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Editor's Note

Insect pest infestation is a major problem of crop production in Bangladesh. It reduces yield and marketable quality of the produce and thereby farmers incur huge financial loss. It is learnt that the crop loss ranges 30-52% due to infestation. Some major pest of horticultural crops are caterpillar, fruit and shoot borers, fruit fly, aphids, thrips, white fly, diamond back moths, leaf miner etc. Seasonal variation insect infestation is observed. High temperature and humidity in summer favor insect reproduction.

Farmers generally depend on synthetic chemical insecticides for their control. The overdose, improper insecticides, repeated application due to insects resistance are some contributing factors in increasing frequency and amount of insecticides application per unit area in many vegetables and fruits.

But the consumers look for safe vegetables and fruits as many of them are consumed as fresh or minimally processed. Production of safe fruits and vegetables is possible through adoption of environment friendly IPM technology packages which include **resistant variety, mechanical control, use sex pheromone, bio-control agents, biopesticides, clean cultivation etc.** IPM will minimize the wide spread application of synthetic pesticides and thereby saving huge foreign currency in importing pesticides.

It is heartening to note that Bangladesh Agricultural Research Institute (BARI) scientists already developed environment friendly **Integrated Pest Management (IPM)** packages to control the some major pests in horticultural

crops. Research thrust is necessary on insect resistance breeding, bio-pesticides development, sex- pheromone identification etc.

In order to promote the supply of safe vegetables and fruits for both domestic and export market, IPM technology needs to be dissemination through Farmers Community Approach (FCA), Mass Media Campaign, Demonstration and Training etc. Department of Agricultural Extension (DAE) and different NGOs should accelerate such activities considering the environment and health concern of the people in Bangladesh.

INSECT PEST MANAGEMENT FOR QUALITY HORTICULTURAL CROP PRODUCTION IN BANGLADESH

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In pest attacks are one of the most important limiting factors to different crop production. Annual yield loss due to insect pest alone is 25 percent for vegetables and 30 percents for fruits and that is one of the major cause for low production of those crops in Bangladesh. Till today crop protection of Bangladesh is mostly dependent on toxic synthetic chemical pesticides. Due to indiscriminate application of pesticides, its consumption increased several folds in the last decade. During 1997-2008, pesticide consumption increased 328.4% and per ha pesticide use increased 598.8%. Although 80% of the

insecticides are being applied in rice, the frequency and amount of insecticide applications per unit area is higher in vegetables.

Development of eco-friendly, sustainable, socio-economic acceptable integrated pest management or an IPM package is one of the best ways to get rid of insect pests management system. IPM is the integrated approaches for pest management that are gaining credence for use in sustainable agriculture development. It involves the integration of the most appropriate management strategies for pest control where sole dependency on pesticides can be avoided. Scientists of Bangladesh agricultural research institute have already been developed some effective IPM technologies, and some are in pipeline to control the devastating pests especially the insect pests of vegetables and fruits. Some of the IPM technology packages against those pests are discussed briefly as follows:

Developed Pest Management Technologies for Vegetable Insect Pests

Brinjal

Brinjal is attacked by many insect pests. Among them shoot and fruit borer, jassid, epilachna beetle etc. are considered as the major insect pests. IPM packages developed against those pests are as follows:

Brinjal shoot and fruit borer:

Brinjal shoot and fruit (BSFB), *Leucinodes orbonalis* Guen. is the most destructive pest of Brinjal. The yield loss caused by this pest has been estimated more than 85% in Bangladesh. Despite its seriousness, farmers rely exclusively on the application of chemical insecticides to combat BSFB, which has resulted in a tremendous misuse of pesticides in an attempt to produce blemish-free marketable brinjal fruits. However, BARI scientists have

developed effective and economic IPM package to combat the pest.

Management IPM Package:

- a. **Sanitation:** Weekly removal and destruction of pest-damaged shoots and fruits that harbor brinjal shoot and fruit borer (BSFB) larvae from the field.
- b. **Use of sex pheromone:** Sex pheromone for BSFB (a combination of two chemicals) has been identified, synthesized, and is now commercially available to trap the male moths before they mate. BSFB pheromone lures (in a plastic tube) baited in a suitable trap, 'BARI trap'. Male moths are attracted to the trap, captured and killed. The pheromone lure hung through the center of the lid inside the trap in such a way that the lure is 2-3 cm above the water level of trap. The trap should be set just above the plant canopy. Baiting should be started from 4-5 weeks after transplanting and continued till last harvest. A distance of 10 m² should be maintained between the traps. The pheromone plastic tubes (lures) should be changed at every 45-60 days.
- c. **Artificial release of bio-control agents:** To proliferate the use of different bio-control agents, weekly release of two parasitoids should be done. The parasitoids are i) egg parasitoid, *Tricogramma chilonis* (@ 1gm parasitized eggs/ha/week) and ii) larval parasitoid, *Bracon habetor* (@ 1 bunker /ha/week).
- d. **Community approach:** Community approach of the IPM package should be followed.

Chemical control:

Application of Thiamethoxam + Chlorantraniliprole (Voliam Flexi 300sc @ 0.5 ML/Liter Of Water. Pre-

harvest interval 7 Days) Or Spinosad (Tracer 45 Sc @ 0.4ml /Liter Water. Pre-harvest interval 3 Days) Or Emamectin Benzoate (Proclaim 5 Sg @ 1g /Liter Water. Pre-harvest interval 7 Days). At 10 Days interval. However, pre-harvest interval should be strictly followed for harvesting.

