ICAR-DGR Newsletter

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National conference on "Enhancing productivity of oilseeds in changing climate scenario" (NCOS) organized at ICAR-DGR, Junagadh during 7-9 April 2018

A three-day (7-9 April 2018) national conference on 'Enhancing productivity of oilseeds in changing climate scenario' was organized at DGR in association with Indian society of oilseeds research (ISOR), Hyderabad. At inauguration, Director Dr. Radhakrishnan invited the honorable guests and participants. The Chairman of the inaugural session Dr. Trilochan Mohapatra, Secretary DARE and DG, ICAR, New Delhi appraised the participants on status of oilseeds in the country, and the significant achievements made so far for sustainable oil seed production and future prospects and challenges and Co-Chairman, Dr. A. R. Pathak, Hon'ble VC, JAU, Junagadh gave lead lecture on "Strategies for doubling of farmers' income"and Dr. A. Vishuvardhan Reddy, Director, ICAR-IIOR, Hyderabad gave opening remarks and presented an overview of conference and society. The conference covered six thematic areas during technical sessions.1. Development of climate resilient varieties. 2. Management strategies to mitigate impact of climate change. 3.Crop protection measures to enhance productivity. 4. Processing post-harvest management and value addition for harnessing the potential of secondary sources of oil. 5. Innovative approaches for rapid adoption of technologies. 6. policy frame work for oilseed sector including doubling of income. There were *in toto* 19 lead lectures, 74 oral presentations, 43 poster presentations and 19 special oral presentations (for students)

Inauguration of NCOS-2018

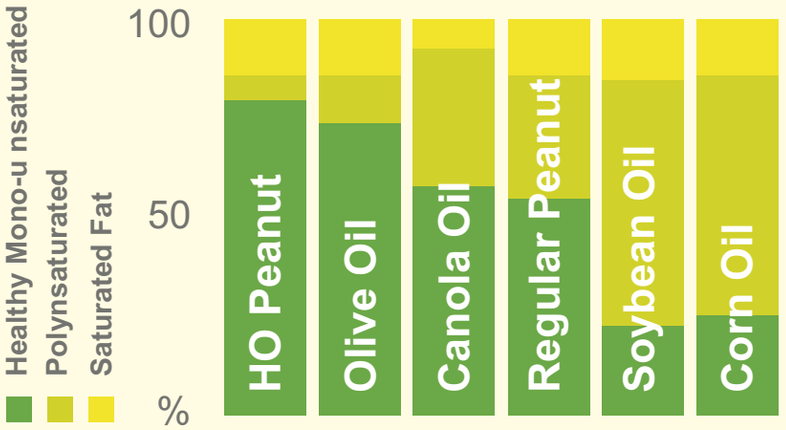
High-Oleic Peanut in India: shift in paradigm of health oil

ICAR-DGR, Junagadh has developed several high oleic acid content (~80%) peanuts through molecular breeding. Oleic acid content in these lines has been confirmed over the seasons and locations. Peanut with high oleic acid content increases shelf-life of peanut oil and food products besides extending major health benefits to the consumers. High oleic peanut-healthoil has better healthy Mono-unsaturated fatty acids content than olive oil. Currently high oleic peanuts are under final stage of all-India level testing and would be released sooner as variety. The high oil and high oleic acid containing peanut will certainly boost up Indian peanut export scenario as well as meet the growing demand of food industries besides availability of health-oil to the consumers.

Table: Oleic acid and linoleic acid content of two selected lines over four seasons

Genotype (Code of breeding line)	Crop season	Oleic acid (O) content%	Linoleic acid (L) content%	O/L ratio
NRCGCS-602 (HOS-130 or HOP-IL_MAS_130)	*Kharif* 2015	80.7	2.3	35.1
	Kharif 2016	80.5	2.7	29.9
	Summer 2017	82.4	2.9	28.0
	Kharif 2017	83.5	2.5	32.9
NRCGCS-605 (HOS-145 or HOP-IL_MAS_145)	*Kharif* 2015	80.3	2.6	30.9
	Kharif 2016	80.3	2.6	30.9
	Summer 2017	82.9	2.5	33.8
	Kharif 2017	83.1	2.3	36.2

Fig. Fatty acid composition of various oils



High Oleic Peanuts	Regular Peanuts
82% monounsaturated	54% monounsaturated
5% polyunsaturated	28% polyunsaturated
13% saturated	18% saturated

