

ICAR-CTRI

News

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From the Director's Desk



Root-knot Nematodes Menace in Tobacco: Need for Strategic and Integrated Management Interventions

Root-knot nematodes (*Meloidogyne* spp.) are ubiquitous parasites with an amazing ability to infest a wide range of plant species. Being polyphagous parasites, they occupy a vast array of ecological niches in both tropical and subtropical climates. The root-knot nematode represents one of the major biotic stresses in tobacco cultivation particularly in FCV tobacco in Karnataka and Bidi tobacco in Gujarat. The extent of damage in tobacco (yield loss) is often reported to be around 25%. The most prominent and distinctive symptom of *Meloidogyne* infestation is the appearance of galls on primary and secondary roots that may subsequently become swollen and deformed. Above ground symptoms of nematodes in host plants include: wilting during the hottest part of the day even under adequate soil moisture conditions, loss of plant vigour, yellowing of leaves and stunted growth. The infected plant roots offer congenial conditions for soil-borne pathogens to enter the root system and cause diseases such as root rot, *Fusarium* wilt etc. In some cases parasitic nematodes also serve as vectors for transmission of viral diseases. The symptoms caused by nematode infestation are difficult to diagnose with certainty as they often mimic symptoms or disorders caused by the deficiency of one or more plant nutrients.

Once the root knot nematodes are established in the field, it becomes virtually impossible to eradicate them. It is, therefore, important to develop effective management strategies intended to keep soil nematode population below economic threshold level. The underlying philosophy of management strategies should focus on disturbing harmonious relationship between nematode and host plant by altering soil ecosystem. Nematode management strategies developed and advocated in the past include (i) Cultural practices such as summer ploughing, organic and inorganic soil amendments, crop rotation, growing antagonistic and trap crops, crop residues destruction, (ii) Physical methods such as soil sterilization using steam, soil solarisation etc., (iii) Chemical methods involving use of soil fumigants, nematicides etc, (iv) Biological methods employing fungi for trapping (*Arthrobotrys* spp. and *Monacrosporium* spp.) and egg parasites (*Paecilomyces lilacinus*, *Pochonia chlamydosporia*) and bacterial parasites (*Pasteuria penetrans*, *Pseudomonas fluorescens* and *Bacillus* spp.). Any of these methods when used individually is often reported to be only partially effective in managing the nematode menace under many conditions. It is, therefore, important to develop an integrated management strategy involving combinations of cultural, physical, chemical and biological interventions for effective and lasting protection against parasitic nematodes. The future research on nematode management needs to be focused on:

- ❖ Developing nematode resistant cultivars of tobacco.
- ❖ Improved and cost effective soil solarisation techniques.
- ❖ Evolving new strains of potential bio-agents against nematodes.
- ❖ Development of eco-friendly botanical nematicides.
- ❖ Understanding and management of inter relationships of tobacco host on one hand and root parasites including nematodes, *Orobanche* etc., on the other.



(D. DAMODAR REDDY)

RESEARCH HIGHLIGHTS

- ❑ Eight promising FCV entries viz., RS-22, RS-23, RS-24, RS-32, TBST-112, TBST-113, TBST-114, TBST-115 from ICAR-CTRI, Rajahmundry were contributed to AINPT for multilocation testing.
- ❑ Five crosses involving seven parents viz., FCH-222, Kanchan, FCH-201, NLST-3, JL-53#12, FCH-239 and ABL-10 were found to be promising in terms of cured leaf yield in NLS area.
- ❑ *In vitro* studies on glyphosate 41% SL at four different concentrations of 5, 10, 20 and 50 ppm tested by poisoned food technique found to inhibit seed germination of *Orobanche cernua* with varied degree of inhibition.
- ❑ Planting of tray seedlings treated with chlorantraniliprole 25 SC @ 0.0075% a day before planting was highly effective in protecting the tobacco transplants from ground beetle, *Mesomorpha villiger* Blanchard damage.
- ❑ Integration of two rows of sorghum as barrier crop + foliar spray of insecticides (flonicamid 50 WG @ 0.02%, pymetrozine 50 WG @ 0.02% & imidacloprid 17.8 SL @ 0.005%) at 10, 25 & 40 days after planting effectively protected FCV tobacco from whitefly transmitted leaf curl virus disease.
- ❑ Agri-biomass briquetting machine and multipurpose chaff cutter-cum-pulvelizer were procured and installed at the institute to make agri biomass briquettes for use in FCV tobacco curing in place of wood.
- ❑ Polycarbonate roof chamber was erected at 2 ft. height over the existing barn at CTRI Farm, Katheru for trapping the solar energy which saved wood fuel to an extent of 29% during curing compared to traditional barn.
- ❑ Studies on socio-economic impact of FCV tobacco in NLS area revealed that the average net returns/acre (own land) was higher for tobacco (Rs 49,806/-) than other crops grown in the region.
- ❑ The wealth indicators in rural household's of NLS area showed a propensity for consumption

