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CICR

CENTRAL INSTITUTE FOR COTTON RESEARCH, NAGPUR

NEWSLETTER

AICCIP ANNUAL GROUP MEETING HELD AT UAS, DHARWAD

The Annual Group Meeting of the All India Coordinated Cotton Improvement Project (AICCIP) was held at University of Agricultural Sciences (UAS) Dharwad on April 7-9, 2006. Dr. Gautam Kalloo, Deputy Director General (Crop Sciences and Horticulture), ICAR, New Delhi in his address emphasized the need for inclusion of more number of quality genotypes in both National as well as zonal testing. He also noted that the number of entries in interspecific hybrids (h x b) trial was less and suggested that efforts are to be taken to include more number of entries in future trials, with active participation of Private Sector. He expressed concern about narrow genetic base in most of the hybrids. Dr. S. A. Patil, Vice Chancellor, UAS, Dharwad also gave useful suggestions during inaugural session.

Release of publications by Dr Kalloo, DDG ICAR during inaugural session of AICCIP Group Meeting at Dharwad.

Dr.B.M.Khadi, Director, CICR, Nagpur, in his introductory remarks emphasized upon the importance of Bt cotton in the future cotton scenario in India. He stressed that the issue of growing 20% refugia needs to be looked into as the poor Indian farmer was not ready to lose the area to non-Bt cotton in his limited land holding. He called upon the industry to develop various staple length quality classes of Bt cotton catering to the needs of specific textile requirements. The susceptibility of Bt cotton to foliar diseases and sucking pests are other areas of concern which require urgent attention of the Scientists.

This was followed by presentation of Project Coordinator's report for 2005-06. Dr. K.N.Gururajan, while presenting the results of male-sterility based trials, expressed that the yield levels of MS based hybrids were low and wanted thorough rethink on strengthening MS based work. He also suggested combining the trial on MS hybrids with conventional hybrids in a single trial, thus increasing the precision of experimental trials. Quality aspects like strength needed to be combined with high yield, he commented, after presenting the results of all AICCIP trials.

Dr Pramod Pundhir, Principal Investigator (Breeding), AICCIP presented the results of breeding trials. Entries with higher fibre strength and yield have been identified and accordingly promoted in the zonal trials. Dr P.L.Nehra, Principal Investigator (Agronomy) presented the Agronomy results while results of Entomology trials were presented by Dr. Surulivelu, Principal Investigator (Entomology). Dr. P. Chidambaram, Principal Investigator (Pathology) presented the highlights of results of Pathology trials. Cotton leaf curl virus disease continued to be the predominant disease in North zone, while Grey mildew and Alternaria leaf spot disease dominated in other zones. Early onset of CLCuV disease resulted in yield loss of 57%. Seed treatment with Vitavax 200 WP (3.0g/kg of seed) was found beneficial in controlling root rot, while seed treatment with *Trichoderma viride* @ 10g/kg of seed plus soil amendment @ 2.5 kg/ha was also equally effective.

Dr V.V. Singh, Principal Scientist CICR, Nagpur gave a detailed account of the germplasm being maintained at CICR, Nagpur. Several germplasm accessions having useful biometric characters were listed. Dr. Makwana presented the results of fibre quality tests. Dr. Raveendran, Director,

CPBG, TNAU, Coimbatore exhorted the public institutions to concentrate on development of Bt cotton varieties and indigenize the genes as it can help save exchange reserves for the country.

Technology Transfer And Breeder Seed Production

Dr.Anupam Barik, Director, DOCD, Mumbai, in his opening remarks mentioned that the Govt.of India has spent nearly Rs. 5 crores on Frontline Demonstrations through both ICAR and State Departments of Agriculture. He desired that Scientists should also demonstrate the post harvest technologies like clean picking, processing and storage to the farmers so that quality improvement also gains importance in these demonstrations. The quantification of fuel efficiency, energy savings, area coverage under plant protection per unit time, cost of operation, reduction in drudgery etc. are of importance in the Implement demonstration under FLD. Dr.A.M Narula, Principal Scientist, ICAR, New Delhi, mentioned about the need to demonstrate only proven technologies. He further stressed about the need to demonstrate full package of technologies rather than individual technologies in farmers' fields.