Inputs: S. K. Bera, J. H. Kamdar, and T. Radhakrishnan

Alternaria leaf blight menace to *rabi*-summer groundnut

Many biotic stresses are known to limit groundnut productivity during *rabi*-summer season, but *Alternaria* leaf blight is becoming a major disease in *rabi*-summer groundnut states particularly in Gujarat, Andhra Pradesh, Karnatka, Tamil Nadu and Maharashtra. *Alternaria* fungi is a weak opportunistic pathogen causing leaf spots, rots and blights on many plant parts on over 380 host species of plant. Its severity increases with crop stresses such as poor soil fertility, moisture deficit stress, insect damage, and nutrient deficiency. There are four different species of *Alternaria* causing leaf spot and blight diseases in groundnut. *Alternaria arachidis* Kulk. causes necrotic brown leaf spot of groundnut (Kulkarni, 1974). The most common disease is leaf blight cause orange-brown necrotic spot and veinal necrosis by *Alternaria alternata (Fr.) Keissler,* (Balasubramanian, 1979). *Alternaria tenuissima* (Kunze ex Pers) Wilts causing blighting of apical portions of leaflets with light to dark brown spot (Ghewande *et al*., 1982). *Alternaria longipes* causes necrotic leaf spots of groundnut (Giri and Murugesan, 1996). This disease significantly affects pod and haulm yield of groundnut. *Alternaria* leaf blight has economic importance in groundnut, it causes reduction in pod yield (13-22%) and haulm yield (24-63%) and it also affects kernel quality in groundnut (Kumar *et al*., 2012).

Due to minor disease, a little information is available on response of groundnut cultivars to *Alternaria* leaf blight. A field survey of groundnut field in Junagadh and Rajkot district of Gujarat revealed cultivars TG-37A, ICGS-37, JL-24, AK-

159, DRG-12 and TPG-41 were susceptible to *Alternaria* leaf blight (Kumar *et al.*, 2012). About 200 groundnut genotypes have been screened over the 4 years for resistance to *Alternaria* leaf blight at ICAR-DGR, Junagadh, Gujarat. Among them, two advanced breeding lines (PBS 12169, PBS 12190) and three interspecific derivatives (NRCGCS 349, NRCGCS 74 and NRCGCS 186) have been found resistance of *Alternaria* leaf blight. It also has been observed that Spanish bunch cultivars having more susceptible than Virginia bunch cultivars. Generally, plants weakened by any biotic and abiotic stresses are more prone to *Alternaria* infections as compare to healthy plants. Therefore, recommended agronomic package and practices should be followed for raising the healthy crop. Crop rotation is the most widespread cultural practice, it not only improves soil fertility, moisture and texture but also control weed and pathogens which act as primary source of inoculum. Intercropping of groundnut with susceptible crops to *Alternaria* spp such as cotton, sesame, tomato and onion should be avoided which can greatly increase disease incidence. Deep ploughing of all undecayed left over plants debris of previous season crops especially of cotton and groundnut which greatly reduced disease incidence in groundnut. Till now there are limited resistance sources are available in the cultivated groundnut to *Alternaria* leaf blight that ceiling the progress made through conventional breeding approach. Now, breeding programme is going on resistance of *Alternaria* leaf blight at ICAR-DGR, Junagadh to further standardize the screening techniques for identifying better sources of resistance and utilizing available resistance sources for developing high yielding resistance groundnut varieties.

Fig. 1 Disease symptom on plant

Fig. 2 Disease in field condition

Inputs: Narendra Kumar and Ram Dutta

PBS 22040- A novel genetic stock tolerant to iron chlorosis in groundnut

Iron chlorosis is quite commonly observed in calcareous soils in groundnut, as the groundnut is sensitive to iron deficiency which affects economic yields especially under assured irrigated conditions. It had been reported that 13-15% losses in the pod yield due to Fe deficiency in calcareous soils (Tandon, 1998). Management strategies for iron chlorosis including the amending Fe to soil are an expensive practice. Therefore, development or growing the tolerant cultivars (Fe efficient) is the most effective and economical approach to overcome yield losses due to iron chlorosis in groundnut. To explore the possibility of identify Fe chlorosis tolerant genotype, one hundred fifty groundnut genotypes including advanced breeding lines, interspecific derivatives and cultivars were screened under natural prevailing conditions for their tolerance to iron chlorosis in a randomized block design with three replications during summer 2013, 2014, 2015 and 2016 at ICAR-Directorate of Groundnut Research, Junagadh.

The genotypes showing interveinal chlorosis in their top five leaves are rated for visual chlorotic rating (VCR) on 1-5 scale at various growth stages (Singh and Chaudhari, 1993). Highest iron chlorosis score was 5.0 on 1-5 scale during the study. Based on four year screening results revealed that an advanced breeding line, PBS 22040, recorded an average VCR of 2.0 on 1-5 scale. This Virginia bunch advanced breeding line was identified as iron chlorosis tolerant genotype which can be used as novel genetic stock in groundnut and could be used in breeding programme for developing high yielding variety with tolerant to iron chlorosis in groundnut.

