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ONION - GARLIC NEWS

A biannual publication by National Research Centre for Onion and Garlic

FROM THE DIRECTOR'S DESK

The first half of the year saw good arrivals of *rangda* crop from January to March, 2001 in Pune and Nasik Districts of Maharashtra. In the major markets of Lasalgaon, Pimpalgaon, Lonand and Chakan the arrival of onions during the month of April was more compared to last year's. But, May and June showed a mixed response in terms of arrivals. A similar trend of ups and downs in arrivals was observed in the other main markets of Gujarat, Tamil Nadu, Andhra Pradesh, etc. To facilitate the onion growers to profit from this highly fluctuating market situation and for a forecast of the market situation in different parts of the country, a market information system (MIS) is developed by the Centre. This package contains information on market-wise arrivals and prices of onion and garlic. At present it covers 52 markets in India. Using this package, producers and dealers can predict and can choose the market and time to sell their commodity at a profit.

Another bright spot for the onion industry is the developing demand for processed onion in the form of powder and flakes. The export demand for flakes and powder is to the tune of 6000 tons, whereas, the supply is only around 2500 tones annually. Given the fact that end users – especially consumers – having less time on hand for peeling and preparing onion means, companies investing in processed products will reap huge profits in the coming years. A pre requisite for this budding industry is onion varieties with high TSS (>18^{0}B). Keeping this in view, a project was taken up on germplasm collection of white onion and breeding white onion varieties for high TSS suitable for the onion processing .

On the infrastructure front, work has already started on the new administrative cum laboratory building and residential quarters according to the master plan approved by the ICAR.

RESEARCH HIGHLIGHTS

CROP IMPROVEMENT

Collection of germplasm

A total of 335 white onion, 41 red onion and 27 garlic germplasm lines was collected from 208 villages in 25 districts of Maharashtra, Madhya Pradesh and Gujarat during April – May, 2001 in the form of seeds.

Germplasm evaluation of onion

Based on the *rangda* and *rabi* (2000) performance Acc. No. 574 was found better in terms of marketable yield and will be used for further selection and improvement.

Elite germplasm evaluation of onion

Acc. No. 597 recorded significantly higher marketable yield in both *rangda* and *rabi* 2000, whereas, Acc. No.s 671 and 650 were found superior in terms of TSS for both these seasons.

Sources of Resistance in onion and garlic against thrips and eriophyid mite

No line of onion was found resistant to thrips out of 91 lines screened during *rabi*.

Among the 127 lines of garlic screened 42 lines were found resistant to eriophyid mite and none for thrips.

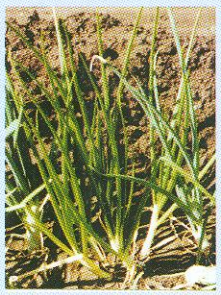
Heterosis breeding

In line x tester programme, two male sterile lines obtained from IIHR, Bangalore, *viz.,* MS 48A and MS 65A were crossed with 42 selected lines including varieties and germplasm lines. Out of this, seed were obtained from 36 crosses with MS 48A and 37 with MS 65A, which will be evaluated further.

Inbred development

Bulbs of inbred lines (selected on the basis of horticultural traits) obtained from late *kharif (rangda)* 2000 were planted again in Feb 2001 to get second-generation inbreds.

Marker identification



A marker line with glossy leaves in shallot has been selected from *rabi* germplasm. Literature shows that glossy leaves (without wax) is linked with thrips resistance. Also a male sterile line showing non-viable pollen under microscopic studies was identified.

Interspecific hybridization

For incorporation of desirable traits into *Allium cepa*, crosses were made between three lines of *Allium fistulosum* (TA 106, TA 104 & AF 468 – obtained from AVRDC, Taiwan and multiplied at NRCOG) and seven varieties of *Allium cepa* (ALR, Phule Safed, Arka Kalyan, B-780, Punjab Naroha, N-2-4-1 and Arka Niketan) alongwith reciprocal crosses. In this category, six interspecific hybrids were obtained.

