CICR News letter

CENTRAL INSTITUTE FOR COTTON RESEARCH, NAGPUR

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Dr Swapan Kumar Datta joins as DDG, Crop Science, ICAR

Dr Swapan Kumar Datta joined as Deputy Director General, Crop Science, ICAR on June 18, 2009. Dr. Datta is a world renowned Plant Biotechnologist . Recipient of numerous awards as DAAD Fellowship, Germany (1985-1986), FMI Fellowship, Switzerland (1987), ETH- Senior Scientist (Group Leader) at Zurich (1987-1993), CGIAR Science award amongst others, he has made indelible mark with his pioneering work in haploid research in cereals, molecular biology and genetic engineering research for rice improvement. He has provided a clear vision of why Biotechnology is needed in India, which was published by AAAS in Science Forum (later reprinted in British Nutrition Journal and AgBioforum). He is involved in worldwide research collaboration on application of genomics and gene technology for crop improvement with public and private organizations. He is actively involved in the Indian National Biotechnology Network and has contributed many presentations Nation-wide. He has taken initiative to develop collaborative research activities in India and abroad. Dr. Datta has published more than 118 research papers which were published in reputed journals including Nature, Nature Biotechnology, Theoretical Applied Genetics, Plant Cell Reports, Euphytica, Crop Science etc. Dr. Datta developed homozygous *indica* 'Golden Rice' with enriched pro-vitamin A in polished seeds (transferred to Bangladesh for field evaluation and further use) and high iron rice and transferred to USA and India for research and further use. Dr. Datta was also instrumental in development and field evaluation of hybrid Bt and Xa21 rice in China, India and Philippines and transgenic rice with enhanced sheath blight resistance with PR-genes for sheath blight resistance. All the scientists and staff of CICR, Nagpur join in felicitating Dr. Datta on his taking over as DDG, (CS) at ICAR.

BRAIN STORMING ON 'COTTON: FACING THE NEW CHALLENGES' ORGANIZED

Brain Storming on 'Cotton: Facing the new challenges' was held on July 9, 2009 at Central Institute for Cotton Research, Nagpur. There were two sessions with session one comprising of background papers and chaired by Dr. C.D. Mayee, Chairman, ASRB, New Delhi. Session Two of Brain storming session was chaired by Dr. Swapan Datta, Deputy Director General (Crop Sciences).

Dr. C.D. Mayee delivered a talk on 'Cotton- the recent revolution and issues' in which he analyzed historical developments in cotton and milestones in cotton productivity over the last 50 years. Dr. Mayee deducted that every ten years there has been technological boost to cotton productivity. Starting with Desi cotton the cotton productivity registered sharp spurt almost every decade with the advent of *hirsutum* cotton, hybrids and pyrethroid chemicals for insect control in that order. He mentioned that the era of Bt cotton started in 2002 giving further boost to cotton production which touched 350 lakh bales last year. Dr. Mayee observed that precision farming is the need of the hour and with adoption of precision farming productivity of 35 q. of cotton per hectare can be achieved. He desired that CICR should take the lead and demonstrate the feasibility of precision farming on a model plot.

Dr. S. Sreenivasan, Director, CIRCOT, Mumbai gave a talk on 'Cotton trade, demand, pricing & quality issues' after the introduction of Bt cotton-the recent challenges & ways to tackle them'. He informed that growth of cotton fabrics was 1-2% in 1990 decade. However, after the year 2004, cotton registered 10% growth compared to 5% growth in manmade fibres. Dr. Sreenivasan gave industry requirements for

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cotton of different fibre span lengths. He also informed that now Bt cotton occupies 78.7% share of cotton fibres but unfortunately very few Bt cotton cultivars satisfy the industry quality norms. He also regretted that in 2007 hirsutum cotton in 28-32mm length dominated the production with very less production of other three types of cotton viz. *arboreum*, *herbaceum* and *barbadense*. The other issues raised by him related to reduction in micronaire in Bt cotton after second picking only resulting in poor quality cotton and mixing of Bt with non-Bt inorganic cotton meant for export. He informed the gathering that organic cotton has good market for export and such mixing of Bt cotton with non-Bt may jeopardize this market. Dr. Sreenivasan presented a futuristic picture of cotton with ideal attributes such as tenacity and extension of polyester, softness of wool, less short fibre content and improvement of GOT. Apart from increasing productivity, enhancing demand for cotton is also important by addition of value to fibres, by products and wastes. He desired that research efforts be directed by traditional or biotechnological means to achieve these objectives.

