भाकृअनुप ICAR

NRCOG NEWS

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Inauguration of New Laboratory-cum-Administrative Building

Shri Sharadchandra Pawar, Hon'ble Union Minister of Agriculture and Food, inaugurated the newly constructed Laboratory-cum-Administrative Building of National Research Centre for Onion and Garlic in a grand function held at Rajgurunagar on 9.11.2004. Dr. Mangla Rai, Secretary, DARE & DG, ICAR, New Delhi presided over the function while Dr. Gautam Kalloo, DDG (Hort. & CS), and Shri Dilip Mohite Patil, MLA, Dr.S.N.Puri, VC, MPKV, Rahuri and Dr.K.E. Lawande, Director, NRCOG were present on the dais.

Dr. K.E. Lawande welcomed the distinguished guests and highlighted the achievements of the NRCOG. He thanked the dignitaries for their continuous guidance and support. Hon'ble minister in his speech emphasized the need for increasing the productivity of onion and garlic in our country, while mentioning the productivity levels in US, The Netherlands, China and other countries. He also emphasized the need for bringing down the cost of production of onion and garlic and announced to provide 30-acre additional land at Kalus, near Chakan to the centre for research & seed production of onion and garlic. Dr.G.Kalloo, DDG (Hort. & CS) appreciated the strides NRCOG has made in onion and garlic research in a short period of time. Shri Dilip Mohite Patil, MLA raised the problems of the farmers and requested the Hon'ble minister to solve the grievances of onion growing farmers related to export and price stabilization.

Dr. Mangala Rai, Director General, ICAR in his address ensured for continuous support to NRCOG for the betterment of the Centre. He also emphasized that Indian Council of Agricultural Research has the great task to sustain the productivity of agricultural crops, which is decreasing due to low input use efficiency. He also emphasized on potential role of biotechnology in enhancing productivity and sustainability through development of resistant varieties. An exhibition was organised where different private companies actively participated. Around 1500 farmers and guests attended the function. At the end, Dr. V. S. R. Krishna Prasad, Principal Scientist (Hort.) proposed the vote of

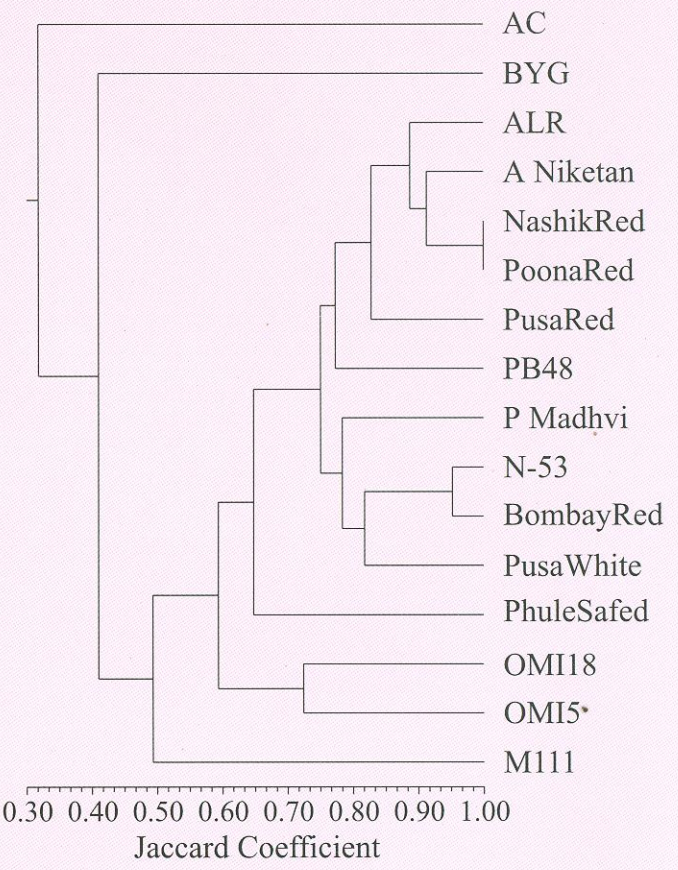
Diversity Assessment In Onion Varieties Using Microsatellite And SNPs

Polymorphisms in microsatellites can be used to identify genetic variability in the population, DNA fingerprinting and marker assisted breeding in onions. DNA fingerprinting was done using 24 microsatellite primers developed for onions in 14 Indian and 2 exotic varieties at University of Wisconsin, Madison, USA.

