



**REPORT**

**ON**

**ALL EXPERIENTIAL LEARNING  
PROGRAMME UNITS (2017-18)**



**UTTAR BANGA KRISHI VISWAVIDYALAYA**

**PUNDIBARI, COOCHBEHAR**

**WEST BENGAL, PIN - 736165**

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## **1. INTRODUCTION**

Experiential learning programme (ELP) is a focused part in the Under Graduate course curricula of the University keeping parity with the Indian Council of Agricultural Research (ICAR) formulated UG syllabus having a set objective of – “Earn While You Learn”. Experiential denotes interactive involvement based personally determined experience that would turn into innovation finally leading to the development of an entrepreneur resulting the generation of job provider rather than job seeker. In 2017-18 nine (9) Experiential Learning Programme units started their operation at Uttar Banga Krishi Viswavidyalaya in different establishments namely –

**Table – 1: Experiential Learning Programme units of the University**

<b>Sl. No.</b>	<b>Name of the ELP unit</b>	<b>Name of the establishment</b>
1.	<b>Experiential Learning Programme on Mushroom Production and Processing</b>	Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
2.	<b>Experiential learning Programme on Bio - Control Agents and Their Mass Production</b>	Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
3.	<b>Experiential Learning Programme on Vermicompost Production</b>	Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
4.	<b>Experiential Learning Programme on Commercial Horticulture</b>	Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
5.	<b>Experiential Learning Programme on Protected Cultivation of High Value Horticulture Crops</b>	Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
6.	<b>Experiential Learning Programme on Mass Multiplication of Plant and Molecules through Tissue Culture</b>	Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
7.	<b>Experiential Learning Programme on Engineering Technologies</b>	Faculty of Technology, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165
8.	<b>Experiential Learning Programme on Vermicompost Production and Processing</b>	College of Agriculture (Extended Campus), Uttar Banga Krishi Viswavidyalaya, Majhian, Dakshin Dinajpur, West Bengal, PIN - 733133
9.	<b>Experiential Learning Programme on Mushroom Production</b>	College of Agriculture (Extended Campus), Uttar Banga Krishi Viswavidyalaya, Majhian, Dakshin Dinajpur, West Bengal, PIN - 733133

The associated personnel of the University for functioning of the units include –

**Table – 2: The associated personnel and account number of different ELP units of the University**

Sl. No.	Name of the ELP	CEO	MD	Manager(s)	Account No.
1	Experiential Learning Programme on Mushroom Production and Processing at Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165	Dean, Faculty of Agriculture, UBKV, Pundibari, CoochBehar	Prof. (Dr.) Ayon Roy	Dr. Surajit Khalko	State Bank of India Current Account No. – 37561324604 Branch – Pundibari Branch Code - 18606
2	Experiential learning Programme on Bio - Control Agents and Their Mass Production at Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165	Dean, Faculty of Agriculture, UBKV, Pundibari, CoochBehar	Prof. (Dr.) Ayon Roy	Prof. (Dr.) P. M. Bhattacharjee	State Bank of India Current Account No. – 37561321749 Branch – Pundibari Branch Code - 18606
3	Experiential Learning Programme on Vermicompost Production at Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165	Dean, Faculty of Agriculture, UBKV, Pundibari, CoochBehar		Dr. Tarun Paul, Dr. Partha Sarathi Patra	State Bank of India Current Account No. – 37747791443 Branch – Pundibari Branch Code - 18606
4	Experiential Learning Programme on Commercial Horticulture at Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165	Dean, Faculty of Horticulture, UBKV, Pundibari, CoochBehar	Prof. (Dr.) Partha Sarathi Medda	Dr. Partha Sarathi Medda, Dr. Subhamay Sikdar, Professor (Dr.) Amarendra Nath De, Dr. (Mrs.) Arpita Mandal Khan	State Bank of India Current Account No. – 37561326894 Branch – Pundibari Branch Code - 18606
5	Experiential Learning Programme on Protected Cultivation of High Value Horticulture Crops at Faculty of Horticulture, Uttar Banga Krishi	Dean, Faculty of Horticulture, UBKV, Pundibari, CoochBehar	Dr. Indrajit Sarkar	Prof. (Dr.) Ranjit Chatterjee, Dr. Indrajit Sarkar, Dr. P. K. Paul,	State Bank of India Current Account No. – 37561307860 Branch –



Sl. No.	Name of the ELP	CEO	MD	Manager(s)	Account No.
	<b>Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165</b>			Dr. Soumen Maitra	Pundibari Branch Code - 18606
6	<b>Experiential Learning Programme on Mass Multiplication of Plant and Molecules through Tissue Culture at Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165</b>	Dean, Faculty of Horticulture, UBKV, Pundibari, CoochBehar	Dr. Indrajit Sarkar	Dr. Soumen Maitra, Dr. S. Kolukunde , Professor (Dr.) Amarendra Nath De	State Bank of India Current Account No. – 37575068405 Branch – Pundibari Branch Code - 18606
7	<b>Experiential Learning Programme on Engineering Technologies at Faculty of Technology, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165</b>	Dean, Faculty of Technology, UBKV, Pundibari, CoochBehar		Dr. Om Prakash Chaturvedi	Yet to open a separate bank account
8	<b>Experiential Learning Programme on Vermicompost Production and Processing at College of Agriculture (Extended Campus), Uttar Banga Krishi Viswavidyalaya, Majhian, Dakshin Dinajpur, West Bengal, PIN - 733133</b>	Associate Dean, College of Agriculture, UBKV, Majhian, Dakshin Dinajpur		Dr. Surajit Kundu, Dr. Tapas Kumar Pandit	Yet to open a separate bank account
9	<b>Experiential Learning Programme on Mushroom Production at College of Agriculture (Extended Campus), Uttar Banga Krishi Viswavidyalaya, Majhian, Dakshin Dinajpur, West Bengal, PIN - 733133</b>	Associate Dean, College of Agriculture, UBKV, Majhian, Dakshin Dinajpur	Prof. (Dr.) Ayon Roy	Mr. Rakesh Yonzone, Md. Azgar Ali	Yet to open a separate bank account

