

# ICAR-CTRI

## News

ICAR - CENTRAL TOBACCO RESEARCH INSTITUTE - 533105, A.P.

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### 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)

(D. DAMODAR REDDY)

## RESEARCH HIGHLIGHTS

### CULTIVAR IMPROVEMENT

- The genetic resources of ICAR-CTRI increased to 3369 with the addition of 178 bidi, 3 rustica, 75 *natu* 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 + interculturalures recorded higher BCR i.e. 1.42 over hand weeding + interculturalures (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 (936.0%), 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.

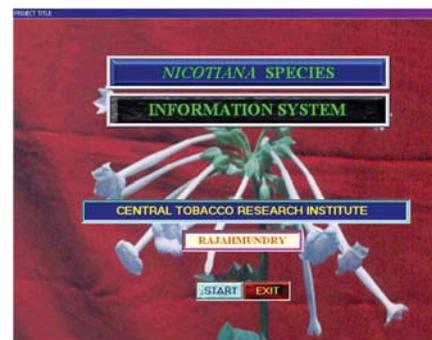
### PROTECTION TECHNOLOGY

- 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.

### COPYRIGHT OBTAINED

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

- ❑ Damodar Reddy, D., S. Kushwaha, S. Srivastava and R. S. Khamparia. 2014. Long-term wheat residue management and supplementary nutrient input effects on phosphorus fractions and adsorption behaviour in a Vertisol. *Communications in Soil Science and Plant Analysis* 45: 541-54.
- ❑ Ghosh, R.K., Z.S. Khan, C.V.N. Rao, K. Banerjee, D. Damodar Reddy, T.G.K. Murthy, N. Johnson and D.P. Ray. 2014. Assessment of organochlorine pesticide residues in Indian flue-cured tobacco with gas chromatography - single quadrupole mass spectrometer, *Environmental Monitoring and Assessment* 186(8): 5069-75.

- Khan, Z.S., R.K. Ghosh, R. Girame, S.C. Utture, M. Gadgil, K. Banerjee, D. Damodar Reddy and N. Jhonson. 2014. Optimization of a sample preparation method for multiresidue analysis of pesticides in tobacco by single and multi-dimensional gas chromatography-mass spectrometry. *Journal of Chromatography - A*, 1343: 200-6.
- Ghosh, R.K., C.V.N. Rao, D. Damodar Reddy, N. Johnson and R. Athinarayanan. 2014. Determination and uncertainty analysis of imidacloprid residue in flue cured leaf matrix of *Nicotiana tabacum* L. *International Journal of Agriculture, Environment and Biotechnology* 7(2): 347-54.
- Ravisankar, H., S. Gunneswara Rao and U. Sreedhar. 2014. Expert system for identification of natural enemies of tobacco pests. *Indian Journal of Plant Protection* 42(4): 312-6.
- Ravisankar, H and K. Sarala. 2014. Knowledge - Based Weather Information System. *International Journal of Applied Research on Information Technology and Computing* 5(2) : 159-63.

#### RADIO TALKS

##### AIR, Visakhapatnam

- Modern agricultural methods in the commercial cultivation of virginia tobacco (in Telugu) by Dr. M. Nageswara Rao, ACTO on 08.11.2014.
- Adoption of modern techniques for maintaining the quality of virginia tobacco ( in Telugu) by Dr. S.V. Krishna Reddy, Principal Scientist on 25.12.2014.
- FCV tobacco cultivation-current problems-farmer welfare programmes (in Telugu) by Dr. Y. Subbaiah, Principal Scientist on 28.12.2014.

#### TRANSFER OF TECHNOLOGY

Organised 4 field visits and 4 training programmes on FCV tobacco nursery technologies. Conducted one Tobacco Stake Holders Meet on crop developmental activities.

#### CONFERENCES/ TRAININGS/ 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 29<sup>th</sup> October to 5<sup>th</sup> 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. M.Kumaresan and Sri Sunil Mandi 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.
- Dr. U. Sreedhar and G. Raghupathi Rao attended the International Conference on 'Changing Scenario of pest problems in Agri-Horti Ecosystem and their management' during 27-29 November, 2014 at Maharana Pratap University of Agriculture & Technology, Udaipur.
- Dr. Y. Subbaiah attended a training programme on 'Management Development Programme on Leadership Development (a pre-RMP)' at

NAARM, Hyderabad during 1-12 December, 2014.

