

# ONION - GARLIC NEWS

*A biannual publication of National Research Centre for Onion and Garlic*

## FOUNDATION STONE LAYING CEREMONY

The foundation stone laying ceremony of laboratory-cum-administrative building of the centre was organized on 18 Nov., 2000. Dr. R.N. Pal, DDG (Hort.) was the chief guest for this occasion. Other dignitaries present were Dr. Kirti Singh, Secretary, NAAS and Ex-ASRB Chairman; Dr. B.S. Dhankhar, ADG(VC); Dr. K.E. Lawande, Director, NRCOG; Shri Narayanrao Pawar, MLA; Shri B.B. Gupta, SE, CPWD; Dr. M.L. Pandita, Chairman, RAC; Dr. D.G.

Dhandar, Director, ICAR Research Complex for Goa; Dr. S.D. Shikhamany, Director, NRC Grape; Dr. P.N. Kale, Member, RAC and Shri S. V. Butte Patil Ex-MLA.

The *bhoomi puja* ceremony was done by Dr. R.N. Pal. Dr. B.S. Dhankhar welcomed the dignitaries on behalf of the centre and Dr. Kirti Singh summarized

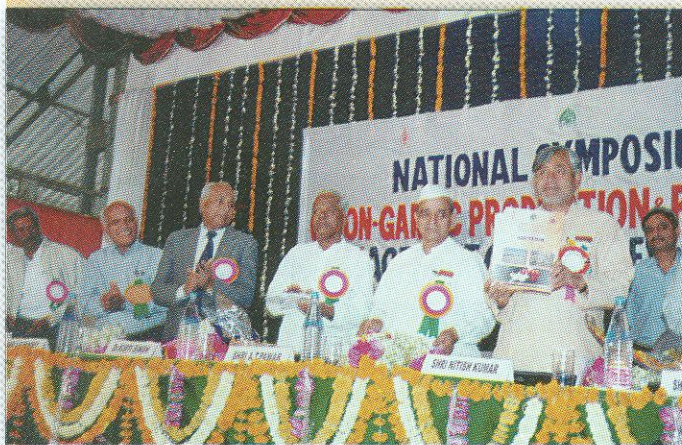
the development of centre from its inception to the present state of development. All the dignitaries appreciated the enthusiastic efforts of the staff towards the overall growth in infrastructure and research achievements. Shri Narayanrao Pawar advised the farmers to adopt new technologies for better yield and higher benefits

from onion and garlic crop. Shri B.B. Gupta, SE, CPWD gave the details of the proposed building, which will occupy an area of 15,000 sq. feet and will cost Rs.2.25 crores.

The function came to an end with the customary vote of thanks by Dr. K.E. Lawande, Director, NRCOG.



## NATIONAL SYMPOSIUM ON ONION AND GARLIC AT NASHIK



A three day national symposium on "Onion & Garlic Production and Post Harvest Management – Challenges and Strategies" was organized at Nashik from 19-21 Nov., 2000 by Indian Society of Vegetable Science, Varanasi, National Research Centre for Onion & Garlic, Rajgurunagar and National Horticultural Research and Development Foundation, Nashik. Shri Nitish Kumar, Hon'ble Union Minister for Agriculture and Cooperation, Government of India, inaugurated the symposium. About 170 scientists, private agencies, experts, planners and policy makers from all over the country attended the symposium.

Eminent scientists Dr. Prem Nath, Ex-ADG (FAO); Dr. Kirti Singh, Ex-Chairman, ASRB and Secretary,

NAAS; Dr. M.L. Pandita; Dr. O.P. Lal; Dr. G. Kalloo; Dr. P.N. Kale; Mr. S.P. Srivastava; Mr. S.C. Singhal, Dr. U.B. Pandey and Dr. K.E. Lawande discussed various issues regarding onion and garlic along with other scientists. As a result of

discussions, some research issues and policy issues in these two commodities for the new millennium were chalked out, which are as follows: -