Fig.1 Screening trial for tolerance of iron chlorosis during summer season

Input: Narendra Kumar and Ajay B.C

Modified AMMI Stability Index (MASI) for stability analysis

The additive main effects and multiplicative interaction (AMMI) model (Gauch, 1988, 1992) is one of the most widely used tools to analyse and structure GEI. It interprets genotype (G) and environment (E) as additive effect using two-way ANOVA by least squares and GxE as multiplicative effect by applying Principal component analysis. In order to quantify stability measures of AMMI, AMMI Stability Index (ASI, Jambulkar et al. 2014) considers only first two interaction principal component axis to rank genotypes based on stability. In the process vital information provided by other interaction principal component axis is not captured while ranking the genotypes.

Hence, in order to capture all possible information for ranking genotypes, modified form of ASI referred to as Modified AMMI Stability Index (MASI) is being proposed which considers all significant interaction principal component axis of AMMI model in order to rank the genotypes based on stability. The formula for calculation of MASI is given below,

$$MASI = \sqrt{\sum_{n=1}^{N'} PC_n^2 x \theta_n^2}$$

Where, PCn are the scores of nth IPC; and θn is the percentage sum of squares explained by thenth principal component interaction effect.

The proposed methodology has been used for finding out the stability of 52 breeding lines evaluated under two levels of P application during 2013 to 2014. AMMI model identified three significant interaction principal component axis (IPCA) which together explained 100% variability explained by genotype * environment interactions (GEI) in the data (data not shown). If stability index is calculated using ASI it captures only 79% GEI in the data for ranking the genotypes whereas the MASI captures 100% GEI and hence ranks genotypes better than ASI.Pod yield per plant, ASI and MASI and their rankingsfor top and bottom 10 identified using MASI are given in the Table 1.There is clear difference between genotype ranking based on ASI and MASI. MASI is better than ASI as it is capturing complete variability explained by GEI.

Table 1: Mean yield and ranking of genotypes based on ASI and MASI

Genotype	Pod yield / plant (g)	ASI	Rank. ASI	MASI	Rank.MASI
PBS 22083	13	0.07	1	0.07	1
PBS 22088	9.5	0.07	2	0.11	2
PBS 29098	11.5	0.08	3	0.13	3
Somnath	14.2	0.09	4	0.14	4
PBS 29145	12.4	0.17	12	0.17	5
PBS 29170	11	0.13	8	0.18	6
PBS 22076	12.9	0.15	11	0.18	7
PBS 29149	10.2	0.11	6	0.18	8
PBS 22081	13.1	0.11	7	0.18	9
PBS 22080	15.4	0.18	13	0.18	10
PBS 22091	11.8	0.45	42	0.46	43
PBS 22077	14.3	0.45	43	0.46	44
SP 250A	11.8	0.47	45	0.48	45
M 13	13.3	0.48	47	0.49	46
PBS 22086	15.9	0.51	48	0.51	47
PBS 29164	12.1	0.48	46	0.52	48
PBS 29080	12.1	0.52	49	0.52	49
PBS 29169	13.2	0.52	50	0.53	50
PBS 22084	14.9	0.55	51	0.56	51
PBS 29148	13.9	0.57	52	0.6	52

Inputs: Ajay BC, Aravind J, Abdul Fiyaz R, Bera SK, Narendra Kumar, Gangadhar K and Praveen Kona

Amelioration of yellowing with balanced nutrition in groundnut

Yellowing is a major issue particularly in *kharif* groundnut in black calcareous soils of Gujarat affecting groundnut productivity. A survey was conducted in 10 villages surrounding Mendarda, Veraval and Sasan areas of Junagadh and Sasan-Gir district of Gujarat seriously affected by yellowing during *kharif* 2018. Soil samples were collected from yellowing affected fields from 0-15 cm depth after 70-80 days of crop germination and were analyzed in lab for nutrient status in the soil. One sample was collected from a field showing no yellowing symptoms for comparison. Out of 14 soil samples from yellowing affected fields, 14 samples were found to be low in Fe (<4.5 ppm) and Mn (<3.5 ppm), 07 low in boron (<0.6 ppm), and 12 samples were found low in available nitrogen content (<280 kg N ha^{-1}) (Table 1). The analytical results suggest that yellowing is caused by multi-nutrient deficiencies and hence, balanced nutrition is the way to alleviate yellowing in groundnut. In case of deficiency of Fe, Mn and B yellowing occurs on top leaves while that of N occurs on lower leaves.

