ICAR

NRCOG News

Volume 12 No.2 July-December, 2008 Visit us at http://nrcog.mah.nic.in

From Director's Desk

Climate is changing and it is changing at a faster rate. The weather parameters worst affected by this phenomenon are temperature and distribution of rainfall. In case of onion, increase in night temperature beyond critical level (>14°C) is harmful for bulb initiation and development. Day temperature beyond >38°C reduces bulb size and storage quality. Long break or sudden high rainfall in one or two days always invites problems of foliar diseases and pests. Post monsoon rains or cloudy weather during Dec-Jan increases disease load and thereby reduces yield. During the year 2007-08 there was delay in monsoon and due to which *kharif* crop was planted late. The prices of onion were high during Sept to Dec. Due to sufficient storage during last year there was steady supply till Dec 2008. Despite of good export (>14 lakh ton) no price hike was experienced even though *kharif* was delayed. This underlines the importance of storage and enhancing scientific storage facilities countrywide. NRCOG's model storage structure approved by Government of Maharashtra under subsidy component has increased storage capacity in Maharashtra to the tune of 8 lakh ton. Still there is need for further increase. Produce of *kharif* and late *kharif* crop started arriving in markets. The prices may go down in the coming months. However, post monsoon rains in November and cloudy weather in December has affected late *kharif* crop in Maharashtra. There has been spectacular increase in area under drip and sprinkler in Pune and Nashik districts. The demonstrations and trainings organized by NRCOG is becoming a major motivation factor for the farmers to adopt this technology.

There has been a wide appreciation for concerted efforts made by NRCOG over last ten years. The varieties and technologies developed by NRCOG are being well adopted by Maharashtra, Gujarat and Karnataka farmers. There is need for extension in other states also. Considering the importance of multi-location testing and verification of results under different agro climatic zones, ICAR has approved All India Network Research Project on Onion and Garlic worth Rs.678.20 lakh covering 12 important and potential onion and garlic growing states. Further, the status of NRCOG has been upgraded as Directorate of Onion and Garlic Research and with this up gradation and network project, the centre has become 'national' in true sense as it can reach to un-reached areas so far.

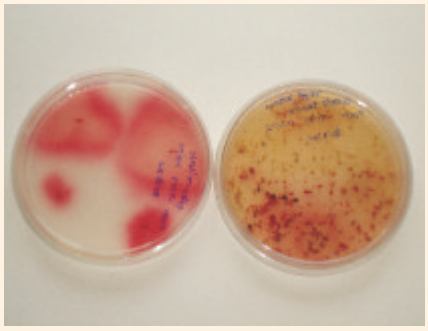
Research

A procedure for isolating *Pyrenochaeta terrestris* from onion roots


Pink root

As the name indicates, the most striking symptom of this disease is pink root. Infected roots first turn light pink, then darken through red and purple, shrivel, turn black, and die. The pinkish red discoloration may extend up into the scales of the bulb. New roots also may become infected. If infection continues, plants become stunted and there is tip burning. The disease seldom results in plant death. Infection is confined to roots and outer scales of the bulb.

Surface sterilized tissues from onion roots exhibiting typical pink root symptoms were plated on water agar supplemented with antibiotics and wheat straw pieces and also surface sterilized pink root affected discs along with pink roots were kept on to this media and incubated under cool white fluorescent light. After 4–5 days, the plates were examined. The morphological characteristics of the isolates examined were consistent with those of *Pyrenochaeta terrestris* described by Punithalingam and Holliday (1973).When this fungus was cultured on water agar with wheat straw pieces, characteristic pink pigment was produced. The present isolates produced typical pigment on wheat straw agar, when the diseased root tips and discs were placed on top of the wheat straw agar and at 25°C in incubator for 10 days. The present isolate was identified as *P. terrestris* based on the morphological characteristics mentioned above. Sub-cultures of isolates *P. terrestris* were transferred to chloroam-phenicol-amended (500 ppm) corn-meal (CCMA) agar plates and incubated at 24°C for a further 10–14 days. Cultures with setose pycnidia were identified as *P. terrestris.* All isolates of *P. terrestris* isolated by the procedure caused pink root of onion when tested. The pathogen was cross inoculated to another host, corn and the symptoms were noticed on the roots 30 days after inoculation. The inoculums have been maintained on cereal media and also on sterile soil in tubes for further screening studies.


