CIAH: NEWSLETTER

ICAR-Central Institute for Arid Horticulture
Beechwal, Bikaner-334 006, Rajasthan

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From the Director's Desk .....

Dry-land agriculture has immense potentials in providing the nutrition rich food, social security and ecological restoration for the inhabitants of the desert and tribal areas. Much of the recent past advances of the 20th century in the Indian Horticulture is production technology for the favorable climatic regions. However, the diverse landscape of hot arid and semi-arid areas of the north-western part of the country is yet not getting logical thought for the resources based development. The native crop–plants both annual and perennial are drought tolerating and equally playing vital role for food and fodder especially when animal husbandry is an integral component of the farming. The monsoon supported arid crops are better bio-mass producer but the harvest failure of kharif season or conventional cropping is very high and it is estimated 50–60% in most of the years only because of un-certainty in the rain's pattern. Based on long-term research findings, SWOT analysis and field experience at CIAH, it is accomplished that the region has an excellent opportunities with wide-range of crop-plants and utilization of resources for the ecological prosperity through crop-genotype-environmental understanding and adopting innovative concepts as production tool.

In-spite of environmental restrictions and bio-physical constraints, the Rajasthan state can be classified into three distinct zones i.e. hot arid, semi-arid and sum-humid for horticultural perspective. With changed scenario, climatic resilience cropping patterns and effective resource management, now, it is necessary to have new innovative concepts with the most prospective plant species (khejri, *Prosopis cineraria*) for enhancing crop-genotype productivity through agri–horti–silvi–pastoral integration in the arid and semi-arid areas. Similarly, mango based crop production sites and wide-spacing planting models would be gainful for diversified cultivation under semi-arid, sub-humid and tribal dominating landscape of the north-western states.

Here, horticultural exploitation with native crop–plant species is generally found to be the most appropriate, multi-functional, viable and stable under the restrictions from environmental extremeness. At present, systematic horticulture with native, indigenous and potential crop-plant species is very negligible, and productivity and quality of produce from the existing cropping is marginal and un-organized. This situations is primarily because of unavailability of desirable crop–genotypes suited to the prevailing climatic conditions &/or environmentally stressed production sites of defined sub-zones, unavailability of requisite quality seed-planting material of recommended crop–genotypes and lack of apposite technologies of cultivation. Therefore, there are essentially two complementary requirements for enhancing the productivity i.e. improvement in genetic make-up as provision for suitable crop-genotypes and development of favorable micro-climate at production sites of the specified zone to minimize the ill-effects of adversity as technological tool for crop-plants under combinations and regular income.

For success in dry-land horticulture with hot arid to semi-arid sub-tropic climate, appropriate land-use plan of production sites is the pre-requisite considering the environmental factors, resources availability and big sized (4–10 ha) holding of the unit fields. Based on strategic and long-term R & D studies, an innovative concept (HBCPSMA) is postulated by me at Bikaner and recommended for development and management of horticultural based crop production sites. In this concept, major emphasis is given on creation of favorable micro-climate and protection of crop-plants at production sites, and it is considered as the primary requirement for the promotion of horticulture, and this is in addition to the provision of appropriate crop-genotypes for the defined zone. Besides, adoption of the innovative and improved management practices and technique for specific crop-combinations is the key input for the efficient resource utilization and minimizing the ill-effects from abiotic and biotic factors, and this crop–genotype–environment interactive technological advancement is recommended as Horticulture Based Crop Production Site Management Approach (HBCPSMA of Samadia–2004). Now, this crop–genotype–environmental technological tool is being popularized with khejri for promotion of wide spectrums of desert crop-plants combinations.

(D. K. Samadia)
Director

At H. Q. , Bikaner.

New variety of Khejri - Thar Amruta identified for longer harvesting period : Khejri variety Thar Amruta (Selection–2) identified at ICAR-CIAH in 2021 is for better quality tender pods and longer duration of sangri harvesting. At commercial harvest age-group of 6th year, bud-grafted plants are 3.81 m height and 3.62 x 3.75m spread, and has thornless dense-foliage and compact growth. This age-group plantation recorded 5.62 kg sangri and 5.98 kg loong yield/plant annually and regularly. With June month lopping and natural management practices, the bud-grafted plants giving profuse growth and bio-mass harvest (23 kg/plant) at stabilized age-group of 7th-8th year under scanty rain (250–350 mm/year). For fresh vegetable or sangri dehydration, marketable quality stages tender pods are light-green, straight, roundish-flat, 15.32–21.81cm length, 0.28–0.53 cm diameter and 0.852–1.796 g weight. Tender pods recorded 24.96 % dehydration recovery **(D. K. Samadia, S. M. Haldhar, A. K. Verma and P. S. Gurjar).**