Other pests:

In the Brinjal field infestation of insect pests like jassid, epilachna beetle and whitefly are frequently observed. Bio-rationales like neem products like neem seed kernel extract (500 gm crushed neem seed kernel should be soaked in 10 liters of water. The filtered water then ready for application) or neem oil (@5 ml/ liter of water + 5 gm detergent or soap powder) were used to reduce jassid and whitefly infestation. Mechanical control method was practiced for epilachna infestation. Inundative release of bio-agents will also help to reduce those pests.

Cucurbit crops

Cucurbit crops like bitter gourd, sweet gourd, cucumber, tassel gourd, ash gourd etc. are attacked by different insect pests but cucurbit fruit fly, epilachna beetle, whitefly, fruit borer like *Spodoptera sp.* or pumpkin caterpillar are considered as the major pest. The developed technologies against those pests are as follows:

Cucurbit fruit fly:

Cucurbit fruit fly is a devastating pest of different cucurbit vegetables. In Bangladesh, this pest has been a major problem for the farmers as they invade the crops in high populations and devastate the cucurbit crops. Due to its nature of damage it is very much hard to control this pest with insecticide. However, an effective and cheap management strategy against this pest has already been developed, which comprises of sanitation and use of sex pheromone mass trapping.

Management

a. Sanitation: Collection and destruction of infested fruits along with larvae

b. Pheromone bait trap: The sex pheromone, 'cuelure', which mimics the scent of female flies, attracts the male flies and traps them in large numbers resulting in mating disruption. Simple plastic containers known as 'BARI trap' or 'Magic trap' were used for deployment of the pheromones. The rectangular plastic container had around 3-liter capacity and 20-22 cm tall. A triangular hole measuring 10-12 cm height and 10-12 cm base was cut in any two opposite sides. The base of the hole would be 3 cm above the bottom. Water containing two-three drops of detergent would be maintained inside the trap throughout the season. The pheromone soaked cotton was tied inside the trap with thin wire. Fruit fly adults enter the trap and fall into the water and die. Water inside the trap was replenished often to make sure the trap was not dry. The pheromone dispensers were continued throughout the cropping season. The pheromone bait traps should be in the cucurbit field at a distance of 12-15m² starting from first flower initiation and be continued till last harvest.

c. Community approach: Community approach of the IPM package was practiced.

Other pests:

In the cucurbit field infestation of some other pests like epilachna beetle, fruit borer like *Spodoptera sp.* or pumpkin caterpillar are frequently observed. For the control of borer pests, weekly releases of two parasitoids were done in the trial areas. The parasitoids were i) egg parasitoid, *Tricogramma chilonis* (@ 1gm parasitized eggs/ha/week) and ii) larval parasitoid, *Bracon habetor* (@ 1 bunker /ha/week). Bio-rationales like neem products like neem seed kernel extract (500 gm crushed neem seed kernel should be soaked in 10 liters of water. The filtered

water then ready for application) or neem oil (@5 ml/ liter of water + 5 gm detergent or soap powder) were used to reduce jassid and whitefly infestation. Mechanical control method was practiced for epilachna infestation. Inundative release of bio-agents will also help to reduce those pests.

Tomato

The key constraints to tomato production relate to tomato leaf curl virus, particularly in summer production when total crop loss is possible because of the efficiency of the vector, *Besimia tabaci*, transmission and susceptibility of currently available varieties. Other key constraints of tomato production are the attack of fruit borer, *Helicoverpa armigera*. The recently developed manage technologies against those pests are as follows:

Management

a. Use of virus resistant germplasm: Resistant/tolerant line against whitefly and leaf curl virus (containing the Ty-2 resistance gene) were developed. Those line (TLB 182) were promoted among the farmers to resist whitefly and whitefly transmitted leaf curl virus disease.

b. Pheromone bait trap:

Sex pheromone for *Helicoverpa armigera* and *Spodoptera litura* is now commercially available to trap the male moths before they mate. Pheromone lures (in a plastic tube) baited in a suitable trap, 'BARI trap'. Male moths are attracted to the trap, captured and killed. The pheromone lure hung through the center of the lid inside the trap in such a way that the lure is 2-3 cm above the water level of trap. Bating should be started from 3-4 weeks after transplanting and continued till last harvest. A distance of 15 m² should be maintained between the traps.

c. Artificial release of bio-control agents:

To proliferate the use of different bio-control agents, weekly release of two parasitoids were done in the trial areas. The parasitoids are i) egg parasitoid, *Tricogramma chilonis* (@ 1gm parasitized eggs/ha/week) and ii) larval parasitoid, *Bracon habetor* (@ 1 bunker /ha/week). Those bio-control agents would manage the fruit borer problem.

Chemical control:

Application Of Thiamethoxam + Chlorantraniliprole (Voliam Flexi 300sc @ 0.5 Ml/Liter Of Water. Pre-harvest interval 7 Days) Or Flubendiamide (Belt 24wg @ 0.5g /Liter Water. Pre-harvest interval 7 Days) Or Spinosad (Tracer 45 Sc @ 0.4ml /Liter Water. Pre-harvest interval 3 Days). Application Of insecticides should be done at 10 days intervals for 2-3 times after first incidence of insect infestation. However, pre-harvest interval should be strictly followed for harvesting.

