



DGR NEWSLETTER

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DGR in the nation's service

The Directorate of Groundnut Research (earlier National Research Centre for Groundnut) was established on 1st October, 1979 at Junagadh, in the Saurashtra region of Gujarat having more than 30% of groundnut area of the country, with its mandates: to conduct basic and strategic research to enhance productivity and quality of groundnut, act as a national repository of working collection of germplasm and information on groundnut, offer consultancy and training, establish relevant institutional linkages, and to provide logistic support and coordination mechanism for generation of location specific technologies through all India coordinated research project on groundnut (AICRPG). In 1992, the AICRPG with its 5 main and 17 supporting centers were brought under DGR.

The major thrust areas of DGR are: genetic enhancement of groundnut for improving productivity and quality, development of varieties possessing resistance to biotic and abiotic stresses, integrated multi-disciplinary approaches for management of water, nutrients, soil-borne fungal diseases, development of groundnut based cropping systems and economically viable efficient input-use production technologies and suitable strategies for preventing post-harvest spoilage of produce by storage pests especially the bruchid beetle.

Through AICRPG, this directorate has released 53 high-yielding varieties with in-built resistance/tolerance of major biotic and abiotic stresses for different agro-climatic regions, identified several production technologies, consortia of bio-fertilizers (Rhizobia and PGPR), bio-control agent and optimized components of IPM for major diseases and pests. Some of the promising groundnut varieties are Girnar 2, Girnar 3, TG 37A, GG 7, TPG 41, TG 51, and Utkarsh.

Development of transgenic groundnut for resistance to PBNB & PSND, drought & salinity and fungal diseases is in progress. DGR is also producing about 15,000 q breeder seed and conducting about 900 FLDs annually through AICRPG to make the availability of quality seeds and transfer of production technologies to the farmers.

Recent strategies and work plan

Enhancing groundnut maturity through

- Management practices in short duration groundnut varieties (seed priming, biodegradable mulch, nutrient management, hormonal use and irrigation scheduling)
- Release of groundnut variety through exclusive AVT trials on advanced breeding lines for maturity in 90 days
- Development of early duration varieties through breeding

Increasing productivity through

- Development of high yielding varieties
- Integrated crop management practices (Nutrient, weed and water management and IPM)
- Development of efficient microbial inoculants for better nutrition and mitigation of biotic and abiotic stresses

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- Expansion of groundnut cultivation in river-beds, potato-fallows, rice-fallows, widely spaced plantation crops
- Transfer of technology
- Identification of approaches for speedy transfer of technology
- Capacity building of extension agencies (subject-matter specialists of KVK and ATMA) of major groundnut growing states through training and FLDs on improved technologies
- Promotion of new groundnut cultivation technologies through young, educated progressive farmers who are willing to do experiment with innovations

Incidence of thrips and leafhoppers in summer groundnut in Saurashtra

Thrips and leafhoppers may cause yield losses up to 40% and 22%, respectively, in groundnut, especially when infestation occurs during the vegetative stage. The infestation symptoms of thrips and leafhopper include curling of young leaves and terminal buds, and yellowing of leaves from tip extending downwards, respectively. To assess the situation of insect-pests infestation in Saurashtra region of Gujarat, a survey was conducted during summer 2014 a few some farmers' fields of Junagadh, Jamnagar, Rajkot, Amreli and Gir-Somnath. The thrips and leafhoppers caused severe foliar damage in talukas listed below:

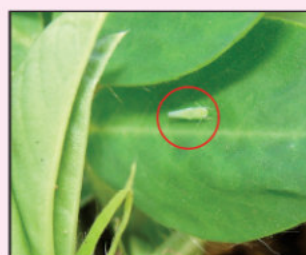
Since the crop was already in flowering stage, for the effective management of thrips and leafhoppers, the farmers were advised to go for one or two foliar applications (at 15 days interval) of Dimethoate 30 EC (1000 ml/ha) or Monocrotophos 36 SL (1200 ml/ha) or imidacloprid 17.8 SL (150 ml/ha). It is also suggested to apply pesticides during the morning or evening hours of the day for more effectiveness.