Tender pods of Thar Amruta

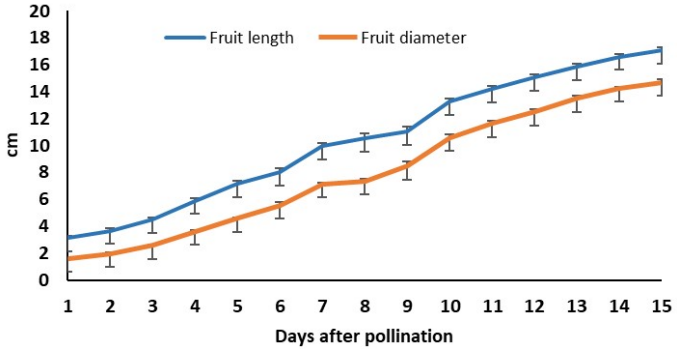
Seed production technology of sponge gourd var. Thar Tapish: Sponge gourd is an important cucurbit and the developed variety Thar Tapish is much potential for quality fruit yield under heat stressed conditions. Considering the quality seed demand, its production techniques were standardized adopting channel and drip system of crop cultivation.

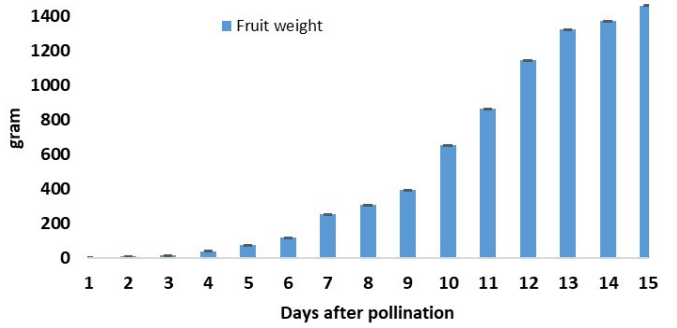
For better vine growth, spacing of 2.0 m x 0.50 m and seed rate of about 2.0 kg/ha is found optimum. An isolation distance of 500 m is needed to avoid out-crossing from other variety. Integration of intercultural operations such as hoeing, weeding, spraying and crop inspections for roughing is effective at 18-21, 30-35 and 45-50 DAS as critical stages of growth, flowering, fruit setting and first tender fruit harvest. Mature fruits become ready for first harvesting at 80 DAS and keeping 6-8 fruits/vine is good for seed production. Each ripen fruit contains 104–320 seeds and the weight of 100 seeds is 8.18–10.12 g. The seed yield is 90-155 g/plant. Seed can be stored 5-10 years with varying conditions. Thus, technology is ease to adopt and beneficial to farmers for minimizing cost of seeds **(A.K. Verma, D.K. Samadia, Hanuman Ram, P.S. Gurjar and M.K. Berwal).**

Evaluation and characterization of *Momordica balsamina* L. (*Jhaar karela*): Keeping in view the medicinal potential of *M. balsamina*, seven germplasm were evaluated during rainy season of 2021 which were collected from different places of Rajasthan.

The evaluated germplasm showed variiability with respect to fruit and yield traits. Among the evaluated material, CIAHMB-1 performed best under hot arid conditions. CIAHMB-1 produced first female flower on lower nodes (8.2) and registered maximum fruit length (3.49 cm), fruit diameter (2.63 cm), number of marketable fruits per plant (212.4) and fruit yield per plant (1.05 kg). Fruits are spindle shaped and attractive green green in coour at tender stage **(B.R. Choudhary, Dhurendra Singh and S.K. Maheshwari).**

Standardization of maturity indices through growth and development study in bottle gourd: Fruit setting and growth development study was carried out in bottle gourd var. Thar Samridhi to standardize its maturity indices. The crop was sown with the on-set on monsoon rains during July months. Opened female flowers were tagged periodically when the peak of fruit setting was observed during the second week of October. Results revealed that a sudden increase in growth of fruit length was observed between 6-7 days and second sudden increase was in between 9-10 days after pollination. Fruit diameter followed almost same growth pattern (fig. 1). Similarly, fruit weight was also increased with slow rate during initial 6 days after pollination and faster increase in weight was recorded during 7 to 13 days of pollination (fig. 2). With respect to fruit surface texture, tiny hairs were observed during first 5 days of pollination after that they were disappeared. After 15 days, fruit surface become comparatively hard due to tissue hardening and thickening of fruit peel. On the basis of morphological and visual observations, maturity indices standardized for the fresh vegetable purpose harvesting (grade 'A') and fruits should be harvested after 9-11 days of fruit setting having firmness range 9-10.5 kg/cm^2, fruit weight 400-800 g and smooth surface **(Hanuman Ram, D. K. Samadia, P.S. Gurjar and A.K. Verma).**