Key findings of Annual Workshop Meeting of AICCIP

❖ *Intrahirsutum* GMS based hybrid HHH 287 (for Haryana), *G.hirsutum* variety MCU 13 (for Tamil Nadu) and *G.arboreum* variety HD 324 (for Haryana) have been approved and notified for commercial cultivation.

❖ Two *intrahirsutum* hybrids viz., Navkar 5 (for North zone) and Ajeet 90-2 (for Central Zone) and one GMS based intra-arboreum hybrid NACH-6 (for Central and South zone) have been identified and recommended to Central Subcommittee on Crop Standards and release of varieties of Agricultural Crops for notification.

❖ Breeder Seed production in respect of national indents has been taken up satisfactorily ; as against an indent of 1.6 quintals of parental lines of hybrids and 191 quintals of varieties, 57.6 quintal of parental lines and 392 quintal of breeder seeds of varieties were produced.

❖ Application of pendimethalin @ 1 kg a.i. /ha supplemented with one hoeing at 35 DAS was the best weed control practice recommended for Sriganganagar.

❖ Combined application of 50% of recommended dose of fertilizer along with 5 to 10 tons of FYM per hectare led to significantly higher seed cotton yield at many locations.

❖ Under summer irrigated condition, application of 50% RD-NPK along with line sowing of sunnhemp @15kg/ha on one side of the ridge and green manuring at 45 DAS in cotton crop is recommended for Deccan Canal Tract of Western Maharashtra and Srivilliputtur (Tamil Nadu).

❖ Use of farm waste and paper cover as land and soil cover management options improved seed cotton yield significantly by reducing weed problem substantially.

❖ Cotton + Cluster bean (1:1 ratio) fertilized with 125% RDF resulted in higher seed cotton yield with better cost benefit ratio of 1:1.9 at Rahuri.

❖ Intercropping of one row of sunflower with two rows of cotton or one row of castor with three rows of cotton was seen remunerative (C: B ratio of 1:2.2) over sole crop (1:1.4) and other intercrop combinations at Dharwad.

❖ Polo 50 SC (Diafenthiuron) at 400 g.a.i /ha and Thiamethoxam were found effective against white fly**,** jassids & aphids and recorded significantly higher yield over control.

❖ Spinosad new A: D (at 50, 75, 100 g), RIL 042 (at 500, 750, 1000 ml), NNI 001 (at 48, 60 g), E2Y 45, S1812 and E237 were found effective against bollworms and helped in realizing significantly higher yield over control.

❖ Location specific IPM modules were tested with Bt hybrid in all the centers and were found effective in reducing the pest infestation, plant protection cost and in increasing the seed cotton yield as seen with conventional hybrid and variety. IPM fields had more natural enemies and showed high **c**ost: benefit ratio compared to farmers' practices in many locations.

❖ Besides offering good protection against pink bollworm, Thiodicarb spray treatment led to significantly higher seed cotton yield over control in several locations.

❖ Vitavax 200 WP (3.0g/kg of seed) or Seed treatment with *Trichoderma viride* @ 10g/kg of seed plus soil amendment @ 2.5 kg/ha were found equally effective in the management of root rot disease.

❖ Early onset of CLCuV disease resulted in yield loss of 55-60%.

General Crop Condition, Pests and Diseases (2005 06)

In general, favourable weather conditions and manageable pest situation prevailed throughout the cotton growing states of the country. With available good technologies, the cotton production during 2005-06 has been worked out at 242 lakh bales for a second season in a row. In spite of a significant breakthrough in overall production, there seems to be a mismatch between demand (8-10 lakh bales) and supply (3 lakh bales) in case of Extra Long Staple (ELS) cotton pointing to urgent steps needed for enhancing production and productivity of ELS cotton.