This was followed by a panel discussion covering the following issues:

- Gene construct and future biotech products: How should India deal with IPR?
- Bt cotton hybrids: Are they more susceptible?
- Roundup Ready Cotton: Issues on suitability for Indian cropping systems.
- Seed quality, market trade, export and quality issues.
- Mealy bugs, Mirid bugs, new emerging pest and diseases: How to prevent resurgences and remedies.
- Sucking pest resistance to insecticides: The problem and management options.
- Bollworm resistance to Cry toxins: Status, trends and management option for India. Refugia option for Bollgard-II.
- Leaf reddening and wilt: Causes, precautions and remedies.
- Gearing up for Climate change

The outcome of these deliberations was as follows:

- An attempt should be made to analyze the Bt hybrids spread in India and quantify the role of Bt gene *per se* in bringing about of this increase in yield.
- Public sector institute like CICR must take a lead and concentrate on creation of genetic variability.
- Bt is a valuable technology and should not be mismanaged to avoid a breakdown.
- Utilization of valuable strategies like refugia and alternate crop could address the crop management and strengthen breeding programme.
- Gene pyramiding without disturbing the basic genome should be taken up to tackle multiple problems.
- Strategy to overcome leaf reddening should be developed and the susceptible lines should not be included in breeding programme.
- In AICCIP evaluation studies, an index of all characters should be used instead of specific parameters.
- Mealy bugs, Mirid bugs, new emerging pests and diseases may best be controlled by good management practices.

Dr. Mayee & Dr. Datta looking at Drip Irrigation systems at CICR, Nagpur

MEETINGS ORGANISED

राजभाषा कार्यान्वयन :

हिंदी दिवस समारोह का आयोजन

कपास संस्थान मुख्यालय में 14 से 29 सितंबर, 2009 तक हिंदी दिवस समारोह का आयोजन ''हिंदी चेतना पखवाड़ा'' के रूप में किया गया। संस्थान के पूर्व निदेशक डा. एम.एस. कैरों समापन कार्यक्रम के प्रमुख अतिथि थे। कार्यक्रम की अध्यक्षता प्रभारी निदेशक डा. केशवराज क्रांति द्वारा की गई। सुलेख, श्रुतलेखन, शब्द – अर्थ, संधि – विच्छेद, घोष – वाक्य, मुहावरे – लोकोक्तियॉ, स्मरण – शक्ति, टिप्पण – प्रारूपण, पत्र – लेखन, प्रश्नमंच, सरकारी कामकाज हिंदी में सर्वाधिक करने तथा तकनीकी / लोकप्रिय लेख सर्वाधिक लिखने के बारे में, कुल 12 प्रतियोगिताओं का आयोजन किया गया। इन प्रतियोगिताओं में सभी स्तर के स्टाफ द्वारा बढ़–चढ़कर भाग लिया। विजेताओं को प्रमुख अतिथि एवं निदेशक के हस्ते पुरस्कृत किया गया। प्रमुख अतिथि द्वारा कपास अनुसंधान तथा राजभाषा का कार्य समर्पित भाव से करने पर बल दिया। आपने इस राष्ट्रीय संस्थान में देश के विभिन्न राज्यों से आए किसानों को कपास का तकनीकी ज्ञान स्थानीय भाषा तथा हिंदी में पहुँचाने का भी आह्वान किया। निदेशक द्वारा संस्थान स्टाफ से राजभाषा कार्यान्वयन को गति देने तथा अधिकाधिक कार्य राजभाषा हिंदी में करने का आह्वान किया गया।

- संस्थान की राजभाषा सलाहकार तथा कार्यान्वयन समिति की बैठक का आयोजन संस्थान निदेशक की अध्यक्षता में दिनांक 24.08.09 को किया गया।
- संस्थान द्वारा जारी कपास की **बीएनबीटी** किस्म तथा एक बीटी संकर **एनएचएच 44 बीटी** के प्रसार–पत्रक हिंदी में बनाए गए।
- चार प्रपत्रों को द्विभाषी बनाया गया।

Celebration of Hindi day at the CICR, Regional Station, Coimbatore

Hindi day was celebrated at the CICR, Regional Station, Coimbatore on Sept.14, 2009. Dr. N.Gopalakrishnan, Project Coordinator &

Head, CICR, Regional Station, Coimbatore chaired this meeting. Dr. M.R.Vasudeva, Director, Airport Authority of India, Coimbatore was the Chief Guest for the Hindi Day function. The Hindi Day function began with the welcome address by Smt. K.Subashree, Member Secretary, Official Language Implementation Committee. Dr.N.Gopalakrishnan in his inaugural address mentioned about the progress made by this regional Station during the previous year towards Hindi related activities and the usage of official language in the day-to-day functioning of the office.