- Dr. K.Sarala and Dr. K. Prabhakara Rao participated in the 'Bio Andhra – 2014, First International conference on Marine and Agricultural Biotechnology' at JNTU, Kakinada during 15-17 December, 2014.

#### AWARDS

- Dr. U. Sreedhar, Principal Scientist & Head, Crop Protection has been honoured with Dr. R. P. Srivastava Memorial National Award (Gold Medal) for his outstanding contributions in the field of Entomology at the International Conference on "Changing Scenario of Pest Problems in Agri-Horti Ecosystem and their Management" during November 27-29, 2014 at Udaipur.



- 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 1-6<sup>th</sup> 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.

### ICAR INTER-INSTITUTIONAL TEAM VISIT TO HUDHUD CYCLONE AFFECTED AREAS

The Hudhud cyclone characterized by heavy wind and moderate rains hit coastal areas of Andhra Pradesh on 12<sup>th</sup> October 2014. The cyclone crossed the sea coast at Pudimadaka village of Achutapuram Mandal of Vishakhapatnam District and inflicted a severe damage to crops and farm structures in Srikakulam, Vizianagaram, Vishakhapatnam and some parts of East Godavari Districts of Andhra Pradesh. The Central Tobacco Research Institute coordinated the visit of ICAR inter-institutional teams comprising scientists from CTRI, DRR, CRIDA, DOR, DOPR and DSR to Hudhud cyclone hit areas. The teams assessed the nature and extent of damage to crops and farm structures and suggested crop specific advisories to farming community for mitigating the adverse effects of the cyclone. CTRI submitted a detailed report to ICAR, New Delhi for information.

### PERSONALIA

#### APPOINTMENTS



Dr. S. Kasturi Krishna, Principal Scientist has taken the charge as Head of the Division, Crop Production on 28.10.2014.

Dr. C. Chandrasekhara Rao, Principal Scientist has taken the charge as Head of the Division, Crop Chemistry and Soil Science on 17.11.2014.



#### Retirements

- Sri P. George, SSS, CTRI, Rajahmundry retired on 31.10.2014.
- Sri D. Seethapathi Rao, AAO and Sri Md. Bajuddin, Technical Officer, CTRI, Rajahmundry retired on 30.11.2014.
- Dr. S. Gunneswara Rao, Sr. Scientist, CTRI, Rajahmundry superannuated on 31.12.2014.

### VISITORS

- Delegation from Tobacco Industries and Marketing Board of Zimbabwe led by its Chief executive Officer Dr / Mr Andrew Matibiri visited the CTRI Research Station, Hunsur on 09.10.2014.
- Dr. Ch. Srinivasa Rao, Director, ICAR-CRIDA visited CTRI on 16.10.2014.

### KVK

**KVK, Kalavacharla organised the following programmes:**

- World Food Day on 16.10.2014 and released a brochure 'Milky Mushroom Production'.



- Women in Agriculture Day on 04.12.2014.
- Exposure Visit of Cashew Farmers from Andhra Pradesh to Bhubaneswar during 18.12.2014 to 22.12.2014 in collaboration with Directorate of Cashewnut and Cocoa Development (DCCD), Cochin under Human Resource Development Programme.
- Awareness Programme on Agro-based income generation on 30.10.2014.
- Rural Agricultural Work Experience Programme (RAWEP) during 18<sup>th</sup> to 27<sup>th</sup> November, 2014.
- Vocational Training Programmes on Banana fibre extractor, handicrafts making with weeds and coir door mat making during 05.12.2014 to 06.12.2014; 12.12.2014 to 22.12.2014 and 15.12.2014 to 24.12.2014, respectively.
- Exhibition displaying CTRI-KVK women empowerment activities at KVK, Undi, West Godavari on 17.09.2014.
- Dr.D.Damodar Reddy, Director, CTRI inaugurated 'Motorised Mechanical Pressing Device' for making Coir door mats at KVK, Kalavacharla on 4<sup>th</sup> December, 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.



Volley Ball (Shooting) Team

### 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 15<sup>th</sup> TII Tobacco Farmers Award function organized by TII, Guntur on 11.10.2014.
- Twelfth meeting of the Tobacco and Tobacco Products Sectional Committee, FAD-4, Bureau of Indian Standards at Hyderabad on 20.10.2014.
- Meeting of Directors of Crop Science Division regarding Vision-2050 and Institute based projects at Krishi Bhavan, ICAR, New Delhi during 10-11 November, 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.