N-2-4-1 x TA 106

Somaclonal variation in garlic

Some combinations of NAA and BA are giving good callus from root explants.

CROP PRODUCTION

Varietal performance under different dates of planting

Irrespective of varieties, higher yield was observed when sowing was done during first week of Sept. and subsequent transplanting during second week of Oct. Amongst the varieties evaluated, B-780, N-2-4-1 and Arka Niketan were found superior in terms of marketable yield.

Onion based cropping system

Based on the first year's result, the most profitable onion based cropping system was Aster (*kharif*) – Onion (*rabi*) followed by Bajra (*kharif*) – Onion (*rabi*).

Drip – a source of water saving

Among the different methods and levels tested, drip irrigation at 100% PE recorded the highest yield in both onion (46.7 t/ha) and garlic (14.8 t/ha). The yield increase over surface irrigation was 31.5% in onion and 14.8% in garlic and water saving was 45.5% and 44%, respectively.

Response to Micronutrient Application

In a field trial, foliar application of micronutrients namely Fe, Mn, Cu and Zn did not show significant effect on the yield of onion and garlic bulbs during *rabi* 2000-2001. However, Zinc sprayed @ 220 ppms at 30, 45 & 60 DAT showed little response on onion bulb storage.

Application of Organic Manures

Amongst different organic manures applied, effect of vermicompost @ 4 t/ha + 50% RDF produced onion and garlic bulb yield on par with 100% RDF application.

Management of summer nursery of onion

An experiment on effect of shading on summer onion nursery showed that shading with netlon / hessian cloth increased germination percentage and final transplantable seedlings.

Nursery under netlon

CROP PROTECTION

Disease Mangement

During *rabi* season, Propioconazole (Tilt) 0.2 % effectively reduced Stemphylium blight and increased the yield of onion bulbs.

Pest Management

Cultural control

Incidence of stemphylium blight

Onion crop planted on 15 November and 1 December is severely infested by thrips and yield loss up to 50 % was recorded. Higher yields were obtained from 15 September 1 and 15 October plantings due to the lesser incidence of thrips during that period. Two population peaks were observed -one in the month of August and the second in February. Management of thrips during these months is essential to avoid yield losses. Hot and dry weather is more congenial for thrips multiplication. Damage caused by thrips is aggravating the Stemphylium blight disease intensity particularly during *kharif* season. It is important to control thrips, for the effective control of the disease.

Potassium fertilizer had no effect on thrips infestation in onion. Sprinkler irrigation was effective in minimizing

thrips population in onion compared to drip and surface irrigation, but there was an increase in stemphylium blight.

Chemical control

For *rabi* season ETL for thrips was worked out at 30/ plant.

Seedling root dip with carbosulfan (0.025%) and imidacloprid (0.04%) for 2 hours before planting offered protection up to 40 days to onion plants against thrips. Botanicals such as neem, karanj and annona were not effective in controlling thrips.

MARKET INFORMATION SYSTEM

Software named M I S (Market Information System) was developed to provide the market wise arrivals and price information on onion & garlic covering major markets in India. This can help the producers to choose the market and time to sell their produce profitably.

INSTITUTIONAL ACTIVITIES

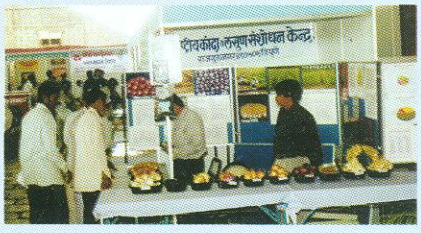
The III IMC meeting was held on 18.2.01. Stress was given towards development of infrastructure facilities of the center.

The II & III SRC meetings were convened on 8 – 9 Feb and 25 – 26, May. The scientists presented and finalized their research projects.

The II &III RAC Meetings were held on 17 Feb and 20 April under the chairmanship of Dr.M.L.Pandita. Dr. P. C. Tripathi and Dr. V. Mahajan, Senior Scientists (Hort.) of the Centre proposed new projects.

