



# CIAH Newsletter

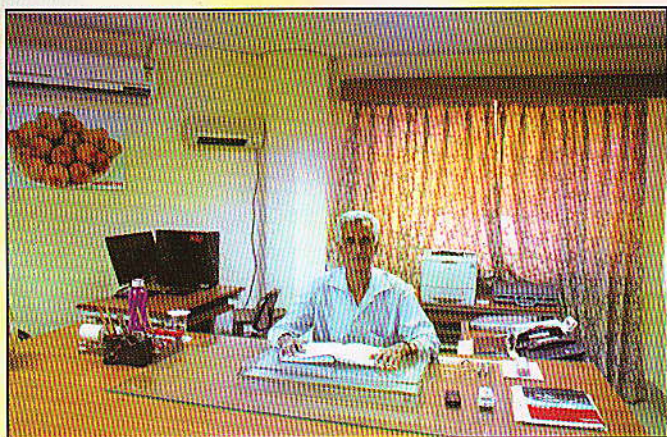


CENTRAL INSTITUTE FOR ARID HORTICULTURE  
Beechwal, Bikaner-334 006, Rajasthan

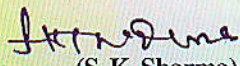
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## FROM THE DIRECTOR'S DESK



The Central Institute for Arid Horticulture, Bikaner, is one of the premier Institute in the country to carry out the R&D programmes for the fruits and vegetable production in hot arid climatic conditions. The arid horticultural development is a recent phenomenon and rays of hope for socio-economic upliftment of the poor farmers in hot arid regions. There is tremendous scope of horticultural development in hot arid regions of the country as it has vast area, ample solar radiation, low incidence of pests and diseases, enough labour force, potential biodiversity and wide opportunity to cater the demand of domestic consumers as well as international markets. However, the hot arid regions have several kinds of unique constraints, which have been designated as major challenges for horticultural development in such regions. Thus, keeping the above facts in mind, the scientists of Central Institute for Arid Horticulture, Bikaner (Rajasthan) are working hard to develop the compatible technologies for the production of horticultural crops under scarce water conditions, extremes of temperatures, uncertainty of rain fall, poor soil condition, etc. The Institute undertakes basic, applied and strategic studies for developing technologies to enhance the production and productivity of the horticultural crops under harsh climatic conditions. The scientists of the institute are fully aware about the SWOT parameters of the hot arid regions of the country and are carrying out their research and extension programmes, accordingly. The Institute also has very good programmes and activities for the transfer of improved technologies to farmer's fields. I am feeling immense pleasure by bringing out this newsletter to illustrate the major efforts made by the Institute for the growth and development of arid horticulture during last six months.

  
(S. K. Sharma)  
Director

## RESEARCH SPECTRUMS

### 1. Bikaner

A record of Eulophid, *Pediobius foveolatus* Craw a larval-pupal parasitoid of *Henosepilachna vigintiotopunctata* Fabr : The occurrence of eulophid parasitoid, *Pediobius foveolatus* Craw (Eulophidae: Hymenoptera) on grubs of spotted leaf beetle, *Henosepilachna vigintiotopunctata* Fabr commonly known as *Epilachna* beetle (Coleoptera: Coccinellidae), which is an important pest of cucurbitaceous vegetables in arid region of Rajasthan and reported to be causing severe damage to leaves as well as fruits through scraping. The parasitoid has been observed first time in the field and collected grubs of *Epilachna* beetle.



Fig. : Grub and adult of *Epilachna*

They were collected from the tumba, *Citrullus* sp during September and kept in a jar under the laboratory at room temperature. It was fed with tumba leaves, fruits and observed regularly for adult emergence. Interestingly, among the larval-pupal instars reared, about 13% of them were found to be failed to become adult. Further, to know the exact reason for failure, all the unemerged larval-pupal intermediates were separated from the jar and kept in a separate jar for a week for adult emergence. In spite of adult emergence, we observed a small black colour eulophids emerged out the larval-pupal instars and they were identified as *P. foveolatus*. Therefore, it indicates that under natural condition, this eulophid is a major mortality causing agent and it may reduce the population of *epilachna* significantly. It can be a potential bio-control agent in near future under hot arid ecosystem of Rajasthan (Dr. V. Karuppaiah and Dr. S.M. Haldhar).



