

NAHEP-IG ANNUAL REPORT

(2018-19)

Submitted to

National Director

National Agriculture Higher Education Project

ICAR, Krishi Anusandhan Bhawan,

Pusa Campus, New Delhi-12

Submitted by



COLLEGE OF HORTICULTURE AND FORESTRY

(Agriculture University, Kota)

Jhalrapatan, Jhalawar-326023, Rajasthan

NAHEP Annual Report 2018-19
Agriculture University, Kota

1. Executive Summary

The generation of human resource well versed with technology and advancement being achieved in modern era of knowledge explosion, it is inevitable to educational institutions to cope up with the situation of advancement.

The College of Horticulture and Forestry, Jhalawar is a constituent unit of Agriculture University, Kota which was established in 2004. It is the only college of its own kind in the state to cater the need of farming community and upliftment of Horticulture in the state. The college operates two faculties i.e. Horticulture and Forestry and runs UG, PG and Ph.D. degree programmes in respective faculty. The total intake capacity under UG and PG degree programmes are 120, 35 and 05 respectively. Presently, there are 44 faculty members on the roll of the college. In the existing state of the college, it was getting felt to upgrade the infrastructure facility and create resources packed up with advancement to impart education in changing scenario of science and technology and for that matter in the field of agriculture/horticulture. With such a view to revamp entire academic sphere of the college it was proposed to submit a proposal under “Innovation plan for Hi-Tech Horticulture” under National Agricultural Higher Education Project. The commissioning of the project has favoured the college in accommodation of facilities required for imparting quality education. The grants in aid received through the NAHEP-IG, many addendum have been made in existing facilities at the college.

In this context, infrastructure facilities like hydroponic system, drip and mini sprinklers facility and water harvesting structure have been created. Class rooms and instructional farm have been modernized. Polyhouses, existing path along polyhouse, boundary wall and grading and packing units have been renovated. The library has been digitalized. Equipments/implements like automatic fertigation machine, drip and sprinkler system, power boom sprayer, power weeder, post hole digger, data logger, lux meter, bund farmer and air compressor were procured. National level seminar and workshop one each have been successfully organized.

The support received through NAHEP-IG grant is sure to fillip the overall academic ambit of the college focused primarily towards teaching.

2. INTRODUCTION

The College of Horticulture and Forestry, Jhalawar is a constituent unit of Agriculture University, Kota and it is the only college of its own kind in the state which was established in 2004 to cater the need of farming community and upliftment of Horticulture in the state. The college operates two faculties i.e. Horticulture and Forestry and runs UG, PG and Ph.D degree programmes in respective faculty. The total intake capacity under UG and PG degree programmes are 120, 35 and 05 respectively. Presently, there are 44 faculty members on the roll of the college.

The Jhalawar district is famous for mandarin cultivation and is also regarded as *Chhota Nagpur*. Mandarin is the major fruit crop of the area which covers around 35000 ha land in the district. The other crops of the area are coriander, garlic, tomato, chilli, nigella, etc which occupy sizeable area under cultivation. The maximum and minimum temperature during the summer and winter is 45⁰C and 1⁰C, respectively with annual rainfall 980 mm.

The college is spread over 125 ha area where basic infrastructures like administrative block, hostels, guest house, tissue culture laboratory, seed processing unit, protected cultivation unit have been created to impart quality education to students and need based research work in the field of horticulture and forestry.

To generate human resource well versed with technology and advancement being achieved in modern era of knowledge explosion, it is inevitable to educational institutions to cope up with the situation of advancement. In consonance to that it was getting felt to modernize class room, instructional farms, and renovate the existing infrastructures competitive to create human resource development. Keeping this in view the present project entitled “Innovation Plan for Hi-Tech Horticulture” was envisaged with the following objectives:

- Strengthening of existing hi-tech horticulture and establishment of pilot hydroponic unit for skill up gradation of the students, farmers, NGOs personnel's, rural youth and entrepreneurs.
- Establishment of Pilot Demonstration unit for Hydroponic/aeroponic /soilless culture.
- Development of package of practices of soil less/aeroponic culture of important high valued horticultural crop.

- Modernization of existing facilities like class room, laboratories and instructional farms for smart teaching and hands on training for scaling up learning.
- To improve the competence among the faculty, technical staff and students.
- Generation of linkages with National / International organizations and leading private institutions.

3. Achievements with good quality photographs

(a) Strengthening of existing hi-tech horticulture

Four naturally polyhouses each of 1000 sqm area have been renovated this year under NAHEP with polythene cladding material, insect net and thermal screen. Further, existing fan-pad polyhouse has been renovated with cladding material of polycarbonated sheets for establishing hydroponic system. The polyhouse have been modernized with mist and micro sprinkler arrangements. Further, the facilities of data logger and lux meter have also been inducted. These addition shall help in maintaining better amenable growing condition for the crop in harvesting better yield.

