COTTON Innovate

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SCIENTIFIC TALKS

Radical "Trojan Female" pest control approach

A wild idea talk on "Radical Trojan Female pest control approach" was given by Dr. Rishi Kumar, Senior Scientist (Agril. Entomology) on 3rd May, 2014 at CICR, Regional station, Sirsa. He mentioned that Trojan female technique (TFT) in the battle against insect and animal pests, inspired by a fighting tactic from Greek mythology can be helpful not only in management but in eradication of pest species from a particular locality. It is a novel and cost-effective technology platform for the specific, persistent, non-lethal and non-GMO control of vertebrate and invertebrate pests through naturally occurring mutations that cause male infertility in the maternally inherited mitochondrial DNA (mt DNA) and have little or no impact on females. Trojan females look fine, they're normal fertile females, but they produce sons who are infertile which is bad for the population. The Sterile Male Technique (SMT), commonly applied to invertebrates, has capabilities to eradicate the pest species but SMT requires large quantities of sterile males to be produced and released each year in a costly process that can limit its use. The TFT, a novel twist on the SMT paradigm, could provide similar control at greatly reduced effort; being self-perpetuating in nature, making it economically viable to apply to a wider range of invertebrate species under a wider range of contexts (i.e. from possums, rabbits, stoats and rats, to mites, aphids, moths and weevils) than the SMT, and even to vertebrates (for which the SMT is not cost-effective). The TFT is thus a strong candidate for the effective, persistent and specific reproductive control of multiple pests, providing synergies with conventional control. Arguably this approach is more humane than poisoning or trapping.

Dr. R. B. Singandhupe, Pr. Scientist & I/C KVK, CICR, Nagpur gave a talk on "Soil Water Evaporation Loss retarding Process with Hydromulch" on 3rd May, 2014. He mentioned that Cotton growing farmers take up cotton crop during monsoon season under rain fed conditions. However, erratic / uneven distributions of rainfall in subsequent months adversely affect the growth of plant. Also after south west monsoon recedes, particularly after September every year, the cotton crop suffers from moisture stress particularly in the month of October and November and boll development is badly affected due to continuous depletion of soil moisture and non availability of plant nutrients. In light textured soil where maximum water holding capacity in 1 meter soil depth is about 100-150 mm and daily water consumption in the month of October and November on an average is 4.50 mm per day, 50 % depletion of available soil moisture occurs within 11 to 17 days period. That means after monsoon rains recede, the crop can sustain only for 11 to 17 days in light soil, 18- 22 days in medium textured soil where the water storage capacity is 150-200 mm and 28 days or more where water storage capacity of heavy soil in 1 meter soil depth is 250 mm and above. Therefore to avoid moisture stress during boll development stage conservation of soil moisture is essential. In his talk, Dr. Singandhupe suggested alternative measure i.e. use of hydro mulch for conserving soil moisture in rainfed areas . The hydro mulch is mixture of guar gum seed powder, mulch, water and other ingredients sprayed on bare soil. The binder made up of guar gum powder helps the hydro mulch stick together. When water is added, the powder forms a viscous gum and all mulch material are retained on soil surface for longer period and check evaporation loss of water from soil profile. The guar seed contains 82-85 % guar gum, 5 % protein, 0.6 % ether extract and 1.5 % crude fibre and acts as binding agent. He has also suggested other binding material i.e. sugarcane molasses, powder form of cassava roots, to be used as binding material in hydro mulch. However, these products require intensive research study for wider adaptation.

Dr. Singandhupe also explained the importance of Climatic water balance study through which the magnitude of drought period of particular soil type is quantified through water balance procedure developed by Thornthawaite and Mather (1957). Once the severity of drought is known, precautionary measures like adjustment of dates of sowing, use of mulch and other field operations where maximum amount of rain water is recharged in soil profile can be advocated to the farmers.

Reference:

Thornthawaite, C.W. and Mather, J.R. 1957. Instruction and table for computing potential evapotranspiration and water balance: Centerton, N. J., Laboratory of Climatology, Publications in Climatology vol.10, no.3, p.185-311.

Dr G. Balasubramani, in-charge, ITMU delivered a talk on "IPR issues and Patent Protocol" on 3rd May, 2014. Intellectual property is an intangible creation of the human mind, usually expressed or translated into a tangible form and Intellectual property rights (IPR) is the rights given to people over the creation of their minds. The government is giving exclusive rights or monopoly right (Patent) to the inventor to use of creations for a certain period of time (20 Years) and stopping others from copying, making, using, importing or selling. When a patent is granted, the applicant becomes the owner of the patent, like any other form of property. Different types of IPR exist as per the Indian law viz., Patents, Design, Trademarks, Geographical indications, Copyrights and other intellectual properties are Plant varieties and farmers rights, Protection of Integrated Circuits layout design and Trade secrets i.e. Undisclosed information. The Patents Act, 1970 was amended in 1999, 2002 & 2005. The amended Act, in accordance with TRIPS, has provided for product patents in foods, medicines and chemical substances. India became signatory to PCT in 1998. As a consequence, patent filing including PCT National Phase Applications have increased exponentially. Considerable changes have been made in the patenting procedure through the introduction of Patents Rules, 2003, which were further amended in 2005 and 2006, resulting in new practices and procedure. The protocols for patents were explained in details like the processing of a patent application is a multi-stage process, involving filing of an application, electronic data processing, screening and classification, publication, examination, pre-grant opposition, grant / refusal, renewal, maintenance. He concluded his talk with the following quotes that "All experiments are not invention, All invention cannot be patented, All Patents cannot be commercialized and All commercialized technologies are not successful, nevertheless continue to invent & patent". Some important websites were given for further reading: www.ipindia.nic.in -Intellectual Property Office, India, www.patentoffice.nic.in -Patent office, India http://copyright.gov.in Copyright Office, India, ipr.icegate.gov.in-Automated Recordation & Targeting for IPR Protection http://www.icegate.gov.in E- Commerce portal of Central Board of Excise and Customs, www.ipab.tn.nic.in - Intellectual Property Appellate Board, India.