No epidemic situation due to pests and diseases was reported from any part of the country. In North zone, especially in Rajasthan, dust storm, dry and hot season during early crop growth period caused notable damage. Incidence of *Spodoptera* was reported from certain areas. In Central Zone, frequent dry spells and heavy rains caused considerable damage to seedling growth, necessitating frequent gap filling. Jassids were severe in Uttar Pradesh, while whitefly incidence was more in Saurashtra and North Gujarat. In south zone, jassids appeared

throughout the season. Pink bollworm appeared early in Andhra Pradesh and was more prevalent in interspecific hybrid DCH 32 in Karnataka. Mirid bug was seen in Karnataka leading to dropping of squares.

Cotton leaf curl virus disease was moderate in North zone and was seen in all *G.hirsutum* genotypes and hybrids. Symptoms of Tobacco streak virus disease transmitted through thrips were reported from Andhra Pradesh. However, the presence of virus could not be confirmed. All the more, it calls for caution and alertness in coming season. Among other diseases, grey mildew, alternaria leaf spot and bacterial blight were controlled through timely intervention.

CAPACITY BUILDING PROGRAM IN GLOBALIZED AGRICULTURAL ECONOMY ORGANIZED

A two day Capacity Building Program in Globalized Agricultural Economy was organized at CICR, Nagpur on March 3-4-2006. The theme of the program was to create awareness about International Trade Scenario in Agriculture and Capacity Building to face new emerging challenges in the globalized agro-economy. With the globalization of agricultural trade under WTO regime, export competitiveness in agricultural products has become key to survival of farm sector. However, success in international trade requires development of quality oriented Indian agriculture and science based approach. To increase awareness about these issues and capacity building to face these challenges, ICAR, New Delhi has organized a series of "Capacity building programs for Indian Agriculture research, extension and development organization in globalized Agricultural Economy". Third such program was organised at CICR, Nagpur on March 3-4, 2006. The program was conducted by Centre for Trade in Agriculture and Agro-based industries (CITA), New Delhi.

The workshop was inaugurated on March 3, 2006 by Dr.Sukumar Devotta, Director, National Environment Engineering Research Institute (NEERI), Nagpur. Dr. B.M.Khadi, Director, CICR in his welcome address emphasized importance of such programs which help sensitize agricultural scientists, entrepreneurs, policy planners & media personnel so that Indian farmer can achieve desired output. Earlier, in his introductory address, Dr. HemChandra Gajbhiye, Principal Scientist and Organizing Secretary gave back-ground information of the program. Mr. Vijay Sardana, Executive Director of CITA gave brief overview of genesis of CITA. He mentioned that 21st century is knowledge oriented. So CITA is conducting programs providing information on all aspects spanning wide range of topics such as GMO, Biosafety issues, IPR issues, Pest risk analysis etc. pertaining to International trade in Agriculture. Shri. Sharad Pawar, Hon. Union Agriculture Minister is founder president for CITA.

In Inaugural address, Dr. Devotta, Director, NEERI highlighted importance of food security and emphasized that with globalization of agriculture cost has to be competitive. He added that water management will be major challenge in coming years as India is likely to be categorized as water starved country in next 25-30 years. The program was attended by more than 100 persons drawn from 16 ICAR institutes, 14 Agricultural universities, progressive farmers and entrepreneurs from Central and Western parts of the country. The inaugural program concluded with vote of thanks by Dr.M.R.K.Rao, Head, Division of Crop Production,CICR,Nagpur

CICR FOUNDATION DAY CELEBRATED

CICR foundation day was celebrated at CICR, Nagpur on April 1, 2006. The function was organised under the aegis of Staff Welfare Club. The function commenced with Dr. Phundan Singh, Head Crop Improvement Division, giving a brief account of genesis of the institute. He described in brief various growth stages of the institute and mentioned people who played role in its early development. Dr. B. M. Khadi, Director, CICR in his talk attempted to acquaint all staff members of the institute with the mandate crop of the institute i.e. cotton. In a lucid and informative talk, he explained in brief the research activities of the institute and also future research priorities. The major achievements and breakthrough achieved in last twenty years were also enumerated by him. The programme was conducted by Mrs. M. Chakrabarty, Scientist (SG) The programme ended with vote of thanks given by her.