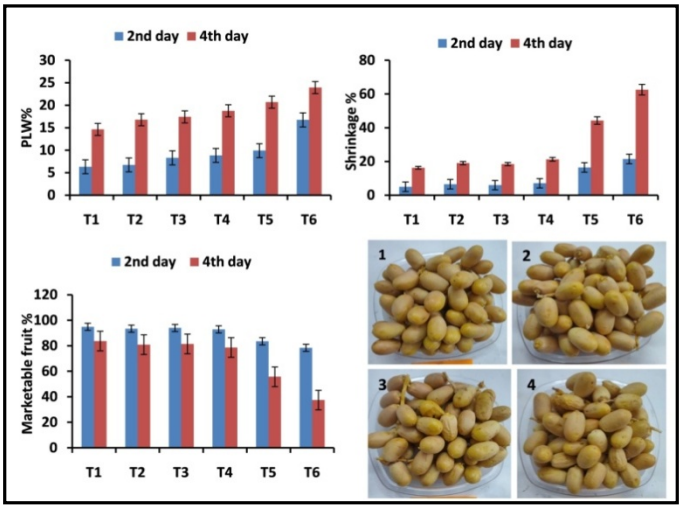




Dynamic changes in fruit length, diameter, weight from fruit set and fruit developmental stages of bottle gourd .

Collection of ker germplasm 'AHCD/KK/MKJ/BRC-10 from Khajuwala-Pakistan border: An elite ker germplasm was collected during September, 2021 from Khajuwala-Pakistan border having heavy fruiting load (>10 kg fruits/bush). Fruits were collected at green pea stage and red ripe stage for observations. At green pea stage, average fruit weight, length and diameter were 0.72 g, 0.81 cm and 0.74 cm, respectively while average fruit weight, length and diameter at red ripe stage were 5.54 g, 1.87 cm and 1.84 cm, respectively. Pea size stage fruits are being analyzed for biochemical and nutritional qualities. Seeds from red ripe fruits were extracted and average seeds/ ripe fruit were counted 20.80. Seeds were sown for multiplication of seedlings **(Kamlesh Kumar, P.S. Gurjar, M.K. Jatav, B.R. Choudhary and R.C. Balai).**

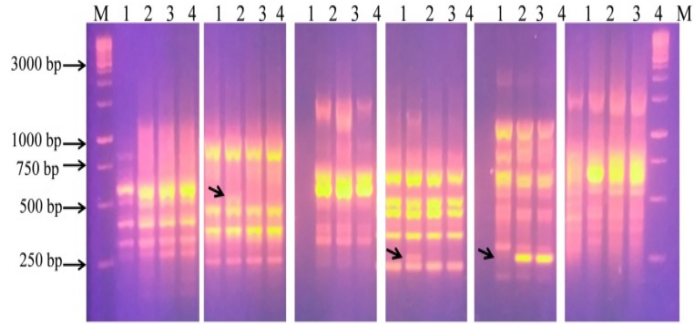
Standardization of packaging for safe transport and marketing of fresh dates: An experiment was carried to standardize suitable packaging material for safe transport and marketing of date palm fresh fruits. Date palm cv. Halawi fruits were harvested at doka stage, packed in different packaging materials and stored at ambient conditions (temperature: 42±2°C and RH: 55-60%) for 4 days period. The packaging treatments were plastic box with 0.5% ventilation (T_1), plastic box with 1.0% ventilation (T_2), CFB box with 0.5% ventilation (T_3), CFB box with 1.0% ventilation (T_4), woven cloth bags (T_5) and without packaging (T_6). After 2 days of storage, significantly high physiological loss in weight (PLW) was observed in T_6 (16.74%) followed by T_5 (9.92%) and minimum PLW was recorded in T_1 (6.34%) followed by T_2 (6.75%). Fruit shrinkage was observed minimum in T_1 (5.05%) followed by T_3 (5.98%), whereas maximum fruit shrinkage was observed in T_6 (21.53%) followed by T_5 (16.45%). At 4th day of storage, minimum PLW (14.64%), fruit shrinkage (16.28%) and maximum marketable fruits (83.72%) were observed in T_1 followed by T_3 whereas maximum PLW (23.95%), fruit shrinkage (62.54%) and minimum marketable fruits (37.46%) was recorded in fruits stored without packaging material. It is concluded that packaging of fruits considerably extend shelf life and retain freshness for 4 days period. Food grade plastic boxes and CFB boxes with 0.5% ventilation found suitable packaging for retail marketing of doka stage fresh date fruits **(P.S. Gurjar and R.K. Meena)**