In connection with Hindi day celebrations various competitions like Hindi essay writing, general knowledge, usage of administrative Hindi words, memory contest, handwriting, reading, passage based questions in Hindi etc. were held to promote Hindi in the Regional Station during the second week of September, 2009. All the staff members enthusiastically participated in these competitions. On the Hindi day celebration, the Chief Guest Sh.M.R.Vasudeva distributed the prizes to the winners of these competitions. The chief guest in his presidential address narrated the importance of both Regional and National language in order to effectively communicate with the State and Central Government respectively. He said that the National Language is a tool for the people of India to know each other. The function came to an end with the vote of thanks proposed by Shri Pravin P.Ambade.

Dr. Gopalakrishnan, Dr. Vasudeva & Smt. Subashree at Hindi day celebration at Coimbatore

IRC Meeting of CICR, RS, Sirsa

The Annual IRC meeting of the Regional station was held on July 17, 2009. The meeting was chaired by Dr. K. R. Kranthi, Director, CICR, Nagpur. Dr. V.V. Singh, Head, Division of Crop Improvement, Dr. P.R. Bharambe, Head, Crop Production, Dr.D.Monga, Head of the Regional Station, Sirsa and Dr.V.S. Nagrare, Member Secretary, IRC were present in the meeting. The scientists of CICR, RS, Sirsa, Dr. S.L.Ahuja, Dr. O.P. Tuteja, Dr.R.A.Meena, Dr. S.K.Verma and Dr. Rishi Kumar presented the results and discussed the technical programme for the next year.

IJSC Meeting

The Institute IJSC meeting was held on July 17, 2009 at CICR, Regional Station, Sirsa. The meeting was chaired by Dr. K.R.Kranthi, Director, CICR, Nagpur.

PME COMMITTEE MEETING AT CICR, RS, Sirsa

The PME committee chaired by Dr. P.R. Bharambe visited the station on Sept.17-18, 2009. The members were Dr. P.K.Chakraborty, Head, Division of Crop Improvement, Dr. A.R. Reddy I/C TMC Cell, Dr. M.V. Venugopalan, Member Secretary PME Cell. Dr. K.R.Kranthi, Director, CICR, Nagpur, and the PME committee reviewed the TMC projects and other institute projects.

RESEARCH HIGHLIGHTS

THESPESIA LAMPAS (LINN.)-A CLOSE WILD RELATIVE OF *GOSSYPIUM.*

Thespesia lampas Linn. was collected in vegetative form from village : Kolappully; Taluqa : Ottapalam; District : Palakad; State: Kerala and planted in wild species garden of CICR Research Farm, Nagpur.

Thespesia lampas is a small shrub, chromosome number n=13 belongs to family malvaceae; Leaves : broadly palmately lobed, middle lobe larger, rudimentary lobe absent; Venation : reticulate and palmate divergent; Bracts; three, large, persistent; Inflorescence : terminal shoots bearing axillary flowers; Flower; yellow petals with long claw, Petal blotch : present; Ovary : Superior with axile placentation; Fruit : Capsule, dry, brittle, loculicidally dehiscent, 4-6 locules, Locule opening pattern : longitudinal at 45^0 - 65^0 angle; Seed : Small, dark brown, lintless.

The plants supported abundant vegetative growth but failed to enter into reproductive phase for six consecutive seasons. Nascent unopened flower buds aborted persistently. Plants were however forced to enter into reproductive phase by subjecting it to moisture stress, pruning and lopping. Blooming period of *Thespesia lampas*

a&b:- Portion of flowering shoot. C:- Seed : Small, dark brown & lint less.
D: Capsule : Dry, loculicidally dehiscent, locules opening longitudinally at 45^0- 65^0 angle

did not match with *Gossypium anomalum* (AB-genome- *Gossypium* wild species). The size of pollen grains of *T. lampas* measured up to 400 µ with pollen tube width measuring up to 123 µ, making it amenable to enter and penetrate into stigma/style of *G. anomalum*. Early efforts are under way to cross it effectively with *G. anomalum*.