Republic Day celebrated at CICR

Republic day was celebrated at CICR, Nagpur under the aegis of Staff Welfare Club by unfurling the National Flag followed by Sports competition and cultural program. Labour Welfare Club also celebrated the occasion by organizing Child Health Camp in which Institute panel Doctors Viz. Dr. S.B.Muley, Dr. B.D.Deshmukh and Dr. Upadhyaya examined the children .

Dr. Khadi Addressing at Child Health Camp.

KVK ROUND UP

Training Organized : Twenty seven short duration (1 to 3 days) training courses were conducted in different disciplines for 385 practicing farmers, 76 rural youths and 345 extension functionaries. In all 806 participants attended the course.

Discipline	No. of courses	Practicing Farmers	Rural youth	Extension functionaries	Total
Crop Production	2	32	25	-	57
Horticulture	7	89	26	35	150
Plant Protection	4	20	-	41	61
Vaterinary Science	3	51	-	25	76
Home Sci.	7	93	-	244	337
Extension	4	100	25	-	125
Total	27	385	76	345	806

Front Line Demonstration : Front line demonstration (FLDs) on pulse chickpea variety Vijay was conducted in 10 ha. area with 25 farm families in Rabi, 2006 with 0.4 ha. area each in village Sukli and Panjari Lodhi . INM, IPM and irrigation management technologies were demonstrated. and average increase of 20**.** 5% in yield of chickpea Vijay was recorded.

Scientific Advisory Committee Meeting: The half yearly scientific advisory committee meeting of KVK,

Dr. Rao addressing Scientific Advisory Committee members

CICR, Nagpur was held on April 3,2006 under the Chairmanship of Dr. M.R.K.Rao, Head, Crop Production Division, CICR, Nagpur. Committee members, Head of Divisions and staff of KVK attended the meeting.

On Campus Demonstrations : Six crop demonstrations on Brinjal, Tomato, Chilli, Coriander, Cabbage, Lucerne T-9 and fruit crop were undertaken. The production and protection technologies of these crops were demonstrated on area about 0.2 acre each.

Diagnostic Survey : Diagnostic survey in adopted villages and other villages of Nagpur district were undertaken on crop production, protection and animal production to disseminate information about remedies to overcome specific problems in rabi crops as well as animal husbandry and dairying, This Survey covered more than 35 ha. area and 20 animals.

Animal Health Camp: Three animal vaccination and treatment camps was organized in village Banwadi, Kaldongri and Sukli wherein 300 goats were vaccinated again PPR and 51 goats, 16 cows and 21 bullocks were treated.

Chana Gyan Diwas : KVK, CICR organized Chana Gyan Diwas on February 28, 2006 to popularize the production technology of chickpea among farmers. Thirty eight farmers from village Sukali and Panjari Lodhi participated in the programme. On the occasion the field visit of farmers were conducted at demonstration plots of chickpea at KVK farm.

PARTICIPATION IN EXHIBITIONS

Indian Science Congress Exhibition

CICR, Nagpur participated in Exhibition organized at Indian Science Congress held at Achrya N.G.Ranga Agricultural University, Rajendranagar, Hyderbad on Jan. 3-7, 2006. The CICR stall in ICAR pavilion was visited among others by Dr. Mangala Rai, DG, ICAR and Dr. M. S. Swaminathan, renowned Agricultural Scientist. CICR displayed in its stall photographs, charts and demonstration material on various cotton production and protection technologies.

National Krishi Expo 2006 in New Delhi

CICR, Nagpur participated in National Exhibition Krishi Expo 2006 on the theme Mission 'Increasing Productivity Of Agriculture' organized by Ministry of Agriculture, Government of India at Pragati Maidan, New Delhi during March 8-12, 2006. CICR displayed in its stall photographs and charts on various cotton production and protection technologies. During the period more than 5000 visitors comprising of farmers, students, extension workers and other professionals from various states visited CICR Expo and appreciated the efforts of CICR scientists in the

CICR Stall at National Krishi Expo-2006

development of new technologies for increasing cotton productivity. Dr. S. M.Wasnik, Senior Scientist (Extension), coordinated the Exhibition. Dr. T.R.Loknathan, Sr. Scientist (Breeding), Dr. K. R. Kranthi, Sr. Scientist (Entomology), Sh. Gulbir Singh & Sh. S. S. Patil, Senior Technical Assistants also participated in the exhibition.

