

UNIVERSITY OF HORTICULTURAL SCIENCES, BAGALKOT



Report on
Internship Training Program Entrepreneurship
development through Vegetable Seed Production – A
new horizon

NAHEP, IDP CELL,
COLLEGE OF HORTICULTURE, SIRSI.

Introduction

National Agricultural Higher Education Project (NAHEP) is formulated by ICAR. This project is proposed on 50:50 cost sharing basis between the world Bank and Govt of India, implemented at the education division, ICAR, New Delhi. It is launched in November 2017 to improve quality and relevance of Agricultural Higher Education and strengthen the national Agricultural Education in India with overall objective to provide more relevant and high quality Education to Agricultural university students.

Under the guidance of ICAR, NAHEP-IDP conducted 21 days industrial training program for quality enhancement, better employment and entrepreneurship opportunities for all Agricultural graduates. This training programs may include ;

- * Bee keeping
- * Export
- * Seed industry
- * Landscaping etc.

The Agricultural students also get training certificate and ICAR conducted this program for free of cost for the benefit of all agricultural and Horticultural students.

Towards conducting 21 days Internship Training Program Entrepreneurship development through Vegetable Seed Production – A new horizon. Students have been screened based on their interest by conducting group discussion by Dean, IDP Campus coordinators and RHWE Coordinators

Name of the Participants :

Sl. No.	Name	ID No	Class
1.	Anjali. M. A	UHS19UG4985	IV B.Sc. (Hort.)
2.	Bharati	UHS19UG4992	IV B.Sc. (Hort.)
3.	Chandrakala	UHS19UG4993	IV B.Sc. (Hort.)
4.	Kavya	UHS19UG5005	IV B.Sc. (Hort.)
5.	Neha	UHS19UG5015	IV B.Sc. (Hort.)
6.	PrathyakshaMogra	UHS19UG5022	IV B.Sc. (Hort.)
7.	Priyanka J	UHS19UG5023	IV B.Sc. (Hort.)
8.	Radhika Jadar	UHS19UG5024	IV B.Sc. (Hort.)
9.	Rakshita N V	UHS19UG5026	IV B.Sc. (Hort.)
10.	RutuSadare	UHS19UG5030	IV B.Sc. (Hort.)
11.	SameenaKorabu	UHS19UG5033	IV B.Sc. (Hort.)
12.	SanjanaJ	UHS19UG5034	IV B.Sc. (Hort.)
13.	ShahinRonad	UHS19UG5040	IV B.Sc. (Hort.)
14.	ShaliniKamble	UHS19UG5041	IV B.Sc. (Hort.)
15.	VeenaYelawar	UHS19UG5052	IV B.Sc. (Hort.)
16.	VidhyaBhat	UHS19UG5055	IV B.Sc. (Hort.)

Organising team for 21 Days Internship Training Programme				
	Entrepreneurship development in vegetable seed production – New Horizon	21 Days Internship Training Programmes, Laxmi Inputs, Ranebennur, Haveri	Dr. Shivanand Hongal Dr. Prakasha D P. Dr. Pushpa P. <u>Co-organizers</u> Dr. Ashoka N. Dr. Harshavardhan M.	12.01.2023 to 01.02.2023

Day 1

12-01-2023 THURSDAY

On the first day of training the organizing team took all the 16 students to Laxmi Inputs R & D farm and Introduced to all the faculties of R&D. Later, Dr. Chethan introduced himself and gave brief introduction regarding the working of R & D farm and the crops which are majorly grown for seed production. He also took our introduction. After that we have been taken to Tomato plot. Dr. Chethan sir explained the agronomical practice of the Tomato crop. He showed 60 hybrids in that plot which grown for trail purpose. He explained about the different colours, shapes, size, growth habit, lycopene content, acidic and non acidic content, firmness of Tomato etc. We were been assigned to identify the different growth habit of the plant which were mainly of Determinate, Indeterminate, Semi-Determinate. He also gave good information regarding the crossing and pollination techniques and asked us few questions regarding the breeding methods followed for various aspects.





After lunch Group 1 was taken to Tomato plot for emasculation. Emasculation is nothing but removal of male part or anthers from the flower. All we assigned each rows for Emasculation, and provided us forceps. After emasculation day after tomorrow they had undergo pollination with the desired pollen grains.



Day -2

13-01-2023, Friday

At 9:30 am we have been taken to Laxmiinputs. Dr. Nitin who is a gourd breeder. He took them to Bitter gourd, Ridge Gourd, Sponge Gourd plot. He explained the agronomical practices followed in the gourds and said about different sex form in the curcubits. He made the students to identify male and female flowers and explained pollination process, timings of bagging and pollination. He gave information about the gynocieous lines and how to induce maleness through different spary.