Cabbage /cauliflower

Leaf eating lapidopterous pests like cabbage worm and diamond back moths are the main constraints for cabbage production. Integrated pest management packages to control those pests are as follows:

a. Mechanical control: Hand picking and destruction of *Spodoptera litura* or DBM egg/larvae during initial stage should be done in the cabbage and cauliflower fields.

b. Use of sex pheromone:

Sex pheromone for *Spodoptera litura* is now commercially available to trap the male moths before they mate. *Spodoptera litura* pheromone lures (in a plastic tube) baited in a suitable trap, 'BARI trap'. Male moths are attracted to the trap, captured and killed. The pheromone lure hung through the center of

the lid inside the trap in such a way that the lure is 2-3 cm above the water level of trap. Bating should be started from 4-5 weeks after transplanting and continued till last harvest. A distance of 15 m² should be maintained between the traps.

c. Artificial release of bio-control agents:

To proliferate the use of different bio-control agents, weekly release of two parasitoids should be done in the field. The parasitoids are i) egg parasitoid, *Tricogramma chilonis* (@ 1gm parasitized eggs/ha/week) and ii) larval parasitoid, *Bracon habetor* (@ 1 bunker /ha/week). Those bio-control agents would manage the fruit borer problem.

Country bean

Country bean is one of the most popular vegetables in Bangladesh. Now- a- days country bean became a year round crop instead of only growing during winter. So, due to year round availability infestation of different pod borers were also increased. Previously, pod borer, *Maruca vitrata* was considered as the single borer pest of country bean in Bangladesh. But recently it was observed that *Helocovarpa* sp. infesting pods of country bean. On the other hand aphids infestation is also considered as the limiting factor for country bean cultivation especially during cool and dry period.

Farmers are spraying different types of insecticides at a very high frequency and dose on country bean to save the crop from the borer complex and aphids. Even after that proper management of those insect pests become difficult. However, the following management approaches can effectively control the insect pests of country bean.

Management package

- a. **Mechanical control:** Hand picking and destruction of *M. vitrata* and *H. armigera* infested flowers and pods should be done at alternate days in the country bean fields.
- b. **Artificial release of bio-control agents:**
To proliferate the use of different bio-control agents, weekly release of two parasitoids should be done in

the field. The parasitoids are i) egg parasitoid, *Tricogramma chilonis* (@ 1gm parasitized eggs/ha/week) and ii) larval parasitoid, *Bracon habetor* (@ 1 bunker /ha/week). Those bio-control agents would manage the fruit borer problem.

- c. **Spraying of soap water:** Five gm powder soap/liter of water during initial aphid infestation can manage aphid population in a sustainable manner.

Chemical control:

Application of Thiamethoxam + Chlorantraniliprole (Voliam Flexi 300sc @ 0.5 ML/Liter Of Water. Pre-harvest interval 7 days) Or Flubendiamide (Belt 24wg @ 0.5g /Liter Water. Pre-harvest interval 7 days) Or Spinosad (Tracer 45 Sc @ 0.4ml /Liter Water. Pre-harvest interval 3 days) Or Emamectin Benzoate (Proclaim 5 Sg @ 1g /Liter Water. Pre-harvest interval 7 days). Application of insecticides should be done at 10 days interval for 2-3 times after first incidence of insect infestation. However, pre-harvest interval should be strictly followed for harvesting.

Developed Pest Management Technologies for Fruit Insect Pests

Mango

Insect pest attack, besides many other factors, plays a significant role for the low yield and poor quality of mango in Bangladesh. Mango can be attacked by plethora of insect pests but mango hoppers, fruit fly, mango leaf cutting weevil, mango fruit borer etc. Are considered as the major constraints of mango production. Some of the important management packages developed against them are as follows:

Mango Hopper:

The mango hoppers are the most destructive and major pests of all mango varieties all over Bangladesh. Voracious feeding of hopper nymphs causes the inflorescences to wither and turn brown. The hoppers also

excrete honeydew, which encourages development of sooty mould on the surface of leaves, branches, and shoots where the honeydew retained. The black coating of the sooty mould growth interferes with the photosynthesis activity of the affected plant parts.

Management

1. Annual pruning and thinning of densely planted mango orchard.
2. Spraying of two full cover spray applications with cypermethrin 10 ec @ 1 ml/liter of water or fenvalerate 20 ec @ 0.5 ml/liter of water within 10 days of flower initiation and after one month of the first spray.

Mango Fruit Fly:

Mango fruit fly is a major pest of the ripening mango fruits. The wriggling maggots are found inside the infested ripe fruits when they are cut open. The affected fruits get malformed and rot.

Management

1. Harvesting of mature mango before proper ripening.
2. Clean cultivation.
3. Use of methyl eugenol pheromone traps starting from pea stage of mango.
4. Wrapping of individual fruits with waxy paper before one month of harvesting.

Mango Leaf Cutting Weevil:

Mango leaf-cutting weevil is a serious pest of mango especially in nursery plantation. Female weevil excavates small cavities on either side of the midribs on the underside of a new leaf and laid eggs. The leaf is then cut by the female weevil near the base, a little above the petiole, at almost right angle to the midrib. Infested mango trees with new leaves will show characteristic cut leaves with petioles and basal portions of the laminate of leaves.