**Canopy management in karonda :** Karonda, under diversified fruit based cropping system, were pruned with different pruning intensities viz., mild pruning (involving thinning of criss-crossed and dried branches), medium pruning (by retaining 4-6 scaffold branches) and severe pruning (heading back at 45 cm height from ground) during the month of February-March, 2012. During February-March, 2013, plants were pruned so as to maintain them as per aforesaid treatments, except heading back of severely pruned plants. Additionally, thinning of crowded shoots was performed in severely pruned plants. Like previous year, the unpruned plants yielded 7-9 kg fruits, while mild pruned plants recorded 10-12 kg fruits per tree. However unlike previous year, this year medium pruned registered an increase in the yield i.e. 12-14 kg fruits per tree. As a result of medium pruning, on one hand yield was increased, while on the other hand, the harvesting period was also hastened by about three weeks (first week of August) in comparison to mild pruned plants. The severe pruned plants exhibited sparse flowering and bore only few fruits. Though, karonda is a shrub like evergreen fruit crop; however, the findings of this study suggest that medium pruning could be an essential operation to strike a balance between vegetative and reproductive growth (Dr. Hare Krishna, Dr. R. Bhargava, and Dr. S.R. Meena)



Fig. : Fruiting in medium pruned karonda plants (Inset: a close view of fruiting branches)

**Record of flower beetles on watermelon:** Three flower beetles viz., *Mylabris macilenta*, *Anthicus crinitus* and *Anthrenus subclaviger* were identified on watermelon crop in the hot arid region of north-western India. The average incidence of flower beetles on watermelon ranged between 1.07 to 5.13 per plant of *M. macilenta*, 3.33 to 7.60 per plant of *A. crinitus* and 2.87 to 8.60 per plant of *A. subclaviger*. The incidence and the number of these beetles was observed highest in first fortnight of June and the lowest in second fortnight of April. These beetles were found to be aggregated on the flowers of the watermelon crop. They cause injury to the flowers, pollens, ovary of the crop. They appeared only as a casual feeder and their population was extremely low for affecting any appreciable damage on the

plant. There is no previous record of *M. macilenta*, *A. crinitus* and *A. subclaviger* feeding on watermelon flowers (Dr. S. M. Haldhar)

**Maintenance of bitter gourd germplasm :** Bitter gourd (*Momordica charantia*) is potential cucurbit but yet not systematically exploited under high temperature and abiotic stressed conditions. As a result of germplasm collection and evaluation from 1997-2009, 04 lines maintained at the institute were evaluated during 2013 for trait specific characterization. The germplasm exhibited wide range of variations and recorded for days to appearance of first male flower (36.21 – 48.37 DAS), node number to appearance of first male flower (10.21 – 18.24), days to appearance of first female flower (42.84 – 54.26 DAS), node number to appearance of first female flower (15.24 – 28.64), days to first harvest (51.24 – 65.48 DAS), fruit weight (24.5 – 175.8 g), fruit length (6.92 – 21.31 cm), fruit diameter (2.65 – 5.65 cm), number of fruits/ plant (7.92 – 16.48), number of non-marketable fruits/ plant (3.24 – 5.41), number of marketable fruits/ plant (2.94 – 12.71), fruit yield/ plant (0.083 – 1.125 kg) and vine length (1.78 – 2.45 m). The line AHBT-2 was found to be potential for fruit quality and yield characters and can be use in breeding programme (Dr. D. K. Samadia)

**Antioxidant properties of watermelon genotypes :** Ten genotypes of red-fleshed watermelon were analysed for various health promoting bioactive compounds. The evaluated genotypes showed significant difference for different phytochemicals and antioxidants. The total phenols varied from 16.77-21.41 mg/g, total flavonoids 55.60-100.93 mg/100g and tannin content 35.07-60.83 mg/100g on dry weight basis. Total carotenoids and lycopene ranged from 4.90-8.06 mg/100g and 3.74-6.80 mg/100g, respectively on fresh weight basis. The average antioxidant activity was found to be varied from 40.13-84.05  $\mu\text{mol TE}/100\text{g}$  fresh weight. The results indicate that red-fleshed genotypes of watermelon are good source of antioxidants and showed wide variability for different phytochemicals and antioxidants (Dr. B. R. Chaudhary)

#### Performance of Indian bean varieties under national net-work:

The performance of two varietal trials of Indian bean (pole and bush type) conducted at 18 centres of AICRP (VC) from 2010 – 2013 were analyzed. Among ten entries of pole type, two were from CIAH such as AHDB-03 (Thar Maghi) and AHDB-16 (Thar Kartiki) and tested with national checks (Pusa Early Prolific and Swarna Utkrist). The results revealed that the low temperature and frost conditions are the limiting factors in beans and the normal maturing varieties are not suitable for the cultivation under arid agro-climate. The institute varieties Thar Maghi and Thar Kartiki recorded the superiority for tender pod yield 103.07 and 103.41 q/ha, respectively on pooled basis under extremes of arid environmental conditions till the onset of frost injuries. The tender pod yield (q/ha) potential of both the institute entries is very wide i.e. AHDB – 03 (46.50 – 232.30) and AHDB – 16 (41.52 – 370.00) under national net-work. The entry AHDB – 16 (10/DOLVAR – 9) was superior over the national checks at



Kalyani, Rahuri, Bikaner and Kalyanpur. The entry AHDB-16 recorded the highest yield (q/ha) potential at Kalyani (359.30), Varanasi (343.67) and Ranchi (305.10) in comparison to overall mean of the centers (148.96) and entry AHDB-03 recorded the highest yield (q/ha) potential at Kalyani (229.25), Ranchi (206.30) and Jabalpur (205.45) in comparison to overall mean yield (q/ha) of the centers was 119.32 (**Dr. D. K. Samadia**)