After lunch we were taken for bagging in Bitter gourd and pollination in Ridge gourd, as their anthesis timings are different to conduct pollination. We identified the desired female flower for pollination and bagged it along with the unopened male flower for the next day pollination. After that we had gone for



Hand Pollination in Ridge gourd.

DAY 3

14-01-2023 Saturday

By morning 10:00 am we left our stay and visited Research and development department of Laxmi inputs India pvt LTD, Rannebenur

There we met Dr.Nithin, PhD graduate and Chethan sir , MSc graduate in agriculture.

Dr.Nithin took us to gourds session.In the gourds field at first we visited Bitter gourd plot there sir explained briefly about the gourds, there family , scientific name , chromosome number and time of anthesis and stigma receptivity. We were



later taken for carrying out pollination which were bagged in the previous evening.



Day -4

15-01-2023, Sunday

At 11:00 we have been taken to farmers plot where the company have been contracted for the seed germination estimation we went to nearby plot in rannebennur where the farmer have been given muskmelon seeds for cultivation. After that we came back to our stay by 2 pm



Day -5

16-01-2023, Monday

Today by 10 am we went to Laxmi inputs, Dr.Chethan sir took us to Tomato plot and thought us very good information about growth habit of tomato (determinate and semi- determinate types), different shapes of tomato, pollination time , anthesis and dehiscence timing in tomato.

Later we were thought about emasculation in tomato. All of us were completely involved in emasculation.



By evening we were involved in emasculation of tomato flowers . By 6:00pm we returned back to stay.

DAY-6

17-01-2023 –Tuesday

By morning 10:00 am we left our stay and visited Research and development department of Laxmi inputs India pvt LTD, Rannebenur. There we met Dr.Nithin, PhD graduate and Chethan sir , MSc graduate in agriculture. Dr.Nithin took all the members into pumpkin and okra plot and after that Chethan sir took all the member to cucumber plot.



In the pumpkin field at first , there Nithin sir explained briefly about the pumpkin, there family , scientific name , chromosome number , time of anthesis , stigma receptivity and some of varieties like ArkaChandan, Arkasuryamukhi, PusaViswas, Pusan Vikas etc.

Day-7

18-01-2023- Wednesday

In the okra plot sir thought us very good information about breeding objective of okra like earliness, less fiber content and resistance to pest like pod borer, shoot borer and diseases like powdery mildew, downy mildew, yellow vine mosaic virus etc. pollination time, anthesis and dehiscence timing in okra. By evening we came back to our stay.



Day -8

19-01-2023, Thursday

By 10:00 am we were being taken to Laxmi inputs pvt Ltd R and D Farm. Mr. Chethan sir took us to cucumber plot and he explained us about the cucumber, there family, scientific name, pollination timing sex type there are monoecious, gynoecious, hermaphrodite etc, parthenocarpic and types of cucumber like point sett or English cucumber and white cucumber, pest like fruit flies and diseases like powdery mildew and downy mildew etc,

Sir explained about attributes of cucumber before selection of female parent. attributes like vine length, leaf seration and colour, fruit length and fruit girth, number of fruits per plant fruit weight and disease observation.

By evening at 6:00pm we returned back to stay.



Day -9

20-01-2023, Friday

At 11:00 we went to farmers plot near by village in Rannebennur. There we met a farmer who have been given seeds of Tomato for GOT estimation in germination under various trails. And we discussed with the farmer regarding the other practices followed during cultivation and even the extraction of the Tomato seeds throug acid treatment method with the help of Tomato extractor.



DAY-10

21-01-2023, Saturday

We went to R And D farm at 10:30 am , On 1st day i.e 12th January Each one were assigned to do presentation on some crops which are available in Laxmi inputs (India) pvt.ltd

We were asked to do presentation on Scientific name , Chromosome number, Origin , Family, Soil , Climate , Planting System, Anthesis and Dehiscence timings, Breeding objectives and Methods, Important Varieties, Pest and Diseases of the following Crops

Neha : Brinjal

Sanjana: Okra

Prathyaksha: Ridge guard

Sameena : Cucumber

Rutu : Chilli

Shahin : Capsicum

Veena: Sweet Corn

Shalini : Sponge guard

Radhika : Cabbage , Cauliflower , Broccoli

Vidya : Bitter guard

Rakshitha: Tomato

Bharati: Pumpkin

Chandrakala: Ash guard and Snake guard

Kavya: Watermelon and Muskmelon

Anjali : Summer Squash and Winter Squash

Priyanka : Bottle guard

DAY- 11

22-01-2023, Sunday

At 11:00 am we went to Laxmi inputs pvt Ltd R and D Farm and we were assigned removal of pollen grains from desired male flower of Tomato . After that they took us to another farmers plot where ge had also grown muskmelon for seed extraction.



DAY 12

23-01-23 Monday

By morning 10:00 am we left our stay and went to MruthunjayaKalyanMantapa, Ranebennur.