Management

1. Collection and destruction of the freshly cut leaves from the ground of the mango orchard.
2. Bagging of new flushes with mosquito net for 10-15 days.
3. At severe attack spraying of fenitrothion (sumithion or others) @ 2 ml/liter of water on the new flushes.

Mango Fruit Borer:

In recent years, mango fruit borer has been out breaking as a serious pest of mango at different regions of the country. The young caterpillars attack the mango fruits at marble stage to fruit maturity at the distal end. The typical symptom of damage by this insect appeared with a small dot or exit hole with dark pale brown ring encircling it. The surrounding areas of the exit hole rotted due to secondary attack of different fungus. Sometimes the infested fruits cracks and fall down on the ground. The larva feed within the fruit and make series of tunnels in the kernel.

Management

1. Spraying of Neem Oil @ 10ml/L + Trix 5 MI/L Of Water at fortnightly interval from marble size stage to fruit maturity were the best management option for the effective management of the mango fruit borer

Jackfruit

Jackfruit is attack by several insect pests but jackfruit borer is considered as the major pest of the fruit. Ipm package developed against the pest is as follows:

Jackfruit borer

On an average 27.44% jackfruits are infested by jackfruit borer in bangladesh. Reddish brown caterpillar of borer bore into shoots, flowers buds and fruits of all developing stages. Early infestation of jackfruit borer results in deformation of fruits and sometimes dropping off the

immature fruits. The larvae bore into the mature fruits and cause damage to the edible part. Later infested fruits get rotten.

Management

1. Clean cultivation,
2. Bagging of young fruits with polythene (size 55 cm x 85 cm).
3. Spraying of neem oil @ 10ml/l + trix 5 ml/l of water at 30, 40 and 60 days after fruit setting is also one of the best management options for the effective control of the jack fruit borer.

Litchi

Among the different insect pests attacking litchi, litchi fruit borer and litchi mites are considered as the major pests of litchi in Bangladesh. Recently developed some of the management technologies against those pests are as follows:

Litchi fruit borer:

Litchi fruit borer is a serious pest of litchi in Bangladesh. The larva of this pest is found to bore into the fruits to the seed. The larva thus destroys a part of the flesh and the seed. Due to attack of the pest the market value of litchi reduced very much.

Management

1. Bagging with mosquito net from the pea size of fruits can control the pest attack significantly. Three to four bunch of litchi should be tied together and then covered with mosquito net bag (30 inch x 20 inch).

Litchi mite:

Mite is a serious pest of litchi all over Bangladesh. Generally mite attacks on immature leaf. Young shoots and flower buds. Both nymphs and adults suck sap from

leaves and shoots. Litchi production is greatly reduced by the infestation of this pest.

Management

1. Pruning and destruction of mite infested leaves.
2. Application of miticide (omite 57 ec @ 2.0 ml/liter of water) during severe infestation.

Conclusion

The higher demand for horticultural crops and increased economic returns encouraged the farmers to bring more lands under those crops cultivation. Moreover, the demand for those crops reached beyond the boundary of the country as Bangladesh entered the vegetables and fruit export market. So, it is very much needed to develop and use of eco-friendly, sustainable, socio-economic acceptable Integrated Pest Management or IPM packages, which not only boost up the production of fruits, vegetables and flowers in Bangladesh but also ensure the quality of those crops.

Researches as well as developmental efforts have been unexpectedly slow and limited for the development of safe and effective ipm technologies for horticultural crops. As a result, the availability of IPM technologies for horticultural crops lagged behind seriously for years, compelling the farmers to have no other option than to rely solely on pesticide use for pest control. However, among the horticultural crops maximum IPM technologies have so far been developed on vegetable crops. On the other hand at present IPM technologies to manage insect-pest problems of fruits and flowers are very much scanty and no organized research and development work has so far been conducted to develop IPM technologies of these crops. So, a holistic and sustainable way of integrated pest management is thereby needed for boosting up country's total vegetables, fruits, and flower production by reducing the pest management cost.

Hortex News in brief

82nd Governing Body Meeting

The 82nd meetings of the Governing Body of Hortex Foundation was held on Tuesday, May 31, 2011 at Hortex Conference Room under the Chairmanship of Mr. C. Q. K. Mustaq Ahmed, Secretary, Ministry of Agriculture and Chairman, Hortex Foundation. The meeting discussed on various administrative issues and policy directives including the new pay scales of Hortex officials and staff, approval on recruitment of Assistant General Manager (Marketing) etc.



Partial view of 82nd Governing Body Meeting of Hortex Foundation

Expert Consultation Meeting on Citrus Canker Disease Management for Export Promotion

Hortex Foundation organized a series of expert consultation meeting on citrus canker disease management for export promotion of pest free citrus fruits with the experts of Plant Pathology from different universities, research institute and extension services. Responsible from Bangladesh Agriculture University, Mymensingh; Bangabondhu Sheikh Mujibur Rahman Agriculture University, Salna, Gazipur; Sher-e-Bangla Agriculture University, Dhaka; Department of Botany, Dhaka University, Dhaka; Bangladesh Agricultural Research Institute, Joydevpur, Gazipur; Plant Protection Wing

(Quarantine) of Department of Agricultural Extension, Dhaka and Bangladesh Fruits, Vegetables and Allied Products Exporters Association (BFVAPEA) attended the meeting on May 10, 2011 at Hortex conference room. After threadbare discussion on the issues a 13 (Thirteen) member committee has been formulated by Dr. Hamizuddin Ahmed, Former Director (Research), Bangladesh Agricultural Research Institute, Joydevpur as a convener, while Mr. Md. Rafiqul Islam, Assistant General Manager (Production), Hortex Foundation as a member secretary of the committee and requested to prepare and submit a report on recommendations on the basis of short term and long term basis for eradication and preventive measures for citrus canker disease from Bangladesh. Final report is under process.