The detailed information along with activities of all nine different units are presented below -

## 2. Activities of Experiential Learning Programme on Mushroom Production and Processing at Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165

No. of students enrolled	20
Date of Commencement	3 <sup>rd</sup> November'2017
(Student activity)	
Activity Plan Executed	<p>a) <b>Survey in the nearby villages of the University for Mushroom growing and spawn production activity as well as for the scope of mushroom production, market etc.</b></p> <ul style="list-style-type: none"> <li>To understand the demand of mushroom among the people and local market.</li> </ul> <p>b) <b>Commercial product development</b></p> <ul style="list-style-type: none"> <li>Pure culture of Mushroom, spawn and mushroom production <ul style="list-style-type: none"> <li>Isolation and making of the pure culture to produce good quality spawn.</li> <li>Testing of cultures for the ability to produce good quality spawn <ul style="list-style-type: none"> <li>The produced spawn were tested for the potentiality to produce mushroom fruiting body</li> </ul> </li> </ul> </li> <li>Commercial production of the spawn and Mushroom <ul style="list-style-type: none"> <li>Spawns were prepared in bulk quantity using wheat grains as substrate for growing spawn, to meet the demand of local mushroom growers as well as for production of mushroom in mushroom house for sell in market</li> <li>Mushrooms were produced in bulk quantity using the spawn produced in laboratory in mushroom house to meet the local market demand of fresh mushroom</li> <li>Part of produced mushrooms were dried and sent to markets of distant places through market channels</li> </ul> </li> <li>Cost estimation <ul style="list-style-type: none"> <li>Existing market value of inputs helps in estimation of materials and other costs to arrive at the total cost of production of the products</li> </ul> </li> <li>Quality analysis <ul style="list-style-type: none"> <li>Lectures by faculties on quality control. <ul style="list-style-type: none"> <li>Finalization of design /product <ul style="list-style-type: none"> <li>Label design</li> <li>Packing of products</li> <li>Information brochure</li> </ul> </li> </ul> </li> </ul> </li> <li>Target Amount of the product to be marketed: <ul style="list-style-type: none"> <li>Mushroom Spawn: 1000 Packets in 2 months</li> <li>Mushroom fruiting body: 250 Kg in 2 months</li> </ul> </li> <li>Packing range : Mushroom- 1 Kg, ½ Kg Spawn - 200g</li> </ul>
Actual Production	<ul style="list-style-type: none"> <li>Mushroom Spawn: 840 Packets (including 200 pkts for</li> </ul>



mushroom cultivation)

- Mushroom fruiting body: 195 Kg

### Economics of the activity:

Cost of production	₹ 3153.00 ₹649.00 (Account maintenance charge)
Product Sold	<ul style="list-style-type: none"> <li>• Mushroom Spawn:: ₹ 5484.00 (457 Pkts)</li> <li>• Mushroom fruiting body: ₹ 11,700.00</li> </ul>
Profit	• ₹ 14,031.00 - ₹ 649 = ₹ 13382/-

### Profit sharing:

An amount of Rs. 13382/- (Rupees thirteen thousand three hundred and eighty two only) has been generated as profit of the abovesaid activity and 50% of this amount, i.e. Rs. 6691/- (Rupees six thousand six hundred and ninety one only) has been distributed among the twenty students in September, 2018; the details of which is presented below -

Sl. No.	Name of the student	Amount given (Rs.)
1	Anshu Priya	Rs. 334.55/-
2	Avirup Guha	Rs. 334.55/
3	Bijoy Chanda	Rs. 334.55/
4	Chandan Saha	Rs. 334.55/
5	Birat Rai	Rs. 334.55/
6	Th. D. Grace Chiru	Rs. 334.55/
7	Jasmeen Khandaker	Rs. 334.55/
8	Jeet Roy	Rs. 334.55/
9	Madhurima Biswas	Rs. 334.55/
10	Md. Aminur R. Ansari	Rs. 334.55/
11	Md. Saheen Akhtar	Rs. 334.55/
12	Nithya S.	Rs. 334.55/
13	Osman Ali	Rs. 334.55/
14	Rupom Barua	Rs. 334.55/
15	Saheb Bhadra	Rs. 334.55/
16	Sandesh Rai	Rs. 334.55/
17	Sourav Das	Rs. 334.55/
18	Souvik Dey	Rs. 334.55/
19	Surajit Sarkar	Rs. 334.55/
20	Yeti	Rs. 334.55/
	<b>TOTAL</b>	<b>Rs. 6691.00</b>

The glimpse of activity under this ELP unit is presented below:



**PREPARATION OF SUBSTRATE**



**SPAWNING AND SPAWN RUNNING**



**PREPARATION OF SPAWN**



**PREPARATION OF SPAWN**





**CULTIVATION OF OYSTER MUSHROOM**



**CULTIVATION OF OYSTER MUSHROOM**



**CULTIVATION OF OYSTER MUSHROOM**



**CULTIVATION OF OYSTER MUSHROOM**



**FINAL PRODUCT**

### **3. Activities of Experiential learning Programme on Bio - Control Agents and Their Mass Production at Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165**

No. of students enrolled 18

Activity Plan Executed

a) **Survey with the farmers in villages of the University jurisdiction with questionnaire for awareness about the use and availability of the bio-agents.**

- Questionnaire development to understand farmers profile for buying behavior.