## RESEARCH ISSUES

- Use of conventional and non-conventional methods for the development of varieties/F<sub>1</sub> hybrids having uniform size, shape, colour, resistance to biotic & abiotic stresses and longer shelf life
- Collection, characterization, evaluation and cataloguing of indigenous onion and garlic germplasm
- Emphasis to be given for purification of existing recommended varieties and their availability to the common farmers
- Priority to be given for development of white onion varieties with TSS > 18% for commercial production of value added products
- Use of mechanization viz: direct seeding, combine harvesting etc. and pressurized irrigation system for reducing the cost of production
- Evolving integrated pest and disease management modules and organic farming packages to lessen the environmental pollution and residual matters
- Use of frontline demonstrations and minikit trials for reduction of vast gap between yield potential on research farm and farmer's field for efficient transfer of technology

## POLICY ISSUES

1. Storage life of onion and garlic needs to be increased. For this cold storage structures, use of irradiation, on farm storage structures and facilities for community storage for the farmers at strategic growing areas as well as marketing places needs to be developed.
2. Development of exclusive export oriented onion and garlic production programme, infrastructure facilities for handling, transportation and shipping for the export of onion and garlic along with long term and firm national policy has to be developed in a planned way.
3. Emphasis needs to be given on value added products in terms of dehydrated flakes, powder and paste. Development of eco-friendly and attractive packing material will further boost the sale of finished products.
4. Availability of quality seed is the main hurdle in popularizing the commercial varieties. Adopting 'Seed Village Concept' and involving sponsoring agencies/university to produce sufficient quantity and quality of breeder seed can ameliorate the situation. Developing facilities for long-term storage at strategic production areas can circumvent low onion seed viability.
5. In short term, frontline demonstration for increasing productivity, post harvest handling and storage technology on farmers field for its quicker and efficient adoption will suffice the purpose.

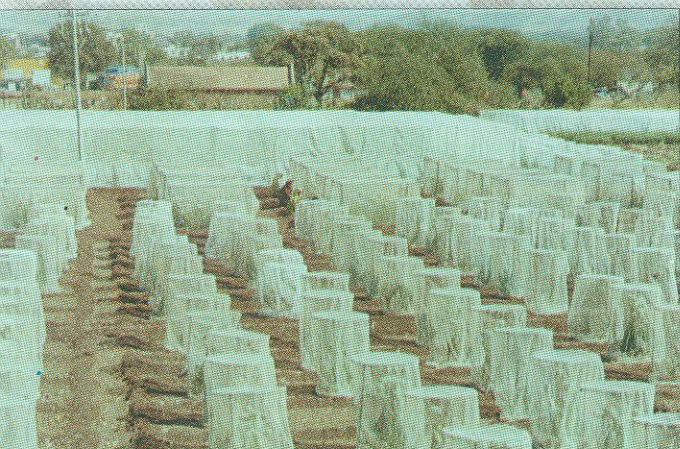
## RESEARCH HIGHLIGHTS

### CROP IMPROVEMENT

#### *Collection, Characterization, Evaluation and Maintenance of Onion and Garlic Germplasm*

- 46 lines of indigenous onion were evaluated for suitability, adaptability and horticultural traits during *kharif*, 2000. Of all the lines tested, 23 lines were selected based on their overall performance and adaptability to *kharif* season. Based on statistical analysis, no lines performed significantly superior over the check variety B-780.

- During *rangda* season, 84 lines of onion germplasm, 23 lines of exotic onion hybrids, 20 inbred lines and 12 elite lines were sown for evaluation purpose.
- In *rabi* 2000 – 2001, a total of 84 lines of onion germplasm, 23 exotic hybrids and 9 elite lines have been planted along with three check varieties viz., ALR, N-2-4-1 and Arka Niketan and evaluation is on going.
- In garlic, 104 accessions have been planted apart from 36 elite lines for evaluation of important horticultural traits. Commercial varieties G-41, GG-2 and GG-3 were planted as check varieties.
- For maintenance of germplasm, bulbs of 142 lines have been planted for seed production and 30 lines including commercial varieties and three lines of *Allium fistulosum* viz., TA 104, TA 106 and AF 468 have been planted for massing purpose.