Seminar on Integrated Pest Management of Thrips and Borer Pests of Exportable Vegetables

Hortex Foundation organized a seminar on “Integrated Pest Management of Thrips and Borer Pests of Exportable Vegetables at its conference room on Thursday, May 26, 2011. Mr. Jalal Ahmed, Vice Chairman, Export Promotion Bureau and Director, Hortex Foundation was the Chief Guest, while Krishibid Md. Hasanul Haque, Director, Plant Protection Wing, DAE was as Special Guest. Managing Director, Hortex Foundation Dr. S. M. Monowar Hossain presided over the meeting. Apart that Dr. Amirul Islam, Former Director General, Bangladesh Jute Research Institute presided over the technical session of the seminar. Keynote paper was presented by Dr. Syed Nurul Alam, Head of Entomology Division, Bangladesh Agriculture Research Institute, Joydevpur, Gazipur.



Partial view of the Seminar on Integrated Pest Management of Thrips and Borer Pests of Exportable Vegetables.

Chief Guest Mr. Jalal Ahmed, emphasized in his speech that Bangladesh should be taken initiative immediately to grow international standard quality fresh produce under contract farming system with Global GAP certification for export to mainstream markets in Europe and Middle East where Bangladeshi produces have huge demand. In this regard he advised to identify specific area for production of high-value export oriented fruits and vegetables.

Special Guest Krishibid Md. Hasanul Haque advised the exporters to follow the International Rules strictly for quarantine pests under WTO and SPS measures to maintain the image of Bangladesh and good reputation globally. Mr. Haque also emphasized to grow exportable produces by maintaining integrated pest management practices (IPM) and supervised cultivation.

Dr. Syed Nurul Alam mentioned in his keynote speaking that farmers are growing more land due to higher demand for horticultural crops at home & abroad and more economic returns than any other crops. Mr. Alam emphasized to develop and use eco-friendly, sustainable, socio-economic acceptable integrated pest management packages which not only boost the production of fruits, vegetables in Bangladesh but also ensure the quality of those crops.

About Sixty four participants were from different organizations like BARC, BARI, BADC, DAE, DAM, SRDI, BSTI, EPB, BFVAPEA, BAPA, NGO's, Hortex, Private Enterprises and Fresh produce Exporters.

Participation in National Fruit Fair, 2011, Dhaka

Hortex Foundation participated in the three days long National Fruit Fair from June 16-18, 2011 at the premises of Krishibid Institute, Khamarbari Shawrak, Farmgate, Dhaka which was inaugurated by Mr. Md. Akter Hossain, Additional Secretary (), Ministry of Agriculture, Govt. of the People's Republic of Bangladesh. Hortex stall was well decorated with festoons, banner and various kinds of exportable fruits of Bangladesh including: Mango (various), Jackfruit, Citrus fruits (Jara lebu, Ada lebu, Elachi lebu, Satkora), Guava, Pineapple, Hogplum, Sapota, Carambola, Pummelo, Monkey Jack, Wood apple, Anola, Burmese apple, Daophal etc.



Hortex Stall in the National Fruit Fair, 2011

Study Tour on Organic Farming in Thailand

A four members team of Supply Chain Development Component of National Agricultural Technology Project (NATP) comprising Dr. Md. Saleh Ahmed, Post Harvest Handling & Quality Assurance Expert, Mr. Monirul Islam, Supply Chain Development Officer, Savar, Dhaka, Mr. Md. Azmol Hosain, Chairman, CIG, Shibgonj, Bogra, and Mr. Md. Shahabuddin, Chairman, CIG, Belabo, Norshidhi visited Thailand in on a study tour mission on "Organic Farming" during 26 May to 2nd June, 2011. The objectives of the mission were having an exposure to the

development of Organic Farming along with its operational aspects and get acquaintance with stakeholders of the supply chain of organic products in Thailand. The mission program includes; field visits (practice organic farming), extension, training organizations and university, private farms and market visits etc.



Bangladesh Team Visiting an organic Farm in Thailand

Cool Chain Support

During the period Hortex Foundation provided total of 30 round trips of cool chain transportation supports to 07 organizations to carry their agro and other allied products. The organizations are: Syspromark, Pharma Trade, Associated Capsules (Pvt.) Ltd., Farco Syndicate, Trade Clippers Cargo Ltd., Khawja Trading Agency and Aga International.