**Integrated disease management of bottle gourd :** Bottle gourd variety 'Thar Samridhi' was sown during rainy season of 2013 in the field for integrated disease management of bottle gourd through chemicals, bio-agents and botanicals (carbendazim @ 0.1%, mancozeb @ 0.2%, *Pseudomonas fluorescens* strain CIAH-196 @ 5% and neem leaf powder @ 5%). Seed treatment of bottle gourd seeds with above four treatments was done alone before sowing followed by foliar spray in different combinations. *Alternaria* leaf blight, *Cercospora* leaf spot and powdery mildew were noticed under field conditions. Disease severity of *Alternaria* leaf blight, *Cercospora* leaf spot and powdery mildew was recorded ranging from 6.50-28.75%, 7.25-29.50% and 10.50-37.60%, respectively. The most effective results observed in combined treatment of carbendazim (seed treatment) + mancozeb (foliar spray) + *Pseudomonas fluorescens* (foliar spray) + neem leaf extract (foliar spray) for management of *Alternaria* leaf blight with minimum disease severity (6.50%). While, combination of mancozeb (seed treatment) + carbendazim (foliar spray) + *Pseudomonas fluorescens* (foliar spray) + neem leaf extract (foliar spray) was found the most effective for integrated management of both *Cercospora* leaf spot and powdery mildew of bottle gourd with minimum disease severity of 7.25 and 10.75%, respectively. Maximum disease severity of 26.50, 28.10 and 34.10% was noticed in seeds treated with *Pseudomonas fluorescens* CIAH -196 for reducing *Alternaria* leaf blight, *Cercospora* leaf spot and powdery mildew, followed by neem leaf extract with disease severity of 25.15, 26.40 and 33.15%, respectively. (**Dr. S. K. Maheshwari**)

**Collection and refinement/standardization of rural wisdom based technologies (RWBT)/processes and products of value addition of arid fruits and vegetables:** The data / information related to socio-economic and psychological profile of the 26 farmers (respondents) were collected and documented. More than 10 rural wisdom based technologies (traditional technologies) related to arid horticultural crop production and value addition were collected and documented. The refinement/standardization work on some RWBT/processes of value addition like preparation of pickle and *Pandhari* of *aonla*, pickle of *karonda*, dehydration of *kachri*, snapmelon, etc., was initiated. The preliminary information / data about rural resources like biodiversity and other biotic-abiotic resources, which may play vital role in horticultural development in hot arid region of the country, were also collected from secondary sources, farmers, field workers, experts and the same were documented (**Dr. S. R. Meena**)



Fig. : Pickle of karonda



Fig. : Aonla Pandhari

**Evaluation of Date palm germplasm:** The conservation and evaluation work on sixty genotypes of date palm was carried out under hot arid environment. The flowering and fruiting were observed in 30 out of 60 genotypes, while rest of the plants are under vegetative phase. Number of bunches varied from 1 to 10 in these date palm genotypes. Similarly, number of strands per bunch ranged from 11-72, number of berries/strand varied from 13-39. The maximum number of bunches/ plant were observed in Khalas (10) followed by Sewi, (8) Sabiah (7) and Chip-chap, (6.). The number of berries (20 per strand) was observed in cvs. Zahidi followed by Khuneizi (18). Maximum fruit yield at *doka* stage was observed in cvs. Khalas (79kg/tree) followed by Dayari (62kg), Chip-Chap (46kg/tree) and Shamran (41kg/tree). However, minimum fruit yield (0.78kg/ plant) was observed in cv. Punjab Red possibly due to initial bearing age (**Dr. R. S. Singh**)

**Preparation of Date biscuits:** Date biscuits were made from *doka* fruits of cultivar Sabiah and Medjool. Addition of date pulp powder @ 10 and 20 per cent was found better for biscuit preparation. The appearance of biscuits made from Sabiah cultivar was better than Medjool. Addition of 20 per cent pulp powder for biscuit preparation resulted in sweeter biscuits than those made with 10 per cent on the basis of organoleptic score. Date RTS was prepared from *doka* fruits of cv. Zahidi by adding sugar 100g and 200g/l of juice and without sugar (control). Organoleptic test revealed that addition of 100g sugar per liter of juice was better for making delicious drink (RTS) than other treatments. RTS was further diluted in the ratio of 30:70 for testing. (**Dr. R. S. Singh, Dr. R. Bhargava and Dr. S. R. Meena**)

**RTS from bael pulp powder:** Bael pulp powder was prepared from ripened fruits with recovery of 30% and stored under refrigerated and room temperature conditions. Pulp powder was used to prepare RTS and on the basis of organoleptic taste. It was found good in terms of appearance, taste and acceptability characteristics. The change in colour of powder from yellow to reddish was noted under ambient storage condition after a year. Further, the study indicates that pulp powder can be stored for more than 12 months under refrigerated conditions without change in colour of powder and quality for preparation of delicious drinks (**Dr. R. S. Singh and Dr. R. Bhargava**)