### Heterosis breeding programme in onion

- Under this programme, forty-two crosses each, involving male sterile lines MS 48 A and MS 65 A were planted during October. Along with this, maintenance of male sterile lines by crossing with maintainer lines was also done.
- Development of first and second-generation inbreds of promising collections and commercial varieties is also underway.
- For population improvement, massing of 30 lines including commercial varieties was carried out by planting bulbs in isolation.

**Interspecific hybridization :** Bulbs of *Allium fistulosum* lines viz., TA 104, TA 106 and AF 468 were planted with seven commercial varieties for introgression of desirable genes along with its reciprocal crosses to study the effect of genotypes in crossing.

### Germplasm Exchange

Seeds of 67 lines of *Allium* including wild species obtained from Centre for Genetic Resources, Netherlands were sown during October 2000 to study their performance and adaptability under Rajgurunagar conditions. The material obtained will be utilized to introgress desirable genes into our local and commercial gene pool.

### Tissue Culture

- Bud size having uninucleate stage of pollen was standardized at 3 – 4 mm size. Standardization of protocol for production of haploids from anthers, ovary and immature flower buds of onion is underway using different media and different combinations and concentrations of plant growth regulators.
- Work is in progress for standardization of protocol for induction of callusing in garlic using different explants and plant growth regulators for creation of somaclonal variants.

### CROP PRODUCTION

- To identify and establish onion based economically feasible cropping system, trials were planned during *kharif*, *rangda* and *rabi* season

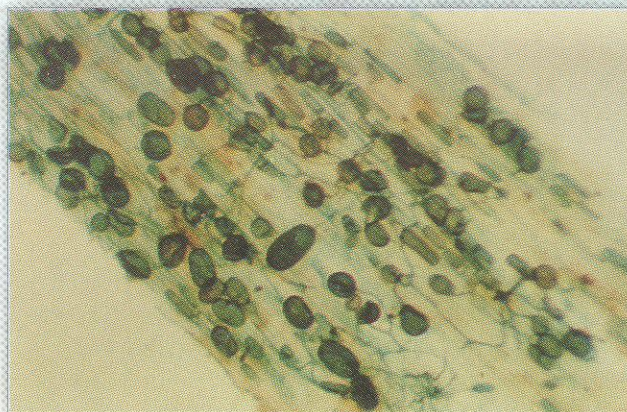


- Preliminary trial to find out the optimum water requirement for onion crop by using drip, sprinkler and flood irrigation is being worked out for efficient utilization of water resources
- Field experiment to evaluate the effect of foliar application of micronutrients on the growth and uptake of onion bulb crop was conducted. Application of all four nutrients: Fe, Mn, Zn and Cu had a better growth when compared to blank application of only N, P and K.

- Field trial to study the split application of potassium and sulphur on the quality and yield was undertaken in the *kharif* 2000 applying at different rates. K as KCl had better influence on the yield values of onion bulbs than  $K_2SO_4$

## CROP PROTECTION

- Under epidemiological studies of stemphylium leaf blight, Tilak air sampler was installed in the field and spore count as well as disease on onion crop was recorded in *kharif* 2000.
- Experiment to control stemphylium using botanicals was conducted during *kharif*, 2000.
- Eight isolates of VAM were isolated, including *Glomus fasciculatus* from different onion growing soils of Pune District and multiplied.
- Under study for seasonal incidence, onion crop was sown at 15 days interval from 1 June, 2000 in 15 plots. To know the incidence of the pests and disease, plots were sprayed with insecticides, fungicides, mix of insecticide and fungicide and vermicompost with control (without any spray), in three replications.
- Screening of onion germplasm for thrips resistance (*rangda* and *rabi*) and garlic for thrips and eriophyid mites during *rabi* 2000 is underway
- Experiment on the effect of certain botanicals, seedling root dip and intercropping on management of onion



Roots showing VAM infection

thrips has been initiated. Management of thrips and diseases on seed crop of onion is also being studied.

- Studies on effect of K fertilizer on onion thrips and irrigation systems on both onion and garlic thrips has been taken up.