Seminars/Meeting Participation

During this period Hortex officials attended number of seminars, workshops, trainings and discussion/policy meetings on various issues of agriculture and export related affairs. Some of them are as follows:

- (i) Participated in the National Workshop on “Rural Communication Services in Bangladesh” at IDB Bhaban, Dhaka which is organized by Rural Communication Services (RCS), AIS/FAO, Dhaka;
- (ii) Attend the “Signing Ceremony of the Memorandum of Articles (MoA) & Articles of Association (AoA) of Agro-Horticulture Sector Business Promotion Council (AHSBPC)” at DCCI Conference Room, Motijheel C/A, Dhaka which is organized by Business Promotion Council, Ministry of Commerce, Govt. of Bangladesh.
- (iii) Participated in the “Round Table discussion on Production of Vegetables for Export & Processing”. The Department of Agricultural Economics, BAU,

Mymensingh organized the meeting at the conference room of the Dean Agricultural Economics, BAU, Mymensingh.

- (iv) Attended in the seminar on “Agribusiness in Bangladesh: Challenges and Opportunities” at Westin Hotel, Gulshan, Dhaka. The seminar was jointly organized by the Royal Danish Embassy and The Norway Embassy, Dhaka, Bangladesh.
- (v) Participated in the “All commodities export target fixation meeting for the year 2011-12” of Export Promotion Bureau (EPB) at its Conference Room, TCB Building, Kawran Bazar, Dhaka.
- (vi) Participated in the meeting on “Quarterly meeting (Prantic) on Media Service in respect of Agriculture”. The meeting was organized by Agricultural Information Services (AIS), Khamarbari at the conference room of the Practical Action Bangladesh, Dhanmondi Residential Area, Dhaka.

Production and Marketing Advisory Services

During the period April-June 2011, advisory services were provided to 39 entrepreneurs, producers, NGOs, researchers, university students, govt. organizations on various aspects of production, post-harvest management practices, processing, cool-chain transportation and marketing of horticulture crops at home and abroad. The notable among the recipients of such services are: Crown Fruits and Vegetables Export; Chetona Model Academy; Lodi Green Offerings; Integrated Crop Solution BD Ltd.; SUNCO Foods Industry; Sara Trading & Distribution Co.; M/s. Sun Trade Co. Ltd.; M/s. Fuyad Impex; Practical Action Bangladesh Gaibanda; SAN Trade Co.; M/s. E. Haque Trading International; M/s. S. R. Enterprise, Chittagong; PROSHIKA (Tissue culture and FASAL); Megha Trade Limited; Kafil Foundation; Camco International; Krishok Bangla Agro Products, Savar; Bangladesh Agribusiness Development Project of Department of Agricultural Marketing (DAM); Maa Fatema Agro. Ltd.; Mohila Training Center, Rajshahi; Mohila Kallayani Gono Kendra (MKGK), Narshindi; Sundry Ltd., Setu Samaj Kallyan Sangstha, Jessore, Paragon Agro. Limited, Dhaka; Omar Trading Corporation, Dhaka; Royal Danish Embassy, Dhaka; Peoples Development Foundation, Jessore; SylhetFoods (BD) Ltd; Atish Diponkor University, Dhaka; Bangladesh Agril. University, Mymensingh etc.

Trainings/Workshops/Seminars under Supply Chain Development Component (SCDC), NATP

During the period, Supply Chain Development Component (SCDC) i.e. Hortex component of National

Agricultural Technology Project (NATP) has carried out 5 (five) training programs in different aspects on selected commodities & management practices for developing supply chain in the project sites. A total of 490 different stakeholders participated in the training program including 434 CIG farmers, 30 local traders, 17 inputs dealers and 9 management committee members of Commodity Collection and Marketing Center (CCMC). Out of 490 participants, 420 were male and 70 were female. Related specialized resource persons were invited from different organizations like Spices Research Center (SRC), DAE and BADC as well as SCDC, NATP.

At the same time SCDC-Hortex component also conducted 5 (five) workshops on (i) “Contract Farming in Agri-business”, (ii) “Safe Production, Post-harvest Management & Marketing of Lemon and Okra”, (iii) “Quality Fish Production & Post-harvest Management”, (iv) “Safe Production & Post-harvest Management of Vegetables” at Hortex Foundation, Dhaka; Comilla Sadar of Comilla; Delduar of Tangail; Mirsharai of Chittagong for sharing knowledge and skill development among the participants. A total of 240 different stakeholders were participated in the workshops including CIG farmers, traders, and exporters, officials of donor agencies, DAE, universities, private companies, Hortex, SCDC and other component of NATP. Specialized resource persons were invited from the private enterprises, research institute like BARI, extension services i.e. DAE, DOF and SCDC officials.



Partial view of the Seminar on “Contract Farming in Agri-business”

During April – June, 2011 beyond study to in Thailand another study tour in India on “Post-harvest Technology”. A total of 4 (four) participants including two CIG farmers, one SCDO and One Experts of SCDC were participated in the study tour.

New Assistant General Manager (Marketing) Joined Hortex Foundation

Mitul K. Saha joined Hortex Foundation as its Assistant General Manager (Marketing) on June 19, 2011. Mr. Saha earned M.S in Agricultural Economics (Marketing) from Bangladesh Agricultural University, Mymensingh in 2000. Since 2000, he worked at various capacities in different organizations as a consultant including Coastal Land Zoning Project under Ministry of Land, Bangladesh Quality Support Programme (BQSP) under Hortex Foundation, KATALYST, South Asia Enterprise Development Facility (SEDF) etc.



Mr. Saha participated in many training, workshop and seminar. Pertaining to his profession, he is also an active member of various professional organizations.