Nutrients should be applied as per soil test report of individual fields. In case of deficiency of Fe, Mn and boron in the field, ferrous sulphate (25 kg/ha), manganese sulphate (25 kg/ha) and borax (10 kg/ha), respectively may be applied at the time of sowing. To avoid nitrogen deficiency, 25 kg/ha of nitrogen should be applied as basal dose and ensure to treat the seeds with quality *Rhizobium* culture. In case of poor nodulation, apply 10-15 kg/ha of N as top dressing if crop shows stunted growth and yellowing on lower leaves. If yellowing is noticed on top leaves in the standing crop, foliar application of 0.5% ferrous sulfate (with 0.1 % citric acid), 0.6% manganese sulphate (with 0.3% lime), and 0.2% borax should be done promptly to prevent/minimize yield losses. Further, make adequate provision for proper drainage of excess water from the field and avoid application of heavy doses of FYM in groundnut crop in low lying fields with poor drainage or, rather split the quantity between preceding crop and groundnut. In chronically yellowing susceptible fields grow yellowing tolerant varieties like TAG 24, TG 17, JL 24 etc.

Table: Nutrient status of soil samples collected from different farmers' field

S.No.	Farmers' Name	Village	pH	EC (dS/m)	Av. N	Av. P	Av. K	S	Fe	Cu	Mn	Zn	B
					kg/ha				ppm				
Samples from fields with yellowing symptoms													
1	Jagamal A. Karenjia	Manekvada	7.7	0.33	50	14	148	20	0.21	0.52	0.44	2.64	0.60
2	Govind M. Sondarva	Manekvada	7.5	0.28	125	18	177	24	0.52	0.64	1.36	10.55	0.61
3	Kanjibhai K. Dodiya	Sukhapur	7.5	0.38	176	18	470	35	4.18	0.34	0.13	10.47	0.66
4	Jesa M. Nagera	Bhalpur	7.6	0.19	201	22	329	37	1.58	0.64	0.16	0.18	0.69
5	Govindbhai Parmar	Kajali	7.5	0.4	276	18	327	34	0.81	0.74	0.29	1.55	0.55
6	Raja K. Ram	Bhalpur	7.3	0.63	427	25	329	20	0.75	0.37	0.30	2.18	0.49
7	Piyushbhai H. Bharga I	Ajotha	7.3	0.52	201	21	305	98	2.52	0.31	0.34	1.07	0.44
8	Piyushbhai HBharga II	Ajotha	7.4	0.23	226	26	408	39	4.37	0.43	0.16	0.60	0.49
9	Vijay D. Bharga	Ajotha	7.4	0.3	226	22	381	46	2.40	0.63	0.25	0.98	0.53
10	Ghatorbhai A. Dodiya	Khabha	7.4	0.26	439	18	343	23	0.49	0.90	0.26	2.13	0.47
11	Sandipbhai Patel	Khabha	7.4	0.26	201	22	320	15	0.70	0.66	0.32	2.99	0.48
12	Popatbhai Valjibhai I	Manpur	7.4	0.24	176	20	349	37	0.19	0.67	0.23	2.33	0.70
13	Popatbhai Valjibhai II	Manpur	7.4	0.26	151	20	251	37	0.35	0.75	0.32	1.97	0.36
14	Devsibhai Kunt	Mendardra	7.3	0.31	226	24	329	38	0.74	0.89	0.29	1.93	0.34
Samples from field with no yellowing symptoms													
1	Kanjibhai T. Dodiya	Kevadra	7.5	0.31	652	40	435	17	5.63	0.27	3.81	0.33	0.60

Input: Kiran Reddy, Ram A. Jat and Radhakrishnan T.

IPM modules against major sucking insect pests of groundnut

Five different IPM modules were designed and tested for the management of insect-pests in groundnut including farmer practices during 2013 to 2018 at DGR, Junagadh, Gujarat. Farmers Practices (FP) or Control included seed treatment with mancozeb 3g/kg seeds and T_5 included Deep summer ploughing upto 8 inches + Soil solarisation with polythene sheet (aprrox 175 µm) + Grow 3-4 rows of Bajra (border crop) and Castor (trap crop) @ 250 g seeds each per ha mixed with groundnut seeds + Seed treatment (with mancozeb 3g/kg seeds + Imidacloprid 600 FS @ 1 ml/kg seeds + Rhizobium @ 625 g/ha seed) + Application of *Trichoderma* enriched FYM (50kg FYM with 4 kg *Trichoderma*/ha) 20 days before sowing and applying in seed furrow + Pheromone trap as mass trapping (@25 traps/ha each for *Helicoverpa* and *Spodoptera*) + Hand picking and destroying of egg masses/ gregarious larvae + NSKE @ 5% at 20-30 DAS + Difenoconazole 1 ml/lit (application if ELS/LLS/Rust scores crosses 3 rating scale) + Avoiding end of season drought (at pod maturity time) + Harvesting at right maturity + Sorting of plants from diseased/infected + Drying of pods exposing at sun light + Avoiding mixing of collected pods with had picked pods + Drying of pods below 9% moisture content and storing in dry place. Data were recorded for the incidence of major sucking pests, *i.e.*thrips and leafhoppers.

