

ICAR-CTRI

News

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

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From the Director's Desk



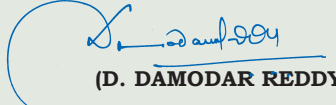
Tobacco Specific Nitrosamines (TSNA): Knowns, Unknowns and Research Needs

The harmful constituents of tobacco are drawing attention of researchers and general public for their potential health hazards. Tobacco Specific Nitrosamines (TSNAs) represent one such potentially harmful substance and their presence in smoke and smokeless tobacco products has been the focal point of increasing public concern for their alleged involvement in serious health risks such as cancers for consumers.

On nitrosation, the major tobacco alkaloids including nicotine, nornicotine, anabasine, and anatabine result in the formation of TSNAs viz., N-nitrosornicotine (NNN), 4-(methyl nitrosamino)-1-(3-pyridyl)-1-butanone (NNK), N-nitrosoanabasine (NAB) and N²-nitrosoanatabine (NAT), respectively. Among all known TSNAs, the NNK and NNN are reported to be potentially carcinogenic. The concentration of different TSNAs in tobacco varies widely across different tobacco types and also with soil, crop and nutrient management practices and post-harvest curing processes adopted for a given type of tobacco. Burley tobacco exhibits relatively high content of TSNAs as compared to other types of tobacco. The excessive use of nitrogenous fertilisers tends to result in relatively higher content of nicotine and consequently higher level of TSNAs.

Though the TSNAs have been the subject of research over the years, our understanding of the exact mechanisms/processes/factors by which the TSNAs are formed and regulated within the plant continues to be incomplete. The genetic mechanisms responsible for vast variability of TSNA content among the different tobacco types and the variability induced within the genotype in response to management practices are yet to be fully elucidated.

There is an increasing need for concerted research efforts to understand the biosynthesis and regulation of TSNAs. Multi-institutional and inter-disciplinary collaborative research is required to be initiated to reduce the levels of TSNAs by making use of advances in genetics and biotechnological tools. Further, regulation of genes encoding for nicotine demethylase and related enzymes, and there by ensuring reduced levels of TSNAs is one of the strategic research areas needing urgent research attention. Efforts to identify and exploit "low-converter" tobacco genotypes with reduced TSNAs need to be intensified. Further, the advances in frontier areas of science including Genomics and Transcriptomics need to be fully utilised to lower the TSNA levels in cured leaf and tobacco products so as to minimize the associated health risks.


(D. DAMODAR REDDY)

RESEARCH HIGHLIGHTS

- In FLDs conducted in various zones, the FCV tobacco line, TBST-2 found promising over SIRI (C) with BCR 1.44 (NBS) 1.32 (SBS) and 1.11 (SLS) and preferred by the farmers in all the three zones.
- In the on-farm trials conducted in the NLS area, FCV lines Tobios-2, Tobios-6 and NLST-4 found promising with 9.57%, 16.44% and 9.47% increase in cured leaf yield than control Kanchan and recorded desired quality characteristics.
- Lines FCH 238, FCH 239, FCH 240 and FCH 242 found to be promising with higher leaf yields in replicated trials at Hunsur.
- Integrated supply of Potassium through use of Tobacco stem ash or cotton stem ash in conjunction with fertilizer SOP in equal proportion recorded cured leaf yield and bright grade production comparable to 100% SOP alone in FCV tobacco under KLS conditions.
- The reduction in the productivity of 100% organic tobacco was 28.5% in 4th crop season compared to 50% , 42.7% and 33.0% observed in the first, second and third crop season respectively in FCV tobacco grown under KLS. 40.7% reduction in the root knot incidence and 38.5% in the wilt incidence was observed in organic treatment.
- ICAR, New Delhi has approved the project “Characterization, value addition and utilization of tobacco seed oil and its by-products” under Consortia platform-14 on Phytochemicals/ High value compounds.

Field Experience Training

Six ARS scientist trainees of 101 FOCARS batch from NAARM, Hyderabad were given 21 days Field Experience Training (FET) during 19.02.2015 to 11.03.2015 at Jonnada village, East Godavari District.