Pink colouration on the media


Healthy and pink root infected corn

Garlic Based Cropping Sequences

Studies on sequential cropping of well-delineated agro ecological zone would help for optimization of nutrient inputs thereby minimizing the external inputs. In recent years, soil fertility - fertilizer use research is focused on cropping sequences. Due to escalated chemical fertilizer cost, impaired quality of produce, degraded soil and polluted surroundings necessitated the practice of cropping systems for vegetable production in recent years. So far, no prominent cropping system has been followed for garlic. Garlic is a short duration spicy vegetable crop commercially grown in India. The productivity of garlic could be increased through improved agronomic practices especially through cropping pattern. Garlic based cropping system is, to grow two or more crops in sequential manner in a year from the same piece of land. However, the available information on similar aspects in garlic is meagre. Hence an experiment was conducted in garlic to study the garlic based cropping systems to get higher yield and net profit per unit area per unit time.

Field trials were conducted during *kharif*, *rabi* and summer seasons to find out the most economically viable, environmentally suitable and socially acceptable garlic based cropping systems under western Maharashtra conditions. The selected cropping systems were soybean (*kharif*) - garlic (*rabi*), groundnut (*kharif*) - garlic (*rabi*), potato(*kharif*)-garlic(*rabi*), pea*(kharif*)-garlic(*rabi*), mung bean (*kharif*) – garlic (*rabi*), bajra (*kharif*) - garlic (*rabi*), cucumber (summer) – garlic (*rabi*) along with traditional cropping systems like bajra (summer) – garlic (*rabi*) and groundnut (summer) - garlic (*rabi*).

Among the various sequences evaluated during the last four years, the highest marketable bulb yield of garlic (6.87t/ha) was noticed in soybean (*kharif*) – garlic (*rabi*) sequence followed by groundnut (summer) - garlic (*rabi*) (6.69 t/ha). Moreover, it was found that the higher B: C ratio was noticed in groundnut (2.65) (summer) - garlic (*rabi*) followed by soybean (2.58) in *kharif* season and garlic in *rabi* season.

There was slight improvement in physical and chemical properties of soil particularly available N,P & K content of the soil, organic carbon, organic matter in legume based cropping sequences like soybean followed by garlic and groundnut (summer) followed by garlic (*rabi*) than other sequences evaluated. It is well known fact that cultivation of legumes increase the available N content in the soil. The increased available N showed that biological N fixation by the root nodules of soybean/ groundnut/ mungbean/pea. This would have helped in slow and sustained release of N and enhanced availability of nutrients in the soil and promoted the growth of garlic.

Public- private partnership initiative: MoU with Bejo Sheetal

In accordance with the mutual desire to promote cooperation between the National Research Centre for Onion and Garlic, Rajgurunagar, and Bejo Sheetal Seeds Pvt. Ltd., Jalna, a MoU was entered into for the purpose of onion improvement through hybrid development via conventional breeding. The MoU signing was effected on 18 Nov. 2008 between the two Organizations at NRCOG. The occasion was graced by Dr. RB Deshmukh, Vice Chancellor, Mahatma Phule Krishi Vidyapeeth, Rahuri and Mr. Piet Barten, Director, Bejo Zaden, The Netherlands along with other dignitaries from the two Organizations.