TRANSFER OF TECHNOLOGY

Dr. V. Mahajan, V. Sankar, A.P.Trivedi and P.M.Kulkarni participated in the exhibition " Taste of India-2001" at Ganesh Kala Krida Manch, Pune organized by Mission Event Pvt. Ltd., Pune from 8-10 Jan, 2001.



A group of 55 farmers were trained on "Onion & garlic Production and Pest and disease management" for two days at NRCOG sponsored by Spic Phi Seeds Ltd., Pune on March 19-20, 2001.

Scientists of NRCOG guided 80 farmers on "water resource-Developed program" organized by SDAO, Rajgurunagar on 16.3.01

K.E.Lawande delivered lecture on "Vegetable Cultivation"organized by Vanavasi Kalyan Ashram, Pune on 27.04.2001.

PUBLICATIONS/PRESENTATIONS

Sankar,V., A.Khar, A.Asha Devi and K.E.Lawande (2001). Genetic variability and character association in *rabi* onion. **In** *VIII* All India Conference on Cytology and Genetics – Souvenir & Abstracts, held at Bangalore University, Bangalore from Jan 23-25.p34.

Sankar,V., P.C.Tripathi and K.E.Lawande (2001). Value added Products of Alliums (0nion & garlic). *Kisan World,* Vol. 28(4), April 2001:49-50.

SYMPOSIUM/SEMINARS ATTENDED

K.E.Lawande attended "XIX Group meeting of AICVIP" and acted as chairman for Session II : Collection, Evaluation and Conserevation of germplasm organized by IIVR, Varanasi from 15-18 Jan, 2001.

K.E.Lawande attended the meeting of planning commission – X Plan Sub group on vegetables organized by ICAR, New Delhi on 06.02.2001 & 26.02.2001

K.E.Lawande delivered a Valedictory lecture at UGC sponsored state level seminar on "Preservation, protection and precaution of Biodiversity" organized by HRM College, Rajgurunagar on 18.02.2001.

K.E.Lawande attended the International Conference on "Sustainable development and sustainable Life system" at New Delhi organized by Bhoovignan Vikas Foundation, New Dehi from 22-23 April 2001

RECOGNITION

K.E.Lawande was recognized as Fellow of Indian Society of Vegetable Science, Varanasi in Jan 2001.

HUMAN RESOURCE DEVELOPMENT

TRAININGS

P.S.Srinivas, Scientist (Ento.) attended a summer school on "Biodiversity of phytophagous mites and recent advances in their management" at TNAU, Coimbatore from 19.02.01 to 11.3.01.

H.S.C.Shaikh, T II 3 (Comp.) attended " Java programming and Internet Technologies" at IASRI, New Delhi from 28-05-01 to 09-06-01.

R.B.Baria, T I, attended short-term training course in Bee keeping at CBRTI, Pune from 25.6.01 to 29.6.01.

PERSONNEL

TRANSFERS

Smt. M.S. Salve, Sr. Clerk & Shri. V.V. Patil, T-5(Farm) joined NRCOG on 06/05/01 & 11/05/01, respectively upon transfer from DWMR, PC Unit, Rahuri.

DISTINGUISHED GUESTS

Name	Designation	Date of visit
N.K.Sawant	Soil Scientist, Pune	25.01.01
K.G.Thomas	Dy.Director, Spices Board, Kerala	31.01.01
Dr.V.Ranga Rao	Retd.Director, Oil Seeds	09.02.01
Dr.R.N.Pal	DDG (Hort.), ICAR	25.03.01
Dr.S.N.Puri	VC, MPKV, Rahuri	29.03.01
Paul Meyer	VP, John deere with 10 member Team, Antinis Gardica	07.06.01
Dr.G.B.Rathuri	Director, CIAH, Bikane	13.06.01
Dr.P.L.Gautam	National Director, NATP, N.Delhi	17.06.01

Dr. R.N.Pal interacting with Scientists

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To,

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