b) **Commercial product development**

- Isolation of the bio-agents from the field
  - Isolation of the bio-agents from crops to enable the farmers to provide the local isolates of the bio-agents.
    - Testing the efficacy of the bio-agents
  - The isolates of the bio-agents will be tested for their efficacy in the plant health management.
- Mass production of the bio-agents
  - These provide important details such as protocols for mass production of the bio-agents on grains, broth media and in fermenter.
- Commercial production
  - Preparation of commercial product by mixing the mass multiplied bio-agents in a proper ratio with talc based formulation as **Crop specific Bio-Mix (Rice Bio-Mix, Veg Bio-Mix, Lentil Bio-Mix etc.)**
  - Preparation of traps and Tricho–cards per unit area (Bigha) basis.
- Cost estimation
  - Creating a prototype also helps in estimation of materials and other costs to arrive at the total cost of production of the consortium products
- Quality analysis
  - Lectures by faculties on quality control.
    - Finalization of design /product
      - Label design
      - Information brochure
      - Method of application (local language)
- Target Amount of the product to be marketed:



- Microbial inoculant: **250 kg in 2 months**
- Trichocard:
- Trap:
- Packing range : 200 g, 500g and 1 kg

Actual Production

- Microbial Inoculant: 230 kg

### Economics of the activity:

Cost of production ₹ 15573.00

Product Sold ₹ 63512.00

Profit ₹ 47939.00

### Profit sharing:

An amount of Rs. 47939/- (Rupees forty seven thousand nine hundred and thirty nine only) has been generated as profit of the abovesaid activity and 50% of this amount, i.e. Rs. 23970/- (Rupees twenty three thousand nine hundred and seventy only) has been distributed among the eighteen students in September, 2018; the details of which is presented below-

Sl. No.	Name of the student	Amount given (Rs.)
1	Alolita Bhattacharya	Rs. 1331.66/-
2	Antara Mochary	Rs. 1331.66/
3	Anwasha Samanta	Rs. 1331.66/
4	Debjani Mandal	Rs. 1331.66/
5	Moumita Khatun	Rs. 1331.66/
6	Oindrila Debsarma	Rs. 1331.66/
7	Paramita Das	Rs. 1331.66/
8	Piyali Sarkar	Rs. 1331.66/
9	Pousabh Das	Rs. 1331.66/
10	Rahul Shaikh	Rs. 1331.66/
11	Rayanta Kumar Lala	Rs. 1331.66/
12	Rekha Khalko	Rs. 1331.66/
13	Saikat Chowdhury	Rs. 1331.66/
14	Sohel Rahaman	Rs. 1331.66/
15	Sovonlal Sahu	Rs. 1331.66/
16	Subhajit Ruidas	Rs. 1331.66/
17	Vyshnavi Sunil	Rs. 1331.66/
18	Kapil Deb Harjee	Rs. 1331.66/
	<b>TOTAL</b>	<b>Rs. 23969.98/-</b>

The glimpse of activity under this ELP unit is presented below:



ISOLATION OF MICROBES



MEDIA AND GROWTH



MASS PRODUCTION OF *Pseudomonas fluorescens*



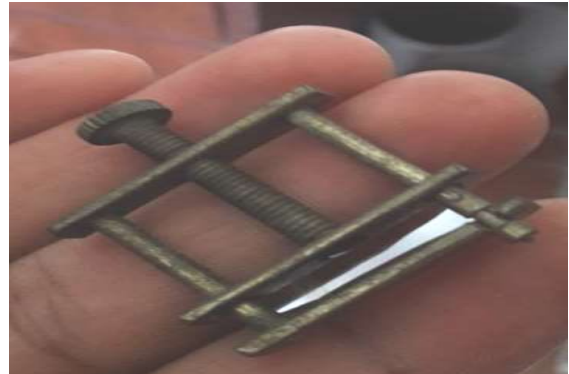
MASS MULTIPLICATION



BACTERIAL FILTER ASSEMBLY



FERMENTER



LOCK



MASS PRODUCTION OF BIOCONTROL AGENTS



INSIDE B.O.D.



CORCYRA REARING CAGE



REARING BOX





***Trichogramma* EGG CARDS**



**EGG CARDS**



**COMMERCIAL PRODUCTION**



**COMMERCIAL PRODUCTION**

#### 4. Activities of Experiential Learning Programme on Vermicompost Production at Faculty of Agriculture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN - 736165

No. of students enrolled 20

Activity Plan Executed

- Collection of waste materials
- Processing of waste materials
- Pre-digestion of waste materials
- Installation of waste materials in pits
- Release of earth worms
- Supply of food, watering, turning and maintenance in vermicompost pit
- Harvesting, sieving, drying & packing of finished product
- Analysis of plant sample and final product of vermicompost
- Marketing of the product

#### Economics of the activity:

Cost involvement including

Rs. 24000/-

account maintenance

Product Sold till date

Rs. 11800/- (Rest products are available in the unit)

The glimpse of activity under this ELP unit is presented below:



Students working in the vermicompost production unit





Partially decompost straw



Mixing of cowdung + fertilizer  
soil



Bed filling



Water sprinkling



Earthworm release in bed



Earthworm-*Eisenia foetida*



Turning of bed



Harvesting of vermicasts



Sieving of vermicasts



Vermicompost

Bed technique of vermicompost production





Rice straw



Mixing of cow dung + fertile soil



Transportation of cow dung



Filled pit



Pit filling



Earthworm-*Eisenia foetida*



Gunny bag covering



Water sprinkling



Vermicompost



Sieving of vermicasts



Harvesting of vermicasts

Pit technique of vermicompost production





*Active participation of every group member*







**COLLECTION OF SPECIES**



**WATERING IN VERMICOMPOST BED**



**MIXING AND TURNING**



**PEST AND DISEASES**



**HARVESTING AND SIEVING**



**5. Activities of Experiential Learning Programme on Commercial Horticulture at Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165**

No. of students enrolled: 12

Works undertaken:

The programme consists of three sub-projects, namely -

**Cultivation of early winter vegetables**

- a. Coriander*
- b. Radish*
- c. Tomato*
- d. Cauliflower*

**Production of planting materials**

- a. Teak sapling*
- b. Areca nut seedling*
- c. Papaya seedling*

**Production of commercial flowers**

- a. Gladiolus*

***Cultivation of Radish :***

The seed was sown in the month of august. Radish seedlings appeared above the ground two or three days after sowing. Radish was mainly cultivated for leafy vegetables purpose.