Commercial hybrids in onion are not common in India mainly due to the difficulty encountered in the availability of male sterile lines in short day onions, required for heterosis breeding. The cross pollinated nature of the crop and the inherent inbreeding depression adds to the woe of the breeder. Present day commercial varieties are mostly selections, which suffer from variability in size, shape and colour of the bulbs. Hybrids on the other hand offer uniformity in bulb colour, shape and size, which are highly desirous traits from production and market point of view. Hence, a five year project was formulated for the development of hybrids in onion through conventional breeding using male sterile (MS) lines from Bejo Sheetal and C lines from NRCOG.

The major advantage is that Bejo has short day type male sterile and maintainer lines along with the necessary experience in the field of onion hybrid seed production and marketing. They are the only seed company in India who have commercialized short day Onion hybrids (Bombay Red type) in the Country. NRCOG on the other hand has very good C lines with many desirable horticultural traits such as single centeredness, good storability and high yield along with suitability for the different seasons.

With this collaboration, we aim to incorporate the desired traits into the new hybrids, the commercialization of which will be taken care of by the Bejo. A successful venture between the two Organizations will see an overall increase in onion production and productivity in India.

हिन्दी पखवाड़ा

राष्ट्रीय प्याज एवं लहसुन अनुसंधान केन्द्र, राजगुरूनगर में दिनाँक १५.९.२००८ से २९.०९.२००८ तक हिन्दी पखवाड़ा मनाया गया। जिसके दौरान हिन्दी प्रश्न मंजुषा, हिन्दी पठन, निबंध, वाद-विवाद, कविता पाठ एवं सुलेखन प्रतियोगिताओ का आयोजन किया गया । हिन्दी पखवाड़ा समापन समारोह दिनाँक २९.०९.२००८ को सम्पन्न हुआ । जिसमें मुख्य अतिथि श्री राजेन्द्र प्रसाद वर्मा, सहायक निदेशक (हिन्दी) टंकण एवं आशुलिपिक, हिन्दी शिक्षण योजना, पुणे का, डॉ. के. ई. लवाण्डे, निदेशक, राष्ट्रीय प्याज एवं लहसुन अनुसंधान केन्द्र, राजगुरूनगर ने शाल, श्रीफल, पुष्प गुच्छ एवं मोमेन्टो भेट दे कर स्वागत किया। निदेशक, राष्ट्रीय प्याज एवं लहसुन अनुसंधान केन्द्र, राजगुरूनगर ने स्वागत भाषण में अपने विचार प्रगट किये उसके पश्चात मुख्य अतिथि महोदय ने हिन्दी प्रबोध, प्रवीण एवं अंग्रेजी से हिन्दी में भाषान्तर की सी. डी. का प्रयोग करके दिखाया। भाषान्तर से शत प्रतिशत कार्य हिन्दी में किया जा सकता है इसकी जानकारी के साथ अमल में लाने पर बल दिया । इस अवसर पर प्रथम, द्वितीय एवं तृतीय स्थान प्राप्त प्रतियोगियों को पुरस्कार प्रदान किये गये । अन्त में डॉ. वी. महाजन ने आभार प्रगट किया ।

Exhibition

NRCOG has participated in the exhibition KISAN held at Moshi, Pune organized by Kisan Forum Pvt. Limited. The exhibition was held for 5 days from 17-21 Dec 2008 where large number of farmers visited.

Our new colleague

Dr. Amarjeet Gupta has joined NRCOG as senior scientist (Horticulture) on 6 December 2008.

Distinguished Visitors

Dr. Nawab Ali, DDG (Engg.), ICAR, New Delhi	01.07.2008
Dr. R.P. Tewari, Director, NRC Mushroom, Solan	01.10.2008
Mr. Anna Hazare, Social Worker, Ralegansiddhi, Pune	16.11.2008
Dr. R.B. Deshmukh, Vice-Chancellor, MPKV, Rahuri	18.11.2008
Mr. Piet Barten, Bejo Zaden, The Netherlands	18.11.2008
Mr. Suresh O. Agrawal, Managing Director, Bejo Sheetal Seeds Pvt. Ltd., Jalna	18.11.2008

Dr. Nawab Ali, DDG (Engg.)

Padma Bhushan Anna Hazare

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