**Mass multiplication of somatic embryos of date palm through cell suspension cultures :** 200 mg of friable embryogenic callus of date palm was chopped into small pieces and transferred



aseptically into 50 ml of liquid MS media of above mentioned compositions containing 300 mg activated charcoal in 250 ml flask capacity. The suspension cultures were passed through a 500 micron mesh filter. Cultures were maintained on a rotary shaker. Embryogenic cell suspension established by filtering suspension through 500 micro meter strainer. The suspensions were observed for cell shape, size and cell cluster formation. The suspensions were highly heterogeneous having embryos of different shape such as spherical, elongated and rooted and sizes 1 mm to 10 mm. The resultant embryos were further, plated for germination on media with or without plant growth regulators. (Dr. D. Singh and Dr. P.N. Sivalingam)

**Molecular diversity of *Ziziphus* genotypes used for moisture stress tolerance and gene flow estimation :** Genomic DNA of three populations of *Z. nummularia* was tested with 27 polymorphic random decamer primers and 18 ISSR primers along with *Z. rotundifolia* and *Z. mauritiana*. The average polymorphic percentage revealed by these primers was 92.8 and polymorphic information content was 0.44. Jaccard's similarity co-efficient among *Z. nummularia* population was ranged from 0.69 to 0.76. Phylogenetic analysis based on UPGMA method showed that *Z. nummularia* populations from Jaisalmer and Bikaner were closely related than Godhra and formed one major cluster and populations of *Z. rotundifolia* and *Z. mauritiana* distantly formed separate clusters. Nei's gene diversity (*h*) ranged between 0.178 and 0.216 with overall diversity of 0.334 and Shannon's information index (*I*) value recorded between 0.258 and 0.323 with an average of 0.495. The estimated gene flow value (0.697), diversity among populations (0.418) and Fst value (0.419) demonstrated that overall *Z. nummularia* has high genetic diversity within the population and limited gene flow between populations indicate that *Z. nummularia* populations may be well adapted and stabilized according to the local geographical hot arid and semi-arid eco-system (Dr. D. Singh and Dr. P.N. Sivalingam)

## 2. At Godhra (Gujarat)

### Salient features of promising genotype of bael "CHESB-5" :

A promising genotype CHESB-5 was identified and collected from Badalpatti village of Jaunpur district of Uttar Pradesh State and *in-situ* budding was performed during 2006. It was superior genotype with desirable characters like earliness, compact growth, medium height, very less spine, better yield with quality fruits having pleasant flavour with attractive colour of pulp. It started flowering and fruiting from 4<sup>th</sup> year of budding. Plant height, stem girth, plant spread was recorded 5.25 m, 43.42 cm and 5.10 m, respectively during 6<sup>th</sup> year of orchard life. Average yield 52.11 kg in 6<sup>th</sup> year, fruit weight 1.68 kg, fruit size 21.80 cm x 15.30 cm, fruit girth 45.79 cm, shell thickness 2 mm, total number of seed 128, seed weight 0.15g, total seed weight 33.15g, fibre weight 65 g, shell weight 265 g, locules in cross section 13-16, pulp 69.50%, TSS pulp 34<sup>o</sup>B, TSS mucilage 48.50<sup>o</sup>B, acidity (0.28%) and vitamin C 19.80 mg / 100 g pulp were recorded. It is an early maturing variety (February). The fruits of this genotype is less affected by sun scald owing to compact and luxuriant

growth of plants under rainfed hot semi-arid ecosystem of western India. Ellipsoidal fruit shape (tapering towards styler end) is recognized as distinct character of this promising genotype (Dr. A. K. Singh, Dr. R. S. Singh and Dr. Sanjay Singh)



Fig. : Promising genotype of bael "CHESB-5"

**Preparation of moringa *bhajji*:** Moringa is an important leafy vegetable, which is rich in nutrients and vitamins. However, the consumption of leaves as vegetable in western part of the country is very less. In order to enhance the consumption of leaves as vegetable, *bhajji* preparation from its leaves was attempted, where fenugreek is used for traditional recipe. It was found that moringa *bhajji* is not only acceptable product in terms of flavor, nutrients but also highly profitable to those involved in *bhajji* making business as the leaves are cheaper and available throughout the year as compared to fenugreek leaves. Moringa *bhajji* fulfills the demand of the sustainable nutritional and livelihood security of the rural peoples (Dr. S. Raja)

**Extraction of gum from "Goma Manjari" of clusterbean :** Cluster bean is recommended not only for vegetable purpose but also for extensive application in the food industry as thickening and stabilizing agents, due to its low cost and wide range of functional properties. Goma Manjari variety of cluster bean, developed at CHES, Vejalpur, is an upright, single stemmed, deep rooted, which is highly valued for its higher yield, greater nutritional importance and drought tolerance. This variety has registered 31.53 per cent endosperm content, 5.62 per cent germ and 24.11 per cent gum content, indicates its industrial property too. The gum extraction using wet processing method followed by immediate drying of endosperm (2-3days) results accurate gum formation rather delayed drying or replacing wet processing by soaking of seeds in water for 12 hrs (Dr. S. Raja)

## EXTENSION PROGRAMMES/ACTIVITIES

### 1. Bikaner

**Visit and interaction/ meetings at the Institute :** More than 200 farmers, >100 students and agricultural supervisors, professionals, lecturers, teachers, scientists/ trainees etc., visited to the Institute's farm/experimental blocks and held interaction /meetings with them to acquaint/ expose them with



latest arid horticultural technologies as developed by the Institute.