**FIELD ACTIVITIES:**

PREPARATION OF BED	08/08/2017
PLANTING	09/08/2017,
IRRIGATION	As per requirement
Nutrient	Foliar spray with N.P.K
HARVESTING	Harvesting started since 10/09/17,
SELLING	Selling started since 10/09/17 Upto 20/09/17

***Cultivation of coriander:***

It is a tropical crop and can be grown throughout the year for leaf purposes but for higher price it was grown in August.

**Manure:**

FYM was mixed during Bed preparation.

**Irrigation:**

First irrigation was given after sowing and thereafter no irrigation was provided due to the presence of excess moisture in soil.

**FIELD ACTIVITIES:**

PREPARATION OF BED	08/08/2017
PLANTING	10/08/2017,
IRRIGATION	11/08/2017,
HARVESTING	Harvesting started since 13/11/17,
SELLING	Selling started since 13/11/17 Upto 15/11/17

***Cultivation of tomato:***

The crop was grown from October. The land was ploughed and harrowed 3 or 4 times to obtain a fine tilth. Farm Yard Manure (FYM) was applied at the last ploughing.

**Irrigation**

Irrigation was provided once in 7-10 days depending on the soil and weather conditions

**Cultural practices**

The plants were provided support with the help of small bamboo sticks to increase the production.



**FIELD ACTIVITIES:**

PREPARATION OF BED	09/10/2017
IRRIGATION	7-10 days interval as required by soil
NUTRIENT	45 and 60 DAS
HARVESTING	Harvesting started since 17/01/18

**Production of Planting Materials:**

Planting material production consisted of multiplication of propagating materials. In this ELP Arecanut seedlings and teak stumps through root cutting have been produced.

**TEAK:**

Sl. No.	PRACTICE	DATE
1.	Teak Stump treatment with Bavistin	12/09/2017
2.	Packet filing(soil, sand, SSP, FYM)	13/09/2017 upto 15/09/2017
3.	planting	18/09/2017 upto 20/09/2017
4.	Foliar spray (N:P:K – 20:20:20 @ 4gm/ l)	23/10/2017

**ARECANUT:**

Sl.no	PRACTICE	DATE
1.	Packet filing(soil, sand, SSP, FYM) and Sowing	08/11/2017 upto 10/11/2017
2.	Foliar spray (N:P:K – 20:20:20 @ 3gm/5 lt.)	17/11/2017

**Production of commercial flowers:****Cultivation of Gladiolus:**

Cultivation has been done for cut flower production.

**FIELD ACTIVITIES:**

PREPARATION OF BED	27/11/2017
PLANTING	29/11/2017,
IRRIGATION	29/11/2017,
NUTRIENT	27/11/2017
HARVESTING	Harvesting started since 20/01/18,
SELLING	Selling started since 20/01/18 Upto 30/03/18

**Economics of the activity:**

Cost of production	Rs. 16711.00
Income excluding revolving fund	Rs. 54625 - Rs. 20000 = Rs. 34625/-
Total Profit	Rs. 34625 – Rs. 16711 = Rs. 17914/-

**Profit sharing:**

An amount of Rs. 17914/- (Rupees seventeen thousand nine hundred and fourteen only) has been generated as profit of the abovesaid activity and 50% of this amount, i.e. Rs. 8952/- (Rupees eight thousand nine hundred and fifty seven only) has been distributed among the twelve students in September, 2018; the details of which is presented below.

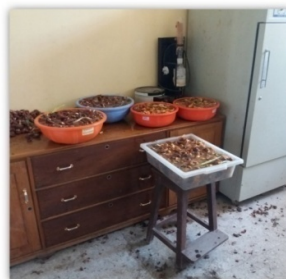
Sl. No.	Name of the student	Amount given (Rs.)
1	Himanshi Swain	Rs. 746/-
2	Marina Narjinary	Rs. 746/
3	Poulami Roy	Rs. 746/

4	Rajdeep Mohanta	Rs. 746/
5	Riya Chakraborty	Rs. 746/
6	Shibasish Das	Rs. 746/
7	Soumit Dey	Rs. 746/
8	Sourav De	Rs. 746/
9	Abdul Latif Ansary	Rs. 746/
10	Subhasish Kundu	Rs. 746/
11	Tanushree Koley	Rs. 746/
12	Hrishav Saha	Rs. 746/
TOTAL		Rs. 8952

The glimpse of activity under this ELP unit is presented below:



Selection of corm



Seperation of corm



Field preparation



Stacking



Harvesting of flower



Harvested flower



Coriander field preparation



Radish field preparation



Radish field



Weeding



Tomato harvesting



Harvested tomato





Marigold field



Marigold harvesting



Arrangement of Teak



Watering



Filling of Arecanut seedling



Selling of Arecanut seedling





Treatment of Gladiolus corm



Supervision of field



Harvesting of spike



Harvesting of Marigold



Harvested Spike



Ready to sell



## 6. Activities of Experiential Learning Programme on Protected Cultivation of High Value Horticulture Crops at Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165

No. of students enrolled: 12

Works undertaken:

- Protected cultivation of Gerbera

**Preparation of beds:** 28<sup>th</sup> of October 2017.

- Beds were prepared with 1 m width ,30 cm height and length is 10m. These raised beds were prepared by leaving 15 cm path in between the beds.
- During the final land preparation, the well decomposed FYM @ 5kg/sq.m was applied.
- The pH 6.7 was estimated before application of manures and fertilizer.

**Spacing-** 30cm x 30cm (Triangular method of planting was followed)

**Planting material:** Suckers of previously grown plants available in our university.

**Planting:** Planting done at a depth of 10 cm in the prepared beds.

**Irrigation:** Irrigation given immediately after planting with a rose can as per the rate of 600-700 ml of water per plant per day.