Taluka	Foliar damage (%)	
	Thrips	Leafhoppers
Junagadh	12.5	8.8
Manavadar	10.0	5.0
Mendarada	6.7	13.3
Visavadar	5.0	10.0
Dhoraji	22.5	17.5
Jam Kandarana	5.0	15.0
Bagasara	10.0	15.0
Amreli	10.0	10.0
Vadiya	15.0	5.0
Talala	5.0	8.3
Kodinar-Una	7.0	7.0
Kalavad	5.0	5.0



Thrips infestation

(Inputs: Nataraja M.V., Jadon K.S. and Prasanna Holajjer)



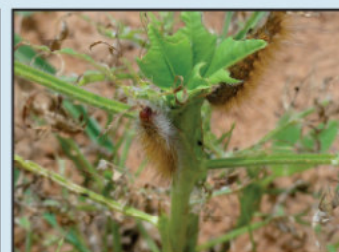
Leafhopper

Outbreak of red hairy caterpillar in Cuddalore, Tamil Nadu

A survey by a team of scientists from RRS, Vridhachalam during *kharif*-2012 & 2013 in twelve villages (Pudhukooraipettai, Arasakuzhi, Ponnalagaram, Chinnavadavadi, Periyavadavadi, Erumbanur, Poovanur, Pudhuvannaikuzhi, Mathur, Srimushnam, Agragaram, Melpuliangudi) of Cuddalore district (Tamil Nadu) revealed severe outbreak of red hairy caterpillar (RHC) – *Amsacta albistrica* with more pronounced effect in Chinnavadavadi village of Vridhachalam block (15 km away from the Regional Research Station (RRS), Vridhachalam). Nearly 200 acres sown with VRI-2 variety was found severely devastated by the RHC and population density to the tune of 25 larvae/plant was recorded. The incidence of other defoliators (*Spodoptera litura*, *Helicovera armigera*, *Approaerema modicella* and *Anarsia eppiphias*) was also noticed. The level of defoliator's damage at vegetative stage ranged from 25-30%. The scientists visited the infested fields and explained about the preventive, non-chemical methods to the local farmers of infested area. Poison baiting method was also demonstrated in RHC infested farmers field at Chinnavadavadi. The scientists also insisted about the collective community action only after having clear understanding of the pest's life cycle, which are not only prerequisite, but are effective only when carried out on a large scale.



Severely infested groundnut crop



Entire shoot tip eaten up by the RHC larvae

(Inputs: Indira Gandhi P. and M. Chandrasekaran, TNAU, RRS, Vridhachalam, Tamil Nadu)

An entomopathogenic fungus *Nomuraea rileyi*, infecting *Spodoptera litura*

For the assessment of real-time pest situation in groundnut, a survey was conducted in Gondal, Doraji Jamkandora, Kalavad, Mendrada, Sasan Gir and Talala talukas of Saurashtra region of Gujarat during *kharif* 2013. The standing groundnut crop was found infested with *Spodoptera litura*. Interestingly, 30-40% of *S. litura* larvae were found infected with a whitish fungus which later turned greenish-grey when brought to the laboratory. The fungus was later identified as

Nomuraea rileyi which is an entomopathogenic fungus. Entomopathogenic fungi are prominent biocontrol agents and can provide an alternative and more environmentally friendly approach for pest management. Around 700 species of entomopathogenic fungi are currently known but only ten species are presently being developed for biocontrol. The full potential of these entomopathogenic fungi has not yet been approached. The fungus *N. rileyi* is an important candidate for further development as a microbial insecticide, since it is capable of attacking all developmental stages including pupal stage. Moreover, *N. rileyi* secretes a proteinaceous substance that inhibits the metamorphosis of *S. litura*. Therefore, this fungus can be explored for its use as potential microbial bioagent against *S. litura* in the groundnut ecosystem.



Healthy larva of *Spodoptera litura* *Spodoptera litura* larva infected with *Nomuraea rileyi*

(Inputs: Poonam Jasrotia, Nataraja M.V. and Thirumalaisamy, P.P.)