CICR ORGANIZES KRISHI MELA UNDER COTTON FLD

CICR, Nagpur organized a Krishi Mela on Jan. 28, 2006 under the Cotton Front-line Demonstration

Farmer narrating his experiences of Cotton FLD at Krishi Mela

(FLD) Programme at Zilla Parishad Primary School premises in village Rampur in Warora Tahsil of Chandrapur district. Head, Crop Production Division CICR, Nagpur, Dr. M. R. K. Rao was the Chief Guest while Dr. Phundan Singh, Head, Crop Improvement Division chaired the function. Sh. Deoraoji Gedam, Member, Zilla Parishad, Chandrapur was prominently present and graced the function. On the occasion, Dr. Rao asked the farmers to adopt crop production technology like Ridges and Furrow technique, use of proper dose of NPK as per recommendations, green manuring, use of biofertilizers, vermicompost, intercropping, organic manures, harvesting of rain water in ponds and using it during drought like situations, etc. Speaking on the occasion Dr. Phundan Singh stressed on use of quality seed for increasing cotton productivity. He emphasized the need for adoption of recommended varieties/hybrids and advised to purchase the seeds from reliable sources only. Sh. Deoraoji Gedam thanked CICR Scientists for scientific innovations that helped in increasing agricultural production. Dr. R. K. Deshmukh, Principal Scientist (Plant Pathology) and Incharge FLD outlined about various interventions/technologies demonstrated. He also narrated the importance of Integrated Pests and Disease Management practices in cotton production. Dr. S. M. Wasnik, Senior Scientist (Extension) emphasized on adoption of the low cost technologies by the growers. He asked the villagers to help in group formation and spread of the technologies to the other and nearby farmers.

On the occasion, many FLD farmers shared their experiences of cotton FLD programme, the success stories and the benefits received due to technology adoption. They appreciated the performance of CICR variety Surabhi. Out of 93 FLD participating farmers, three farmers namely Shri Raju Dumare, Shri Milind Bhoyar and Shri Sanjay Nannaware were felicitated at the hands of Dr. P. Singh, Dr. Rao and Sh. Deoraoji Gedam for best performance of the trials.

Earlier, Dr. S. M. Wasnik welcomed the guests and conducted the whole proceedings. Smt. Lakhapure, Teacher working with the ZP School of the village proposed the vote of thanks at the end. More than 300 farmers, farmwomen and rural youths of the FLD villages Rampur, Pichdura and Pachgaon as well as from earlier FLD villages Tumgaon and Umari participated in large numbers.

RESEARCH HIGHLIGHTS

Bt Cotton Excels in Rainfed Ecosystem Too

With Bt cotton in India into the third year of its cultivation, Andhra Pradesh and Gujarat states have gone far ahead with the technology even if it meant little unorthodox way of clinching success. With three more Bt cotton hybrids of RCH being brought under cultivation during 2004-05 adding to the existing MECH Bt hybrids, random surveys were conducted in both the states to know their spread and impact. This season (2004-05) too had witnessed less of the targeted pest (*Helicoverpa armigera*) menace. The data collected from 60 cultivators in Surendranagar district (Gujarat) indicated that Bt hybrids recorded a yield of 20.46 q/ha against 16.34 q/ha in conventional hybrids. If the RCH-2 Bt alone was considered, the yields were still superior at 22.87 q/ha. The flip side of the technology was that many other non-descript and unapproved Bt hybrids too are in cultivation (few of them developed by farmers themselves) and seem to be popular with farmers. The Andhra Pradesh survey covered 76 cultivators of Bt and conventional cotton hybrids in the intensive cotton district of Guntur. Most part of the state reported severe attack by pink boll worm (*Pectinophora gossypiella*). RCH 2 and Kurnool Bt have shown high degree of tolerance to pink bollworm attack while the former has shown less tolerance to sucking pest attack and excessive vegetative growth marginally extending the crop duration. The average area under Bt cotton was 1.58 ha against 1.53 under non-Bt cotton. 57% of the sample farmers' cotton area of 197.57 hectares was under Bt cotton. Even more surprising was that 79 % of the sample farms Bt cotton area was totally rainfed.