**Manure:**

- Foliar application of N:P:K(19:19:19) @3g per litre of water at weekly interval.
- Fermented mustard cake had been prepared and diluted by 10 times with water and apply at an interval of 15 days @ 500ml/plant.

**Cultural practices:**

- After 40 days of planting, removal of flower buds was done to increase the vegetative growth.
- Light hoeing was done to keep the soil in porous condition.

**Flowering time:** Flowering started in 3months and 15 days.

**Harvesting:**

- Harvesting done by pulling the stock without harming the plants when the outer rows of disk florets unfurled.
- The plants were tied in the bunches of 6 different colour flowers and sold.

### FIELD ACTIVITIES:

PREPARATION OF BED	28/10/2017
PLANTING	1/11/2017, 2/11/2017
IRRIGATION	EVERY DAY
FOLIAR SPRAY	Once in a week
MUSTARD CAKE	15 days interval
HARVESTING	Harvesting of flowers started since 16/02/18,
SELLING	Selling started since 16/02/18 and continuing but cost cultivation have been done up to 16/05/18 for maintenance of the plants

- Raising of off-season hybrid marigold flowering plants for selling

**Method of sowing of marigold seed in cocopeat:**

- At first the coco peat boxes were broken and soaked in water over night. On the next day they are allowed to dry *i.e.* just to remove the excess water.
- The pro trays were filled with the wet coco peat and only the viable seeds (the dark black seeds).

There were 2 seeds in each hole, to ensure the germination of seeds in each hole. After that they were transferred to the green houses and watered daily

**Sowing in sterilized media:**

- At first soil and FYM were mixed thoroughly and they were allowed to dry.
- The mixed soil was then packed in newspaper and sterilized using autoclave.
- The sterilized soil was mixed with cocopeat @ 1:1 ratio and poured in protray and seeds were sown.
- Sterilised media was used for sowing hybrid seeds as because they were highly priced and germination percentage will be more.

**Transplanting**

- One month old seedlings were transplanted in the protray containing soil and FYM (@ 1:1 ratio). When the seedlings were having 2-3 leaves they were transferred in 4 inch polypacket of 15-gauge thickness.

**Selling:**

- When the first bud of the plant just shown colour (peeping out) at that time selling was started.

**FIELD ACTIVITIES :**

STERILIZATION OF MEDIA	7/9/2017
SOWING IN STERILIZED MEDIA	17/8/2017, 13/9/2017, 13/11/2017
TRANSPLANTING	18/10/2017, 14/11/2017, 1/12/2017
HARVESTING AND SELLING	Started from 20/11/2017

- Protected cultivation of Chrysanthemum for potted plants and flowers

The 40 days old rooted cuttings have been collected from Instructional Farm, Dept. FMAP, F/Hort, UBKV without cost.

**Preparation of soil:** At first soil and FYM was mixed in the ratio of 1:1 thoroughly.

**Filling in packets:** 7<sup>th</sup> of August 2017.

**Date of transplanting of chrysanthemum rooted cuttings in polythene bags:**

9<sup>th</sup> of August 2017

At the bottom of the packets 3 holes were made with the help of a sharp stick. The packets were filled with the mixture tightly. The rims of the packets were folded as these portions were liable to damage.

**Planting of rooted cuttings:** The cuttings was uprooted from the main nursery carefully. Then wholes were made at the middle if the filled packets and the roots of the plants were inserted in the holes. The soil around the plant was tightened by pressing with fingers.

**After care:**

Immediately after transplanting watering was done to the plants

Pinching was done 1 month after transplanting.

After 1 week the transplanted plants were treated with bavistin @1g/lit and dithane M-45@3g/lit of water

Foliar spray was done with NPK (19:19:19)@3ml/5lt of water.

**FIELD ACTIVITIES:**

PREPARATION OF SOIL	7/08/2017
FILLING OF PACKETS	9/08/2017
PLANTING OF ROOTED CUTTINGS	10/08/2017, 11/08/2017
WATERING	In two days interval within a week
PINCHING	11/09/2017, 12/09/2017
FUNGICIDE SPRAYS	28/08/2017
FOLIAR SPRAY	Once in a week

- Protected cultivation of off-season palak

**Preparation of beds:** 25<sup>th</sup> of August, 2017.

- Beds were prepared with 1 m width , 20 cm height and length is 10m. These raised beds are prepared by leaving 15 cm path in between the beds.
- During the final land preparation, the well decomposed FYM @ 5kg/sq.m was applied.
- The pH level of 6.0 was estimated before application of manures and fertilizer.

**Time of sowing:**

- 1<sup>st</sup> sowing-29/8/17,
- 2<sup>nd</sup> sowing-20/9/17
- 3<sup>rd</sup> sowing-10/10/17

**Seed rate:** 450 g seeds were required for 3 times sowing. Seeds were treated with Sprint @ 2g/Kg of seed

**Irrigation:** Irrigation was given immediately after planting with a rose can as per the rate of 600-700 ml of water per square meter per day.

**Fertilizer:** Foliar application of N:P:K (19:19:19) @3g/5l at weekly interval.

**Cultural practices:**

**Weeding:** Hand weeding @7days of interval

**Thinning:** Thinning was done at 12days after sowing

**Harvesting:** The crop was ready for harvesting in about 3-4 weeks after sowing

**FIELD ACTIVITIES :**

<b>Bed preparation</b>	25/8/17,18/9/17,9/10/17
<b>Seedling sowing</b>	1 <sup>st</sup> sowing-29/8/17,2 <sup>nd</sup> sowing-20/9/17,3 <sup>rd</sup> sowing-10/10/17
<b>1st irrigation in bed</b>	29/8/17
<b>Irrigation</b>	As per requirement
<b>Weeding</b>	In every 7days interval
<b>Harvesting</b>	18/9/17,9/10/17,7/11/17

- Protected cultivation of off-season Radish for leaves

**Preparation of beds:** 25<sup>th</sup> of August, 2017.

- Beds were prepared with 1 m width , 20 cm height and length is 10m. These raised beds were prepared by leaving 15 cm path in between the beds.
- During the final land preparation, the well decomposed FYM @5kg/sq. m was applied.
- The pH Level of 6 was estimated before application of manures and fertilizer.