Plant parasitic nematodes reducing groundnut yield

In India, a number of plant parasitic nematodes in groundnut are known to reduce crop quantity as well as quality which include *Meloidogyne arenaria*, *Meloidogyne javanica* and *Tylenchorhynchus brevilineatus* (causal agent of kalahasti malady). On a worldwide basis, these may incur annual estimated monetary losses to the tune of 1.03 billion USD. According to AICRP on plant parasitic nematodes with integrated approach for their control, in India, root-knot nematodes (*M. arenaria* and *M. javanica*) can cause 21.6% losses in groundnut. In some areas of Junagadh (Gujarat) and Kanpur (Uttar Pradesh), the losses to groundnut due to *M. arenaria* and *M. javanica* was reported to be up to 17% and 11%, respectively. In West Midnapur district of West Bengal, high populations of *Criconemoides onoensis* and *Pratylenchus* spp. infecting groundnut was recorded. Kalahasti malady (*T. brevilineatus*) is serious disease of groundnut in parts of Chittoor and

Nellore districts of Andhra Pradesh and yield losses to the extent of 20-50% are quite common in severely infected fields. For the management of parasitic nematodes in groundnut crop, we are working on the possibility of the primary source of nematode management.

(Inputs: Prasanna Holajjer)

EVENTS

Showcase of DGR technologies at Krishi Vasant-2014

(Nagpur 09-13 February, 2014)

Krishi Vasant-2014, a mega farmer's event was jointly organized by Ministry of Agriculture, Confederation of Indian Industry and Government of Maharashtra at Central Institute for Cotton Research (CICR), Nagpur during 9-13 February, 2014. DGR had been identified as nodal agency for mobilizing farmer friendly information from the establishments such as SAUs and KVKs located in Gujarat. DGR has laid-out the demonstration of four very popular groundnut varieties (TG 37 A, Girnar 2, Girnar 3, TPG 41). A stall on "Recent updates on improved groundnut production technologies" was also set up. DGR has also displayed the pods and seeds of 40 most promising varieties of India which are under cultivation along with necessary information. About 20,000 pamphlets on variety specific package of practices were distributed to the participant farmers. The DGR had also laid out live-crop demonstration plot at CICR, exhibiting promising groundnut varieties.



Dr. S. Ayyappan, Secretary (DARE) & DG (ICAR) visited DGR stall; Farmers taking keen interest in DGR technologies (Inputs: Narayanan G. and Mr. Murlidhar Meena)

National Science Day at DGR

(Junagadh, February 28, 2014)

The DGR celebrated yet another National Science Day on 28 February 2014, with the theme “Fostering Scientific Temper”. The DGR organized several competitions for school and college students of Junagadh to celebrate the National Science Day. On 24th February 2014, an elocution competition for students of VI - IX standards on the topic “Fostering scientific temper”, a debate competition for students on the topic “Progress in science: curse or boon for society” and an elocution competition for college/university students on the topic “Climate change: let us live with it” were organized. On 25th February 2014, an essay writing competition on the topic “Effect of climate change on future civilization” for school children and a quiz competition on general awareness about science and general knowledge, for DGR staff, were held. A science exhibition on the topic “Green technology” was held on 26th February 2014



National Science Day celebrations at DGR

for school children along with an essay writing competition on the topic “Effect of climate change on future civilization” for the DGR staff. On 27th February 2014, a painting competition on the topic “Global warming” was held for school children. Two quiz competitions for school children, for classes VI-VII and VIII-IX, were held on 28th February 2014. About 200 school children from 11 local schools and college students from three different colleges accompanied by their teachers participated in the 5 day activities organized in the conference hall and auditorium of DGR. The valedictory function and prize distribution ceremony were held on 28th February 2014. The knowledge of children about delicate inter-relationship among active and passive components of nature was also enriched by a pictorial talk given by

the Chief-Guest, Dr. Sandeep Kumar, IFS, Deputy Conservator of Forest, Wildlife Division, Sasan, Gir-Somnath. Dr. J.B. Misra, Director DGR, gave away the prizes and mementoes to the winners and participants.