The hi-tech unit had earlier no provision of rain water harvesting. Now, rain water harvesting facility has been created unitizingly at a place favoring collection of rain water through roof catchment of 4000 sqm area. The water will serve as a source of supplemental irrigation for the crop cultivation in besides helping in recharge of existing open well nearby the polyhouse.

An automatic fertigation machine with four injectors has been installed at protected cultivation unit for fertigation purposes.

(b) Establishment of hydroponic unit

One hydroponic unit of 500 sqm area has been established for imparting demonstration on growing of crops soillessly. The hydroponic unit consists of three models viz., Flat, A-type and Tower type to grow various kinds of horticultural crops. The seeds of palak, coriander, basil and cucumber have been sown in protrays and very soon seedlings will be transplanted in hydroponic unit. The development of package and practices for hydroponic technique shall go side by side.

(c) Modernization of class rooms

Three class rooms each of seating capacity of 60 students have been renovated with Digital Teaching System consisting of SMART board, visualizer and projector with wi-fi facility. Besides, rooms have been also renovated with addition of furniture, window curtain, security camera and biometric machine for providing quality education and proper monitoring of students. Along with SMART board, there is also provision of green board to have all sort of teaching facility in smart class room. To make the class room energy efficient- a way towards green initiatives the class rooms have been connected with solar panel.

(d) Digitization of library

The library of the college has been strengthened with e-journals like J-gate and I-scholar. Both e-journals covered more than 46,000 e-journals related to Science and Technology (Horticulture, Agriculture, Forestry and Basic Science) and Social Science and Humanities etc. and useful for research scholars as well as faculty. Besides, 202 textbooks related to Hi-Tech Horticulture have been procured. These textbook are very useful for gaining knowledge about new technology of Horticulture especially hydroponic of students and faculty members.

(e) Modernization of instructional farm

Drip and mini sprinklers over 8 hectare area on instructional farm have been installed for efficient use of irrigation water and fertilizers. Besides, some equipments which are helpful in minimizing drudgery have also been purchased. These equipments are bund former, power weeder, power operated boom sprayer, post hole digger and air compressor machine. With the help of post hole digger, about 700 pits have been dug to establish arboretum and avenue plantation along the road side during falling rainy season.

4. International / National Trainings / Workshop / Seminars

One National Seminar on "Technological Advancement in Horticulture for 21st Century" and one workshop on "Hi-Tech Horticulture" under National Agriculture Higher Education Programme- Innovation Grant by ICAR, New

Delhi got organized successfully at the College of Horticulture and Forestry, Jhalawar.

The seminar had its inaugural ceremony on February 18, 2019. At this occasion Dr. G. L. Keshwa, Hon'ble Vice-Chancellor, AU, Kota - Chief Guest; Dr. S. K. Sharma, Dean, College of Horticulture, Bermiok, Sikkim - Special Guest; Dr. P. L. Saroj, Director, CIAH, Bikaner - Guest of Honour; Dr. L. K. Dashora, Former Dean, CHF, Jhalawar - Guest of Honour; Er. M. S. Acharya, Former Dean, CHF, Jhalawar - Guest of Honour, Dr. I. B. Maurya, Dean, CH&F, Jhalawar and Dr. Jitendra Singh, Organizing Secretary were present at the dias.

At the outset, Dr. I. B. Maurya, Dean, CHF, Jhalawar and PI, NAHEP-IG welcomed the dignitaries at the dias, guests, resource persons, participants, etc., among others. Dr. Jitendra Singh, Organizing Secretary presented the detail outline of the seminar and also expressed upon the need for technological advancement to project Indian Horticulture high-up in future ahead. While addressing the seminar, Er. M. S. Acharya, Former Dean, CHF, Jhalawar expressed that in view of changing scenario of science and agriculture, the use of Artificial Intelligence should form part of the technological advancement in horticulture. In his speech, Dr. L.K. Dashora, Former Dean, CHF, Agriculture University, Kota emphasized upon adoption of the technology which are amenable and competitive to hasten farmers income. Dr. P. L. Saroj, Director, CIAH, Bikaner, expressed his concern over production - consumption economics in line of the farmer concern of higher profitability and consumer concern of less paying for the commodity sold by the grower in the market. Dr. S. K. Sharma, Dean College of Horticulture, Bermiok, Sikkim, narrated for the adoption of technique of Organic farming especially in current day market requirement. Speaking as the Chief guest Dr. G.L. Keshwa, Hon'ble Vice-Chancellor, Agriculture University, Kota articulated that technological advancement in the field of horticulture is must and it is dire need of country to make farming profitable and sustainable. Skilled man-power has its role as career of advanced technology and the College of Horticulture and Forestry, Jhalawar is moving sturdily in the field of academics and the students coming out of this college holds records of achievement in the career and services at national level. Toward the end, Dr. Priyanka Solanki, Co-Organizing Secretary of the seminar proposed vote of thanks to all concerned ones behind organization of the seminar.