It was observed that synthesized IPM Modules significantly reduced insect-pest incidence on groundnut and enhanced the yield over farmers' practices (FP). The population of thrips and leaf hoppers were recorded to be lowest in module T5 and varied from 0.46 to 1.46thrips/plant and 0.47 to 4.0 leafhoppers/plant, respectively. The module T5 was significantly superior to Farmer Practice during both *Kharif* and *Rabi* summer seasons.

The pod yield in *Kharif* 2015 was highest in IPM module T5 (1319 kg ha^{-1}) and lowest in FP (1184 kg ha^{-1}). Also, fodder yield was recorded maximum (4040 kg ha^{-1}) and minimum (3960 kg ha^{-1}) in FP module. The highest pod yield during *Rabi*-summer 2016 season was obtained in T5 (1397 kg ha^{-1}) and lowest in FP (1126.5 kg ha^{-1}) The BC ratio and ICBR was highest in Module T5 i.e. 1.7 and 1.4, respectively during *Kharif*-2015. Similarly, during *Rabi* summer 2016, the BC ratio and ICBR were highest in Module T5 i.e. 1.6 and 2.9, respectively

T5 module

Farmers Practice

Inputs: Harish G

Elite early maturing advanced breeding lines of groundnut

Groundnut is important grain legume crop covering an area of 45 lakh hectares in India with a production of 67.7 lakh tons and a productivity level of 1484 kg/ha (FAOSTAT, 2015). About 70% of groundnut area lies in low to moderate rainfall areas. Hence drought stress is the major constraint in increasing groundnut productivity during *kharif* season. Groundnut crop faces either early, mid and end season drought situations. Flowering and grain filling are two important sensitive growth phases to drought. To mitigate drought stress, developing early maturing cultivars is important breeding objective in groundnut breeding.

The flowering and maturity can optimally regulated to escape drought to achieve substantial yield under stress conditions. Biologically, drought escape consists of active growth and metabolism for the rapid completion of the life-cycle before drought events occur. However, if drought stress occurs, it is essential to have water use efficiency mechanism to get greater adaptive capacity. A shorter vegetative period combined with a longer grain filling period produce higher pod yield even under drought during crop growth situations. This, early flowering and maturity is an effective drought escape mechanism, but it can limit grain yield potential. Therefore development of short duration groundnut genotypes with high yield would be useful to address drought as well as fit into cropping systems.

Efforts of crop Improvement unit, ICAR-Directorate of Groundnut Research resulted in identifying groundnut genotypes which matures early with high yield potential. Early maturing elite advanced breeding lines such as PBS 14068, PBS 16033, PBS 15014, PBS 16023 and PBS 15044 have been developed which matured within 95-105 days with higher yield potential during *kharif* season. The shorter life cycle of early maturing genotypes help in escaping drought and biotic stresses if planting dates are adjusted. These early maturing genotypes can also be evaluated for potato/rice fallows systems.

Inputs: Gangadhara,K., Sangh Chandramohan and Ratnakumar, A.L.

Promising Bold seeded advanced breeding lines of groundnut

Groundnut is an important oilseed legume grown extensively in semi-arid tropical countries. In India, oil is the ultimate economic product of groundnut crop. Increased availability of cheaper oils for both food and confectionery purposes has resulted in the change in consumer preference and hence groundnut oil is relegated to the lower ranks. Hence the future of groundnut crop lies in its use as food and confectionery rather than exclusively as oil type. Groundnut kernels are utilized in various ways *viz*., snack food, peanut butter, oil, and other products. Presently, there is great demand for large seeded confectionery groundnut types for export purpose. Kernel size coupled with the nutritional quality can also determine the worth of groundnut for direct consumption. More precisely, characters which are preferred for confectionery purpose are high sugar and protein; low oil and aflatoxin contamination, attractive kernel size and shape and ease of blanching and high oleic/linoleic acid ratio.

The most important component of edible groundnut export consists of the bold seeded, hand-picked and selected types, which have great demand all over the world and fetch higher prices in domestic and international markets. Breeding efforts in this direction resulted in identification of genotypes, PBS 19144, PBS 29162 and PBS 29148 for oil content (%); PBS 29148, PBS 29146 and PBS 19162 for protein content (%); PBS 29148, PBS 29146 and PBS 29162 for sugar (%) with large seeded types with high yield potential. Other advanced breeding lines such as PBS 29195, PBS 29192, PBS 29225, PBS 29194 and PBS 19230 have higher hundred kernel weight (>50g), shelling out turn (>60%), kernel length to width ratio (2) and O/L ratio (2).