While the 29 percent of the Bt cotton area was distributed between the officially approved Bt hybrids (MECH 15% and RCH 2 14%) the rest 71 % of the area was under many non-descript Bt hybrids, referred commonly by cultivators as Kurnool Bt (Kurnool district in A.P. is known for its cotton seed industry). The average yield performance was in the order Kurnool Bt (33.68 q/ha) followed by RCH-2 (30.12 q/ha) followed by MECH-12 (26.87 q/ha). Over all, RCH-2 has performed better than MECH hybrids among the approved Bt hybrids.

In cases of non-descript Bt, the seed price ranged between Rs.600 to Rs.800/packet against Rs.1600/packet of official Bt and the concept of refuge seed supply itself was practically absent, while the adoption of the same in case of official Bt was less than 10%. The number of sprays in Bt cotton ranged from 6.9 in Kurnool Bt to 9.4 in MECH 12 against 12.8 in non-Bt. The cost of plant protection was Rs.7548/ha, Rs.9478/ha and Rs.12125/ha respectively. While the respective cost of cultivation was Rs.25185/ha, Rs.28975 and Rs.30987/ha, the average yields were 33.68q/ha, 26.87q/ha and 24.25q/ha. The net returns amounted to Rs.32879/ha, Rs.16511/ha and

Rs.10044/ha. Though the recommended seed rate is 450 gm/acre, to overcome germination problems and to ensure proper plant density, all the cultivators have used 675 gm/acre. At this seed rate, and the official prices, the unofficial Bt cottons performed better economically. But, the situation calls for serious intervention as the Bt cotton crop acreage seem to be growing exponentially but unsystematically posing difficulties for scientific monitoring of crop performance and resistance management.

Clear benefits in terms of early termination of the crop facilitating timely operation, yield loss savings, savings in plant protection expenditure. overcoming labour shortage for plant protection activities, reduced exposure to chemicals, rejuvenating capacity of the Bt, etc. are some of the reasons cited by the cultivators for preferring them.

The survey also revealed that for the third consecutive year Pink Boll Worm has been reported as the major constraint than American Boll Worm. While the Bt cotton involved less of picking cost in view of least attack by the pink bollworm, overall it fetched a lesser price by Rs.70-Rs.110/q, from the traders on the pretext of relatively poor fibre quality against the non-Bt counterparts. This may be more due to the genotype, than the gene itself. This, particularly when there is no valid scientific report to that effect, merits attention as it is likely to distort market play or in the event of the quality deterioration being due to the technology, even more stronger intervention is required through research thrust as quality cotton is the order of the day in the changed global textile market scenario.

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Bollworm tolerant, Elite Fibre quality genetic stocks tested under unprotected and no choice conditions for three years (2003-2005)

Factors contributing to **bollworm** tolerance: high rutin (>33µ/g fresh weight) and chlorogenic acid (>18µg/g fresh weight) in the ovary of fully formed squares positively correlated to high larval mortality under artificial screening.

Utilization of these stocks is being made through single plant selections, seed multiplication and location specific trial for evaluating adaptability.

G21-17-619 : 40-60 g/plant**,** Synchronous boll opening**,** Early (150-160 days)**,** Tolerant to Jassids (Grade 1: leaves free from crinkling, no bronzing or drying)**,** Fiber strength:length ratio is 0:76**,** Suitable for rainfed**.**

ND 63 30-35 g/Plant**,** Big Boll 4.8 g**,** Tolerant to Jassids (Grade 1: leaves free from crinkling, no bronzing or drying)**,** Fiber strength:length ratio is 0:8**,** Suitable for rainfed as a sucking pest and bollworm tolerant parent in breeding programs**.**

AR 27 : 40-60 g/Plant**,** Boll weight 4-4.5 g**,** Susceptible to Jassids 60 DAS showing (Grade II: leaves show curling, crinkling and slight yellowing on lower portions of the plant)**,** Fiber strength:length ratio is 0:79**.**