Punit Mohan, Vinita Gotmare & T. P. Rajendran*

***ADG Plant Protection, ICAR, New Delhi.**

LONG TERM STUDIES ON SUSTAINABILITY IN COTTON BASED CROPPING SYSTEMS

A long term study was carried out at CICR, RS, Coimbatore during 2003-2008 on a upland cotton (*Gossypium hirsutum* L. cv. SURABHI) under winter irrigation in a clay loam (*Typic haplustalfs*) soils (pH = 8.63) to ascertain the effects of cropping system and nutrient management on input use efficiency and sustainability. The soil was low in soil N and OC, medium in P and high in K with alkaline reaction (pH = 8.63), low EC (0.67 dsm^{-1}) and sodium (0.032 %). The effect of cropping systems over the years showed that cotton in cotton-sorghum significantly out yielded (1427 kg/ha) the cotton monocrop (1160 kg/ha) due to superior yield attributes (kapas/plant, boll wt., biomass) and increased water and nutrient use efficiencies and salinity moderation (EC>3.8). In addition it produced 6547 kg/ha of grain sorghum. Application of 90 kg N/ha (with soil test based P & K) to *Sorghum* significantly improved grain yield (4.2 q/ha) over control. Higher WUE (30.7 kg/ha-cm) and low water use (58.8 cm) was recorded in cotton under double cropping than monocropping (24.7 kg/ha-cm and 63.6 cm respectively). Higher water productivity (Rs.6.86/m^3) and nutrient use efficiency (17.8 kg seed cotton/kg NPK uptake) were recorded under cotton-sorghum over control (Rs.5.52/m^3 and 13.6 respectively). Estimation in water use showed around 4000 and 3300 litres of water consumed per kg seed cotton under mono-cropping and double cropping systems, respectively. Sustainable yield index (SYI) was higher in cotton-sorghum system (0.41) than the cotton-fallow system (0.35). Micronaire (3.6 g/tex), maturity (0.71%) and elongation (5.62 %) in cotton fibre improved by following double cropping.

The effect of nutrient schedules over the years showed that INM treatment (NPK@ 60:30:30+ 5t/ha of FYM added annually) followed by inorganic treatment (60:30:30 kg NPK/ha) registered significant increase in seed cotton yield over the control. Under monocrop (cotton-fallow system), NPK (60:30:30) was optimum while for double crops (cotton-*Sorghum)*, NPK+FYM @ 5 t/ha was found to be the optimum nutrient schedule. Highest WUE (32.9 kg/ha-cm) along with low water use (56.5 cm) and maximum water productivity of Rs.7.35/m^3 were also recorded in the above INM treatment. Except the micronaire (lowest with 15 t FYM/ha) other fibre quality parameters were not influenced by nutrient management practices. The Sustainable yield index (SYI) was also maximum in INM.

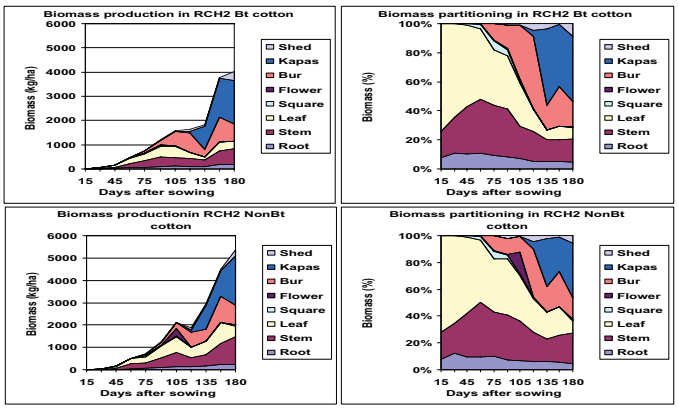
Thus, the study suggested that cotton-sorghum cropping system and integrated nutrient practices (NPK + FYM) may be followed in the winter irrigated situation of the Southern zone of the country to obtain higher productivity and sustainability of cotton based cropping systems.

C.S.Praharaj, K.Sankaranarayanan and K.K. Bandyopadhyay

BIOMASS PARTITIONING IN BT VS. NONBT HYBRIDS OF COTTON UNDER WINTER IRRIGATED SITUATION

In a mixed red and black calcareous clay loam soil (Vertic Ustropept) of Periyanaickan Palayam series at the Central

Institute for Cotton Research, Regional Station, Coimbatore a field experiement was carried out to study the growth and biomass partitioning in RCH2 Bt vs. NonBt cotton. It was



observed that in the initial vegetative phase, irrespective of the genotype leaf was the major sink of the photosynthates. Though the total biomass production was more in RCH2 Bt than its non Bt variant, the partitioning of biomass towards boll was more in case of RCH2 Bt than its NonBt variant (Fig. 1). This was attributed to more boll retention in RCH2 Bt compared to RCH2 NonBt due to lower boll worm infestation in Bt cotton compared to its non Bt variant. Relatively longer vegetative growth period in non Bt cotton compared to the Bt cotton resulted in lower earliness index in nonBt cotton that its Bt variant.

K.K. Bandyopadhyay, A.H. Prakash, K. Shankaranarayanan, B. Dharajothi &N. Gopalakrishnan

COTTON + COTTON INTERCROPPING FOR ERRATIC RAINFALL SITUATION

Cropping system studies showed that in natural ecosystems because of functional diversity, it leads to higher stability in production. Thus, mixing of species with different functional agronomic traits in an agro ecosystems could increase yield and crop productivity. This concept could be simulated under erratic rainfall situation in a cotton production system for higher productivity and stability since the crop is endowed with immense potentialities for biodiversitic capabilities.