Breeding for improvement of pomegranate under hot arid region: A total of 277 crosses were attempted involving 10 pomegranate cultivars both soft and hard seeded type during *hasta bahar* of 2021 for improvement under hot arid climate. Out of these, 52 fruits were set and most of them were attempted at early flowering stage (September and October month). All the pomegranate cultivars in which hybridization was done were found to be cross compatible. The fruit set through artificial cross pollination varies with different cross combinations. Fruit set in different cross combinations ranged from 6.25 to 31.25 %. Maximum fruit set was recorded in cross G-137 × Gul-e-shah Red (31.25%) while minimum fruit set was recorded in cross Jalore Seedless × Ruby (6.25 %) **(Ramesh Kumar, Pawan Kumar and Chet Ram).**

a. Emasculation, b. Pollination, c. Bagging after pollination, d. Fruit set e. Crossed fruit

Identification of elite genotype of date palm"CIAH/DP/F2" : This genotype of date palm is an early to mid-season (second week of July) ripening was identified which possessed berry colour dark red, crunchy in taste and suitable for fresh consumption at doka stage. The genotype is seems to be similar to Khuneizi variety of date palm, therefore the genotype (CIAH/DP/F2) was characterized along with three related varieties using 12 ScoT markers for checking the duplication among the genotypes of date palm. Three ScoT markers were produced specific bands to genotype CIAH/DP/F2. Thus, the genotype CIAH/DP/F2 is different among the rest three genotypes which showed similarity at genetic level. In identified genotype, the morphological attributes was recorded as follows: average weight of bunch (6.50 kg), number of bunches per plant (11.0), number of strands per bunch (67.0), Number of harvested berry per strands (14.20), weight of fruit (7.50 gm), fruit length (32.5 mm), width of fruit (21.5 mm), TSS (26.8 °Brix) and yield per palm (75 kg per palm) **(R.K. Meena, R.S. Singh, B.D. Sharma and Chet Ram)**



Profiling of ScoT markers on four genotypes of date palm for checking duplication and identification of CIAH/DP/F2.

Survey of pomegranate growing areas for occurrence of nematode: Pomegranate (*Punica granatum* L.) is an emerging fruit crop of arid and semi-arid regions. A survey programme of pomegranate orchards was conducted in the second week of September, 2021 at Palana, Ambasar and Sujasar villages of Bikaner district to study occurrence of nematode infestation. The information were collected about plantation, plant-age and fruit yield during interaction with farmers. Plants of pomegranate variety Bhagwa were established in the orchards by farmers. Root knot nematode infestation was found up to average 6.33% in pomegranate orchards. At initial stages of infestation, no flowering and little leaf symptom was observed on infected plants with stunted growth while on later stage of infestation (after 2-3 year) leaf yellowing and wilting of plants with knots on the roots were observed. The resulting setback in the uptake of plant nutrients as the feeder roots are invaded and destroyed leads to debility of the plants and production of smaller fruits. No root knot nematode infestation was recorded in case of tissue culture plants of variety Bhagwa at this Institute and also farmer's orchards. **(S.K. Maheshwari, R. Kumar and Ramyashree D.G.S.).**

At CHES, Vejalpur

Thar Shivangi variety of bael : Average yield/plant is 109.15 kg in 11th year, fruit weight 1.45 kg, fruit size 15.50 cm x 12.87 cm, fruit girth 44.80 cm, shell thickness 1.9 mm, total number of seed 75.32, seed weight 0.13g, total seed weight 32.00g, fibre weight 35.00g, shell weight 190.21g, locules in cross section 15.50, pulp 70.50%, TSS pulp 37.10^{0}B, TSS mucilage 50.50^{0}B, acidity (0.35%) and vitamin C 20.40 mg/ 100 g pulp were recorded. Suitable for various post harvest products and ayurvedic medicines.

Thar Prakriti variety of bael : Average yield per plant 115.75 kg in 12th year, fruit weight 1.40 kg, fruit size 14.05 cm x 15.10 cm, fruit girth 44.10 cm, shell thickness 0.14cm, total number of seed 65 .23, seed weight 0.20g, total seed weight 17.40g, fibre weight 28.42 g, shell weight 190.60g, locules in cross section 14-17, TSS pulp 38.00^{0}B, TSS mucilage 51.00^{0}B, acidity (0.33%) and vitamin C 22.50 mg/100g pulp were recorded. It belongs to late maturing group (1st week of May).The fruits of this genotype are having good flavour and aroma and rich in antioxidants. It is highly suitable for sharbat *murabba* and powder making and various ayurvedic medicines.

Farmers' programmes / extension activities.