and asset creation amongst those who predominantly grow tobacco compared to other crops.

- ❑ A website entitled <http://genderandclimatechangenicra.org/> has been designed and developed under NICRA project of ICAR-CTRI. Gender specific capacity building and adaptation programmes in food preservation and value addition were implemented among the fisher women.

TRANSFER OF TECHNOLOGY

Field visits

A team consisting of Dr. D. Damodar Reddy, Director, ICAR-CTRI, Rajahmundry, Dr. S. Kasturi Krishna, Head, Div. of Crop Production, Dr. M. Anuradha, Head, ICAR-CTRI RS, Kandukur, Sri Jitendra Kumar, Vice President, M/s. GPI India Ltd., Sri M. Prabhakara Rao, GM, M/s. GPI India Ltd visited burley tobacco experimental fields of farmers and M/s GPI at Vinukonda on 10.01.2017 and interacted with farmers.



Fields Friends programmes

The Scientists and Technical Officers of CTRI, Rajahmundry, Guntur and Kandukur research stations acted as resource persons for the Field Friends Teams, being implemented by the Tobacco Board, Guntur in Andhra Pradesh. The teams visited the fields and advised farmers on Good Agricultural Practices at NLS, SLS and SBS areas during the crop season 2017 at different time intervals.

Diagnostic visit to assess *Orobanche* infestation

Scientists of ICAR-CTRI, Managers of Tobacco Board and Tobacco Trade visited FCV tobacco fields of SLS & SBS areas in Prakasam and Nellore districts of Andhra Pradesh on 22nd and 23rd February, 2017. They assessed the incidence and causes of *Orobanche* infestation and suggested remedial measures.

Krishi Unnati Mela

ICAR-CTRI participated and put up an exhibition stall in Krishi Unnati Mela organized by Ministry of Agriculture and Farmers Welfare at ICAR-IARI, New Delhi during 15-17th March, 2017.

Trainings conducted

- ❑ Training programme on "FCV tobacco Field Crop Management" was conducted by ICAR-CTRI, Rajahmundry during 19-24th June, 2017. A total No. of 25 trainees including 15 from ICAR-CTRI and 10 from Tobacco Board and Trade were imparted training.



- ❑ Dr. S. Kasturi Krishna and Dr. G. Raghupathi Rao in collaboration with Tobacco Board conducted training programme on "Good Agricultural Practices, Crop protection agents and PHPM in NLS tobacco production" in CTRI RS, Jeelugumilli on 07.03.2017. The farmers and Tobacco Board field staff of different NLS auction platforms attended the training.

RAC MEETING

Third meeting of the Research Advisory Committee (RAC) of ICAR-CTRI was held during 19-20th April, 2017 at ICAR-CTRI, Rajahmundry under the Chairmanship of Dr. A. Padma Raju, Former Vice-Chancellor, ANGRAU, Hyderabad. The committee reviewed the research being conducted at ICAR-CTRI & its Research Stations and advised a few priority research areas to initiate.



ISO 9001: 2008 certification of ICAR-CTRI

Surveillance Audit-1 of quality management system at place in ICAR-CTRI was successfully conducted on 20.02.2017 and the auditor recommended for the continuation of the ISO 9001: 2008 certification to CTRI.