Agriculture fair-cum-demonstration

(Kodinar, January 09-10, 2014)

A two day Agriculture fair-cum-demonstration was organized for the groundnut farmers of Saurashtra region of Gujarat during 09-10 January, 2014 at Krishi Vigyan Kendra-Kodinar (Gir-Somnath). An exhibition on “Improved groundnut technologies of DGR” was showcased by DGR to the participants of the fair. Extension scientist and technical persons from DGR have participated in the technical session cum farmers-resource person interaction. Resource persons from DGR, have delivered lectures on the pest & disease management and marketing challenges in groundnut grown in Saurashtra region of Gujarat. Besides, all the queries related to the groundnut cultivation were amicably answered during discussion session.



Agriculture fair-cum-demonstration at KVK, Kodinar (Input: Narayanan G.)

TRAININGS

Trainings for the farmers of Odisha and Gujarat

For the groundnut farmers of Odisha and Gujarat, three training programmes were organized by DGR on “Improved groundnut production technologies”. The first and second batch consisted of 27 and 35 tribal farmers from Odisha, who were given training during 18-21 January 2014, and 25-27 January 2014, respectively. The third batch comprising 37 farmers,

from Navsari, Gujarat were given training during 22-24 January 2014. These trainings were coordinated by Dr. Narayanan G. and Mr. Murlidhar Meena. The topics covered in training included improved agronomic practices for groundnut production, polythene mulch technique for enhancing groundnut production, major groundnut pest & diseases and their management, minimizing risk of aflatoxin contamination in groundnut, application of micro-nutrients and its benefit to groundnut, prospects of value addition in groundnut, mechanization of groundnut production, post-harvest management: drying and storage technique for groundnut, Groundnut marketing: opportunities and challenges. A training manual prepared in Gujarati and Hindi was distributed to each of the trainees.



Trainings to the farmers of Odisha and Gujarat

Training to the farmers and extension workers from Uttar Pradesh

A five-day training programme on “Technologies for summer groundnut production in Uttar Pradesh” was organized by DGR during February 18-22, 2014 which was sponsored by the State Institute for Management of Agriculture (UP), under ATMA scheme. The participants included officers and functionaries from UP State Extension Department



and also a few progressive farmers from UP. The trainees were made aware of the latest technologies that are being recently developed and can be used for increasing productivity of groundnut. A range of lectures were delivered by the scientists and technical

officers of DGR. Dr. Ram Dutta was the Course Director, whereas Dr. Narayanan G., and Dr. Poonam Jasrotia coordinated the training programme.

MEETINGS

XVIRAC meeting

The XVI meeting of Research Advisory Committee was held at DGR, Junagadh from 15-17 April, 2014. Dr. S.K. Patil, (VC, Indira Gandhi Krishi Vishwavidyalaya, Raipur) chaired the meeting and other members who had participated in the meeting were Dr. Masood Ali, (Ex-Director, IIPR, Kanpur), Dr. M.B. Chetti (Dean, UAS, Dharwad), Dr. S.N. Gurha (Ex. PS, IIPR, Kanpur), Dr. A.M. Parakhia (Director of Extension Education, JAU), Dr. J.B. Misra (Director, DGR), Ms. Hirbaiben I. Lobi (Progressive Farmer, Jambur, Junagadh) and Shri. J.K.B. Gunde (Progressive Farmer, Kolhapur, MH). Dr. S.K. Bera (PS, DGR, Junagadh) was the Member Secretary of 16th RAC meeting.

The meeting started with the brief introduction of the scientists followed by welcome of the RAC members by Dr. J.B. Misra, Director. Further, Dr. S.K. Bera, Member Secretary, RAC presented the action taken report of XV RAC meeting and presentations on ongoing research projects were made by the PIs or co-PIs which were discussed thoroughly and the plan of work was customized as per the remarks of the research advisory committee. The Chairman and the members of RAC appreciated the research work that has been done at DGR and pointed out the need for reorienting the research plan on certain areas.