The polymorphic bands were scored from 21 primer pairs and genetic similarities between individual lines were compared, and clustering of data was performed. Polymorphisms were recorded maximum up to 64 base pairs and maximum number of bands up to 68.4 per cent was present in variety Nashik Red. The bands were least

(41.7%) in variety M111. Exotic varieties Alica Cric and Birmingham Yellow Globe clustered separately from the Indian varieties and formed a separate cluster. Nashik Red and Poona Red showed 100 per cent similarities with these primers. Similarly N-53 and Bombay Red also showed close grouping. Variety ALR, Arka Niketan, Nashik Red, Poona Red, Pusa Red and PB48 fell under one group, but Pusa Red and PB48 were not much closer than rest of the four varieties in the group. In another group, Pusa Madhavi, N-53, Bombay Red and Pusa White were close, but Pusa Madhavi and Pusa White had some differences than N-53 and Bombay Red. Phule Safed was quite different among the Indian varieties and formed a separate group. Cytoplasmic male sterile lines fell in a separate group and OM118 and OM15 were closer as compared with the variety M111.

Information on the frequency, nature and distribution of Single Nucleotide Polymorphisms (SNPs) is limited in plant genomes, particularly onion. SNPs are useful for high-resolution genetic mapping of traits. SNPs were studied in onion using male sterile genetic marker AOB 272 to test variability in 16 varieties. Polymorphisms were recorded at 4 base pairs. However, this was present in exotic varieties for AOB 272 marker but not in Indian varieties.



Identification Of CMS Lines In Onion

"S" cytoplasm is the most common source of CMS used in production of hybrid onion. But conventional method of identifying maintainer line is labour intensive and time consuming. PCR based technique developed by Havey and co-workers at University of Wisconsin, Madison for identification of male sterile cytoplasm by isolating pooled DNA from seedlings of open pollinated population was used to screen 16 varieties for presence of cytoplasmic male sterility. Of this, three genotypes *viz* M111, OM118 & OM15 had male sterile cytoplasm. These lines can be used as one of the parent for development of hybrids after selecting the superior combinations.

Organic Cultivation Of Onion And Garlic

Organic agriculture brings with it a number of added benefits such as improved soil fertility, prevention of soil erosion, generation of rural employment etc. The consciousness on food quality has increased dramatically in recent years. It now refers not only to the characteristics of the final product, but also to the way in which it is produced, processed and transported. The worldwide market for organic foods is around Rs 8000 crores and is expanding with an annual growth rate of 15 to 30 percent in Western countries. Organic farming is a way of farming that avoids the use of synthetic chemicals and genetically modifed organisms(GMOs) and follows the principles of sustainable agriculture.There is no data available on the organic production of onion and garlic in India. Although some farmers showing interest in organic cultivation but lack of standards and no premium prices for organic onions are the major hindrances. Another major limitation is the low yield in initial years.