LITERATURE SCAN

NANOGOLD PARTICLE MEDIATED GENE DELIVERY IN PLANT

This invention related to nanogold particle mediated gene delivery in plants including process for their preparation and use in plant transformation. DNA loaded gold nanoparticles are embedded in sharp carbonaceous carriers and these nanogold embedded carbon matrices are prepared by heat treatment of biogenic intracellular gold nanoparticles. The DNA-delivery efficiency is tested on model plants. The GUS assay of composite particles revealed good dispersion of the transport material. Also the requirements of plasmid and gold are lower for this composite carrier. Composite particles have better piercing capabilities with minimum plant cell damage compared to that of the commercial micrometer sized gold particles.

Reference:

Vijayakumar, P.S.; Abhilash, O.U.; Khan B. M. and Prasad B. L. V. Nanogold Loaded Sharp Edged Carbon Bullets as Gene Carrier for Plant Genetic Engineering. *Advanced Functional Materials*. **2010, 20**, 2416- 2423.

Contributed by Abhijit Daspute [1], Sachin More[1], Usha Sattija[2], Amar Kadam[1], Mahesh Thakre[1] and Ramakrishna[1]

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The above literature scan was contributed under 'Most Exciting Discoveries in Agricultural Sciences after 2010' as a part of National Science day Celebration- 2014 under RA/SRF's Category.

FAREWELL

Dr. Ram Ratan Gupta, Subject Matter Specialist (Plant Protection) on his superannuation was accorded warm farewell by Krishi Vigyan Kendra, CICR, Nagpur and ICAR-CICR staff welfare Club on 30th April, 2014.



CICR IN PRESS

ढाई साल में बना ली कॉटन स्टिक्स से खाद

खोज केंद्रीय कपास अनुसंधान व प्रौद्योगिकी संस्थान के वैज्ञानिकों ने हासिल की सफलता

महेंद्र सिंह मेहरा | सिरसा

कॉटन काउंटी क्षेत्र सिरसा में कॉटन स्टिक्स यानी कपास की छंटनियों से गुणवत्तायुक्त खाद बनाने की नई तकनीकी पैदा की गई है। इस तकनीकी को पैदा करने के लिए केंद्रीय अनुसंधान और केंद्रीय प्रौद्योगिकी संस्थान के वैज्ञानिकों ने की सफलता हासिल की है। इस खाद के प्रयोग से किसानों की भूमि उपजाऊ शक्ति बढ़ाने में फायदा मिलेगा। बता दें कि कपास के पौधों के अवशेष से जैव संबंधित कंपोस्ट खाद को तैयार करने में वैज्ञानिकों को ढाई साल लगे। वैज्ञानिकों ने खाद तैयार करने में कॉटन स्टिक्स के आधा आधा सेंटीमीटर काट कर छोटा बनाया। इसके बाद इसको गोबर, मिट्टी, कास्टिक सोडा, सूक्ष्मजीवी संघटक, पौधा वृद्धि प्रोत्साहक जीवाणु, डीएपी, यूरिया, अल्कली, जीवाणु व फफूंद का निश्चित अनुपात में मिश्रण मिलाकर ढेर बनाया। पानी का छिड़काव किया। और इस ढेर को कली तापोलिन से ढंक दिया जाता है। इस तरह से ढेर के भीतर का तापमान 55 से 60 डिग्री सेल्सियस हो जाता है। एक हफ्ते के बाद इस बार बार पलटा जाता है। इस खाद को तैयार करने में 100 दिन लगते है। इस नई तकनीकी से तैयार खाद में 1.1 फीसदी नाइट्रोजन, और इतनी ही मात्रा में फास्फोरस व पोटाश की भी होती है।

कॉटन स्टिक्स यानी कपास के छंटियों से गुणवतायुक्त खाद बनाई। खाद को दिखाते किसान राजाराम कड़वासरा।

हां सफलता हासिल की

कॉटन स्टिक्स से खाद तैयार करने में सफलता हासिल की है। ये खाद उत्तम गुणवत्ता की है। इसके कई तरह के खनिजों की आपूर्ति करने वाली ये खाद पौधों के लिए फायदेमंद है। इसको तैयार करना न तो ज्यादा महंगा है।"

डॉ. दलीप मोंगा, अध्यक्ष केंद्रीय कपास अनुसंधान संस्थान, क्षेत्रिय स्टेशन सिरसा।

सिरसा में अधिक बिजाई

कपास के उत्पादन में हरियाणा 5वें नंबर पर है। जिसमें सबसे ज्यादा बिजाई सिरसा जिले में होती है। पिछले वर्ष किसानों ने 6 लाख हेक्टेयर पर बिजाई की थी। इस बार विभाग ने इतना ही कपास उत्पादन क्षेत्र का लक्ष्य रखा है। इस बार कृषि विभाग ने सिरसा में 2 लाख 5 हजार हेक्टेयर का लक्ष्य रखा है।

2-8-4-14 Dainik Bhaskar, Sirsa

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