Irregular and erratic nature in term of quantity and distribution is a common feature of seasonal rainfall. This seems to be much important with reference to the performance and yield of cotton under rainfed condition. While considering the productivity of different species of cotton under rainfed condition, high rainfall year normally favours *hirsutum* over *arboreum* / *herbaceum* cotton and the reverse is true for a low or scanty rainfall year. In resource utilization point of view, the cultivation of *arboreum / herbaceum* is lead to under utilization of rainfall during high rainfall years. For maximization in the utilization of rainfall under both high and low rainfall situation, inter cropping of *arboreum*, *hirsutum* and *herbaceum* is another option.

Under Kovilpatty (Tamil Nadu) situation in Southern cotton

zone, if rainfall distribution is proper, a minimum of 5 quintals of seed cotton per hectare is assured. However, improper and erratic distribution of rainfall leads to further decline in this productivity. Species intercropping studies at Kovilpatty station revealed that planting of G. arboreum (25%) + G. herbaceum (25%) + G. hirsutum (50%) found to record higher yield and stability among the different proportions both under the high and low rainfall situations. This strategy could be easily implemented by resource poor farmers by planting of appropriate proportions of the existing recommended species with favourable agronomic traits in suitable method for realizing at least a part of potential yield.

K. Sankaranarayanan, CS. Praharaj, P. Nalayini, & N. Gopalakrishnan

WEED SHIFT IN COTTON

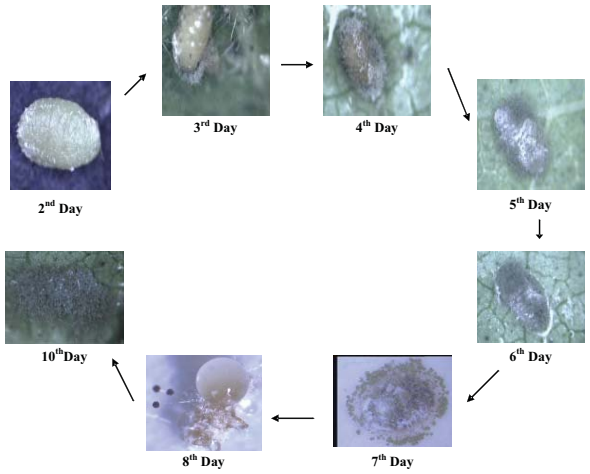
A weed shift is the change in the composition or relative frequencies of weed in a weed population or community in response to natural or manmade environmental changes in an agricultural system. Many factors play possible role in weed shift. For example, cultivation of cotton for many years at Coimbatore resulted in ecologically dominance of broad leaved and sedges from the earlier prevailed grass species. Application of fluchloralin @ 0.75 kg a.i./ha (Basalin) as pre-plant followed by irrigation is the common practice of early season weed control followed by manual weeding & interculture by junior hoe at 45-50 days. The system has adopted two year rotation of cotton (first year) followed by fodder sorghum/sunhemp (second year).

Weed analysis carried out in cotton field revealed that *Trianthema portulacastrum* (*itsit*) is the major one recording a high value of relative density (RD, 74.3%), relative frequency (RF, 38.6 %), importance value (IV, 112.8) and summed dominance ratio (SDR, 56.4). It is closely followed by *Cyperus rotundus* (motha) in those above indices (with 17.5 % RD, 31.4 % RF, 48.9 IV and 24.5 SDR). On the contrary, uncultivated area is infested with weed species viz., *Panicum repens, Chloris inflata, Corchorus olitorius, Euphorbia hirta, Phyllanthus maderaspatensis, Euphorbia geniculata, Tridax procumbens* and *Indigofera sp.* The dominant species here is *Panicum repens* with RD of 87.8 %, RF of 14.3 %, IV of 102.1 and SDR of 51.1; and was closely followed by *Chloris inflata, Corchorus olitorius* and *Euphorbia hirta.* Thus, over the years, weed species has shifted from grassy weeds to broad leaved and sedges following rotations. The reason for this shift may be due to continuous use of fluchloralin @ 0.75 kg a.i./ha (Basalin). Although fluchloralin is known to control of grasses and broad leaved weeds effectively, but its continuous application resulted in possible shifts of earlier grassy weeds and favored for invasion of broad leaved (*Trianthema portulacastrum*) and sedges (*Cyperus rotundus*). The study suggested that the weed shift could be effectively taken care of by using herbicide with different site of action, avoiding the use of same herbicide for cotton and succeeding rotation crops and following of integrated weed management practices.