(a) At H.Q. Bikaner

❖ **Trainings.**

- Conducted one day farmers' training programme at the field (FLDs site of arid vegetables) of Sh. Idan Ram S/o Akuda Ram Meghwal, village- Khara (4JMD, Teh.- Bikaner, district -Bikaner, Rajasthan on 09.08.2021.
- Conducted one day farmers' training programme at the field (FLDs site of arid vegetables) of Sh. Mukesh Pareek S/o Sh. Satya Narayan Pareek, village- Khichiya (5 KHM), Teh.- Bikaner, district -Bikaner, Rajasthan on 10.08.2021.

- Conducted one day farmers' training programme at the field (FLDs site of arid vegetables) of at the field of Sh. Virendra Meghwal S/o Sh. Ishar Ram Meghwal, Village-Belasar, Teh.- Bikaner, district -Bikaner, Rajasthan on 11.08.202.
- Conducted farmers' training on "Entrepreneurship development through Propagation of Khejri organized during 16.08.2021 to 18.08.2021 at the Institute.
- Conducted Five days Collaborative Training Programme with MANAGE Hyderabad on "Extension of Horticultural Technologies in Arid and Semi-arid Regions for Nutritional and Livelihood Security" in virtual /online mode at ICAR-CIH, Bikaner during from 18.10.2021 to 22.10.2021.
- Organized one day farmers' training programme entitled as "Waste water recycling and its role in Swachchhata" during the Swachchhata campaign held in Sarahkunjiya village of Bikaner district (Rajasthan) on 22.12.2021.

❖ Front Line Demonstration (FLDs)

- Conducted 02 FLDs of improved varieties of arid vegetables such as cluster bean vegetable type (Thar Bhadvi) and ridge gourd (Thar Karani) at the field of sh. Prahalad Ram S/o Gordhan Ram Jat , village-Inana, Teh.- Mundwa, district - Nagaur, Rajasthan on 06.08.202.
- Conducted 02 FLDs of improved varieties of arid vegetables such as Kachri (AHK-119), snap melon (AHS-82), at the field of Sh. Champa Lal S/o Mangla Ram Rathor, village- Raven, Teh.- Mundwa, district -Nagaur, Rajasthan on 06.08.2021.
- Conducted 02 FLDs of improved varieties of arid vegetables such as snap melon (AHS-82) and cluster bean vegetable type (Thar Bhadvi) at the field of S. Idan Ram S/o Akuda Ram Meghwal, village- Khara (4JMD, Teh.- Bikaner, district - Bikaner, Rajasthan on 09.08.2021.
- Conducted 01 FLDs of improved varieties of ridge gourd (Thar Karani) at the field of Sh. Mukesh Pareek S/o Sh. Satya Narayan Pareek, village- Khichiya (5 KHM), Teh.- Bikaner, district -Bikaner, Rajasthan on 09.08.202.
- Conducted 04 FLDs of improved varieties of arid vegetables such as Kachri (AHK-119), snap melon (AHS-82), cluster bean vegetable type (Thar Bhadvi), ridge gourd (Thar Karani) and Khejri (Thar Shobha) at the field of Sh. Virendra Meghwal S/o Sh. Ishar Ram Meghwal, Village-Belasar, Teh.- Bikaner, district -Bikaner, Rajasthan on 11.08.2021.
- In addition to FLDs, > 20 method demonstration of the production technologies of arid horticulture were also performed at the Institute to the visiting farmers or while visiting to the farmers' fields during the reported period.

❖ Organization of Exhibitions.

- A technological exhibition was displayed during the programme organized on "Equity and Empowerment-Mahila Kisan Diwas" in Udasar village of Bikaner District on 15.10.2021.

❖ Other extension activities.

- More than 10 technical lectures (online /offline) were delivered during the different farmers' trainings and other programmes organized at the Institute or outside of the Institute during the reported period of time.
- Delivered more than 20 lectures related arid horticultural technologies to visiting farmers, students, stakeholders at the Institute or while visiting to the farmers fields during the reported period of time.
- Various "Farmers' Advisory" were prepared sent to farmers, Arid-Hort.-Farmers' users, clients using different online/offline means and methods.
- More than 500 farmers, students, field workers, supervisors, SMS, dignitaries/ NGO, etc. were visited to Institute during the reported of time.
- More than 30 on/off campus research - Extension - Farmers-Interface- Meetings to inculcate the knowledge and awareness among the farmers about improved production technologies of arid horticultural crops. The activities like visit, meetings/group discussion training, interaction, etc., were also organized for empowerment of farm women, particularly in the field of arid horticulture.
- Various farmers' programmes and activities like visit, meetings/group discussion training, interaction, Research-Extension - Farmers- Interface- Meetings (REFIM), diagnostic and problem solving visits, etc., were conducted in adopted villages under MGMG Scheme of the ICAR/Institute.
- More than 2000 technical folders/literature were distributed among the farmers/ clients during different extension programmes/ activities/ occasions.
- There were made 20 diagnostic and advisory visits to farmer's fields to solve their problems and provide technical help/suggestions for their better crop production/farming system.
- Various programmes/activities like farmers' visits, meeting/ *Sangosthi,* discussions, training, kisan Diwas, FLDs, method demonstrations, mobile advisory, creating linkages, creating knowledge and awareness, distribution of seeds and planting materials, technical literature, etc., were organized under Mera Gaon Mera Gaurav MGMG) Scheme in adopted villages of the Institute during the reported period of time.
- In addition to above, various technological advisory work (One line / telephonic/off line discussions/ guidance/Qns.–Ans.) with farmers were also performed. **(S. R. Meena, R. C. Balai and others).**