In the seminar organic farming was one of the sub-themes. In this session the *Padma Shri* awardee Shri Hukam Chand Patidar, Manpura village, Jhalawar, Rajasthan was invited and felicitated. In his expression, he made concern for commercial application of organic farming especially in the view of emerging catastrophe in living spheres of human being and animal kingdom alike.

The organizer takes it on special record to express gratefulness to NAHEP Cell, ICAR, New Delhi for grants-in-aid provided which paved the way for successful organization of the seminar. It is very sure that the fillip provided by the ICAR, New Delhi will prove its worth in betterment of horticulture in national scenario in broader perspective.

Out of the deliberation made by the participating delegates, the points which appeared distinctly are summarized here as under:

1. To hasten production and farmers' income as well technique intensive horticulture needs popularity.
2. The use of protected cultivation technique especially for vegetables and cut flowers, use of rootstock against changing soil-climatic condition, watershed management needs priority.
3. To add diversity in fruit production, minor fruits like lasoda, mulberry, jamun, khirni, karonda etc should be inducted in cultivation along with commercial fruit crops.
4. To promote organic farming, there is need to popularize establishment of vermicompost unit at the individual grower level. This is especially essential to reduce the problem of supply of input for organic farming. In present day in view of resurgence of one after another diseases, it can be concluded that organic cultivation has tremendous potential.
5. There is high need of value addition of mandarin seeing the extent of its cultivation in Jhalawar in general and in horticulture scenario in particular. In Jhalawar, mandarin covers 13,000 hectare area and production is to the tune of above 3 lakhs tonnes. There is need to establish processing unit locally not only to utilize the volume of production but also to increase the profit margin of the growers.
6. Ample scope exists for value addition of minor and arid fruits like anola, bael, karonda, jamun, etc. The authors presented that by making value addition there can be 4 to 6 times enhancement of the earning

7. There is need to boost start up in the post harvest sector and for this need of concern is to initiate training in the field of this area.
8. During harvesting season, it becomes very common to see glut in the market. The harvest is sold at distress price during peak season. The production needs to be diverted towards processing and value addition.
9. Minor fruits like bael can be converted into nutraceutical products, however branding of the product was invariably emphasized by experts for better marketing. It appeared from the presentation that many minor fruits are at the verge of extinction so there is a need of their conservation at various levels.
10. For better marketing of horticultural produce, farmer should be encouraged to grow as farmer producer organization (FPOs), cooperatives, Self Help Groups (SHGs) for assured income. Contract fanning should form one of the ways of horticultural production.

Workshop

The workshop had its inauguration on 7th March 2019. Dr. Vishal Nath, Director, NRC on Litchi, Muzzaffarpur, Bihar was the Chief Guest of the occasion. Among others, Dr. A.V. Barad, Ex-Dean, College of Agriculture, Junagarh, Gujarat and Dr. L.K. Dashora, Ex-Dean, College of Horticulture and Forestry, Jhalawar, Rajasthan were on the dias. Dr. Vishal Nath stressed upon the relevance of organization of such kinds of workshop especially in educational institution to help to students conceptualize modern way of growing horticultural crops. He delivered an interactive lecture on canopy management on fruit crops. Dr. Barad delivered on protected cultivation of floriculture before the participants. In two days workshop, there were 8 lectures delivered by scientist of different field of specialization. The workshop was attended by 92 participants from the college. The students expressed for undertaking such event on recurrent basis for their knowledge upgradation.

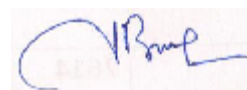
5. Publications

One souvenir of 334 pages was brought out in National Seminar organized under NAHEP-IG on 17-18 February, 2019. This souvenir contains 23 lead papers, 8 oral papers and 170 postal papers. The postal papers were invited on four aspects viz., Innovative approaches in Horticulture (120 papers), Organic farming (19 papers), Post Harvest Management (23 papers) and Marketing and Business (8 Papers).

6. Infrastructure facilities, assets and revenue generation

- Renovation of polyhouses
- Establishment of hydroponic unit
- Modernization of class rooms
- Modernization of instructional farm
- Digitization of library
- Procurement of automatic fertigation machine, drip and sprinkler system, power boom sprayer, power weeder, post hole digger, data logger, lux meter, bund farmer and air compressor.
- Creation of water harvesting structure
- Renovation of boundary wall
- Renovation of walking path along polyhouses
- Renovation of grading, packaging units

The facilities have been created and these facilities shall favour generation of better revenue after a waiting period of few months.



(PI, NAHEP-IG)

Agriculture University, Kota