Air Freight of Fresh Produce to Various Destinations

Major destination-wise air cargo freight charge for the perishables by Biman Bangladesh Airlines in the form of Special Inducement Price (SIP) rates are given below:

Export Destination	Current SIP for Perishable Items
	Air Freight Charge (US\$/Kg) (Vegetables)
Rome	1.89
London/Paris	1.89
Bahrain	1.14
Jeddah/Riyadh	1.09
Kuwait	1.04
Dubai/Abu Dhabi	1.09
Singapore	1.02
Kuala Lumpur	0.65
Karachi	0.65

Source: Biman Bangladesh Airlines, Cargo Department through Bangladesh Fruits, Vegetables and Allied Products Exporters Association (BFVAPEA).

In addition to the base rate mentioned above, total freight includes Terminal Handling Charge (THC), Scanning

Charge and Fuel Surcharge on per kg and Airway Bill Charge on per consignment basis. The rate is applicable for 500 kg or above for Jeddah/ Riyadh, Dubai and 250 kg or above for Kuwait, Singapore, Kuala Lumpur, London and Paris. If the cargo weight is less than the above, rate will be higher. Air Freight Charges for betel leaf and betel nut for some countries a little higher than vegetables.

Wholesale Market Price of Selected Fresh Produce in Selected United Kingdom Markets

All prices quoted relate to stated pack weight and reflect the range of prices for class one produce prevailing on the day of collection as quoted by the selected market sources. All prices listed in pence.

Produce	Origin, Pack	Market	Median Price, GB (Range) Pence/Pack
Bananas	Dollar, 18 kg	Glasgow	1225 (50)
Bananas	Dollar, 18 kg	Western International	1200
Bananas	Dollar, 18 kg	New Spitalfields	1000
Bananas	Dollar, 18 kg	Liverpool	900 (600)
Bananas	Jamaica, 18 kg	Liverpool	900 (600)
Bananas	Jamaica, 18 kg	Glasgow	1225 (50)
Carambola	Malaysia, 3.5 kg	Western International	1800
Carambola	Malaysia, 3.5 kg, small	Liverpool	900
Carambola	Colombia, 3.5 kg	Glasgow	1050 (100)
Coconuts	Cote d'Ivoire, 50	Birmingham	1900
Coconuts	Cote d'Ivoire, 50	Liverpool	2500
Coconuts	India, 25	New Spitalfields	900
Coconuts	Sri Lanka, 25	Liverpool	2000
Coconuts	Sri Lanka, 25	New Spitalfields	900
Guava	Thailand, 5 Kg	Western International	1200
Lemons	Argentina 15 kg	New Covent Garden	1200
Lemons	Argentina 18 kg	Western International	1450
Lemons	Morocco, 40	Liverpool	450 (100)
Lemons	South Africa, 100	Birmingham	1500
Lemons	South Africa, 15 kg	Liverpool	1450 (100)
Lemons	South Africa, 15 kg	New Covent Garden	1200 (200)
Lemons	South Africa, 15 kg	New Spitalfields	1200
Lemons	Spain, 100	Birmingham	1300
Lemons	Spain, 15 kg	Glasgow	1325 (50)
Lemons	Spain, 15 kg	New Spitalfields	1100
Lemons	Spain, 15 kg	New Covent Garden	1000

Produce	Origin, Pack	Market	Median Price, GB (Range) Pence/Pack
Lemons	Spain, 30	Belfast	400
Limes	Brazil, 4.5 kg	New Covent Garden	750
Limes	Brazil, 4.5 kg	New Spitalfields	600
Limes	Brazil, 4 kg	Birmingham	600
Limes	Brazil, 54	Belfast	600
Limes	Mexico 4.5 kg	New Covent Garden	800
Limes	Mexico 4.5 kg	Western International	800
Limes	Mexico 4.5 kg	Liverpool	730 (60)
Limes	Mexico 4.5 kg	Glasgow	700 (100)
Lychees	Thailand, 2 kg	Liverpool	700
Mangoes	Brazil, 4.5 kg	Glasgow	725 (50)
Mangoes	Brazil, 4.5 kg	Liverpool	500 (200)
Papaya	Brazil, 7 kg	Glasgow	775 (50)
Papaya	Brazil, 7 kg	Liverpool	400
Pineapples	Cote d'Ivoire, each	Glasgow	65 (10)
Pineapples	Cote d'Ivoire, 7	Western International	400
Pineapples	Costa Rica, 7	New Spitalfields	250
Plantains	Colombia, 18 kg	Western International	2000
Plantains	Costa Rica, 18 kg	New Spitalfields	1900
Aubergines	The Netherlands, 5 kg	Western International	600
Aubergines	The Netherlands, 5 kg	Belfast	600
Aubergines	The Netherlands, 5 kg	Glasgow	575 (50)
Aubergines	The Netherlands, 5 kg	Birmingham	500
Aubergines	The Netherlands, 5 kg	New Spitalfields	500
Beans(Bob i)	Egypt, packet	Liverpool	65 (10)
Beans(Bob i)	Kenya,12 packet	Liverpool	550
Beans(Bob i)	UK, 4 kg	Liverpool	1000
Beans (Fine)	Kenya, 1.5 kg	Belfast	650
Beans (Fine)	Kenya, 2 kg	Liverpool	650 (100)
Beans (Fine)	Kenya, 2 kg	Western International	650
Capsicum (Green)	Spain, 5 kg	Birmingham	450
Capsicum (Green)	The Netherlands, 5 kg	Birmingham	600
Capsicum	The Netherlands, 5	Western	770