# HUMAN RESOURCE DEVELOPMENT

## Trainings

Faculty / Staff	Title	Institute	Period
PS Srinivas V Sankar DB Mundharikar	70 FOCARS	NAARM, Hyderabad	2 June - 29 Sept., 2000
G Sivaramkrishnan A. Asha Devi Anil Khar MN Maholay SS Joshi	MS Office II-98, Excel & Access Bibliometrics Hands-on training in DNA fingerprinting MS Office, Internet & E-mail	IASRI, New Delhi  INSDOC, New Delhi CPRI, Shimla  NIC, Pune	7-12 Aug., 2000  21-26 Aug., 2000 31 Aug. - 3 Oct., 2000  9-20 Oct., 2000
RK Dedage SC Sharma AP Trivedi NR Gaikwad Md. A. Aziz Qureshi	MS OFFICE, E-mail MS Windows 98 & MS Office  7 <sup>th</sup> International Training Program on "Sustainable Horticultural Production under Climatic Constraints"	NIC, Pune Siemens, India held at NRCOG, Rajgurunagar The Hebrew University of Jerusalem, Israel	19-29 Sept., 2000 18-20 Oct., 2000  31 Oct.,-19 Dec., 2000
PS Tanwar	5 <sup>th</sup> Special workshop on Roster re-writing / recasting for Liaison Officer for SCs/STs & OBCs and dealing Assistants	National Institute of Public Administration, Bangalore	10-13 Nov., 2000
N Gopal	One day reorientation programme on the contract labour (Regulation & Abolition) Act - 1970	National Institute of Public Administration, Bangalore	2 Dec., 2000
N Gopal	8 <sup>th</sup> All India Conference on Implementation of the guidelines and norms laid-down by the Hon'ble Supreme Court of India regarding sexual harassment and gender justice	National Institute of Public Administration, Bangalore	6-7 Dec., 2000

## Participation in Seminars / Symposia / Meeting

Faculty	Topic	Organisers	Date
Lawande KE	Agricultural programme for All India Radio as chief guest	YCMOU, Nasik	14.8.2000
Lawande KE	National Seminar on Onion Production and Export-Challenges and Opportunities - as Guest Speaker	Bejo Sheetal Seeds Pvt. Ltd. Jalna	30.10.2000
Lawande KE Tripathi PC, Maholay MN, Asha Devi A., Anil Khar, Srinivas PS, Sankar V	National Symposium on Onion-Garlic Production and Post Harvest Management Challenges and Strategies	ISVS, NHRDF & NRCOG, Nasik	19.11.2000 - 21.11.2000
Lawande KE	Meeting of Task Force to analyze issues related to production and availability of quality seed and planting material of Horticulture Crops	NHB, Gurgaon	1.12.2000

## Paper Presentation / Publications

**Sankar V, Lawande KE & Khar A.** 2000. Physiological Disorders in Onion. In: Weekly *Udyaniki Jeevan* Vol. 6, No. 41. 30 April

**Kirtane S, Lawande KE, Khar A & Dhumal KN.** 2000. Mutagenic effects in Onion (*Allium cepa* L.) In 3<sup>rd</sup> International Crop Science Congress 2000, Germany, August 17-22, 2000.

**Kirtane S, Lawande KE, Khar A & Dhumal KN.** 2000. Physiological and macromolecular variation induced by gamma radiations and sodium azide in onion (*Allium cepa* L.) In DAE-BRNS Symposium, Mumbai, 285-288

**Lawande KE, Sankar V, Khar A & Qureshi AA.** 2000. Garlic. *Kisan World*. 27(5): 63-64

**Qureshi AA.** 2000. Role of plant nutrient on the quality parameters of onion and garlic. In Project Abstracts of the 7th International Post Graduate Course on Sustainable

*Horticultural Production under Climatic Constraints*. 31 Oct. -19 Dec. 2000. Pp 9

**Sankar V, Lawande KE, Khar A & Qureshi AA.** 2000. Physiological disorders in onion. *Agro India*. Vol IV (10-11), Oct-Nov. Pp 30-31.

**Lawande KE.** 2000. Onion and Garlic Improvement in India. *National Symposium on Onion-Garlic, Production and Post Harvest Management - Challenges and Strategies Souvenir*. Organized by ISVS, NRCOG and NHRDF from 19-21 November 19-21, 2000.

In: "Abstracts and Papers" of *National Symposium on Onion - Garlic Production and Post Harvest Management - Challenges and Strategies*. November 19-21, 2000.