Inputs: Gangadhara, K, Praveen Kona, and Sangh Chandramohan

Relay sowing of pigeonpea in 2:1 ratio at 30 days after sowing gives higher system productivity

Relay sowing of pigeonpea in groundnut is widely popular in Saurashtra region of Gujarat. However, there is need to identify suitable row ratio and time of relay sowing of pigeonpea in light of replacement of spreading varieties with semi-spreading varieties, and in recent increasing popularity of bunch type varieties of groundnut among the farmers. Therefore, a field experiment was conducted during *kharif* 2017 to find out the suitable row ratio and timing of relay sowing of pigeonpea in bunch and semi-spreading varieties of groundnut.

The pod and haulm yield of both bunch (TG 37A; 30 x10 cm spacing) and semi-spreading (GJG 22; 45 x 10 cm spacing) variety was obtained higher under 3:1 ratio over 2:1 ratio but differences were not significant. Similarly, pod and haulm yield of both the varieties increased with consecutive delays in relay sowing of pigeonpea, being highest at relay sowing of pigeonpea at 50 days after sowing (DAS) of groundnut but again differences were not significant. In case of pigeonpea, grain yield and stover yield was higher under 2:1 ratio, in both the types, but differences were not significant. The significantly higher grain and stover yield of pigeonpea was obtained when relay sown at 30 DAS of groundnut in both the groundnut types. The GPEY was found significantly higher with relay sowing of pigeonpea at 30 DAS of groundnut, and with 2:1 ratio in both the types. The wider spacing in 3:1 ratio delays flowering in pigeonpea and lengthens crops duration requiring extra irrigations. Thus, these results suggest that relay sowing of pigeonpea in 2:1 ratio at 30 DAS is ideal for higher system productivity in both bunch and semi-spreading type of groundnut.