#### Visit to farmer's fields and interaction/meetings with them:

More than 10 of farmer's fields were visited and they were provided with technical guidance / assistance to overcome their problems related to arid horticultural crop production.

**Research- extension-farmers-interface meetings:** During the reported period, there were held 11 Research-Extension-Farmers-interface meeting with 11 groups of farmers during their exposure visit at the Institute, farmer's field visits, during survey work and at the site of front line demonstrations, exhibitions and during the other programmes. Moreover, the work on organization of Farmer's Interest Groups / Commodity Interest Groups/ Self-Help Groups were also initiated at the different sites/ locations/ villages of Bikaner districts (Rajasthan) and at the places where front line demonstrations of improved varieties of arid fruits/vegetables crops and their agro-techniques were conducted.

**Front line demonstrations/ adaptive trials:** During the year, two frontline demonstrations of each improved varieties vegetable crop viz., - Thar Manak (Mateera), AHS-82 (snap melon), AHK- 119 (Kachri), Thar Bhadvi (Cluster bean) and Two front line demonstration of Thar Shobha ( *Khejri*) were conducted at farmers fields (at Chak No. 489/500, Sarehkunjiya dated-26.07.13; Chak No. 2,3 NGM, Naggasar dated- 07.08.13 and 24.08.13 and Chak No. 439 RDL Khara, dated- 13.09.13) of Bikaner districts of Rajasthan. In addition, 08 method demonstrations about improved agro-techniques of arid fruits and vegetable production were given to visiting farmers/ extension functionaries or during farmer's field visits/ interaction.



Fig. : The scientists of the Institute interacting with the farmers during training programme on farmer's fields

**Farmer's trainings :** During the reported period, 04 farmer's training programme (on/off campus) were conducted /organised at the Institute and at farmer's fields (at Institute on 06.08.13, Chak No. 2,3 NGM, Naggasar dated- 07.08.13 and 24.08.13; Chak No. 489 RDL, Khara dated 13.09.13).

**Providing technical literature:** About 100 copies of technical folders and bulletins (technical literature) were provided to the farmers /extension workers/ NGOS, during their visit, farmer's fair, exhibitions, meetings, etc.

**Mobile advisory service/ ICT based/ e-extension based activities:** During the reported time, various farmers were answered & guided using mobile service, online telephonic conversation to solve their existing problems related to horticultural crop production. Some advance farmers were rendered technical guidance through e- mails. Besides, other activities included Institute's film show on computer system/ TV for client's knowledge, production of online (Institute's website) technological news through six monthly news letter, providing CD/DVD of the Institute's film and other programmes to needy clients, etc.

**Empowerment of farm women:** During the reported period, > 60 farm women visited to the Institute and held research- extension-farmers-interface meetings with them. They were exposed to modern arid horticultural crop production technologies, value addition techniques of arid fruits and vegetables during their visits, exhibitions, off campus interactions, etc. They were taught about the techniques, which may be helpful in reducing the drudgery in crop production and post harvest management. They were motivated to participate in main stream of arid horticultural developmental programmes. (Dr. S. R. Meena, Dr. R. S. Singh, Dr. D. K. Samadia and Dr. D. Singh)

#### 2. At Godhra (Gujarat)

**KVK Programmes and activities :** During the reported period of the Newsletter, Krishi Vigyan Kendra, Panchmahal (Godhra), Gujarat working under CIAH, Bikaner conducted 10 On Farm Trials (OFT), 13 Front Line Demonstrations (FLD) with 221 method demonstrations on various crops. The KVK conducted 38 training programs also on Agricultural and allied fields through which altogether, 775 farmers benefited, out of them 515 were male and 260 were female beneficiaries.

**Other extension activities:** Field Days (03 Nos.), Farmer Scientist interaction (02 Nos.), Kisan Goshthi (01 No.), Exhibition (01 Nos.), Film Shows (25 Nos.), farmers visit to KVK (133), scientist's visit to farmers field (89), Advisory Services (123), Animal Health Camp (02), Lectures in Training Programme (178), radio talk ( 06), extension literature (12), telephone help line (425, celebration of KVK establishment Day, etc. Moreover, a special kind of *Pashu Chocklate* was prepared by SMSs of the KVK, which could be quite helpful in enhancing the productive and reproductive performance of the dairy animals.



Fig. : Pashu Chocklate as prepared by KVK, Panchmahal (Godhra), Gujarat



**Celebration of days/ programmes**

• **Celebration of Agricultural Education Day:** Celebrated "Agricultural Education Day" in the Institute on 20.07.13 in which 56 students of different schools were educated about modern arid horticultural technologies and scope of the same.