K. Sankaranarayanan, CS. Praharaj, K.K.Bandyopadhyay & N.Sathiskumar

HISTOPATHOLOGICAL CHANGES DUE TO *METARHIZIUM ANISOPLIAE* INFECTION ON *PARACOCCUS MARGINATUS*

Histopathological examination was made to understand the pathogenic mechanism of *Metarhizium anisopliae* against cotton mealybug *Paracoccus marginatus*. It was made at 24 hour interval from first day to ten days after treatment. The fungus infected insect became sluggish and failed to respond to external stimuli within 72 hour of inoculation. They also stopped feeding and there was a change in body colour from yellowish or whitish to brown colour. Germlings of conidial mass was observed 96 hour after inoculation. Penetration by



the germ tubes was randomly located. Areas surrounding the point of entry were darkened indicating lysis presumably due to enzymatic action. The penetration site was randomly located indicates *M. anisopliae* does not require specific orientation. Invasion of hyphal bodies into the haemocoel was observed 144 hour after the inoculation. Hyphal penetration of the fat bodies started 156 hour after inoculation. By this time, hyphal invasion occurred in the internal tissues. At this stage, the insect become moribund and died. At the moribund stage, all the internal organs had extensively disintegrated. The mycelium of the fungus covered the entire body, sometimes making it difficult to identify the insect. There were no signs of infection observed in histological sections of the control insect.

M. Amutha & N. Gopalakrishnan

ON THE NATURAL OCCURRENCE OF AN ENTOMOPATHOGENIC FUNGI, *LECANICILLIUM LECANII* FROM MEALY BUG, *PHENOCOCCUS SOLENOPSIS.*

Natural infection of entomopathogenic fungi, *Lecanicillium lecanii* from mealy bug, *Phenococcus solenopsis* was recorded from farmer's field in Coimbatore district during 2008.Both nymphs and adults of both *Phenococcus solenopsis* and *Paracoccus marginatus* were found to be highly susceptible to infection by *L. lecanii*. When tested against *P.solenopsis* nymphs and adults, 53 and 60 % mortality respectively was recorded at 7DAI (Days after inoculation) under laboratory condition .A maximum of 62.22 and 66.67 % *P.marginatus* nymphs and adults were recorded at 7 DAI. At an initial inoculum of 2 x 10^8 cfu / ml, 49.17 and 64.17 % mortality of *P.marginatus* was recorded at 3 and 5 days after treatment under pot culture condition.

J.Gulsar Banu, T.Surulivelu & N.Gopalakrishnan

KVK ROUND-UP

Training programmes:

Twenty one *on campus* and *off campus* training courses were conducted in different disciplines as Crop Production, Horticulture, Plant Protection, Veterinary Science, Home Science and Extension for 259 practicing farmers, 214 rural youths and 134 extension functionaries. In all 607 participants benefited from the courses.

Celebration of 'Technology Week-2009'

Field visit on the occasion of inaugural function of Technology week at Neri village

The "Technology Week-2009' was inaugurated on 14th September, 2009 at village Neri, tah-Kalmeshwar, district Nagpur. Dr. P. Singh, Ex-Director, CICR, Nagpur and Dr. P. V. Patil, Ex-Director, Lakshminarayan Institute of Technology (LIT), Nagpur were the Chief-guests for the inaugural function.

This programme was organized in collaboration with Karnataka Agro-chemicals Ltd., Bangalore and Sai Agro Agencies, Kalmeshwar, district Nagpur. The theme of the programme was 'Integrated nutrient management in Bt-cotton'. On this occasion, an exhibition was set up comprising stalls of various crop varieties, biofertilizers, insecticides &

Celebration of Technology week at Neri village

micronutrients etc. at the venue. Dr. S.V. Malvi, Ex-Head & Professor, Department of Agronomy, Dr PDKV, Akola was the resource person for the programme. He explained in detail about the importance of balanced use of fertilizer for higher production of Bt. cotton. More than 300 farmers participated in this inaugural programme. A field visit to Bt.cotton plots was organized on this occasion.

For sustainable farming, the subsidiary agro based

Seminar organized at KVK campus in collaboration with MAVIM, Nagpur

entrepreneurship is essential. In this context, Dr. U.V. Galkate, SMS, (Vet.Sci), Sh. S.S. Patil, SMS(Extn) and Sh. Gulbir Singh, SMS(Horti), delivered lectures on goat rearing, vermicompositing and dry land horticulture respectively. Sh. M.K Meshram Programme Coordinator, KVK, Sh. Deven Verma, Proprietor, Sai Agro Agencies, Kalmeshwar and Sh. Omkar Mahadule, Area Manager, Karnataka Agro-chemical

Demonstration of Sarai Cooker for rural women

Ltd., Banglore were present on the occasion.