The experiments conducted at NRC Onion and garlic showed a reduction in yield to the tune of 50 - 70 % in the initial years under different seasons. There was reduction in size of the bulbs and zero percentage A-grade bulbs in the initial years. However the yield increased slowly in the later years with the build up of

organic matter and soil microorganisms. There are several factors, which must be addressed before going for organic cultivation of onion. The selection of season or time of planting is important. The low incidence of diseases and thrips in late *kharif* season gives opportunity to produce organic onion without much loss in yield. Whereas, *kharif* and *rabi* onions, which are planted in June- July and November- December respectively suffer heavily due to disease and thrips attack. As on today no organic compound found effective in controlling thrips and diseases as good as chemical pesticides. Date of planting should not coincide with the peak incidence of thrips. Onions require substantial amounts of nutrients. To produce 15-ton bulbs from one acre, plants remove about 70 kg, 12.5 kg, and 75 kg, of N, P and K respectively. Several organic sources such as green manuring, FYM, poultry manure, vermi-compost, bio-fertilizers can be used with required precautions. The rotation of crop and inclusion of nitrogen fixing crops in cropping sequence also helps in fulfilling nutrient requirement of the crop. Regarding irrigation, the drip irrigation was found better than surface irrigation. However, surface irrigation can be used with proper monitoring of water. Onions are poor competitors with weeds due to their slow growth, shallow and fibrous root system, and the lack of an aerial canopy to shade out other vegetation. Especially in organic production, weed control in onions is crucial. Weed control accounts for major share of the cost associated with production. The cultural methods such as crop rotation, tillage, smother crops, pre-irrigation followed by shallow tillage as close to planting time, soil solarization, flame weeding may be adopted for control of weeds. The Insect pest management is the challenging part of organic cultivation of onion and garlic. Thrips is the major pest that feeds on foliage and reduces the bulb yield. The damage caused by thrips enables various plant pathogens to gain entry particularly purple blotch and *Stemphylium* blight. The combination of cultural and biological methods such as barrier crops, colour repellants and beneficial organisms can be used to suppress thrips. Botanicals such as neem, pongamia, insect pathogens like *Verticilium* are effective but only when thrips population is low. Purple blotch, *Stemphylium* blight, *Fusarium* basal rot and neck rot are common among the fungal diseases that cause yield loss. The disease and its severity are influenced by location, climatic factors, variety and cultural practices adopted. Field Sanitation, crop rotation, avoiding over irrigation, sulfur sprays, foliar sprays of seaweed extract and fish emulsion, *Trichoderma etc* are helpful in reduction of disease infection. Organically grown onions have better shelf life.

In Indian context, organic cultivation of onion and garlic can be profitable venture only if thrips and diseases are well managed and growers get a premium price for organically produced onion and garlic. Further the adoption of all organic standards very strictly is essential for both internal and exotic markets.

Transfer Of Technology

A 3-day training programme on 'Onion and Garlic production technology was organized during 8-10 October 2004. Nineteen Horticulture officers from Department of Agriculture, Government of Tamil Nadu attended the programme. The officers were trained in the areas of crop improvement, production and protection technology, post harvest handling, processing and marketing of onion and garlic. The officers interacted with the growers and traders during field and market visits and acquired first hand information.

Two training progammes on "Post harvest handling and storage of onion" were organized under NAT Project on 'Reduction in post harvest losses in onion' on 11 October & 3 November 2004 at NRC Onion and Garlic. Around two hundred farmers from Pune and Ahmednagar districts attended the training programmes.

Under NATP (Development of hybrids in vegetables-onion), two training programmes were organised on "Onion seed production" at NRCOG on 29 and 30th December 2004. Sh. Shivajirao Adhalrao, Member of Parliament inaugurated the training programme on

29.12.04. Around 200 farmers attended the training programme on 29th and 100 farmers on 30.12.04.

NRCOG participated in the exhibition KISAN 2004 at Moshi, Pune district from 15-19 December 2004 organised by Deccan Exhibitors, Pune.