A view of RAC meeting, field- and lab- visit

NFBSFARA-2013 project review meeting

The first review meeting of NFBSFARA-2013 project entitled “Relationship between *Sclerotium rolfsii*, *Rhizoctonia solani*, the soil and climatic variables in three major cropping systems in the country and identification of markers for resistance to *Sclerotium rolfsii*” was held at DGR Junagadh from 4-5 April, 2014. The meeting was chaired by Dr. J. Kumar (Dean, GBPUA&T, Pantnagar) and other members present included Dr. K.V. Bhatt (NBPGR, New Delhi) and Dr. Suseelendra Desai (CRIDA, Hyderabad). The PI from three main centers included Dr. Radhakrishnan T. (DGR, Junagadh), Dr I. Bhattacharya (BCKV, Mohanpur) and Dr. S.C. Dubey (IARI, New Delhi). Besides, four CIs from DGR, Junagadh i.e. Dr. A.L. Rathnakumar, Dr. P.P. Thirumalaisamy, Dr. N. Kumar and Dr. G.P. Mishra were also present during the review meeting.

Dr. J.B. Misra, Director, DGR welcomed all the members of the review committee and gave his



best wishes to the project team for the grand success of the project. In his opening remarks Chairman, Dr. J. Kumar mentioned about the losses caused due to the diseases in groundnut and emphasized on the need of more investments on the research related to the plant protection. The progress made in this project during last one year was presented by the PIs and CIs of the project. These presentations were discussed in detail by the review committee members and necessary suggestions were made. The meeting ended with the vote of thanks by Dr. A.L. Rathnakumar and it was hoped that this project will surely lead to some conclusive findings.

Institute Research Committee (IRC) meeting

The 62nd meeting of Institute Research Committee was held from 6-8 January 2014, under the Chairmanship of Director, DGR, to review the progress of research activities undertaken and to finalize the technical programme for ensuing seasons. The research projects for the 12th plan were finalized during this meeting. The PIs of different projects presented the highlights under the respective projects and the proposed technical programme. The house approved the activities to be undertaken after thorough discussions keeping in view the priority and availability of resources. The meetings ended with vote of thanks to the Chair by the Secretary.

AWARDS

Dr. K.K. Pal along with Dr. R. Dey and Dr. M. Thomas received the 'Best Paper Award' for their paper, “*Studying the haloarchaeal diversity in the hypersaline environments of the Rann of Kutch, Gujarat, India*” at the International Conference “Biodiversity, Bioresource and Biotechnology” from 30-31 January 2013 at Mysore, India.



Ms. Madhuben Vaghasia, Assistant, secured the first position in the Women Chess Competition under 'Khel Mahakhumb-2013' organized by the Sports Authority of Gujarat from 23 November-23 December 2013 at Junagadh district.



PERSONNEL

Superannuation

Sh. R.D. Nagwadia, Assistant, retired from his services on January 31, 2014 after serving this institute for 30 years.



Sh. C.N. Jethwa, SSS, retired from his services on March 01, 2014 after serving this institute for 34 years.



Transfer

Dr. Ajoy Saha, Scientist, Agril. Chemistry was

relieved from DGR on May 02, 2014 consequent upon his transfer to DMAPR, Anand, Gujarat.



Resignation

Dr. R.S. Garhwal (T-3), resigned from DGR, w.e.f. March 04, 2014 on his selection as Assistant Professor at S.K. Nagar Dantiwada Agricultural University, Gujarat.



INSTITUTE SEMINARS

Speaker	Date	Topic
Radhakrishnan T.	Jan. 15, 2014	'Harnessing the genetic diversity and genomic resources of groundnut for cultivar development in India'
G.P. Mishra	Jan. 15, 2014	'Advancements in genomics strategies for the management of biotic stresses in groundnut (<i>Arachis hypogaea</i> L.)'
K.S. Jadon	Jan. 15, 2014	International training on 'Peanut Risk Management Decision Support System and Weather based Advisories' (September 23 to December 07, 2013) at North Carolina State University, USA under Borlaug Fellowship Program-2013
K.K. Pal	Jan. 17, 2014	'Exploring the genomic diversity of extreme halophiles for isolating genes for osmotolerance'
Manesh Thomas	Jan. 17, 2014	'Studying the haloarchaeal diversity in the hypersaline environments of the Rann of Kutch, Gujarat, India'
N.K. Jain	March 01, 2014	'Impact of polythene mulch, hydrogel and nutrient management on productivity, water use efficiency and soil nutrient status in groundnut (<i>Arachis hypogaea</i>)'
S.K. Bera	March 01, 2014	'Variable response of interspecific breeding lines of groundnut to <i>Sclerotium rolfsii</i> infection under field and laboratory conditions and overexpression of PR10 gene in groundnut cultivars'
Tanmoy Sarkar	April 23, 2014	'Development of transgenic resistance to abiotic stress in groundnut using AtDREB1A gene through Agrobacterium mediated genetic transformation'
Anita Mann	May 15, 2014	'Antioxidant defence system in iron deficient groundnut plants'
M.C. Dagla	May 23, 2014	'मूंगफली की उन्नत प्रजनन पंक्तियों में मिष्ठान लक्षणों के लिए आनुवांशिकी विभिन्नता पर अध्ययन'
M.D. Meena	May 23, 2014	'Profitability in groundnut cultivation in India- A State level analysis'
K.A. Kalariya	May 23, 2014	(i) 'Association of SCMR, SLA and pod yield in Spanish peanut varieties under water deficit stress' and (ii) 'Water deficit stress induced changes in non-photochemical quenching in groundnut'
M.K. Mahatma	June 09, 2014	'Characterization of Spanish and Virginia genotypes of Groundnut for oil quality and antioxidant activity'
R.A. Jat	June 18, 2014	'Conservation agriculture and climate change mitigation and adaptation'