Institute Programmes / Activities.

- Organized the National Webinar on Khejri: A Versatile Tree for Horticultural Exploitation at the Institute on 07.07.2021.
- Under Azadi ka Amrit Mahotsva, a webinar on Sensor base technology in horticulture on 07.09.2021 was organized in which Dr. P.C. Pancharia, Director, CSIR-CEERI, Pilani (Rajasthan) was guest speaker.
- Five days Collaborative Training Programme with MANAGE Hyderabad on "Extension of Horticultural Technologies in Arid and Semi-arid Regions for Nutritional and Livelihood Security" in virtual /online mode at ICAR-CIAH, Bikaner during from 18.10.2021 to 22.10.2021.

Programmes under SCSP Scheme:

- Organization of training and input/items distribution programme under SCSP Scheme: Organized 11 training programmes and distributed different inputs like, Clusterbean (RGC-936), Moong (MH-421), Gram seed, vegetable seed, Kitchen gardening vegetable seed kits for kharif and rabi, cumin seed, kitchen utensils, plastic can, seed grain bin, spinosad insecticide, technical folders, etc. were distributed among SC farmers in different sate and district of Rajasthan during the reported period of time (Director & SCSP Committee).

Organization / Celebration of days/weeks/fortnights.

- Celebration of **"The "93th ICAR - Foundation Day"** : Celebrated "The "93th ICAR- Foundation Day" in the Institute on 16.07.2021 in the Institute in which more than 100 farmers/stakeholders, students, scientists, to participate in above programme.
- **Organization of "Food and nutrition awareness programme for Farmers :** Organized awareness programme on "Food and nutrition for Farmers" at Kadma village of Charkhi Dadri district in Haryana State on 26 August, 2021 as per guide lines of Indian Council of Agricultural Research, New Delhi.
- **Organization of "National Nutritional Week and *Bharat Ka Amrut Mahotsav*" programme:** Organized the programme/campaign to create "Awareness and knowledge about importance of food and nutrition among school going children/students and teachers" at Bal Bharati Secondary School, Bichwal Bikaner on 06.09.2021 under observance of " National Nutritional Week and *Bharat Ka Amrut Mahotsav*" programme of the country.
- **Organization of campaign to create "Awareness and knowledge about importance of food and nutrition among farmers/villagers":** Organized programme/ campaign to create "Awareness and knowledge about importance of food and nutrition among farmers/villagers" at Meghasar, Kolasar and others village of Bikaner district 07.09.2021 under observance of "National Nutritional Week" and *Bharat Ka Amrut Mahotsav*" programme of the country.
- **Celebraion of "*Hindi* Pakhawada" :** Celebrated "*Hindi Pakhawada"* in the Institute during 14.09.2021 to 30.09.2021.
- ***Posan Vatika Maha Abhiyan and Tree Plantation programme:*** The Institute organized programme/ campaign on *Posan Vatika Maha Abhiyan and Tree Plantation and curtain Raiser of " International Year of Millet - 2023* on 17.09.2021 during which more than 100 farmers, 72 school students, > 100 scientists, experts, staff of the Institute, technical, SRF, YPs, ext participated.
- **Celebration 28th Foundation Day of the Institute**: Celebrated the 28th Foundation Day of the Institute on 27.09.2021.
- **Organization of Farmers- Scientists interface meeting and Telecast of Hon'ble Prime Minister's Programme:** Organized programme/campaign on "Farmers- Scientists interface meeting and Telecast of Hon'ble Prime Minister's Programme" in Auditorium of the Institute on 28.09.2021 in which 98 farmers and > 100 scientists, experts, SRFs, and other dignitaries participated.
- **Celebration of "Khejri- Thar Shobha Sale Day:** Celebrated **"Khejri- Thar Shobha Sale Day"** in the Institute on 29.09.202.
- **Organization of "Special *National Swachaata Campaign:*** Organized "Special *National Swachaata Campaign* with the theme of *Waste to Wealth*" in adopted villages viz; Dholera, Khinchiya and Sararupayat village of Bikaner district on 12.10.2021 and about 200 farmers/students of different schools participated in above programme.