S.Kranthi, K.R..Kranthi, V.V.Singh and B.M.Khadi

Entomopathogenic nematode bacterial symbiont- A new management option for management of sucking pests

In recent years, role of sucking pests has become critical in realizing yield potential of cotton crop. The damage is more severe in the early stages of crop growth and can affect the crop stand and yield of cotton. More ever, most of the Bt transgenic commercial hybrids released till date for resistance to *Helicoverpa armigera* are sucking pest susceptible, thus necessitating sprays targeting the sucking pest complex. Chemical management of sucking pests leads to increased cost of cultivation as well as contamination of environment. During work done at CICR, Nagpur bacterial symbiont of heat tolerant isolate of Entomopathogenic nematode *Heterorhabdits indica* was found as viable management option for cotton bollworm pests. Toxicity of EPN to cotton bollworms stems largely from bacterial symbiont that is associated with the nematodes. The bacterial symbiont is known to exist in two phases and primary phase is recorded to be better producer of toxin. During preliminary field trials, the bacterial symbiont broth when sprayed was found to cause mortality of nymphs of sucking pests as aphid, *Aphis gossypii*, leaf hopper Amrasca devastans, Whitefly *Bemisia tabaci* and thrips *Thrips tabaci*. Efforts are under way to standardize formulation and spray schedule of bacterial symbiont broth against sucking pests of cotton.

Nandini Gokte-Narkhedkar, N.V. Lavhe, O.M.Bambawale & B.M.Khadi

PUBLICATIONS

Gokte-Narkhedkar, N., S.K.Banerjee, N. V. Lavhe, Sheo Raj, C.D.Mayee and P. Singh (2005). Entomopathogenic nematodes for control of cotton insect pests. *ICAR News*, 11:14-15.

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Singh,R.K., K.K.Bandyopadhyay, A.K.Misra, K.G.Mandal, and K.M. Hati, (2006) Integrated plant nutrient supply for sustainable production in soybean based cropping system, *Indian Journal of Fertilisers* 1(11):25-32.

Agarwal, I.,K. Rangasamy and S.Kalaivani, (2006) Labagaramana Paruthi Villaichalukku Kuraindha Selavu Thozhil nutpangal (Low cost production technologies for an economically viable cotton production in Tamil Nadu) , *Technical bulletin*

Meeting attended

Dr. B. M. Khadi, Director, CICR attended meet on 'Agriculture transformation through Public Private Partnership' on Jan. 19 and 20, 2006 at New Delhi; attended first RCGM Meeting in DBT on Jan. 27, 2006; participated and presented a paper on Bt Cotton and also chaired session as co-chairman in National Seminar on 'Transgenic Crop in Indian Agriculture. Status, risks and acceptance' at HAU, Hisar on Jan. 28-29, 2006.

Dr. Nandini Gokte-Narkhedkar, Sr. Scientist participated in DBT Task Force meeting on 'Biopesticides and Crop Management'on Jan. 18-19, 2006 at New Delhi.

Dr. P.R. Vijaya Kumari, Sr. Scientist participated in the XII National Seed Seminar on "Prosperity through Quality Seed" held at A.N.G.R.A.U. Hyderabad on Feb.24 - 26, 2006.

Dr. B. M. Khadi participated in the Task Force Meeting on Cotton at Directorate of Cotton Development, Mumbai on March 1, 2006; GEAC meeting at Ministry of Environment and Forests, New Delhi on March 8, 2006;39th meeting of review committee on Genetic Manipulation (RCGM) in DBT on March 28, 2006; Brain storming meeting on 'IPM & Biopesticides' and made a presentation on 'Transgenics and Pest Management' on April 26, 2006 at New Delhi.