QRT Visits

During the period, Quinquennial Review of the institute is going on under the chairmanship of Dr. Hanchinal, Chairperson, Protection of plant varieties & Farmer's rights authority, New Delhi and members Dr. B.N. Bhat, Dr. R. Lakshminarayana, Dr. R.K. Samanta and Dr. T. Ramesh Babu. The QRT team visited CTRI, Rajahmundry (05.02.2015) and its research stations viz., Jeelugumilli (6.2.2015), Kandukur (7.2.2015), Guntur (8.2.2015), Dinhat (10.5.2015) and Vedasandur (16.05.2015), AINP(T) centres viz., Anand (31.1.2015), Nipani (02.02.2015) and KVK, Kalavacherla (05.02.2015). The team reviewed the research work carried out during the period 2009– 2013 in these stations.



Director visits Switzerland

Dr. D. Damodar Reddy, Director, ICAR-CTRI, Rajahmundry visited Zurich, Switzerland to participate in the 32nd Meeting of ISO/TC 126 and its working bodies.



The Bureau of Indian Standards (BIS), Ministry of Consumer Affairs, Food and Public Distribution, Govt. of India, New Delhi nominated Dr. D. Damodar Reddy, Director, ICAR-CTRI, Rajahmundry, Andhra Pradesh and Chairman, FAD-4, BIS, Sectional Committee on ‘Tobacco and Tobacco Products’ as Leader of the Indian delegation to the 32nd meeting of ISO/TC-126 and its working bodies at Zurich, Switzerland. He presented the progress of WG-12 on ISO/NP 17175 ‘Bidis - Determination of total and nicotine-free dry particulate matter using a routine analytical smoking machine’ in the meeting. The ISO/TC 126 appreciated the progress made by WG 12 and requested the Indian delegation to submit the “draft method” incorporating the study results. The Indian delegation has actively participated in the discussions and made contributions to important decisions on the international standards relating to tobacco and tobacco products.

Exhibition

AP- TEC 2015 an Exhibition was organised at ICAR-CTRI in collaboration with Andhra Pradesh Technology Development and Promotion Centre (APTDC), Hyderabad from 05.06.2015 to 07.06.2015. About 10,000 progressive farmers of the district visited the stalls and got benefitted through this programme.



RAC Meeting

The Research Advisory Committee (RAC) meeting of ICAR-CTRI was held on 2nd May, 2015 at ICAR-CTRI, Rajahmundry under the Chairmanship of Dr. A. Padma Raju, Vice-Chancellor, Acharya N.G.Ranga Agricultural University, Hyderabad. RAC members, Dr. V. S. Korikanthimath, Dr. T.V.K. Singh and Dr. Ashok Kumar attended the meeting.

Dr. D. Damodar Reddy, Director, ICAR-CTRI, Dr. K. Sarala, Member-Secretary, RAC, Heads of Divisions, Heads of Research Stations, Scientists and Heads of administration of ICAR-CTRI participated in the meeting.

The committee reviewed the research being conducted at CTRI & its Research Stations and advised few priority areas for initiating the research.



IMC and IJSC Meetings

48th Institute Management Committee meeting was held on 09.06.2015 at the Institute and Dr. D. Damodar Reddy, Director, CTRI & Chairman, IMC welcomed all the newly nominated members and co-opted members. In this meeting, various management issues related to the Institute was discussed viz., list of equipments proposed to be procured and works to be undertaken during annual plan 2015-16, etc.

The 1st meeting of XIII Institute Joint Staff Council held on 09.06.2015. Dr. D. Damodar Reddy, Director, ICAR-CTRI, Rajahmundry and Chairman of the IJSC congratulated the newly elected members. The IJSC examined various issues related to staff welfare including facility of CGHS hospitals to all stations, updating of roster registers, providing facilities to IJSC members, etc.



VISITORS

- A team of Scientists consisting of Dr. Susan Dinbin, Dr. Dahua Garwe and Dr. Frank Magama from Tobacco Research Board, Harare, Zimbabwe visited CTRI, Rajahmundry on 28.01.2015 and got acquainted with different areas of research work going on at the Institute.
- 50 farmers from Vellore District visited CTRI RS, Vedasandur on 28.02.15 under National Horticultural Mission and were explained about the research activities of the station.

SPORTS MEET

ICAR -CTRI Volley Ball Shooting Team participated in the Inter Zonal Sports Meet, held at NDRI, Karnal during 11-14th March, 2015.

A 46 member CTRI Sports and Games contingent participated in the ICAR Inter-Institutional Sports Meet held at CIFT, Cochin during 25-29th May, 2015. CTRI secured 1st place in the Volley Ball (Shooting), 2nd place in women TT Doubles, 3rd place in Men Shotput and 800 m run events.



