From the Director’s Desk

Tobacco in the Whirlpool of Concerns - Call for a Paradigm Shift in the Research Agenda

Today tobacco sector is in the whirlpool of diametrically conflicting concerns relating to the livelihood security of those who are associated with tobacco production, processing and marketing on one hand, and the serious health risks for those who consume it on the other. Another increasing concern about tobacco is deforestation resulting from the use of huge quantities of wood as source of energy for tobacco curing. Further, the emerging issues relating to climate change impacts, resource degradation, biotic and abiotic stresses including Orobanche incidence, escalating production costs, pesticide residues, consumer preferences and regulatory policies are becoming increasingly complex and represent future challenges for tobacco researchers.

Now is the crucial time for the ICAR-CTRI as it stands poised between the glorious past with proven track record of research service to the farming community, and the future that is fraught with uncertainties about its mandated crop. Addressing the whole array of tobacco related concerns, issues and challenges requires ICAR-CTRI to evolve, enrich and expand a strategic research framework by exploring and exploiting new possibilities and opportunities. The unfolding scenario, therefore, requires the ICAR-CTRI to envisage a long-term vision in terms of providing vibrant research back-up for Indian tobacco to be less harmful, remunerative and globally competitive in the changing milieu of national and international policy regimes. The research framework of the institute needs to be built on innovative approaches and new opportunities and should be anchored to the ground realities, with a focus on promoting farmers’ interests and minimizing consumers’ health risks. Besides socio-economic and environmental considerations, the government policy prescriptions, specifically in areas of agriculture, public health, commerce and environment are going to shape the future research agenda of the Institute. Therefore, the future research framework for tobacco needs to be dynamic in nature so as to fit itself into all possible policy scenarios. The strategic research framework should focus on the following critical research priorities:

● Producing tobacco with reduced levels of harmful constituents
● Enhancing farm returns through innovative interventions for sustainable resource use and production efficiency
● Comprehensive understanding of Orobanche parasite-host relations and effective control
● Exploring and effective use of alternative energy sources for tobacco curing to reduce dependency on forest fuel wood
● Exploiting tobacco for diversified uses (phytochemicals and value added products)
**CULTIVAR IMPROVEMENT**

- The genetic resources of ICAR-CTRI increased to 3369 with the addition of 178 bidi, 3 rustica, 75 *nau* and 5 exotic FCV lines to the Germplasm Bank.
- The genotypes *Siri*, TBST-2 and 324C were characterized for 53 morphological DUS characteristics.
- FCV breeding line, TBST-2 showed its superiority in SBS and SLS areas with 13-15% productivity improvement over *Siri* in bulk and on-farm trials.
- The performance of FCV line NLST-4 found to be significantly superior with a nitrogen dose of 115 kg N/ha and topping at 26 leaves under irrigated Alfisols. Whereas CMS hybrid, NLSH-1 recorded superior performance at a spacing of 100 X 60 cm, nitrogen dose of 120 kg N/ha and topping at 26 leaves.
- Line RT 46-1 recorded significantly higher nicotine of 95.44 and 88.02 kg/ha with a spacing of 80 cm X 40 cm at 150:75:75 and 100:50:50 NPK doses, respectively.
- Nineteen *Nicotiana* species were amplified with the barcode primer, trnH – psbA and the resultant amplicons were sequenced.
- The variety, N-98 showed differential banding pattern with SSR marker, TM10023.

**PRODUCTION TECHNOLOGY**

- Mandal level soil fertility thematic maps were prepared for Kandukur and Tanguturu mandals. Soil organic carbon content in Kandukur mandal is low in 80% of the area.
- The FLDs conducted with application of weedicide, quizalofop-ethyl @ 60 a.i./ha at 15 and 17 DAP + intercultures recorded higher BCR i.e. 1.42 over hand weeding + intercultures (1.37).
- *Orobanche* weight found to be reduced with the application of neemcake (49.4%), A/S spray (47%), Neem oil (82.8%), soybean oil (83.4%), pre emergence application of Alachlor (66.3%), Pendi-methalin (93.6%), post emergence application of Glyphosate (64.9 & 80.9%) and Mazethapyr (71.7 & 82.8 %) compared to control in FCV tobacco.
- Addition of biomass ashes brought a marked change in K fertility of soil, with magnitude of increase being consistent with K concentration of biomass ashes. Irrespective of ash type, increasing rates of ash addition resulted in greater increase in K availability. Among the biomass ashes, the increase in K availability followed the order: Cotton stem ash > Tobacco stem ash > Pigeon pea stem ash > Eucalyptus wood ash.
- A field survey was conducted during the crop growing season in the tobacco growing regions of Andhra Pradesh and the possible reasons for occurrence of false maturity were delineated. The strategies and measures to mitigate the false maturity were explored and experiments were planned to prove them scientifically.
- The use of ‘turbo fan’ economized the total fuel wood requirement of FCV tobacco curing to an extent of 11% under KLS conditions.