**Asha Devi A & Khar A.** 2000. Preliminary studies on *in vitro* regeneration from flower bud explants of onion (*Allium cepa* L.) pp: 186.

**Kirtane S, Lawande KE, Khar**

**A & Dhumal KN.** 2000. Induced macromolecular variability in onion (*Allium cepa* L.). pp 194

**Qureshi Md AA, Sankar V & Lawande KE.** 2000. Evaluation of granulated ammonium sulphate on the growth and yield of onion. pp: 210.

**Sankar V, Khar A, Asha Devi A & Lawande KE.** 2000. Effect of mother clove size on growth and yield of garlic var. G-41, pp: 220.

**Sankar V, Khar A, Asha Devi A & Lawande KE.** 2000. Evaluation of exotic hybrids during *rabi* season. pp: 194.

**Srinivas PS & Lawande KE.** 2000. Economics in management of onion thrips. pp: 218

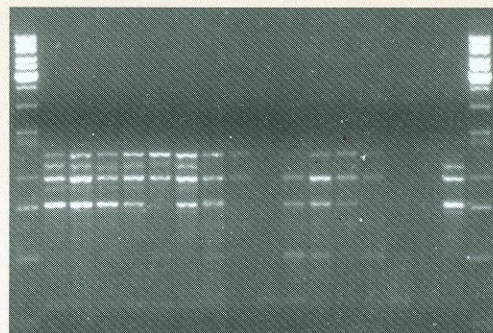
**Srinivas PS & Lawande KE.** 2000. Efficacy of certain botanicals in management on onion thrips. pp: 218

**Srinivas PS. & Lawande KE.** 2000. Population dynamics of onion thrips. pp: 219

## TRAINING HIGHLIGHTS

Ms. Asha Devi and Mr. Anil Khar attended Hands-on training on DNA fingerprinting from 31st Aug.- 3rd Oct., 2000 at CPRI, Shimla. During the training, they learnt about the techniques of DNA isolation, PCR analysis and documentation of PCR products using gel documentation system. A preliminary work on DNA fingerprinting of onion using DNA of sixteen lines of onion was done. Four primers viz., OPA 19 & 20 and OPB 11 & 12, selected on the basis of published literature, were used to carry out PCR analysis for characterizing these onion genotypes.

Dr. Md. A. Aziz Qureshi, Scientist (Soil Science), attended 7th International Training Program on "Sustainable Horticultural Production under Climatic Constraints", held at Rehovot campus, Israel, conducted by The Hebrew University of Jerusalem from 31st October to 19th December, 2000. During the training program, he attended 181 hours of lectures and professional field trips and successfully completed the course with the submission of a project.



Banding pattern of onion genotypes using OPB 11

## AWARDS



K.E. Lawande received award for 'Krishi Patrakarita' from Vasant Naik Agricultural Research & Rural Development Foundation, Mumbai on 1.7.2000 at Mumbai.

K.E. Lawande received Hutatma Rajguru Gaurav Puraskar for 'Research in Agriculture' from Khed Taluka Grahak Hakka Samiti, Rajgurunagar on 21.9.2000.



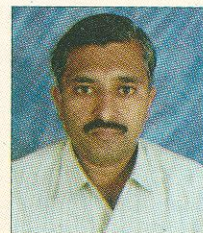
## OUR NEW COLLEAGUES



**Dr. P.C. Tripathi**, Senior Scientist (Horticulture) joined NRC Onion and Garlic, Rajgurunagar on November 2, 2000 as Senior Scientist (Horticulture). Before joining NRC Onion and Garlic, he was working as Scientist (Horticulture) at Central Institute of Temperate Horticulture, Regional Station, Mukteshwar (Nainital). Dr. Tripathi obtained his B.Sc. Agr. & AH, M.Sc. Agr. (Horticulture) and Ph.D. (Horticulture) degrees from G.B. Pant University of Agriculture and Technology, Pantnagar (Nainital). He has published 12 Research Papers, 8 Professional Abstracts, 15 Popular Articles, 1 Bulletin on various aspects of Horticulture. At NRC Onion and Garlic he is looking after the crop production aspects of Onion and Garlic.