**Time of sowing:**

- 1<sup>st</sup> sowing of date 29<sup>th</sup> Aug. of 17
- 2<sup>nd</sup> date of sowing 20<sup>th</sup> sept.17

**Seed rate:**

600g of seed required for two times sowing of three beds of polyhouse, seeds were treated with sprint about 2g/Kg of seed

**Spacing:**

20cm distance between row to row and 5cm distance between plant to plant

**Irrigation:** Irrigation was given immediately after planting with a rose can as per the rate of 600-700 ml of water per plant per day.

**Fertilizer:** Foliar application of N:P:K (20:20:20) @ 3 g per 5 lt. of water at weekly interval

**Cultural practice:**

- Weeding done manually at weekly interval
- Thinning is done fifteen days after sowing

**Harvesting:** Crop is ready for harvesting 25-35 days after sowing

**FIELD ACTIVITIES :**

<b>Bed preparation</b>	25.08.2017, 07.10.17
<b>Seed sowing</b>	29.08.2017, 10.10.17
<b>1<sup>st</sup> irrigation</b>	29.08.17
<b>Irrigation</b>	In every day
<b>Weeding</b>	08.09.2017
<b>Thinning</b>	15.09.17, 25.10.17
<b>Harvesting</b>	27.09.2018, 09.11.17

- **Protected cultivation of Sprouting Broccoli**

**POTRAY RAISING: 11.10.2017**

At first soil was prepared by mixing Vermicompost with fine soil at 1:1 ratio. Seeds were planted on potray, before planting they were treated by Sprint Fungicide. They were watered in specific interval. Germination was started within 2 weeks. Seeds were planted on 11<sup>th</sup> Oct'2017.

**BED PREPARATION IN POLYHOUSE: 13.11.2017**

- Beds prepared with 1 m width , 20 cm height and length is 10m. These raised beds are prepared by leaving 15 cm path in between the beds.
- During the final land preparation, the well decomposed FYM @5kg/sq.m was applied
- The pH level of 6.0 was estimated before application of manures and fertilizer.

**TRANSPLANTING: 15.11.2017**

One month after sowing the seedlings of broccoli transplanted to bed from the nursery bed. Approximately 50 broccoli plants were transplanted in bed in a spacing of 45cmx45cm. At first rows were made in a distance of 45cm X 45cm soil was loosened by khurpi and 4-5g vermicompost had been provided to each pit. Then the seedlings were planted in each pit. Then water was given after planting with rose can.

**Irrigation:** Irrigation was given immediately after planting with a rose can as per the rate of 600-700 ml of water per plant per day.

**INTERCULTURE OPERATION:**

**WEEDING:** Weeding was done on 12 DAS, on **27.11.2017**

**HARVESTING:** Harvesting was done on **25.01.2018**

**FIELD ACTIVITIES :**

<b>Seedling sowing &amp; 1st irrigation</b>	11.10.2017
<b>Irrigation</b>	In every 2 days' interval
<b>Bed preparation</b>	13.11.2017
<b>Trans planting to bed</b>	15.11.2017
<b>1st irrigation on bed</b>	20.11.2017
<b>Watering</b>	Every 7 days interval
<b>Weeding</b>	27.11.2017
<b>Harvesting</b>	25.01.2018



**Economics of the activity:**

Cost of production	Rs. 2299.00
Income excluding revolving fund	Rs. 27555 - Rs. 20000 = Rs. 7555/-
Total Profit	Rs. 7555 – Rs. 2299 = Rs. 5256/-

**Profit sharing:**

An amount of Rs. 5256/- (Rupees five thousand two hundred and fifty six only) has been generated as profit of the abovesaid activity and 50% of this amount, i.e. Rs. 2628/- (Rupees two thousand six hundred and twenty eight only) has been distributed among the twelve students in September, 2018; the details of which is presented below -

Sl. No.	Name of the student	Amount given (Rs.)
1	Dibya Jyoti Mukhia	Rs. 219/-
2	Dipayan Sarkar	Rs. 219/
3	Himanshi Swain	Rs. 219/
4	Rajdeep Mohanta	Rs. 219/
5	Riya Chakraborty	Rs. 219/
6	Riya Paul	Rs. 219/
7	Soumit Dey	Rs. 219/
8	Sourav De	Rs. 219/
9	Abdul Latif Ansary	Rs. 219/
10	Kakali Das	Rs. 219/
11	Tanmoy Mandal	Rs. 219/
12	Avik Bera	Rs. 219/
TOTAL		Rs. 2628/-

The glimpse of activity under this ELP unit is presented below:



Gerbera Flower



Bed preparation



Planting



Gerbera bed



Harvesting of flower



Selling of flower





**Demonstration of cutting**



**Demonstration of packaging**



**Cutting of Gerbera**



**Packaging of Gerbera**



**Arrangement of sticks**



**Ready for marketing**





Marigold flower



Seedlings in plastic packet



Arrangement of seedlings



Seedlings are ready to sell



Selling of seedlings



Transplanting of seedlings





Coco peat preparation



Chrysanthemum seedlings



Bed of Gerbera plant



Gerbera Flower harvesting



Selling of Chrysanthemum



Gerbera flower selling





Palak seedlings (off season)



Radish seedlings (off season)



Radish Plot



Broccoli seedlings (off season)







**Broccoli seedlings(off season)**



**After harve**



**Plot observation**



**Harvest**



**7. Activities of Experiential Learning Programme on Mass Multiplication of Plant and Molecules through Tissue Culture at Faculty of Horticulture, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165**