**PROTECTION TECHNOLOGY**

- Pre plant incorporation of herbicides Alachlor @1000 and Metribuzin at 394 g ai/ha in nursery beds controlled the weeds up to 20-25 days of sowing and gave optimum number of seedlings.
- At CTRI RS, Guntur, application of *Imidacloprid* (0.03%) and *Thiomethaxam* (0.02%) at 50 and 60 days of planting, respectively, reduced aphid infested plants (25.80%) and aphid population (80.75%) over control.
- New IGR Chlorfluazuron 5.4 EC (0.03%) was found effective against *Spodoptera litura* in FCV tobacco nurseries and planted crop under KLS.
- Application of *Pyraclostrobin* 5% + Metiram 55% WG @ 0.2% in field crop of FCV tobacco was effective in suppressing frog eye leaf spot disease caused by *Cercospora nicotianae* under KLS.

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A copyright (No. SW-8169/2014) was obtained for the software entitled "Nicotiana Species Information System" on 12.11.2014 from Copyright office, Government of India. The knowledge base of this system has been designed with 90 descriptor traits in MS ACCESS and the application was developed in Visual Basic 6.0 This software can be utilized as a model for identifying *Nicotiana* species having similar characteristics, and thus a useful taxonomic tool. The user can quickly retrieve the information based on any combination of parameters on one or more species compared to manual search.

**PAPERS PUBLISHED**

CONFERENCE/ TRAINING/ WORKSHOPS ATTENDED

- Dr. K. Suman Kalyani and Dr. K. Prabhakara Rao participated in the 'Workshop for Liaison Officers' at ISTM, New Delhi during 20-21 October, 2014.
- Dr. P.V.V.Siva Rao attended the Model training course on 'Good Dairy Farming Practices: A way forward for organic farming' during 29th October to 5th November, 2014 at NDRI, Karnal.
- Dr. K. Siva Raju attended the meeting on 'Reduce imports of tobacco/ tobacco products into the country' at Tobacco Board on 11.11.2014.
- Dr. K. Sarala, Nodal Officer for NAARM-IFPRI project at CTRI participated in the 'Brainstorming meeting for pre-testing of ASTI survey forms' on 17.11.2014 at NAARM, Hyderabad.
- Dr. K. Sarala attended the meeting of RFD Nodal Officers of Crop Science Division Institutes on 21.11.2014 at New Delhi.
- Dr. K. Sarala attended the National Symposium on 'Agricultural Diversification for Sustainable Livelihood and Environmental Security' at PAU, Ludhiana during 18-20 Nov. 2014.
- Dr. K. Siva Raju and Dr. M. Anuradha attended the National Conference of Plant Physiology (NCP -2014) on 'Frontiers of Plant Physiology Research – Food Security and Environmental Challenges' during 22-25 November, 2014 at Orissa University of Agriculture & Technology, Bhubaneswar.

AWARDS

- The paper entitled “Evaluation of insecticide application technology for effective spray coverage on FCV tobacco” by G. Raghupathi Rao, U. Sreedhar and K. Nageswara Rao was received the best oral presentation award at the International Conference on “Changing Scenario of Pest Problems in Agri-Horti Ecosystem and their Management” during November 27-29, 2014 at Udaipur.

FMS / MIS TRAINING

A training program on 'Management Information System (MIS)/ Financial Management System (FMS)' was organized to CTRI staff members by IBM personnel from 1-6th December, 2014 on Installation and execution of the software, Project Management module and Human Resource Management module. This system includes solutions for Financial Management, Material Management, & Pay roll.
MEETINGS/ VISITS OF Dr. D. DAMODAR REDDY, DIRECTOR, CTRI

- The Selection Committee Meeting at ASRB, KAB-1, New Delhi on 07.10.2014.
- Inspected the Farm activities at CTRI RS, Guntur on 10.10.2014. Interacted with the tobacco farmers from different zones (A.P. & Karnataka) and attended 15th TII Tobacco Farmers Award function organized by TII, Guntur on 11.10.2014.
- Twelth meeting of the Tobacco and Tobacco Products Sectional Committee, FAD-4, Bureau of Indian Standards at Hyderabad on 20.10.2014.
- Inspected the CTRI RS, Kandukur and monitored the Institute and AINP(T) experiments and other farm developmental activities of the Station on 28.12.2014.

INTER-INSTITUTIONAL SPORTS MEET

A 44-member CTRI Sports and Games contingent participated in the ICAR Inter-Institutional Sports Meet held at IIHR, Bangalore during 13-17 October, 2014. CTRI secured 1st place in the Volley Ball (Shooting) event.