TRIBAL SUB-PLAN

Tribal sub plan of ICAR-CTRI was implemented in Seethappadum panchayat of West Godavari district in Andhra Pradesh with a total financial outlay of Rs.10.00 lakhs. Suitable technological interventions viz., desilting of village pond, permanent grain storage bins, high yielding cashew varieties, backyard poultry with Vanaraja birds, tray seeding production in tobacco, farm implements etc. were identified and implemented.

Under this programme income generating activities like Palmyrah fibre production were also included.



Swachh Bharat Programmes

Human Chain formation, Plant a tree programme, Leaf manure making and March Past were the different activities observed in connection with Swachh Bharat Abhiyan during first half of the year 2015.



International Women's Day

International Women's Day was celebrated at ICAR-CTRI, Rajahmundry on 07.03.2015. Dr. D. Damodar Reddy, Director, CTRI graced the occasion as chief guest. Women employees of the Institute were actively participated in the celebrations.

International Women's Day was organised on 08.03.2015 at PMRC, Rampachodavaram to motivate, re-strengthen and rejuvenate the tribal self-help women groups operating under ITDA mandals towards entrepreneurship. A total of 600 tribal farm women have participated in the programme. An exhibition was arranged in connection with this event. Various local organizations viz., ATMA, ITDA, DRDA, KVK-Pandirimamidi, Laya, etc. have participated and collaborated in organizing this event.



National Science Day

National Science day was observed by ICAR-CTRI on 28th February, 2015. Discussion forum, short talks and quiz programme were conducted for the benefit of staff and students of Agricultural College, Rajahmundry. The Institute was kept open for visit of public on the day.



PERSONALIA

APPOINTMENTS

- ❑ Dr. M. Anuradha Principal Scientist has been appointed to the post of Head, CTRI Research Station, Kandukur w.e.f. 19.03.2015.
- ❑ Sri A.V.V. Ramana has been appointed as Assistant on inter-institutional transfer w.e.f. 01.01.2015.
- ❑ Sri M. Anjaneyulu, Smt. A. Sambrajyam and Smt. A. Vijaya Lakshmi, TSCLs were regularized as SSS at CTRI RS, Guntur w.e.f. 11.02.2015.



Retirements

- ❑ Smt. A. Vijaya Lakshmi superannuated on 28.02.2015; Sri J. Siva Sai, Sri M. Satyanarayana and Smt. R. Velliammal superannuated on 30.04.2015; Sri M. Mohan, Sri Sk. Moulali, Smt. Bharati Ghosh and Sri Bijoy Das superannuated on 31.05.2015; Sri P.E. Jemmy, Sri D. Sreerama Murthy, Sri Y. Satyanarayana, Sri V.V.K. Acharyulu and Sri D. Prabhakara Rao superannuated on 30.6.2015.

Transfers

- ❑ Sri L. Senapathi, Assistant, CTRI, Rajahmundry has been transferred to Central Institute of Freshwater Aquaculture, Bhubaneswar on 1.6.2015.

KVK, KALAVACHARLA

Krishi Vigan Kendra (KVK), Kalavacharla organised Technology Week (30.01.2015 to 03.02.2015); Kisan Mela (30-31st March, 2015); Scientific Advisory Committee Meeting (07.04.2015); Training programmes in the areas

of Cashew (7-9th January, 2015 and 2-3rd February, 2015); Demonstrations on Cashew Apple Utilisation (13-16th May, 2015); Two off campus training programmes on Banana fibre extraction and products making (19th January to 4th February 2015 and 6 - 20th February 2015); Awareness on Protection of Plant Varieties and Farmers Rights Act 2001 (29th January and 28th February 2015); Village Adoption Programme to fifteen UG and PG students of NIFTEM, New Delhi (14.03.2015 to 24.03.2015).



EXHIBITIONS

- CTRI-KVK stall was arranged at NIPHM, Hyderabad in connection with National Workshop cum exhibition on Popularization of low cost Agricultural Technologies during 4-6th February, 2015.
- CTRI-KVK stall was arranged at Regional Agricultural Fair, Central Potato Research Station, Patna during 19-21st February, 2015. Central Agricultural Minister Sri Radha Mohan Singh inaugurated the agricultural fair.