PARTICIPATION IN CONFERENCE/ WORKSHOP/ SEMINAR/ MEETINGS/ TRAINING PROGRAMMES

Name	Programme	Venue	Date
Radhakrishnan T., K.K. Pal, G.P. Mishra and K. Chakraborty	International conference on 'Biodiversity, bioresources and biotechnology	Mysore, Karnataka	January 30-31, 2014
M.K. Mahatma	Refresher course for 'Agricultural research management'	NAARM, Hyderabad	February 02-16, 2014
	National Conference on 'Recent trends in processing, quality and safety of ethnic and organic foods'	Tamil Nadu Veterinary and Animal Sciences University, Chennai	June 26-27, 2014
Nataraja M.V., Narayanan G., M.D. Meena	National Agriculture Fair-cum - exhibition "Krishi Vasant 2014"	CICR, Nagpur	February 09-13, 2014
Radhakrishnan T.	IMC meeting	DOR, Hyderabad	February 20, 2014
		DGR, Junagadh	March 15, 2014
Chunilal	Review meeting of Scientific Advisory Council of KVK, Kodinar	Kodinar, Gujarat	January 28, 2014
	'Orientation workshop for launching of National Mission on Oilseeds and Oil Palm (NMOOP)'	DOR, Hyderabad	March 13-14, 2014

Annual workshop of AICRPG

(Coimbatore, May 27-29, 2014)

A three day annual workshop of 'All India coordinated research project on groundnut (AICRP-G)' was organized at Tamil Nadu Agricultural University, Coimbatore during 27-29 May, 2014 in which about 150 groundnut scientists participated. In this meeting, it was emphasized that there is need to implement new improved technologies for increasing the productivity of groundnut, since the area was witnessing a decline. Addressing the participants of the workshop, Dr. N. Gopalakrishnan, Assistant Director General (Commercial Crops), ICAR, asked State Agricultural Universities and ICAR Centers to take collaborative research works to satisfy farmers' needs. Dwelling on the groundnut research activity at various centers under AICRP-G, ADG was of the opinion that due importance should be given to Strength Weakness Opportunities and Threat (SWOT) analysis to recognize the role of planners, managers and researchers during the 12th plan.

Dr. K Ramasamy, Vice-Chancellor, Tamil Nadu Agricultural University requested the participants to carry out an in depth study of root-ecosystem to enhance pod formations in groundnut. Dr. J.B. Misra, Director, DGR presented the highlights of groundnut research carried out in the last few years. In this workshop, three varieties, RG 578, JSP 49, and RG 530 were identified for release in West Bengal, Odisha, Jharkand and Manipur for cultivation during *kharif*. In addition, two genotypes, viz., CTMG 6 (for Karnataka, Maharashtra, Tamil Nadu and Andhra Pradesh) and ALG 06-320 (for Tamil Nadu and Andhra Pradesh) were also identified for release for cultivation in *rabi*-summer. A book 'Groundnut, A crop profile and compendium of varieties notified in India' was also released in this meeting.



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