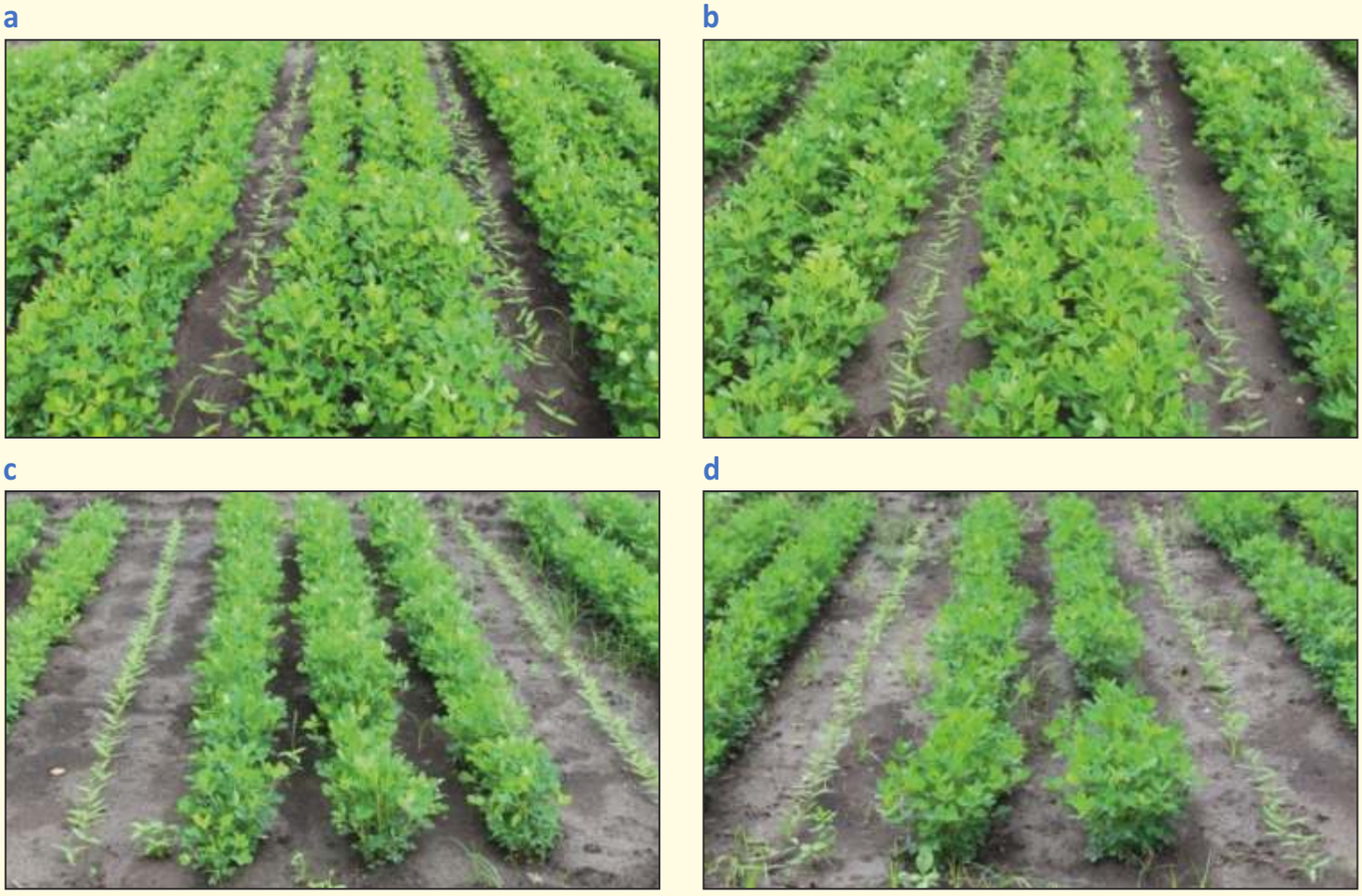


Fig..Pigeonpea relay sown 30 days after sowing of groundnut in 3:1 and 2:1 ratio in groundnut variety TG 37A (a, b) and GJG 22 (c,d), respectively.

Inputs: Ram. A. Jat, P.V. Zala, and Kiran Reddy

ICAR-DGR participates in ICAR West Zone Sports Meet

The ICAR Zonal Sports Meet (West Zone) - 2018 was held at CAZRI, Jodhpur from 16th to 20th January, 2018. A contingent of 31 sports personnel representing ICAR-DGR with Shri. Indraraj Meena, Administrative officer as Chief-de-Mission participated in Football, Volleyball, Carom, Chess, Table tennis, Badminton, 100 m, 200 m, 800 m and 1500 m race and Javelin throw. Sh. M.N. Vaghasia bagged 2nd prize in chess (women)

International day of Yoga

The ICAR-DGR, Junagadh celebrated International Day of Yoga during 20-21st June 2018. On 20th June 2018 an essay writing competition on "Yoga and Meditation: An art of self-realization" was organized at 10:00 AM onwards. Then on 21st June 2018 yoga session as per Common Yoga Protocol was organized at 06:00AM onwards as per expert advice and training of Ms Jaishriben Lashkari and her team from Patanjali Yogpeeth branch, Junagadh, Gujarat. Followed by Physical Yoga Session, a workshop on meditation was organized on 21st June 2018 at 10:30 onwards as per advice and instructions of Ms. Brahmkumari Meenaben from Brahmkumari's branch, Junagadh, Gujarat and her team from Baroda. Dr. Ram Dutta, Principal Scientist & Nodal Officer, International Day of Yoga at ICAR-DGR, Junagadh coordinated the event.

Inputs: Praveen Kona and K.K. Reddy

National Science day

National Science day was celebrated at ICAR-DGR on 28 February 2018 with much pomp and glory. It is celebrated to commemorate discovery of the 'Raman Effect', which led to Sir C.V. Raman winning the Noble Prize. Fifty students from five different schools of Junagadh participated in essay writing, oral and drawing competitions. The theme of National science day for 2018 was "Science and Technology for a Sustainable Future". The purpose of the theme was to raise public appreciation of the scientific issues involved.

Inputs: MK Mahatma

XXth meeting of the Research Advisory Committee

The 20th meeting of the Research Advisory Committee was held at ICAR-DGR, Junagadh from 27-28 March, 2018. The meeting was chaired by Dr. Padma Raju, Ex VC, ANGRAU, Hyderabad, Dr. SN Nigam, Ex. Principal Groundnut Breeder in ICRISAT, Hyderabad, Dr. IU Dhruj, Associate Director of Research, JAU, Junagadh, Dr. KP Patel, Dean Faculty of Agriculture, Anand Agricultural University, Anand, Radhakrishnan T., Director, ICAR-DGR, Junagadh and Dr. SK Bera, Principal Scientist, DGR was the member secretary of 20th RAC meeting. Works done report of the ongoing projects were delivered before the committee extensively discussed and the future work plan was tweaked as per the suggestions of the research advisory committee

नगर राजभाषा कार्यान्वयन समिति की वर्ष 2018 की प्रथम छमाही बैठक

दिनांक १८ मई, 2018 को नगर राजभाषा कार्यान्वयन समिति (नराकास) जूनागढ़ की वर्ष 2017 की प्रथम छमाही की बैठक भाकृअनुप-मूँगफली अनुसंधान निदेशालय, जूनागढ़ में आयोजित की गई | बैठक में इस निदेशालय सहित कुल 12 सदस्य कार्यालयों ने भाग लिया | यह बैठक डॉ. राधाकृष्णन टी., निदेशक, भाकृअनुप- मूँगफली अनुसंधान निदेशालय एवं अध्यक्ष राजभाषा कार्यान्वयन समिति, जूनागढ़ की अध्यक्षता में आयोजित की गयी | इस बैठक में मूँगफली अनुसंधान निदेशालय के अलावा 11 सदस्य कार्यालयों की कुल १६ प्रतिनिधियों ने हिस्सा लिया | डॉ. राधाकृष्णन टी., निदेशक, भाकृअनुप- मूँगफली अनुसंधान निदेशालय एवं अध्यक्ष राजभाषा कार्यान्वयन समिति, जूनागढ़ ने नगर राजभाषा कार्यान्वयन समिति में उपस्थित सभी सदस्य कार्यालय से हिंदी में अधिक से अधिक कार्य करने की अपील की |