FOREIGN VISIT

Dr. D. Damodar Reddy, Director, ICAR-CTRI, Rajahmundry participated in the "Global Meeting on the Implementation of Articles 17 and 18 of the WHO FCTC : Taking action to protect tobacco farmers and the environment" at Dar es Salaam, Tanzania during 12-14th June, 2017.

Tribal Sub Plan

□ Tribal sub plan (TSP) of ICAR-CTRI for 2016-17 was implemented at Seethappagudem and Sirivaripalem villages in West Godavari District, Veerapalli village in Prakasam District of AP and Jamadarbose village in West Bengal. Maize seed, tobacco seed, fertilisers, cashew seedlings, maize sheller and rotovator on custom hiring basis, fishing nets, kitchen garden kits, improved paddy varieties and irrigation equipment were supplied to tribal farmers to enhance the productivity. Training programme was conducted to farm women on tailoring and distributed the sewing machines for improving their livelihood security.



□ ICAR-CTRI, Rajahmundry conducted training-cum-sensitization programme on 'Efficient use and maintenance of critical inputs' for the interventions implemented under tribal sub plan at Seethappagudem and Sirivaripalem villages, West Godavari Dist. on 13.4.2017.

Pulses Seed Hub of ICAR-CTRI

Produced 470 quintals of pulse seed of bengal gram (JG-11), red gram (LRG-41), black gram (PU-31) and green gram (LGG-460) there by achieving 94% of assigned target. The seed produced was supplied to AP State Seed Development Corporation.

CELEBRATIONS

National productivity week

National productivity week was celebrated at ICAR-CTRI, Rajahmundry from 13-18th February, 2017 and discussed various issues related to increase in productivity from different resources.

International Women's Day

ICAR-CTRI celebrated "International Women's Day" on 8th March, 2017 with the theme, "Be Bold for Change" under the chairmanship of Dr. D. Damodar Reddy, Director, CTRI. Ms. B. Rajakumari, IPS, Superintendent of Police (Urban), Rajahmundry, chief guest of the function gave a motivational talk.



Swachh Bharat Pakhwada

Swachh Bharat Pakhwada was conducted during 16-31st May, 2017. As a part of the ongoing "CLEAN INDIA" campaign with the central theme "सफाई के साथ कमाई" (Safai Ke Saath Kamaayi), abandoned area of the old CTRI was cleaned and generated an income of Rs. 4.4 lakhs.

International Yoga Day

The 3rd International yoga day was celebrated at ICAR-CTRI, Rajahmundry on 21.06.2017. Dr. T. Satyanarayana, Member, Brahmakumaries organisation delivered a talk on 'Importance of yoga in daily life' and taught about the practice of Rajayoga. Sri T. Ramu, Yoga Practitioner taught various yoga postures as per the common yoga protocol given by the Government of India.

AWARDS

- ICAR-CTRI, Rajahmundry received the "Cashless ICAR Institute Award" on 14.02.2017 for cash less transactions.



- Dr. Hema Baliwada, Scientist, ICAR-CTRI received "Best Student of the year award 2016" at IARI convocation, New Delhi during 6-9th February, 2017.



- Dr. T. Kiran Kumar, Scientist, ICAR-CTRI as a co-author received "Best Poster Award" at RMSI National Symposium on "New Directions in Managing Forage Resources and Livestock Productivity in 21st Century" during 3-4th March, 2017 at RVSKVV, Gwalior.
- Ms. J. Poorna Bindu, Scientist, ICAR-CTRI received "Young Scientist Award 2016-17 Runner-up II" for outstanding achievement in chemistry from Dr. K.V. Rao Scientific Society, Hyderabad on 27th May, 2017.