AgriHorti graduates association was going on there at that day. All the Agri and Horti graduates from different Agricultural Universities like Dharwad, Raichur, Shivmogga and Horticultural University Bagalkot and who were settled in Ranebennur were there. They have an association of AgriHorti graduates from Ranebennur 1.. Which has been started in aim of getting benefits for AgriHorti graduates.. their family members..for honouring one who had great achievements in their career, for involving in social activities. We volunteered them in welcoming chief guest and distribution of prizes



The Programme begin by 10.30 with Prayer.Theprogrammehas been delighted by the presence of Agricultural minister B. CPatil and MLA's of Ranebennur. By 2 Pm.after lunch.. Entertainment programmeshave been started .. and in that our classmate Prathyaksha gave wonderful Bharatnatyam performance.. Further the members of assosiation felicitated ones who achieved great success in seed production at Ranebennur.. Again the function continuedwith entertainment

programmes.. Finally the programme come to an end by 5.30PM and we returned back to our stay



DAY 13

24-01-2023 Tuesday

By morning 10:00 am we left our stay and visited Research and development department of Laxmi inputs India pvt LTD, Rannebenur

There we met Dr.Basavayya sir , he explained briefly about the okra, there family , scientific name , chromosome number , time of anthesis , stigma receptivity etc.

In the okar plot sir thought us very good information about breeding objective of okra like earliness, less fiber content and resistance to pest like pod borer , shoot borer and diseases like powdery mildew , downy mildew, yellow vine mosaic virus etc. pollination time , anthesis and dehiscence timing in okra.

Different famous varieties released from Laxmi inputs in Tomato, chilli, watermelon, cucumber and Bhendi. Tomato ,Nandi, Don, Arpiths, Angle, Himalaya. Chill ,Jeevitha,1835-GM, 2045 , Diya, Rajani. Watermelon- Ls-12, Shivay, Sina, Neelambike, 2036. Cucumber-Radhe, Mariya, Romeo, Shruti, Lsc9-11.Bhendi- Rekha, Priya, Samarth, Sonal-Gold.

Sir mainly tell about breeding aspects of bhendi and consumer priority for bhendi.

Exploitation of germplasm collection of bhendi like

- 1) Removal of mucilaginous substance
- 2) low iodine content for hypertension patients
- 3) sweet bhendi
- 4) seedless bhendi

Like all those consumer preferences how we can fullfill, mainly by screening of trait of interest.

Techniques used in breeding

- 1) Cytoplasmic male sterility
- 2) Cytoplasmic nuclear male sterility
- 3) male sterility

Different lines

A line- male sterile line

B line- maintainer line

R line- Restorer line

How these lines are work and exploitation of these character for breeding purpose.

Sir tell about GOT test play an important role in maintaining genetic purity of the crop

For Breeder seed -100

Foundation seed -99

Certified seed-98

Hybrid seed -95

Cotton seeds-90

Castor seeds-85.

How we should select and count the percentage of pure seed based on growing of crops and discard the deviating character from Normal parent like for ex: bottle gourd lenth the hybrid seed deviating it's character means the female fruit acquiring.



DAY- 14

25-1-23 Wednesday

Today we visited the processing unit of Laxmi Input Private .Ltd

There Manoj sir and Uday sir welcome us .

Manoj sir explained about the registration of the seed bags ,which were received from the farmers .They explained us in details

Then sir explained us in detail about the procedure from registration to the Export

There sir explained us about the different type of moisture meter

We individually checked the moisture content of seeds in the Digital Moisture Meter

Later on Uday sir explained us the grading of seeds by Gravity separator and it's working process. There were 3 machine which are used by the seed size for the grading .

Then he explained us about the chemical used for the seed viability i.eThairam 2g/kg

After this treatment they dried the seeds under the sun

Then these seeds will go for packing and they seal it



They will feed the date, variety of the crop ,Date of testing ,Date of package, Expired Date , Net gm , Mrp, Genitic purity , physical purity and Moisture content print all these on the pack of seeds

These all procedure showed us in the processing unit



DAY 15

26-1-2023 Thursday

On Thursday, we went to farmer's field of muskmelon, maize, curry leaves, tomato and sponge gourd at different places.

By morning 10:00 am we left our stay and visited farmers field in Joyisaraharahalli, Ranibennur. There Pawar sir and Jagadeesh sir welcomed us to the farmers field .



In Joyisaraharahalli at first we visited Muskmelon plot. There sir explained briefly about the anthesis, stigmareceptivity, pollination, emasculation, bagging of flowers, cost of cultivation, harvesting etc. Then we visited different farmers field



of tomato and sponge guard. Later we went to Kunchuru, there we visited many farmers field like tomato ,okra, sponge gourd,curryleaves,maize.