राजभाषा पखवाडा

इस केन्द्र में दिनांक ८.९.२००४ से १४.९.२००४ तक हिन्दी सप्ताह मनाया गया, जिसके दौरान अनेक प्रतियोगिताओ जैसे: टिप्पण, सुलेखन, कविता पाठ, निबन्ध, वाद-विवाद एवं टंकण आदि का आयोजन किया गया । हिन्दी दिवस समापन समारोह दिनांक १४.०९.२००४ को मुख्य अतिथि डॉ. रमाशंकरजी व्यास, वरिष्ठ हिन्दी अधिकारी, राष्ट्रीय रासायनिक प्रयोगशाला एवं सचिव, नगर राजभाषा कार्यन्वयन समिती, पुणे के सानिध्य में सम्पन्न हुआ । इस अवसर पर प्रथम, द्वितीय एवं तृतीय स्थान प्राप्त प्रतियोगियों को पुरस्कार प्रदान किये गये ।

Institute Meetings

7th SRC meeting was held on 14-15 September 2004 under the chairmanship of Dr. K. E. Lawande, Director. All the scientists presented their research findings and future research programmes were finalized after through discussion. Similarly 7th RAC meeting was held on 21 September 2004. Dr. Vishnu Swarup, Director, Indo- American Hybrids, New Delhi chaired the meeting. Dr. S.H. Shinde, Dr. U.B. Pandey attended the meeting and expressed their viewpoints.

9th IMC meeting was held on 25 October 2004 under the chairmanship of Dr. K.E.Lawande, Director. Mr. C.B. Holkar, Mr. Suryakant Palande attended the meeting. The committee discussed the agenda at length and approved accordingly.

HRD

Dr. Vijay Mahajan, Sr. Scientist (Hort.) attended a training programme on "Onion breeding particularly identification and use of CMS system in development of onion hybrids" sponsored under NATP at USDA-ARS, Department of Horticulture, University of Wisconsin, Madison, USA.

Distinguished Visitors

Dr. G.Kalloo, DDG (CS &H) visited on 25 July 2004.
Dr. S.L. Mehta, National Director, NATP, New Delhi visited on 31 July 2004.
Dr. S. N. Puri, Vice- chancellor, MPKV, Rahuri visited on 29 October 2004.

NRCOG

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NATIONAL RESEARCH CENTRE FOR ONION AND GARLIC

Rajgurunagar-410 505, Dist. Pune, Maharashtra, India. Phone:02135-222026 Fax:02135-224056 Email:nrcog@vsnl.net

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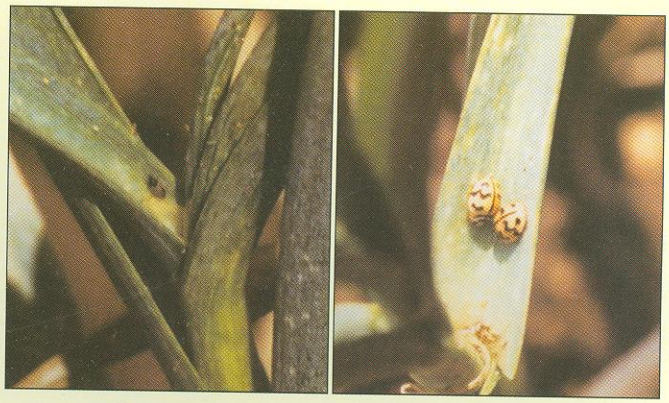
Insectary plants enhance predators in onion and garlic

Many predators during their adult stage depend on number of flowering plants for pollen and shelter. Therefore insectary planting was introduced in onion and garlic ecosystem. Many beneficial insects viz., anthocorid bug, *Orius;* ladybird beetles, *Hippodamia variegata, Cheilomenes sexmaculata, Coccinella septum-punctata* and honeybees were attracted to the flowers. Later, the predators namely, minute pirate bug, *O. tantillus* and ladybird beetles, *H. variegata* and *C. sexmaculata* were migrated to garlic and found actively feeding on onion thrips. *Orius* adult was 1-1.5 mm in size and the nymphs