- Dr. P.M. Mukewar, Principal Scientist and I/C Head, Division of Crop Protection participated in 'National Convention on Knowledge-Driven Agricultural Development: Management of Change' held at IARI, New Delhi during March 24-26, 2006. The National Convention was organized by Agricultural Research Service Scientists' Forum.
- Dr.K.K.Bandyopadhyay, Senior Scientist (Soil Science) and Co-CCPI of the TMC MM1/2.4 project "Refining regional level prediction of cotton production" attended the Annual Review meeting of the project held in the National Remote Sensing Agency, Hyderabad on April 27 and 28, 2006.

CICR AWARDED RAJARSHEE TANDAN LANGUAGE AWARD

CICR, Nagpur, has been bestowed with the prestigious "Rajarshee Tandan" Official Language Award instituted by ICAR, New Delhi, for excellent execution of official work in Hindi.This award was handed over at a ceremony organised at New Delhi on February 27, 2006 by the chief guest Dr. Ratnakar Pandey, Ex. Member of Parliament. Dr. Mangala Rai, Secretary DARE & Director General, ICAR presided over the function. CICR received a shield and a certificate of merit along with another prize for its reputed home publication *Shwet Swarnima* under "Ganesh Shankar Vidyarthi Prize". Director of CICR Dr. B. M. Khadi and Dr. Kumudini Nautiyal Asstt. Director (Official Language) received these awards.

Superannuation

Dr. Sheo Raj, Head, Crop Protection Division, CICR, Nagpur superannuated on Jan. 31, 2006. He joined CICR, Nagpur in 1976 and served institute in various capacities. Institute bid him farewell in a function jointly organized by Staff Welfare Club and Staff Research Council of CICR, Nagpur.

Human Resource Development

Dr. S. Vennila, Sr. Scientist, Entomology attended training on "Resistance Breeding in Crop Plants" from Jan.3 - 23, 2006 at Department of Plant Breeding, Genetics and Biotechnology, Punjab Agriculture University, Ludhiana.

TRAINING ON COTTON PRODUCTION TECHNOLOGY AT CICR RS SIRSA

A two days state level training programme was organized at CICR RS Sirsa on cotton production technology under implementation of Action Plan of ICDP Mini Mission II for TMC. Eight Training Programmes have been organized in which State Agricultural department officials of Haryana participated. A capsule of ten lectures i.e. four in Crop Improvement, one in Crop Production and four in Crop Protection technologies was prepared to impart training.

TRAINING ON BT DETECTION KIT AT CICR RS SIRSA

A training programme on Bt detection kit was conducted at CICR, Regional Station, Sirsa under the chairmanship of Dr.D.Monga, Head I/C, CICR RS, Sirsa. This training was sponsored by Director of Agriculture, Panchkula, Haryana. Sh.Banwari Lal Joint Director of Agriculture (Cotton Haryana) was the chief guest of this training programme. In this programme Deputy Directors of Agriculture, along with their Quality Control Officers from 10 cotton growing districts of Haryana were trained on using Bt detection kit. The kit, a rapid Bt detection technique, was developed at CICR, Nagpur.

Dr.D.Monga, Head I/C in his welcome address mentioned that eight new Bt cotton hybrids were released this year for cultivation in north zone. This is in addition to the already existing six Bt cotton hybrids. Sh.Banwari Lal, JDA remarked that in Haryana around 11,000 ha area was covered under Bt cotton in 2005. He also cautioned the farmers to select the good quality seeds while sowing.

Dr.S.K.Verma, Senior Scientist gave the details of Bt cotton hybrids released for all the three zones and the area under Bt cotton. Mr.Sandeep Verma, from Mahyco Monsanto India Ltd. gave the world scenario of Bt cotton. This was followed by practical demonstration of Bt detection kit by Dr.P.Jeyakumar, Entomologist of CICR, RS, Sirsa.

Various aspects of Bt cotton were also discussed among the participants. The program concluded with vote of thanks by Dr.S.L.Ahuja, Senior Scientist.

CICR ACTIVITIES

Dr. Sheo Raj being felicitated by Director, CICR on eve of his superannuation

Dr. Devotta, Director, NEERI addressing participants of Capacity Building Workshop

Dr. B.M.Khadi, Director, CICR receiving Rajarshee Tandan Award of ICAR

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Bollworm & Jassid tolerant Elite Fibre quality genetic stocks

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