- Dr. U. Sreedhar, Head, Div. of Crop Protection has received "Lifetime Achievement Award" in IJTA 5th International Conference on 25th June, 2017 at Rishikesh



NEW COLLABOTIVE PROJECTS SANCTIONED/ INITIATED

- The Tobacco Board, Ministry of Commerce & Industry, Govt. of India has approved the project “Assessment of soil fertility and development of online recommendation system for FCV tobacco growing soils of India” with an outlay of Rs.45.35 lakhs for a period of four years.
- A project entitled “Development of Distinctiveness, Uniformity and Stability (DUS) Guidelines for FCV (Flue-cured Virginia) and *Bidi* tobacco” was sanctioned by the Protection of Plant Varieties and Farmers’ Rights Authority, Govt. of India, Ministry of Agriculture, Department of Agriculture and Co-operation, New Delhi with an outlay of Rs.18.00 lakhs for a period of two years.
- An inter institutional project, “Investigations on various options for effective use of oil palm biomass waste” was initiated with ICAR-IIOPR, Pedavegi to explore the possibility of utilizing oil-palm waste as alternate fuel for FCV tobacco curing, soil amendment and rooting media for tobacco seedlings production.

KRISHI VIGYAN KENDRA (KVK)

Technology Week

CTRI-KVK celebrated Technology Week from 23-28th January, 2017. Students from Veterinary Polytechnic College, farmers and farm women from nearby areas and from Sukuma district of Chattisgarh state visited KVK, Kalavacharla. They were exposed to various technologies on agriculture, horticulture, animal science, home science and rural crafts during their visit.



Training programmes

CTRI-KVK organized 11 training programmes for farmers and rural women on Garment making, Quilt bag making, Banana fibre extraction and Products making, Embroidery, Buffet plate making, Decoratives with dried flowers, Animal reproduction and health management, Backyard poultry management and vaccination, etc.

SAC meetings

Scientific Advisory Committee Meeting of CTRI-KVK, Kalavacharla

was organized on 21st April, 2017 at CTRI, Rajahmundry and CTRI-KVK, Kandukur organized on 2nd May, 2017 at CTRI RS, Kandukur under the chairmanship of Dr. D. Damodar Reddy, Director, ICAR-CTRI. Work done during 2016-17 was reviewed and action plan for 2017-18 finalized.



KVK Scientists of Karnataka visited KVK-Kalavacharla

Thirty two scientists from 21 KVKs of Karnataka State visited KVK, Kalavacharla on 23.06.2017 and interacted with KVK staff on agriculture, horticulture, animal science, home science and allied subjects.



PERSONALIA

Appointments

- Mr. K. Viswanatha Reddy, Scientist (Ag.Economics) joined ICAR-CTRI on transfer from ICAR-CCARI, Goa on 20.03.2017.
- Dr. A. Srinivas, Scientist (Ag.Extension) joined ICAR-CTRI on transfer from ICAR-ATARI, Zone VI, CAZRI Campus, Jodhpur on 22.03.2017.
- Mr. E. Rangaswamy, Scientist (Plant Pathology) joined ICAR-CTRI on transfer from ICAR-IIHR, Bengaluru on 27.06.2017.
- Dr. S. Ramakrishnan, Pr. Scientist joined as Head, ICAR-CTRI Research Station, Hunsur w.e.f. 30.03.2017

Promotions

- Nineteen technical personnel were promoted to next higher grade during the first half of 2017.

Retirements

- Smt. S. Anasurya and Sri M. Soundara Rajan superannuated on 31.01.2017; Sri Y.N.V.V. Satyanarayana Murthy, Sri P.K.V. Satyanarayana and Sri G.Chinna Rao on 28.02.2017; Sri E.Vijaya Prasad, Sri Orupalli Malakondaiah and Sri T. Lakshmana Rao on 31.03.2017; Sri B. Raja Rao and Sri V.S.R.C. Murthy on 30.04.2017; Dr. M. Nageswara Rao, Smt. N. Arunakumari, Sri P.Ch. Satyanarayana, Sri N. Veerabhadra Rao, Sri G.P.D. Varma, Sri S. Soundara Rajan, Sri Manchala Prasad and Sri Uttam Das on 30.06.2017.

Obituary

- Sri K.V. Ramana, Sr.Techn. CTRI, Rajahmundry passed away on 25.01.2017. Sri K. Veerraju, SSS, CTRI, Rajahmundry and Sri Kanuganti Yesu, SSS, CTRI RS, Guntur passed away on 13.06.2017.