• **Celebration of Farm Innovators Day:** Celebrated "Farm Innovators Day" held on 09.10.13 in the Institute in which more than 20 innovative farmers participated. They were acquainted with several scientific facts and improved technologies of arid horticulture developed by the Institute. The Farm Innovators also expressed/presented their experiences and innovative technological ideas and facts related to arid horticultural crop production. Their feedbacks and suggestions were also invited and recorded to encourage the horticultural development in hot arid regions.

• **Celebration of "ICAR Industrial Day:** The ICAR Industrial Day was celebrated in the Institute on 18.12.1013. In this programme several Industrialist/ farmers participated and discussion were made in length on various aspects related to commercialization of arid horticulture.

• Celebration of ICAR Establishment Day on 16.07.2102 at KVK Panchmahal (Godhra), Gujarat

• Celebration of Mothers Milk Day on 07.08.2013 at KVK Panchmahal (Godhra), Gujarat

• Celebration of Women in agriculture day on 03.12.2013 at KVK, Panchmahals (Godhra), Gujarat

**Visit of VIPs/ Higher Dignitaries****1. At Bikaner**

• Hon'ble Vice-Chancellor, Dr. A. K. Dahama, SKRAU, Bikaner, visited the Institute on 02.09.2013

• Dr. M. P. Singh, Principal Scientist and Head Farming System, Directorate on Farming System Research, Modipuram (UP), visited the Institute on 02.09.2013

• Dr. P. N. Kalla, Director of Extension, SKRAU, Bikaner visited the Institute on 02.09.2013

• Dr. Gulshan Lal, Retd. Professor and Head, Vegetable Crops, GB Pant University of Agriculture and Technology, Pantnagar (Uttarakhand) visited the Institute on 02.09.2013.

• Dr. T. R. Sharma, Principal Scientist, NRC, Plant Biotechnology, New Delhi, visited the Institute on 02.09.2013.

• Dr. K. V. Bhatt, Principal Scientist, NBPGR, New Delhi, visited the Institute on 2.09.2013

• Dr. L. K. Dashora, Dean, College of Horticulture and Forestry, Jhalawar, visited the Institute on 10.12.2013

• Dr. K.R. Solanki, Ex. ADG (Agro-Forestry), ICAR, New Delhi visited the Institute on 15.12.2013

• Dr. O. P. Jangir, Ex. Director of Research, SKRAU, Bikaner visited the Institute on 29.11.2013.

**2. At CHES/ KVK, Godhra, Gujarat.**

• Dr. Gopal Trivedi Former VC, RAU, Pusa, Bihar visited Krishi Vigyan Kendra, Panchmahal (Godhra), Gujarat on 16.07.2013

**Important Meetings held**

• KVK Review meeting held on 18/09/2013 at KVK Panchmahal (Godhra), Gujarat under the chairmanship of Dr. P. P. Patel, Director of Extension Education, Anand Agriculture University, Anand.

• Project Monitoring and Evaluation Committee meeting of CIAH, Bikaner held on 03-12-2013.

• Annual Group Meeting of AICRP on AZF held at MPKV, Rahuri during 26-28 December, 2013.

**Visits/ meeting attended by the Director of the Institute.****(a) Dr. S. K. Sharma, Director of the Institute visited the following AICRP centres during the reported period**

• AICRP on Arid Zone Fruits centre Jadhavwari from 12-14<sup>th</sup> September, 2013.

• AICRP on Arid Zone Fruits centre Ambajogai from 27-29<sup>th</sup> September, 2013

• AICRP on Arid Zone Fruits centre Rahuri during 21-23<sup>rd</sup> October, 2013.

• AICRP on Arid Zone Fruits Centre- Jhalrapatan, Jhalawar (Rajasthan) and Tribal Area of Baran and Jhalawar District under TSP Scheme during 28-29<sup>th</sup> October, 2013.

• AICRP on Arid Zone Fruits to monitor the programme of Date palm Tissue Culture Project at Mundra, Bhuj, Gujarat during 10-12<sup>th</sup> Nov., 2013.

**(b) Dr. S. K. Sharma, Director of the Institute attended/ participated in the following meetings during the reported period**

• Task Force 01/2011 meeting for finalization of the DUS test guideline for *Ber* on 07.08.2013 organized by PPV&FRA at NASC Complex, New Delhi

• Meeting of all the Project Coordinators of AICRPs/AINPs and the Leaders of the CRPs convened under the Chairmanship of Secretary DARE & DG, ICAR, New Delhi during 29-31 August, 2013.

• Inception meeting of the ICAR-Bioiversity proposal entitled "Mainstreaming agrobiodiversity conservation and utilization in agriculture sector to ensure ecosystem services and reduce vulnerability" at New Delhi on 03-04 September, 2013.

• Meeting of Working Group of Agriculture under Chairmanship of Dr. R.S. Paroda, Ex- Director General, ICAR, New Delhi on 07.10.2013

• Meeting of the Editorial Board of the Indian Horticulture, ICAR, New Delhi on 08.11.2013.