**Dr. Vijay Mahajan**, Senior Scientist (Horticulture) joined NRCOG on 30.11.2000. After doing his graduation from College of Agriculture, Indore, JNKVV, Jabalpur in 1986, he completed his masters degree in 1989 and doctoral degree in 1993 from IARI, New Delhi. He worked as Scientist, Associate Professor and Training Associate at IGKV, Raipur for 6 1/2 years. He got young scientist award from M.P. Council of Science & Technology - 1996 and was also honoured by the University as best scientist. He guided two M.Sc. (Ag.) students as major advisor and was member of seven students. Till date he has 17 research papers, 28 radio talks, 2 TV. talks and 5 leaflets/booklets to his credit. He will be working mainly in crop improvement of onion and garlic.

**Mr. N. Gopal**, AAO., joined the Centre on 6.11.2000 on promotion - cum - transfer basis. He was working as Assistant at CIFE, Kakinada Centre.



## DISTINGUISHED GUESTS

<b>Mr M.D. Asthana</b> , Pr. Advisor (Ag.), Planning Commission, GOI, New Delhi	10.07.2000.	<b>Dr. M.L. Pandita</b> , Advisor, F&V Project NDDB, Mangolpuri, New Delhi	18.11.2000.
<b>Dr. B.S. Dhankhar</b> , ADG (VC), ICAR, New Delhi	02.09.2000.	<b>Dr. D. G. Dhandhar</b> , Director, ICAR Research Complex for Goa,.	18.11.2000
<b>Mr. S.K. Patra</b> , DGM, NABARD, Head Agril. Engg., Mumbai	14.09.2000.	<b>Mr. Narayanrao Pawar</b> , MLA, Maharashtra Assembly, Pune	18.11.2000.
<b>Dr. Kirti Singh</b> , Ex-Chairman, ASRB & Secretary, NAAS, New Delhi	18.11.2000.	<b>Mr. Sahebrao Vitthal Butte Patil</b> , Ex-MLA, Pune	18.11.2000.
<b>Dr. R.N. Pal</b> , DDG (H), ICAR, New Delhi	18.11.2000.	<b>Mr. Amar Prasad Satpathy</b> , Minister of State for Agriculture, Orissa, Bhubaneswar	21.11.2000.

## FROM THE DIRECTOR'S DESK

June to December period witnessed scarce rainfall in Gujarat, Rajasthan, Andhra Pradesh and Eastern part of Maharashtra. As a result there was reduction in area under onion and garlic. There was early withdrawal of monsoon in western Maharashtra, which is a predominant area for *kharif* as well as late *kharif* (*Rangda*) crop. Absence of post monsoon rain favoured good growth of *kharif* as well as late *kharif* crop. Yields were higher with good quality bulbs. Although there was reduction in area, stored bulbs of last *rabi* season and good harvest of *kharif* could maintain balance in domestic market. The price ranged from Rs 350 to 450 per quintal, which could console the farmers. The condition of *rabi* onion and garlic planted in Nov.-Dec. is quite good. As apprehended earlier, there is enough seed available in the market as well as with the farmers as a result 80% seed stock remained unsold in *kharif*, *rangda* and *rabi* season. This kind of freaky nature of crop leads to frustration among seed production agencies. Since seed production is easy farmers go for seed production of their own genotypes without following norms of isolation distance. Such genotypes suffer from twin bulbs, direct bolters and variation in shape, size and colour. This kind of low quality seed in production chain is the main hindrance in spread of quality seed of released varieties.

During the period under report, the centre in collaboration with NHRDF, Nasik and Indian Society of Vegetable Science, Varanasi organized a national symposium on "Onion & Garlic Production and Post Harvest Management - Challenges and Strategies". Further, foundation of the administrative cum laboratory building was laid down. 12 lines of onion and 2 lines of garlic were added to the germplasm collected indigenously. Thirty-three exotic hybrids have been planted for their performance studies. Efforts are being made to standardize protocol for large-scale regeneration in onion and garlic.

During this period, 628 farmers visited the centre to apprise themselves about the latest technology and varieties used in onion and garlic.

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To,

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