More than 45 extension functionaries and 50 farmers including farm women participated in a Seminar on 'Use of drudgery reduction tools' organized on 15th, 16th & 17th September, 2009 . This programme was organized in collaboration with Mahila Arthic Vikas Mahamandal, Govt. of Maharashtra (undertaking)

under the banner of Tejaswini Maharashtra Rural Women Empowerment Programme.

Field visit of participants to KVK instructional Field

A demonstration on preparation of Aonla candy was conducted to impart the skills to farmwomen of Bachat gats. This programme was organized through financial support of International funds for Agriculture Development. On both the days, Sh. Ranjan Wankhede, District Coordinating Officer, MAVIM graced the occasion. Demonstrations of different drudgery reduction tools like, improved sickles, conoweeder, improved cotton picking bags, solar cooker and smokeless sarai cooker was conducted and field visit was organized to the various crop demonstrations at KVK instructional farm.

Demonstration of PAT Technology at KVK campus

Technology week was concluded on September 18, 2009 by organizing Seminar cum Kisan Ghosthi at KVK Campus in collaboration with Mahindra Tractors Pvt. Ltd, Nagpur. The theme of the day was 'Integrated Nutrient Management in crops'. More than 70 progressive farmers from Nagpur, Wardha and Amravati districts participated in this programme under the banner of 'Mahindra Samruddhi' scheme. This concluding programme was chaired by Sh. Sanjeev Goyel , Vice President, Mahindra Tractor Pvt. Ltd, Mumbai. Sh. Rajiv Sarkar, D.G.M. Hyderabad, Sh. Sanjay Desai, DGM, Hyderabad and PC, KVK, CICR, Nagpur graced the occasion. In technical session, Scientists of CICR, Nagpur - Dr. A. R. Raju, Dr. Vishlesh Nagarale, Dr. Ramratan Gupta delivered the lectures on, 'Cultivation practices in Bt. cotton', 'Mealy bug management in cotton' and 'IPM and IRM strategies in cotton' respectively. The Scientists interacted with the participants on concerned topic and answered their queries. A field visit of the participants was arranged to the soybean, BN Bt., NHH-44 Bt. and other crops demonstrated at KVK instructional farm.

Group Discussion on 'Prevention of Infectious Diseases in Livestock' organized

KVK, CICR, Nagpur organized a Group Discussion on 'Prevention of Infectious Diseases in Livestock' on July 7, 2009 at Ranmangli village of Bhivapur tahsil. 21 livestock owners of Ranmangli & nearby villages participated in this discussion. Dr. U. V. Galkate, SMS (Veterinary Science) discussed about the economic losses caused due to prevalence of infectious diseases occurred during monsoon in rural area. To avoid such losses, livestock owners were suggested to follow strict schedule of prophylactic vaccination, deworming and ectoparasitic control in livestock. Sh. M. K. Meshram, Programme Coordinator advised the farmers to adopt Livestock Immunization Schedule strictly to prevent animals from fatal diseases, simultaneously to enhance the milk production.

PUBLICATIONS

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2. Thukkaiyannan, P., C.S. Praharaj, and N.Gopalakrishnan (2009). Nutrient management in organic cotton. *Ulavarin Valarum velanmai*, Vol. 1 (2):35-39.
3. Bandyopadhyay, K.K., Misra, A.K., Ghosh, P.K., Hati, K.M., Mandal, K.G. and Mohanty, M. (2009) Effect of irrigation and nitrogen application methods on input use efficiency of wheat under limited water supply in a Vertisol of Central India. *Irrigation Science*. DOI 10. 1007/s00271-009-0190-z
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5. Mandal. K.G., Hati, K.M., Misra, A.K. and Bandyopadhyay, K.K. (2009) Root biomass, crop response and water-yield relationship of mustard (Brassica juncea L.) grown under combinations of irrigation and nutrient application. *Irrigation Science*. DOI 10. 1007/s00271-009-0187-7.
6. Rokde, S.N., Galkate, U.V, R.M.Zinjarde and S.G.Thote (2009) Mortality in Osmanabadi goats in vidarbha region of Maharashtra. *PKV Research Journal* 33(2):289-290
7. Rokde, S.N., R.M.Zinjarde and A.S.Ingole (2009) Indigenous traditional knowledge for treatment of goats in vidarbha region of Maharashtra. *PKV Research Journal* 33(2):294-295
8. Galkate, U.V. and Rokd, S.N. (2009) Effect of varying levels of dietary aflatoxins on certain nutritional parameters and economics in White Leghorn layers'. *Indian Journal of Poultry Science.* Vol :44, Issue :2

9. Thaware,Y.M. Ingale, R.M.Zinjarde Rokde, S.N. and Atkari,M.(2009).Preparation of Burfi from goat mlk blended with varying levels of different fruit pulps. *Indian Journal of Dairy Science*. 62(4):1-5.