Inputs: Lokesh Kumar

Godrej Agrovet sponsored training programme "Groundnut Physiology, Cultivation and Pest Management" organized at ICAR-DGR

Godrej Agrovet Pvt Ltd, Mumbai sponsored two day (13 and 14 March 2018) training programme was organized for their graduate and post graduate staff members at ICAR-Directorate of Groundnut Research, Junagadh. Total 22 participant of Godrej Agrovet who are working on groundnut based cropping system were attended this training programme. Training was organized by Course Director Dr. A.L. Singh with Course coordinators M.K. Mahatma, S.K. Bishi and G. Harish. The theme of training was on Groundnut Physiology, Cultivation and Pest Management. In this 2 day training programme, total 20 lectures were delivered by experts on groundnut which included groundnut varieties, physiology, mineral nutrition, cultivation, integrated drought management, weed management disease and pest management, bio-fertilizers, groundnut nutrition and value added products, Molecular breeding techniques, quality seed production and aflatoxin management in groundnut. Practical on Mineral analysis through Atomic absorption spectrometer and Ion and organic acid analysis using Ion chromatograph was also conducted. Beside this a farm visit was also arranged to expose participant about groundnut cultivation and sucking pest.

Inputs: MK Mahatma

Trainings were Organized by ICAR-DGR on Organic Farming/Natural Farming/Cow Based Economy under Pandit DeenDayal Krishi Unnati Yojana (PDDUUKSY) at Rajkot and Bhuj

ICAR-DGR has conducted two training programmes on Organic Farming/Natural Farming/Cow Based Economy under PDDUUKSY. First training programme was organized at Rajkot center during 10-14th march 2018 at Sarvoday Kelvanisamaj, Yogidham, Kalawad road Rajkot. Fifteen lectures were delivered by experts to 30 participants. Second training programme was organized at Bhuj (Kutch), centre during 12-16th March 2018 at Shri Ramkrishna Trust, Village Madhapar, Bhuj. Dr. R. A. Jat, Senior Scientist (Agronomy) acted as Nodal Officer for the training programmes.

Inputs: Ram A. Jat

Institute Seminars

Date	Topic	Speaker
29 Jan 2018	Skim sequencing based genetic mapping reveals large number of epistatic interactions for stem rot resistance in groundnut	Dr. Sneha M Dodia
	Development of high oleic peanut lines by introgression of mutant fatty acid desaturase 2 gene (AhFAD2) into elite Indian cultivar through marker assisted selection	Dr. Nawade Bhagwat
	Transcriptomic analysis of dissecting stem rot resistance mechanism in groundnut	Dr. Tejas C Bosamia
05 May 2018	Optimum plant stand and nutrient doses for summer groundnut in *Vertisols* of Western India varies with irrigation type	Dr. Ram A Jat
	Polythene mulching and fertigation in peanut: Effect on crop yield, quality, water productivity and economic profitability	
	Assessment of nematicidal properties of fluorescent pseudomonads using peanut root-knot nematode, *Meloidogyne arenaria*	Dr. K K Pal
10 May 2018	Advances in AMMI model and their application in stability analysis	Dr. Ajay BC
	AMMI & GGE biplot analysis to evaluate the phenotypic stability of recombinant inbred lines (RIL's) of peanut under mid-season water stress	
28 May 2018	Genetic variability and stability of breeding lines for *Alternaria* leaf blight in groundnut	Dr. Narendra Kumar

Personnel

Superannuation

Sh. H. B. Lalwani
Chief Technical Officer (CTO) superannuated on March 31, 2018

Sh. A. D. Makwana
Technical Assistant (TA) superannuated on June 30, 2018

Sh. K. H. Koradia
Technical Officer (TO) superannuated on February 28, 2018

Sh. N. M. Pandya
Skilled Support Staff (SSS) superannuated on January 31, 2018

Sh. R. B. Chawada
Skilled Support Staff (SSS) superannuated on April 30, 2018

Transfers

Dr. H.N. Meena
Sr. Scientist (Agronomy) was relieved from this directorate on23 June 2018(AN),upon his transfer to ICAR-ATARI, Jodhpur.

Dr. Sujit K Bishi
Scientist (Plant Biochemistry) was relieved from this directorate on 23 June 2018(AN), upon his transfer to ICAR-IIAB, Ranchi.

Sh. Anil Maurya
(T-5)was relieved from this directorate on 28 June 2018 (AN), upon his transfer to ICAR-IISR, Lucknow.