- **Organization of *"Equity and Empowerment- Mahila Kisan Diwas:*** Organized the *"Equity and Empowerment- Mahila Kisan Diwas"* in Udasar village of Bikaner District on 15.10.2021 in which more than 50 women/children participated.
- **Celebration of "World Food Day" : The Institute celebrated the** "World Food Day" at 3PWM, Khajuwala of Bikaner district of Rajasthan on 16.010.2021 in which more than 100 farmers, children's, scientists, were participated.

- **Observance of the Communal Harmony Campaign Week:** Observed the Communal Harmony Campaign Week from 19.11.2021 to 25.11.2021 and collection of money voluntarily from employee of the Institute (ICAR-CIAH, Bikaner) to raise fund of NFCH (National Foundation for Communal Harmony New Delhi, an autonomous organization under the Ministry of Home Affair, Govt. of India).
- **Celebration of Constitution day:** The Constitution day was celebrated in the Institute on 26-11-2021.
- **Organization of National Campaign on "Agriculture and Environment: The Citizen Face**: Organized "National Campaign on theme "Agriculture and Environment: The Citizen Face" on 26.11.2021 at ICAR-CIAH, Bikaner in which 34 students/children, teachers, scientists, and other officials participated.
- **Celebration of world Soil Health Day:** World soil health day was celebrated by the Institute in Gigasar village of Bikaner district on 05.12.2021.

- **Organization of "*Swachh Bharat Abhiyan*:** Organized the "*Swachh Bharat Abhiyan"* in three adopted villages (Khinchiya, Sarahrupayat and Dholera) of Bikaner district)" under MGMG Scheme to create awareness and interest among the farmers/school going children about during " *Swachhata Pakhwada* on 18.12.2021.
- **Celebration of the Kisan Diwas**: The **Kisan Diwas** was celebrated in Meghasar Village of Bikaner district on 23.12.2021. In this programme more than 300 farmers participated and seed storage bins, packets of improved varieties of vegetables, technical folders, etc were also distributed among the SC farmers under the SCSP scheme of the Institute during the programme.

❖ Visit of VIPs / Dignitaries at the Institute.

- Dr. R. P. Singh, Vice Chancellor, SKRAU Bikaner visited in the institute on 16th July, 2021.
- Dr. Ambrish S. Vidhyarthi, Vice Chancellor, BTU Bikaner visited in the institute on 27th Sept. 2021.
- Dr. B. K. Pandey, Principal Scientist & ADG Horti. Science II, ICAR-New Delhi visited in the institute on 12.08.2021.
- Shri Sunda Ram, Padmashree Awardee visited in the institute on 17.09.2022.
- Dr. Satish Kumar Garg, Vice Chancellor, RAJUVAS Bikaner visited on 30th Sept, 2021.

❖ Awards & Pear Recognitions.