Popular Articles:

1. Rokde, S.N., Ingole, Zinjarde ,Atkari,Pawar and Ekre. *Bharat mein maujud varnit bakriyo ki nasle*. *Krushak Jagat*,63(42):7.
2. Rokde, S.N. *Barsat mein pashuo ki dekhrekh*. *Krushak Jagat*, 63(47):7.
3. Rokde, S.N. *Amdani ka jariya badhayein Bakri palein. Krushak Jagat*, 63(49):7.
4. Rokde , S.N. *Dugdhajwar karan lakshne aani upay* .*Tarun Kisan* Fortnightly 30.9.2009, pp 6.
5. Rokde, S.N. *Vidarbhatil dugdhavyavsayachya aatmahatyanachi karnmimansa* .*Tarun Kisan* 30.9.2009, pp 12,14 and 15.

RADIO PROGRAMME

Dr S.N.Rokde, Senior Scientist, KVK participated in Radio programme entitled, "Management of Livestock in summer". The programme was broadcasted on 3.4.2009 in 'Maz Ghar Maz Wavar' programme on All India Radio.

HUMAN RESOURCE DEVELOPMENT

A training program on 'Team Building' was organized by CIRCOT, Mumbai for the participants of NAIP Project entitled "A Value Chain for Cotton fibre, seed and stalks: An innovation for higher economic returns to farmers and allied stake holders" where Dr. D.Monga, Head, CICR, Regional Station, Sirsa participated. The program was held at Yashwantrao Chavan Academy of Development Administration, Pune from June 13 to June 15, 2009.

Dr A. Amutha, Scientist (Entromology) participated in and one day training cum workshop on "Insecticide resistance monitoring against Jassids" held during 18.8.09 at Central Institute for Cotton Research, Nagpur, Maharastra.

MEETINGS/ WORKSHOPS ATTENDED

Dr. K.R.Kranthi, Director, CICR, Nagpur attended Director's conference on July 16, 2009, comprehensive meeting on Conservation of Agriculture convened by DDG (NRM) on July 17, 2009 at New Delhi and attended Cotton Advisory Board meeting at Mumbai on August 29, 2009.

Dr. K.Rathinavel, Principal Scientist (Seed Technology) attended the Monitoring of DUS trials at CCSHAU,Hisar, and PAU Ludhiana from Aug.5-9,2009 and participated in one day seminar on "IPR, PPV&FR and Biological Diversity acts" and delivered a lecture on topic "The Protection of Plant Varieties and Farmers Rights Act, 2001 and DUS test in Cotton" at the Institute of Forest Genetics and Tree Breeding, Coimbatore on Sept.4,2009 organized by Institute of Forest Genetics and Tree Breeding, Coimbatore.

Dr. Kranthi made a presentaion on 'Cotton research and development in India' in the Governing Body meeting on August 27, 2009 at New Delhi and also participated in the Workshop on 'Resistance Management for Bt Cotton' organized by Monsanto at NASC Complex, new Delhi on Sept. 22, 2009.

Shri S.S.Patil (SMS Extn.) attended Monthly workshop of State Agriculture Department organized by Superintending Agriculture Officer, College of Agriculture, Nagpur on July 16, August 12, and September17, 2009.

Sh. M.K Meshram (Programme Coordinator),Shri S.S.Patil (SMS Extn.) Sh. Gulbir Singh (SMS Hort.), Dr.U.V.Galkate (SMS Vet.Sec.), attended Rural Programme Advisory Committee Meeting organized by All India Radio Nagpur at Dr.PDKV Akola on August 25, 2009.

RECOGNITION AND AWARDS

Dr. Sandhya Kranthi, Sr. Scientist (Entomology) was awarded the PunjabRao Deshmukh Woman Agricultural Scientist Award for the year 2008. She was selected for the award from amongst 29 applicants. Two genetic stocks, CINHTi1 and CINHTi2 were developed and registered with NBPGR, New Delhi. CINHTi1 was used to develop a resistance management tool in the form of pyramided Bikaneri Nerma Bt. Effective crystal toxins were also identified against the cotton bollworm. A database on the baseline susceptibility changes in bollworm populations to toxins of released transgenes for cotton was developed in collaboration with stake holders of the cotton transgenic technology

Dr. Sandhya Kranthi receiving award from
Dr. Farooq Abdullah, Hon. Union Minister of New & Renewable Energy

Compiled & Edited by : Dr. Nandini Gokte-Narkhedkar (Principal Scientist)

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