• Meeting at CAZRI, Jodhpur on 27<sup>th</sup> November, 2013 to review the progress of Date Palm Tissue Culture Project.

• Meeting with DDG (Hort.), ICAR, New Delhi to discuss the SFC presentation on 10<sup>th</sup> December, 2013.

• SFC meeting, ICAR, New Delhi on 11-12<sup>th</sup> December, 2013 under the Chairmanship of Secretary DARE and DG, ICAR.

• Mid Term Review Meeting of AICRP on Vegetable Crops as Chairman of Session on vegetable seed production at New Delhi on 17 Dec., 2013.



- Mid Term Review Meeting ICAR Regional Committee No. 06 at CAZRI, Jodhpur on 18th December, 2013.
- Annual Group Meeting of AICRP on AZF at MPKV, Rahuri during 26-28 December, 2013.

### HRD INITIATIVES

#### Participation of Institute's personnel in Seminars/Conferences/Symposia/workshops

- Dr. S. K. Sharma, Director of the Institute participated in National Horticulture Conference as Resource Speaker at Constitution Club, New Delhi on 17th July, 2013
- Dr. S. K. Sharma, Director of the Institute participated in the National Meet on Citrus at NRC on Citrus, Nagpur during 12-13 August, 2013.
- Dr. B. R. Chaudhary participated in Germplasm Field Day on Vegetable Crops (Brinjal and Bottlegourd) held at Issapur Farm, NBPGR, New Delhi on 30<sup>th</sup> October, 2013.
- Dr. B. R. Chaudhary attended a Workshop on "Water use and water use efficiency- Phenotyping and their relevance in improving adaptation of crops under limited condition" held at UAS, Bengaluru (Karnataka) from 02-12-2013 to 04-12-2013.
- Dr. S. R. Meena participated in International conference and workshop to be held on "Emerging food safety/quality risk : Challenges for developing countries" organized by department of basic and applied sciences, National Institute of Food Technology Entrepreneurship and Management (NIFTEM) at Kundali, Sonapat, Haryana, India from 09 – 11 January, 2014 and presented a research paper orally on Traditional concepts and methodologies of processing and value addition of arid fruits and vegetables grown in western Rajasthan.
- Dr. S. R. Meena attended a brain storming on "Extension Research Issues" held at ZPD, Jodhpur on 26.04.2013

### PERSONALIA

#### Awards/Prizes/ Recognitions

- Dr. Hare Krishna, Nodal Officer for Sub-Task Force on *Ber* submitted 'Draft Guidelines for the Conducting Test on Distinctiveness, Uniformity and Stability (DUS) on Indian Jujube (*Ber*) (*Ziziphus mauritiana* Lamk.)', which is the first DUS test guideline of *Ber* in the world, following the third meeting of Task Force held at NAAS Complex on 07.08.2013.

#### Assessment Promotion/Financial upgradation

##### Scientific personnel

- Dr. S.R.Meena, Scientist (Agricultural Extension) promoted Scientist to Sr. Scientist (Agricultural Extension) in RGP Rs.8000 and Pay Scale Rs.15600-39100 with the w.e.f. 14.09.2009
- Dr. Balu Ram Choudhary, Scientist (Vegetable Science) promoted from RGP Rs. 6000/- to RGP Rs.7000 and Pay Scale Rs.15600-39100 with the w.e.f. 27.06.2009
- Dr. P. N. Sivalingam, Scientist (Plant Bio-technology) promoted from RGP Rs. 6000/- to RGP Rs.7000 and Pay Scale Rs.15600-39100 with the w.e.f. 07.01.2012

##### Technical staff

- Sh. A.V.Dhobi prompted from Technical Officer – Overseer (T-5) to Sr. Technical Officer – Overseer (T-6) in PB-3 Rs 15600-39100 and GP 5400.00 w.e.f. 05.12.2012
- Sh. K.V.Parmar prompted from Sr.Tech. Assistant - Lab (T-4) to Technical Officer – Lab (T-5) in PB-2/Rs.9300-34800 and GP 4600.00 w.e.f. 12.11.2012
- Sh. I.P.Thakor prompted from Sr. Technician – Elect. (T-2) to Technical Assistant – Electrician (T-3) in PB-1/Rs.5200-20200 and GPRs.2800 w. e. f. 08.08.2012
- Sh. R.V.Rathva prompted from Sr. Technician – Lab (T-2) to Technical Assistant – Lab (T-3) in PB-1/Rs.5200-20200 and GP Rs.2800 w. e. f. 17.7.2012
- Sh. Chhuttan Lal Meena prompted from Technical Officer – Field (T-5) to Sr. Technical Officer – Field (T-6) in PB-3 Rs 15600-39100 and GP 5400.00 w. e. f. 13.7.2013
- Sh. B.F.Patel, prompted from Technical Assistant – Field (T-3) to Sr. Tech. Assistant – Field (T-4) in PB-2 Rs 9300-34800 and GPRs 4200.00 w. e. f. 16.12.2012