O. tantillus *C. sexmaculata*

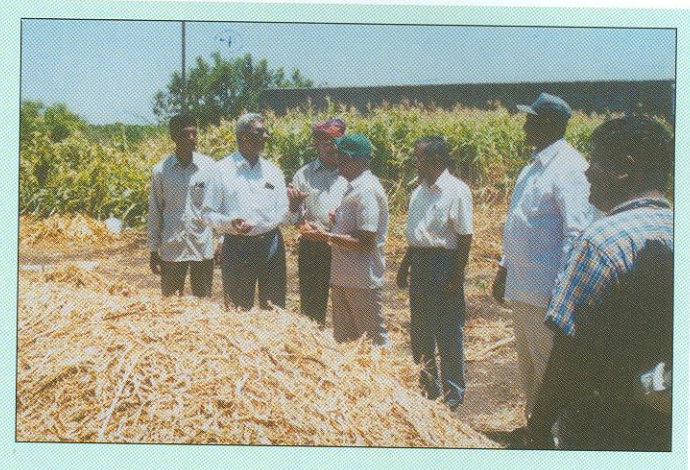
are yellow to orange in colour. Both nymphs and adults found feeding on thrips. But onion plants found less attractive to these predators.

Institute Meetings

Research Advisory Committee

The newly constituted Research Advisory Committee of NRCOG headed by Dr. V. S. Seshadri, Member, RAC was held on 28 February 2005 to finalize the revision of 'VISION-2020' of NRC for onion and garlic. Other members, Dr. S.H. Shinde, Dr. Nazir Ahmed, Sh. C.B. Holkar and Sh. S.Palande attended the meeting.

The Committee headed by Dr. M. R. Thakur was again met on 6-7 May 2005 to review the research programmes being carried out at NRCOG. The chairman and members of the committee have critically gone through the on-going research programmes and suggested new directions of research to achieve higher production and productivity. The committee suggested recasting of experiments in crop production programme keeping the agrarian needs in view. All the scientists presented their achievements in their respective disciplines. Committee members visited farmers' fields of onion growing areas and



had direct interaction with the growers to understand on site problems.

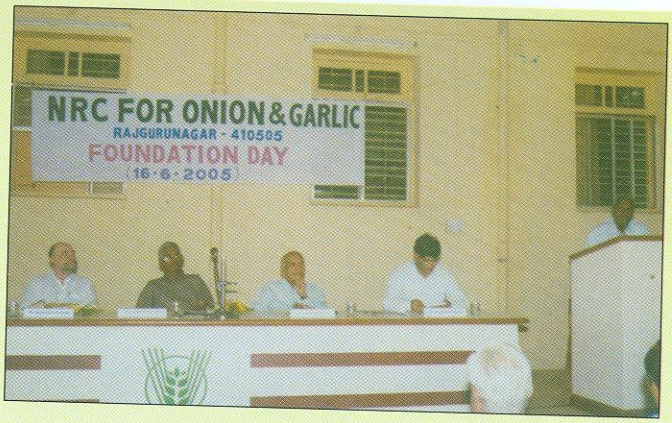
Staff Research Council

Staff Research Council was held on 10-11 June 2005 under the chairmanship of Dr. K.E. Lawande, Director. All the scientists presented their research results. The results and the technical programme for *rabi* season were finalized after a thorough discussion.

Celebration Of Foundation Day

Foundation day of NRCOG was celebrated on 16 June 2005 at the centre. Dr. K. E. Lawande, Director, NRCOG presided over the function and briefed about the research as well as developmental activities and facilities developed. The Chief Editor of the *"Sakal"* newspaper, Shri. Anantrao Dixit was the Chief guest.

He appreciated the progress made by the centre in a short span and while delivering guest lecture he said " the days are not far for the imminent scientists of onion and garlic of the world to gather here". While addressing the farmers, Shri Suryakant Palande, Ex MLA and member of IMC and RAC emphasized on the



availability of good seeds for quality production of onion. Nearly 200 farmers participated in the function and were acquainted with new agro-techniques developed by the centre.