No. of students enrolled	12
Date of commencement	9 <sup>th</sup> August 2017
Activity plan executed	<p><b>a) Discussion with the farmers of the surrounding villages of the University regarding the prospect of selling of tissue culture Malbhog Banana plant</b></p> <p><b>b) Hands on experience regarding the principles and operation of instruments of a Plant Tissue Culture Laboratory</b> Techniques of use of Autoclave, Laminar Air Flow, pH Meter, EC Meter, Humidifier, Rotary Shakers</p> <p><b>c) Hands on experience regarding Banana Tissue Culture</b></p> <ul style="list-style-type: none"> <li>• Preparation of stock solutions and maintenance in refrigerator</li> <li>• Preparation of culture media by mixing the stock solutions, plant growth regulators and using agar as solidifying agent</li> <li>• Collection of disease free Malbhog banana suckers from University orchard</li> <li>• Preparation of explants</li> <li>• Surface sterilization and inoculation of explants in the culture medium under laminar air flow</li> <li>• Judicial monitoring of the inoculated cultures against contamination</li> <li>• Subculture of proliferated tissues</li> <li>• Culture in rooting medium</li> <li>• Acclimatization of tissue cultured plantlets through primary as well as secondary hardening technique</li> </ul> <p><b>d) Commercial product development:</b></p> <ul style="list-style-type: none"> <li>• Tissue cultured Malbhog Banana Plantlets were developed both through direct regeneration as well as callus culture</li> </ul> <p><b>e) Economics of production</b></p> <ul style="list-style-type: none"> <li>• Cost estimation: as living explants, chemicals, electricity, purified water were used for production of disease free tissue cultured saplings hence cost estimation for development of a single plant is very important <ul style="list-style-type: none"> <li>○ Here, the previously available chemicals were utilized and the explants were collected from the University orchard, hence no input cost for this year was required.</li> </ul> </li> </ul>
Actual production	<p>Total production:</p> <p>Callus – 20 bottles</p> <p>Mother culture – 50 bottles</p> <p>Proliferated shoots - 450 pieces in bottles</p> <p>Rooted plantlets in bottles - 150 nos.</p> <p>Primary hardened plantlets – 87 nos.</p> <p>Fully acclimatized plants – 25 pieces</p> <p>Already sold – 10 pieces @ Rs 20/- per plant</p>
Production sold till date (22.05.2018)	<p>10 plants (@20 RS. / Plant) = Rs.200/-</p> <p>[no profit has been generated]</p>

**The glimpse of activity under this ELP unit is presented here:**





MS solution



Agar



Cutting of sucker



Preparation of





Sterilization



Inoculation



Sprouting of sucker



Ready for hardening





Rooting media



Tissue culture plant



Primary hardening



Hardening



Tissue culture Laboratory






## Primary hardening



## Secondary hardening



## Herdening chamber



## Selling of plant

[illegible]

## Deposit slip

[illegible]

## Account Statement





**Explant preparation**



**Hands on exposure to inoculation**



**Culture room**



**Hardened plantlets**

S. No.	Date	Name of Plant/Species	Source of Plantlet	Age of Plantlet	Size of Plantlet	Signature
1	18/11/18	Banana (Musa sapientum)	Tissue Culture	30 days	10 cm	

**Sell register**

**8. Activities of Experiential Learning Programme on Engineering Technologies at Faculty of Technology, Uttar Banga Krishi Viswavidyalaya, Pundibari, CoochBehar, West Bengal, PIN – 736165**

**Students Intake Capacity:**

Particulars	Student intake capacity (Number)	No. of EL Unit
Main campus, Faculty of Technology	25	1
Total	25	1

**Activity under the programme:**

**Fabrication of Power Operated Maize Sheller**

A low cost maize sheller suitable to medium land holding farmers has been fabricated and tested with following general requirements -

- i. High productivity
- ii. Accuracy of shape and size
- iii. Necessary surface finish
- iv. Simplicity of design
- v. Safety and convenience of control
- vi. Low cost

This machine was based on following principle

- The gravitational dropping of the whole maize through the inlet hopper to the rotating spikes and the exist of the grain to the receiver.
- The impact force delivered by the rotating spike to the whole maize cob and motion of this whole maize along the length of the de-cobbing barrel.

**Parts of the machine :**

**Shaft and spikes :** *It is the main component of the machine having length 105 cm. It is mounted on the bearing having metal spikes placed at a spacing of 8 cm with 45 degree. There are three rows which are equally spaced around the periphery of shaft.*

**Frame :** *The frame was made from angled iron mild steel. The overall dimensions of frame were 92 cm length, 85 cm width and 135 cm height. Initially the angled iron was cut to a precise length and was welded by using arc welding technique. The frame was strong enough to take a moment force developed by rotating shaft.*

**Screen:** *Screen is the component of the machine which is used to sieving the maize grain and having diameter 1.2 cm.*

**Inlet Hopper:** *The hopper is fabricated in trapezoidal shape, using galvanized iron of 16 gauge thickness and dimensions of 46 cm length 36 cm width and 46 cm height. It is placed on the outer casing for feeding the maize cobs.*

**Outlet:** *The hopper is fabricated in trapezoidal shape, using galvanized iron of 16 gauge thickness and dimensions of 46 cm length 36 cm width and 46 cm height. It is placed on the outer casing for feeding the maize cobs.*

**How it works?**

*The shaft carrying the spikes is suspended on two ball bearings. The spikes are arranged at 45 degree angle with main shaft with a uniform pitch (about 8 cm). The bearings are mounted on the structural frame work. The inlet hopper is fitted on the de-cobbing cylinder and throat of the inlet hopper fit into*

a square hole created at one end of the de-cobbing cylinder. One end of the cover is fixed with metal sheet and other end is provide with adjustable metal sheet. The electric motor is mounted at one end of the structural frame which is adjustable according to require belt tension. V-belt are used to connect the motor pully to shaft pully. The total cost of production of this maize sheller is less than Rs 9000/-.