By afternoon we had seen the seed extraction of tomato using tomato seed extractor. There sir gave detailed explanation on procedure of tomato seed extraction .By 4:00 pm we returned back to stay.

DAY 16

27-01-2023 Friday

On 27th of Jan we went to the farm of Laxmi inputs there by we collected knowledge regarding emasculation of tomato again in order to enhance our skills of emasculation in tomato .

We went to farm at 9.00 AM in the morning .Our guide Dr.Chetan sir came and assigned us the work of emasculation in tomato .We were provided with forceps .We ought to remove the anthers and the petals and female part of the flower must be made intact.

This we carried up to evening 5.00 PM even and before that we walked through plot and visited the plot of GOT there by we saw the crop of bottle gourd and ridge gourd.We studied various aspects of GOT test.



DAY 17

28-01-2023 Saturday

Pollen collection from the Male plants :

Select open, dark yellow flowers from the father plant for pollen or anther removal. If humidity is low, pollen collection can be done easily without removal of the flower from the father plant. Collect the pollen by using a dissecting needle or scalpel to cut a slit in the anther cone and using the tip of the needle or scalpel to remove the pollen. Under very humid conditions the pollen may be tacky and will not release. If this is the case, the flowers should be removed from the plant and left to dry at room temperature for a couple of hours.



If the pollen is still too tacky, emasculate the flower by removing the anthers from the flowers using either fingers or forceps. Hold the flower at the pedicle, pull the anther out , and leave the anthers to dry in the sun or under an incandescent lamp that is placed at least 18 inches away . After drying, anthers should split and release the pollen. If the pollen does not release, tap the flower to remove the pollen. Pollen can be stored for 1–2 months if left in a dry, cool (32–41°F) place, or kept at –112°F if storage is needed for longer periods of time. Emasculatation of the flower leaving the stigma exposed for pollination.

DAY 18

29-01-2023 Sunday

By morning 10:00 am we left our stay and visited Research and development department of Laxmi inputs India pvt LTD, Ranebennur. On that day we sowing different seeds of gourds like Ridge gourd, Sponge gourd, Bitter gourd, Bottle gourd, and etc. First we take the protrays for sowing and filled with cocopeat. And then taken the seeds of ridge gourd i.e F1 LHB-Bhavyashree hybrid seeds and sown in the protrays and cover with soil. And then put atags at the corner of portrays. Like this we sown the seeds in portrays for seedlings then transplanted to nursery beds.



Protrays with seeds



DAY 19

30-1-2023 Monday

At 10:00 am we went to Laxmi inputs Pvt Ltd R and D farm. By 12:00 pm 3 rd year students of COH ,Sirsi visited Laxmi inputs company as they had been undergoing with the breeding course on vegetables. We explained them few aspects in breeding of vegetables. Dr. Chethan sir explained them tomato breeding aspects and later after lunch we went along with them to Production Unit , Mr. Manoj sir explained the running and working of the machines used in seed extraction. later they left from rannebennur and we came back to our stay

DAY-20

31-01-2023, Tuesday

At 11:00 am we left from our stay and went to Production Unit there we got a kit containing cap ,pen,book. Later we were taken to R and D Farm there we had lunch and after that we went to farm visit and came back to our stay.

DAY -21

01-02-2023, Wednesday

By afternoon 12:00 pm we left our stay and visited Research and development department of Laxmi inputs India pvt LTD, Rannebenur.

In the last day ,Hongal sir ,Prasad sir,Ashok sir, Prakash sir,we 16 members alongwith 3rd year students initially went to Research& Development centre of Laxmi Seed Inputs . Chethansir,remaining staffs and workers were there.First we went to Tomato Plot.There our classmate Prathyakshaexplained on determinate & indeterminate types in Tomato.FurtherChethan sir brought us to Pumpkin, Lady Finger Plot and finally to the plot where gourds are grown There Chethan sir briefly explained about the crops and seed production aspects . That is sir explained briefly about the crops their family , scientific name , chromosome number and time of anthesis and stigma receptivity and some breeding aspects



In the tomato plot chethan sir taught us about growth habit of tomato (determinate and semi- determinate types), different shapes of tomato, pollination time , anthesis and dehiscence timing in tomato.

Thereafter we went to Laxmi inputs seed processing unit. There Manoj sir and Uday sir welcome us to the unit. Further Manoj sir gave detailed explanation on procedures starting from seed procurement to export. We practically learned working of digital moisture meter .Thereafter Uday sir showed grading of seeds using gravity separator and it's working principles . Afternoon we learned packing

and marketing aspects. Finally in the evening. .At the felicitation programme..some of our classmates had given feedback about the IDP programme . Thereafter we felicitated Jayprakash ,Director of Laxmi inputs seed company and the section concluded by 6 pm. Then we return back to sirsi by 9 pm.

