITC, Tata, Aditya Birla Group, Pantaloon Group, Adani, Amul, Ruchi Soya, Nestle, MTR, Dabur, Britannia, HLL's Food

and Beverages beside the traditional food and beverage giants like Coke and Pepsico/Coca Cola are now in business.

- Crop specific farmers' cooperatives like Mahabanana, Mahamango, Mahagrape, e-chaupal by ITC, etc. have already become the brand names. Besides, several private players like Field Fresh, Adani-Agrifresh, SAFAL, etc. are in contract farming, retail and export business under PPP mode.
- Joint ventures, EOUs and PPP collaborations are in operation in different sectors including development of Food parks, processing plants/units, grading and packing units, warehouses, etc.
- Some of the upcoming private ventures namely Skol Breweries India Ltd. are in contract farming agreement with farmers in Haryana; Adani Agrifresh is doing US\$ 251.77 million investment in supply chain; Cadbury India Ltd. has entered in agreement with Tamil Nadu Horticulture Department Corp. to promote cocoa farming in south; Mahindra Group is venturing into agreement with Punjab farmers for potato seed production under contract farming; Himalaya Drugs is sourcing atleast 70% of its herb collection from farmers' production in southern India; PepsiCo is into contract farming in several states for mango, potato, chilli and sweet-orange; while Reliance Retail is establishing 'farm-to-fork' pan-India network.

3. IMPACT OF PROGRAMMES

Initiatives taken by the public and private sector organizations and the proactive policies of the government have significantly brought about a sea change in the Horticulture sector. To mention a few:

- The area under horticultural crops has improved from a meagre 12.8 million ha during 1991-92 to 201 million ha in 2009-10 and the production rose from 96.6 to 227 million tonnes during the same period. India is now 2nd largest producer of fruits and vegetables after China beating Brazil.
- Productivity of horticultural crops as a whole increased from 7.5 to 10 tonnes/ha. India leads in the productivity of grape in fruits and cauliflower in vegetables.
- The international trade in fruits and vegetables has expanded rapidly. The number of commodities as well as varieties produced and traded has increased tremendously.
- There has been increase in diversity of horticultural produce and products.
- Income in horticulture sector has been increasing and driving the supply chain in joint ventures and

contract farming and become popular amongst the cash strapped farmers.

- The trade related policies have been looking outward and there has been enhancement in foreign direct investment.
- Niche markets for organized products have been growing.
- Production environment and market opportunity today is much different than they were in the past. With the horticultural crop production at 200 million tonnes, the sector has emerged as a key driver of GDP contributed by Indian Agriculture.

4. CONSTRAINTS

In spite of the enormous success achieved in this sector, several constraints still exist beside new emerging challenges.

- While poor productivity per unit area continues to be there in most horticultural crops, climate change has started impacting their productivity further.
- Although nursery certification has been mooted, standards for the planting material supplied by some private nurseries and the one procured on quotation are no reliable.
- A number of complex problems like alternate bearing, spongy tissue, malformation in mango; decline in citrus; bunchy top of banana; coconut wilt etc. still remain unsolved although relentless efforts are being made.
- Effort to improve use of bio-products are dwarfed by lack of inputs like bio-fertilizers, bio-pesticides etc.
- Much needs to be done for the development of infrastructure like cool chain, cold storage units, irradiation units etc. in view of the magnitude of the country.
- The present marketing system lacks system approach. There is considerable loss and wastage due to inefficient handling, transportation and storage methods.
- Producers fail to realize expenses incurred on transportation, let alone, the cost of production during the glut periods.

5. SUGGESTIONS

Research

- Lack of varieties for different uses like table purpose, culinary purpose, processing and export. Import of trait-specific germplasm required to be procured in different horticultural crops.

- Keeping in view the importance of planting material, creation of a National Planting Material Authority is suggested.
- There is need for optimization of inputs like seed, agro-chemicals, labour, capital, water and machinery for different horticultural systems.
- Research on organic farming systems need to be more scientific. Effort should be made for producing bulk organic manures, bio-fertilizers and bio-pesticides for meeting the increasing demand.

Education and Transfer of Tecnology (ToT)

- Horticulture is science and as a subject discipline is highly specialized owing to wide range of crops and aspects. Efforts are required to maintain the sub-disciplines in horticulture for specialization in the education and also recruitment systems.
- Although a number of universities and institutes offer specialization in horticulture, critical gaps still remain in imparting training on different aspects of Hi-tech horticulture including post harvest management, market-oriented skills etc. compared to global trends.
- The extension system in horticulture is quite different from annual crops hence emphasis on new models for ToT should be developed.

Business

- Successful models of value chain and retail chain management are already available. These models need to be replicated in smaller towns and rural backgrounds.
- Enough is yet to be done to estimate crop-wise, season-wise losses and to standardize the post harvest technology modules for various horticultural commodities and processed products.
- Market Information System, e-trading facilities, primary processing sector etc. need focused attention.

Policy

- There is need to develop and implement the quality standards, regulations and certification in horticulture produce and products. Enforcement of laws for ensuring quality of inputs (organic and inorganic) is called for.
- Policy issues like implementation of robust APMC Act in some of the states needs to be taken up on priority.
- Support pricing and crop insurance schemes need to be expanded to several horticultural and plantation crops.
- Investment should be made to keep pace with the growing technological advancements in cutting

edge areas of science including horticultural science, e.g. biotechnology, information technology, nano and space technologies etc.

6. THE CONGRESS

The Fourth Indian Horticulture Congress has been designed to address several of the above core issues through a wide range of invited lectures, to be delivered by 80 eminent experts in their respective fields. The deliberations would be addressed by a galaxy of technical experts representing 12 speakers from international organizations, 20 from the National Agriculture Research System, 22 from other public R&D establishments, 18 from industry, and 4 each from NGOs and financial institutions. It is hoped that deliberations during the congress will help to prioritize the future requirements of horticulture R&D keeping in view of the impending XII Five Year Plan proposals in the country.

From food shortage to food surplus, India endeavors to create revolution in horticulture. Horticulture has emerged as an important business opportunity both for growers, processors, retailers and exporters. Huge potential in horticulture has attracted corporate houses to venture into it and to develop innovative models linking farm to fork. Besides, it the sector which has enormous potential for eradication problems of rural unemployment, malnutrition, livelihood concerns etc.

The proactive policies of the Government have resulted in a spectacular growth in the Horticulture Sector. Though, the population has been burgeoning over the years, the per capita availability of fruits and vegetables has improved over the years. I am optimistic that horticulture would change the face of agriculture in India, leading to well being of the rural populations as also will become harbinger of opportunities.

Sir, I hope you will agree with me that a virtual Golden Revolution through Horticulture has taken place as it has made the small holdings profitable, ensured rural employment, increased per capita availability, not only brought self sufficiency in horticultural crops but also generated export surplus in many crops. The per capita availability of fruits and vegetables has improved shattering the myth of 'blessed fruit eaters'. We in the horticulture fraternity look forward to your continued support and dynamic stewardship to lead the revolution to further heights in years to come.

With this, I welcome everybody on this occasion.

Thank you one and all.

Jai Hind !!