The working of the maize sheller machine is simple in operation which is made up of cast iron angle stand in order to resist the whole load of the machine. The electric motor provides the primary motion required to power the machine. The motion and torque are transmitted with the help of belt to the main shaft & as a result the shaft rotates. The whole maize is introduced into the machine through the inlet hopper. They reach the rotating spikes inside the de-cobbing barrel by gravity. The spikes give continuous impact force on the whole maize, thereby removing the grains from whole maize. Because the spikes are arranged in spiral form, the whole maize moves along the length of barrel in the forward direction until they reach the cob exit spout and almost all the grains are removed. The total working capacity this sheller is in the range of 1.0 to 1.2 t/hr.

**The glimpse of activity under this ELP unit is presented below:**



**SHAFT WITH SPIKES**



**FRAME**



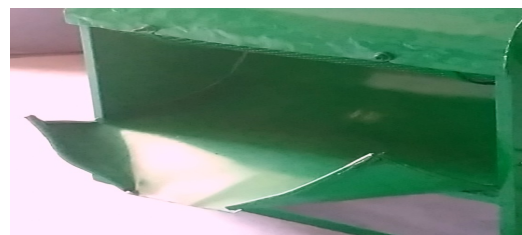
**SCREEN**



**INLET HOPPER**



**INLET HOPPER**



**OUTLET**



**Assembled Power Operated Maize Sheller**



**Demonstration of Power Operated Maize Sheller**



**9. Activities of Experiential Learning Programme on Vermicompost Production and Processing at College of Agriculture (Extended Campus), Uttar Banga Krishi Viswavidyalaya, Majhian, Dakshin Dinajpur, West Bengal, PIN - 733133**

Number of students enrolled: 14

Activities undertaken: Production and processing of vermicompost

**ACTIVITY CHART:**

ACTIVITIES	WEEKS														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Collection of waste materials															
Analysis of plant samples (raw materials)															
Processing of waste materials															
Pre-digestion of waste materials															
Filling up of waste materials in vermipits															
Release of earth worms															
Supply of food, watering, turning and maintenance of vermicompost pit															
Harvesting, sieving, drying															
Analysis of final product (vermicompost)															
packaging of finished product															

**PROJECT ECONOMICS:**

Sl. No.	Particulars		Amount (Rs.)
<b>A.</b>	<b>SALE REALIZATION</b>		
	(i)	Vermicompost - 1000 kg @ Rs. 10/- per kg	10,000
	(ii)	Earthworm – 1.25 kg @ Rs. 1000/- per kg	1,250
	<b>TOTAL INCOME</b>		<b>11,250</b>
<b>B.</b>	<b>COST OF PRODUCTION</b>		
	(i)	Cost of raw materials (cowdung – 1.5 tractor trolleys @Rs. 1800/- per trolley)	2,700
	(ii)	Earthworm (2 kg @ Rs. 1000/- per kg)	2,000
	(iii)	Labour – 12nos. @Rs. 257/-	3,084
	(iv)	Misc. expenses	500
	<b>TOTAL EXPENDITURE</b>		<b>8,284</b>
	<b>NET PROFIT</b>		<b>2,966</b>

The glimpse of activity under this ELP unit is presented here:



**PRODUCTION UNIT AT COLLEGE OF AGRICULTURE, MAJHIAN**



**STUDENT ACTIVITIES DURING PRODUCTION OF VERMICOMPOST**





**STUDENTS ACTIVITIES DURING THE PRODUCTION OF VERMICOMPOST**

**10. Activities of Experiential Learning Programme on Mushroom Production at College of Agriculture (Extended Campus), Uttar Banga Krishi Viswavidyalaya, Majhian, Dakshin Dinajpur, West Bengal, PIN - 733133**

Number of students enrolled: 14

Activities undertaken:

Spawn production of mushroom and Cultivation of *Pleurotus* *sp.* Through the following steps

- Production of culture
- Preparation of spawn
- Preparation of Substrate
- Spawning and spawn running
- Harvesting
- Post-harvest management
- Preparation of mother culture
- Preparation of spawn
- Maintenance of spawn quality



Economics of spawn production and mushroom cultivation:

Cost of production for 175 packets of spawn-

Material	Amount	Cost (Rs.)
1.Wheat grains	35 Kg.	700 (Rs.20/Kg.)
2.Polypropylene packets	1 Kg	150
3.Antibiotics	----	----
4.Cotton	2 packet	150
5.Labour	----	----
6.LPG		40
7.Lime	1 Kg	10
<b>Total</b>		<b>1050</b>

Spawn packets for sale- 80

Receipt- Rs. 15x80 packets = Rs 1200

i. e. Profit= Rs. (1200-1050) = Rs. 150

This profit is made within a period of 70 days.

Cost of cultivation for Mushroom production (50 cylinders)

Material	Amount	Cost (Rs.)
1.Straw	100bundles	200
2.Spawn	50 packets	---- (from our own production)
3.Labour	----	----
4.Fungicide and Insecticide		20
5.Polythene packets	50 pieces	100
<b>Total</b>		<b>320</b>

Mushroom produced- 8 Kg.

Sell of mushroom: 8 Kg @ Rs.50 = Rs 400

Net Profit: (Rs.400-320) = Rs.80

The profit is earned within a period of 70 days.

The glimpse of activity under this ELP unit is presented below:



**PREPARATION OF GROWING MEDIA**



**PREPARATION OF GROWING MEDIA**



**PREPARATION OF MOTHER CULTURE AND SPAWN**



**SUBSTRATE PREPARATION**



**Mother culture**



**Contamination**



**SPAWNING AND SPAWN RUNNING**



**PRODUCED SPAWN**



**MUSHROOM PRODUCTION**





**FINAL PRODUCT**



**POST-HARVEST MANAGEMENT**



**Dean, Faculty of Agriculture, UBKV visiting the mushroom production unit at College of Agriculture, UBKV, Majhian, Dakshin Dinajpur, West Bengal**