Produce	Origin, Pack	Market	Median Price, GB (Range) Pence/Pack
(Green)	kg	International	
Capsicum (Mixed)	The Netherlands, 12	Liverpool	960
Capsicum (Orange)	The Netherlands, 5 kg	Glasgow	925 (50)
Capsicum (Red)	Spain, 5 kg	Birmingham	450
Capsicum (Traffic lights))	The Netherlands, 10x3	Birmingham	800
Capsicum (Yellow)	Spain, 5 kg	Birmingham	450
Capsicum (Yellow)	The Netherlands, 5 kg	Birmingham	600
Chillies	Israel, 2/3 kg	Glasgow	725 (50)
Chillies	Spain, 3 kg	Glasgow	725 (50)
Chillies	Thailand, 2 kg	Western International	1200
Chillies (Green)	The Netherlands, 3kg	Birmingham	1000
Chillies (Green)	The Netherlands, 3kg	Liverpool	1100
Chillies (Green)	Gambia, 1.5 kg	New Spitalfields	850
Chillies (Green)	Gambia, 1.5 kg	Liverpool	600
Chillies (Green)	Spain, 3 kg	Liverpool	1100
Chillies (Green)	The Netherlands, 3kg	Liverpool	1100
Chillies (Red)	Spain, 3kg	Liverpool	1200
Chillies (Red)	Thailand, carton	New Spitalfields	1450
Chillies (Red)	The Netherlands, 3 kg	New Spitalfields	1800
Chillies (Red)	The Netherlands, 3 kg	Liverpool	1200
Cucumbers	The Netherlands, 12 (35/40 mm)	Belfast	450
Cucumbers	The Netherlands, 12/14	New Spitalfields	450
Cucumbers	The Netherlands, 12/14/16	Birmingham	450
Cucumbers	The Netherlands, 12/14/18	Liverpool	575 (50)
Cucumbers	The Netherlands, 12/14/18	New Covent Garden	530 (140)
Cucumbers	The Netherlands, 12/14/18	Glasgow	490 (20)
Cucumbers	The Netherlands, 14	Western International	420
Cucumbers	UK, 10/12/14	Glasgow	465 (30)
Cucumbers	UK, 10/12/14	Liverpool	425 (250)
Cucumbers	UK, 12	Western	560

Produce	Origin, Pack	Market	Median Price, GB (Range) Pence/Pack
		International	
Cucumbers	UK, 12	New Spitalfields	480
Mushrooms	Belgium, 3 kg	New Covent Garden	450
Mushrooms	Ireland, 2.73 kg	Liverpool	475 (50)
Mushrooms	Poland, 2.5 kg	Liverpool	475
Mushrooms	The Netherlands, 3 kg	Liverpool	475 (50)
Okra	Egypt, 4 kg	New Spitalfields	950
Okra	Thailand, 2 kg	Liverpool	900
Potatoes	Cyprus, 20 kg	Liverpool	950 (100)
Potatoes	Cyprus, 20 kg	Glasgow	950 (100)
Potatoes	Cyprus, 20 kg	Birmingham	900
Potatoes	Cyprus, 20 kg	Belfast	800
Potatoes	UK, 25 kg	Liverpool	775 (50)
Potatoes	UK, 25 kg (local)	Liverpool	1000
Radish	The Netherlands, 15 bun	Western Int'l	800
Radish	The Netherlands, 15 bun	New Covent Garden	400
Radish	The Netherlands, 15 bun	Birmingham	550
Radish	Italy, 15 bun	Liverpool	600
Radish	UK, 20 bun	Liverpool	500
Spinach	Spain, 4/5 kg	Glasgow	640 (80)
Spinach	UK, 4.5 kg	New Covent Garden	550
Spinach	UK, 4.5 kg	Western International	420
Squash (butternut)	Israel, 10 kg	Birmingham	1000
Squash (butternut)	Italy, 10 kg	Glasgow	1125 (50)
Squash (butternut)	Portugal, 10 kg	Western International	1100
Squash (butternut)	South Africa, 10 kg	Liverpool	1240 (80)
Squash (butternut)	South Africa, 10 kg	Belfast	1200
Sweet Potatoes	Honduras, 6 kg	New Covent Garden	500
Sweet Potatoes	Israel, 6 kg	Belfast	800
Sweet Potatoes	Israel, 6 kg	Western International	730
Sweet Potatoes	Israel, 6 kg	Glasgow	625 (50)
Sweet Potatoes	USA, 6 kg	Liverpool	800 (100)
Sweet Potatoes	USA, 6 kg	New Covent Garden	625

Produce	Origin, Pack	Market	Median Price, GB (Range) Pence/Pack
Sweet Corn	France, 30	Western International	1000
Sweet Corn	France, Each	Liverpool	35
Sweet Corn (baby)	Thailand, 2 kg	Liverpool	575 (50)
Sweet Corn (baby)	Thailand, 2 kg	Belfast	550
Yams	Ghana, 20 kg	New Spitalfields	2600

Source: Fresh Produce Journal (FPJ), UK, July 08, 2011

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