Transfer of Technology

NRCOG participated in

- Agro-Industry Exhibition-2005 on the occasion of 7th Agriculture Science Congress, under auspicious of NAAS, at College of Agriculture, Pune, from 16-18 February 2005. After inauguration, Shri Sharad Pawar, Union Minister of Agriculture visited NRCOG stall at the exhibition.

- *Shetakari Melawa* 2005 at Nimgaon, from 24-25 February organized by Department of Agriculture, Rajgurunagar.

Dr. V. Mahajan delivered lectures on

- "Onion seed production for export" on 29 January at Solapur organized by APMC, Solapur.

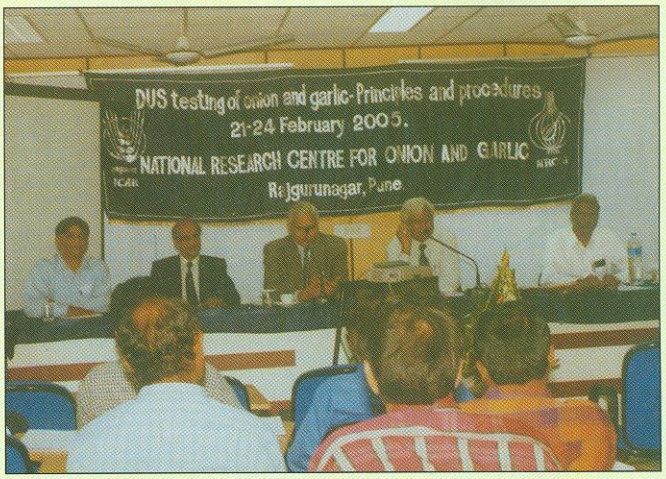
- *"Kanda peek parisanwad"* at Pimpalgaon (Khadki) on 23 March organized by Zuari

Industries Ltd., Goa and Maharashtra Bank, Manchar.

- *"Kanda pikache utpadan va sathavanuk"* at Koregaon Budruk on 28 March organized by Pune Jilha Parishad, Panchayat Samiti, Khed, Agricultural Department and Agricultural Produce Marketing Committee, Khed.

Training

A training programme on "DUS testing of onion and garlic- Principles and procedures" was organised from 21-24 February 2005 at NRCOG, Rajgurunagar. The programme comprised of 12 lectures drawn from experts concerned. Dr. J. L. Karihaloo, Dr. R.K. Chowdhury, Dr. Rajendra Kumar, Dr. Bala Ravi, Dr. K. E. Lawande, Dr. Surendra Prakash and Dr.V.S.R. Krishna Prasad delivered lectures on various aspects related to DUS testing of onion and garlic. 24 participants from ICAR institutes and SAUs, NHRDF and private seed companies actively participated in the training programme. The participants were also imparted training on data collection, tabulation for



Distinctness and Uniformity in both onion & garlic and supplemented with practicals & field visits.

Our new Email ID

Email address of NRCOG has been changed. You can contact us through the following Email Ids : director@nrcog.res.in; aris@nrcog.res.in; admin@ nrcog.res.in; finance@ nrcog.res.in

Distinguished Visitors

Peer Review Committee constituted by MPKV, Rahuri headed by Dr. Kirti Singh along with the members, Dr. S. Kannaiyan, Dr. J. S. Bhatia, Dr. G. S. Sheckhon and Dr. S. S. Kadam, member secretary visited NRCOG on 17.05.05 for studying the linkages between University and NRCOG.

Training to the Officers

NRCOG offers training to Agricultural and Horticultural officers, onion growers and traders on the following aspects of onion and garlic

- Improved varieties and hybrids of onion and garlic
- New agro-techniques in onion and garlic
- Pest and disease management in onion and garlic
- Storage of onion and garlic
- Marketing and trade in onion and garlic

For further details, contact Director, NRCOG

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NATIONAL RESEARCH CENTRE FOR ONION AND GARLIC
Rajgurunagar-410 505, Pune Dist. Maharashtra, India.
Phone: 02135-222026 Fax. 02135-224056 Email: director@nrcog.res.in
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