#### Financial upgradation through Modified Assured Career Progretion Sceme ( MACPS)

##### Supportive staff

- Sh. M.J. Parmar, SSS upgraded from PB-1 Rs 5200-20200+GP 2000 to PB-1 Rs 5200-20200+GP 2400 w. e. f. 01.03.2013
- Sh. A.D.Vankar, SSS upgraded from PB-1 Rs 5200-20200+GP 2000 to PB-1 Rs 5200-20200+GP 2400 w. e. f. 1.12.2012
- Sh. S.J. Patel, SSS upgraded from PB-1 Rs 5200-20200+GP 2000 to PB-1 Rs 5200-20200+GP 2400 w. e. f. 10.5.2013
- Sh. G. S. Rathva, SSS upgraded from PB-1 Rs 5200-20200+GP 1900 to PB-1 Rs 5200-20200+GP 2000 w. e. f. 05.12.2011

#### Probation clearance and confirmation

##### Scientific staff

- Dr. Sushil Kumar Maheshwari, Sr. Scientist (Plant Pathology) PB- Rs.15600-39100 with Rs.8000/- got clearance of his probation w.e.f. 28.07.2011.

##### Administrative staff

- Sh. Rajesh Daiya, Assistant, PB-2/Rs. 9300-34800 with GP Rs.4200/- got clearance his probation w.e.f. 06.01.2012
- Sh. Kuldeep Pandey, Assistant PB-2/Rs. 9300-34800 with GP Rs.4200/- got clearance his probation w.e.f. 07.01.2012

##### Technical Staff

- Sh. Jadav Jay Palsinh Kalyansinh, T-6 (SMS) Education Extension , PB-3/ Rs 15600-39100 with GP Rs 5400.00 got clearance his probation w.e.f. 25.05.2011
- Dr. Ajay Kumar Rai, T- 6 (SMS) Agronomy / Soil Science PB-3/Rs 15600-39100 with GP Rs 5400.00 got clearance his probation w.e.f. 31.5.2011
- Sh. Sua Lal Choudhary, T-1 (Driver), PB-1/ Rs.5200 to 20200 with GP Rs.2000 got clearance his probation w.e.f. 27.7.2011



- Sh. B.C.Meena, T-1 (Driver) PB-1/Rs.5200 to 20200 with GP Rs.2000 got clearance his probation w.e.f. 27.7.2011
- Sh. N.B.Varia, T-1 (Driver), PB-1/Rs.5200 to 20200 with GP Rs.2000 got clearance his probation w.e.f. 28.7.2011

#### New entrants/ joining

1. Sh. Ramdeen, joined at the Institute as Administrative Officer on 1.8.2013.
2. Dr. M.K.Jatav, joined at the Institute as Sr. Scientist (Soil Science) on 1.8.2013.
3. Dr. P.P.Singh, joined at the Institute as Sr. Scientist (Vegetable Science) on 7.8.2013

#### Joining on transfer

- Sh. Rakesh Kumar Swami, Assistant transferred from CHES, Godhra, Gujarat and joined at CIAH, Bikaner on 23.10.2013
- Sh. B.K.Panchal, LDC transferred from CHES, Godhra, Gujarat and joined at CIAH, Bikaner on 03.10.2013

#### Relieving on transfer

- Sh. H.S.Patel, UDC relieved on transfer from CIAH, Bikaner Headquarters to CHES, Godhra on 19.10.2013.
- Sh. P.V.Nayak, UDC relieved on transfer from CIAH, Bikaner Headquarters to CHES, Godhra on 6.9.2013

### STEPS IN POPULARIZATION & COMMERCIALIZATION OF TECHNOLOGY: SUCCESS AND FEED BACK

**Success of *In-situ* budding technique in *khejri* :** The innovative *in-situ* budding technique of *khejri* propagation as developed by the Institute was popularized among the farmers by giving practical demonstration on farmer's field. The *in-situ* budding techniques was performed at farmer's fields on 1.5 - 02 years old root stock (having height about 01.0 metre) to initiate work of

developing *khejri* orchards or *khejri* based cropping system. The success for the same was > 70%. Farmers viewed this technique as wonderful success and boon for the development of *khejri* orchards or *khejri* based cropping system in extreme hot arid climatic conditions, particularly in western Rajasthan. The farmers are very eager to adopt this technique for the plantation and production of *khejri* at large scale a thier fields to harness the commercial properties and potentiality of the *Khejri*.



**Fig. : Giving practical demonstration of *in-situ* budding technique of *khejri* propagation on farmer's field**

Improved production technologies of arid fruits and vegetables as developed by the Institute were also popularized among the farmers through different means and methods of extension. The initiatives were also taken to encourage the arid fruits and vegetables production and their value addition at commercial level. The "ICAR Industrial Day" was celebrated in the Institute on 18.12.1013 to boostup the commercial dimentions of the arid horticulture. In this programme several industrialists/ farmers were participated to churn out /expose the industrial aspects of the arid horticulture (**Dr. S. R. Meena**)

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