- Dr. D. S. Mishra received Excellence in Research Award conferred by Society for Scientific Development in Agriculture & Technology (SSDAT), Meerut (U.P.) for Outstanding Contribution in the Field of Fruit Science on the occasion of International Web Conference on "Global Research Initiatives for Agriculture and Allied Sciences (GRISAAS-2021)" held at SKRAU, Bikaner, Rajasthan, India during December, 13-15, 2021.
- Dr. D. S. Mishra received Best Oral Presentation Award for the paper presented on "Evaluation of guava germplasm based on physico-chemical traits and their use in breeding program". In: VIth International Conference on Global Research Initiatives for Agriculture and Allied Sciences (GRISAAS-2021) held at SKRAU, Bikaner, Rajasthan, India during Dec., 13-15, 2021.
- Dr. S. K. Maheshwari acted as a rapporteur in Technical Session-IX: "Disease Management in Arid Zone Fruits during AICRP meeting on AZF (virtually)" during 26-28th Feb., 2021.
- Dr. B. R. Choudhary acted as rapporteur of during 25th Research Workers Group Meeting-2021 of AICRP-AZF (Virtual) organized by ICAR-CIAH, Bikaner from 26-28th February, 2021 for the session Interaction with farmers and developmental agencies on 28th February and presented the recommendations.
- Dr. B. R. Choudhary Inducted as Fellow of Indian Society of Arid Horticulture (ISAH), ICAR-CIAH, Bikaner, Rajasthan for the year 2020-21.
- Dr. Mukesh Berwal received Best oral presentation award for "Bottom-up Mechanism of Tolerance against Concurrent Abiotic Stresses in Khejri (Prosopis cineraria) under Hot Arid Region" in the International Web Conference on Innovative and Current Advances in Agriculture & Allied Sciences-2021 held during July 19-21, 2021.
- Dr. Kamlesh Kumar received 'Second Prize' in 'Hindi Samanya Gyan Pratiyogita' in 'Hindi Pakhwada' organized and celebrated At ICAR-CIAH, Bikaner during 14-30 September 2021.
- Dr. Kamlesh Kumar awarded with 'Certificate of Excellence in Reviewing' from International Journal of Plant & Soil Science on 24 September, 2021.
- Dr. Kamlesh Kumar received 'Best Oral Presentation Award' on "Development of seed, rootstock and clonal plant standards of lasoda (Cordia myxa L.) for conservation of elite type and mass multiplication of quality planting materials" in International web Conference (GRISAAS-2021) held during 13-15 December, 2021.
- Dr. L.P. Yadav awarded certificate of excellence in reviewing from Asian Plant Research Journal, 2021
- Dr. L. P. Yadav awarded certificate of excellence in reviewing from European journal of Medicinal Plants, 2021
- Sh. Roop Chand Balai awarded with 'First Prize' in Hindi Antaxari Group-A competition during the celebration of 'Hindi Pakhwada' at ICAR-CIAH, Bikaner from 14-30 September 2021.
- Sh. Roop Chand Balai received "Second prize in *Hindi Nibandh Lekhan* competition during the celebration of 'Hindi Pakhwada' at ICAR-CIAH, Bikaner from 14-30 September 2021.
- Dr. Chet Ram recognized for outstanding contribution in the quality of *Plant Cell Biotechnology and Molecular Biology*

Journal and awarded a certificate for the excellence for the peer-reviewing.

- Mahindra Kumar Choudhary awarded with the best oral presentation on 'Inheritance of branching habit in Clusterbean (Cyamopsistetragonoloba (L.) Taub.) in International web Conference on Global Research Initiatives for Sustainable Agriculture and Allied sciences during 13th -15th December 2021.

Important Meetings held

- RAC was held in the Institute on 22.07.2021.
- Various meetings like monthly meetings and other meetings held in the Institute time to time.
- IRC was held in the Institute from 03.09.2021 to 04.09.2021.
- Celebrated the "*Hindi Pakhawada* Programme" in the Institute from 14.09.2021 to 30.09.2021 during which various programmes were organized to create the awareness knowledge and importance of Hindi in our life.
- The Institute participated in summit titled as Natural Farming – Pre Vibrant Gujarat Summit-2021 and held at Anand (Gujarat) in virtual mode on 16.12.2021. During the summit, Hon'ble PM of our country also addressed about the Natural Farming and its benefits/importance.

A success story

High commercial production potential of improved variety of ridge gourd "*Thar Karani* ": A success story.

ICAR- Central Institute for Arid Horticulture, Bikaner (Rajasthan), developed/released a new varieties of bottle gourd name as "Thar Karani" which is highly suitable in hot arid and semi-arid climatic conditions of the country. This variety was popularized among the farmers by conducting its FLDs, trainings, meetings/interactions with farmers and their visits to the experimental locks of the Institutes and FLDs sites also. Observing the production potential and commercial value of this improved variety (Thar Karani) of ridge gourd, farmers started to grow it on large/commercial scale on their fields. Among such farmers, Sh. Mukesh Kumar Pareek S/o Sh. Satyanarayan Pareek , Village- Khinchiya (05 KHM), Tehsil-Bikaner, District- Bikaner, Rajasthan was one of the progressive farmer who grew the above improved variety of ridge gourd (Thar Karani) on his field (0.5 ha)during the Karif season (2 July, 2021) under the technical guidance of scientists of the Institute (ICAR-CIAH, Bikaner). Sh. Mukesh Pareek reported that the performance of crop of improved variety " Thar Karani" of ridge gourd of ICAR-CIAH was wonderful and highly beneficial. He got total production of fruits of the variety (Thar Karani) about 95 quintals from 0.5 ha. of land during the kharif season, 2021.

He sold that the fresh fruits in local vegetable *Mandi*/market (Bikaner) and got gross income Rs. 17200/- from 0.5 of land. In addition to fresh fruits sell, he also produced/prepared 42 kg. seeds of the variety earned a gross income of Rs. 840000/- by selling it among the fellow farmers/others. He further stated that the total cultivation cost of the above variety for 0.5. ha was Rs. 52750/- Thus, he got a net income of Rs. 203250/- from 0.5 ha of land during the kharif season, 2021.

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