



Dr. I.B. Maurya  
DEAN

**COLLEGE OF HORTICULTURE & FORESTRY**

उद्यानिकी एवं वानिकी महाविद्यालय

(Agriculture University, Kota)

(कृषि विश्वविद्यालय, कोटा)

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**NOTIFICATION**

In pursuance to resolution No. AUK/AC-15/2020-02/15 of Academic Council meeting held on 06.10.2020 and subsequent approval of Board of Management vide resolution NO. BOM-15/2020/03, and its meeting held on 12.11.2020, the certificate course on "Protected Cultivation of vegetable and flowers" to be started at this college is hereby notified with specifications as under:

1. **Title:** Certificate Course on "Protected Cultivation of vegetable and flowers".
2. **Content:** Total 06 credit hours.(enclosed)
3. **Number of Beneficiaries:** 20-25 candidates per batch.
4. **Minimum Qualification:** 10<sup>th</sup> Standard
5. **Total duration of the course:** Three months
6. **Selection:** On the basis of 10<sup>th</sup> percentage, if the candidate is 12<sup>th</sup> Pass he/she will be given 2% additional marks and if he/she is graduate will be awarded 5% additional marks.
7. **Course fees:** Rs. 4000/- (as per decision taken in BOM)
8. **Age:** Minimum 18 years
9. **Medium of instruction:** Hindi
10. **Minimum required attendance:** 65%
11. **Evaluation pattern:** Multiple choice question of 100 Marks.
12. **Passing Marks:** 40%

  
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Copy to:

1. The PS to Hon'ble Vice-Chancellor, AU, Kota for kind information.
2. The Registrar, AU, Kota
3. The Dean, COA, Kota
4. The Director Research/Education/Extention Education/Student Welfare/HRD/PM&E, AU, Kota
5. The Comptroller/Controller of Examination, AU, Kota
6. Nodal Officer, Website, AU, Kota/Website Incharge, CH&F, Jhalawar.
7. All Heads and Incharges
8. Guard file

  
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# **CERTIFICATE COURSE**

**on**

**Protected Cultivation of Vegetables and Flowers**



**College of Horticulture and Forestry  
(Agriculture University, Kota)  
Jhalarapatan- 326 023, Jhalawar  
Rajasthan (India)**



## **Certificate Course on Protected Cultivation of Vegetables and Flowers**

### **Introduction:**

Smart farming systems reduce waste, develop productivity and enable management of a greater number of resources through remote sensing. It includes a range of technologies, including remote sensing, Internet of Things (IoT) devices, robotics, big data analytics, and artificial intelligence, to form an integrated crop production management system on a site-specific basis to increase profits, reduce waste, and keep the environmental quality. Protected cultivation technology as an integral component of precision farming has the ability and potential to enhance input use efficiency to a significant level so as to achieve sustainability in food production. It offers immense promise to Indian agriculture to face the challenges of increasing productivity and decreasing land size.

The College of Horticulture and Forestry, Jhalawar has an art of Protected Cultivation Unit consisting of different kinds of protected structures including hydroponics for demonstration of latest technology of hi-tech horticulture as well as training to end users. The infrastructure of the unit includes climate controlled & naturally ventilated polyhouses, hydroponic system, insect proof net houses, nursery facilities, plastic polytunnels, open fields, fertigation, packaging cum storage facility and training hall. Besides, the college has a team of experienced scientific as well as technical staff to teach and train the rural youth in the field of protected cultivation. The College is providing demonstrations and training to farmers since 2010. Because of this, the area under protected cultivation in Jhalawar has increased manifold from zero in 2010 to 100000 sqm in 2020.

To meet the specific requirement of trainees, training modules are tailored and delivered as exposure visits, interactive lectures and 'hands on trainings'. It is beneficial to all the other students, field functionaries, entrepreneurs, and professionals in the horticulture sector to acquaint them about the latest technologies in horticulture, whether it is vegetable, fruit or flower production and their possible application in own country to harness higher revenues from farms. This training will enhance the efficiency and responsiveness of organizations, expand the influence of their work and enable effective implementation of horticulture crop production programmes on Protected Cultivation Technology of vegetables and flowers.

Hands-on training and practical exposure on production technologies becomes important to improve upon the abilities of an individual on production and quality. The practical exposure also enhances the employability of the individual in industrial and will help to prepare a strong foundation and gain understanding of the quality production technique. Presently there is a dearth of technically qualified skilled professionals and their requirement in industry and academic is growing rapidly. The protected cultivation sector is growing at a much faster pace than any other industry in the country. Keeping this in view a certificate course on Protected Cultivation of Vegetables and Flowers has been prepared with following objectives:



**Objectives:**

- To develop skilled and trained manpower for sector of protected cultivation farming.
- To promote self employment and income generation.

**Course Insight:**

- To give an overall view of greenhouse technology in India and abroad including present scenario and future prospects of protected cultivation.
- To develop broad understanding of practices and processes involved in successful raising of high value crops like cucumber, tomato, pepper, muskmelon, rose, gerbera, carnation, etc under protected cultivation.
- To develop a clear understanding of environmental control and plant growth within a protective environment together with a practical knowledge of plant husbandry techniques.
- To identify the main type of growing structures and range of environmental factors controlled within a growing structure.
- To know the various techniques of greenhouse soil sampling, soil sterilization and soil preparation.
- To provide an opportunity to know the various techniques of raising vegetables/flower nursery for greenhouse production, various growing media and important disease of nursery and their management.
- To know about irrigation techniques and estimation of water requirement of different vegetable and flower crops.
- To study the role of macro and micro nutrients, their deficiency symptoms and correction.
- To manage pest, disease and weeds. Chemical and non chemical solutions, Integrated Pest Management (IPM) etc.
- To have comprehensive practical training of growing high value crops in greenhouse right from nursery to harvesting.
- To know about Hydroponics and aeroponics, principles, scope and present status.
- To evaluate maturity stages, harvesting techniques, various post harvest and packing house operations and storage techniques.
- To prepare produce for export, where and how to export and which produce is to be exported.
- To understand marketing system of vegetables in our country and methods of inventory management and record keeping.
- To undertake study tours of important organizations/entrepreneurs dealing with protected cultivation.
- To develop overall personality and introduction to entrepreneurship.

**Duration of certificate course:** 3 months

**Lecture schedule:**

- Two theory and two practical classes per day
- Each theory class will be of 1.30 hr duration whereas practical class will be of 2 hrs duration.

**Minimum Qualification:**

- 10<sup>th</sup> pass.
- Preference will be given to the candidates from the agriculture/horticulture field.
- Govt./Industry/NGO sponsored candidates.
- Open to both male / female candidate

**Age limit :** Minimum 18 years.

**Medium of Instruction & Examination:** Hindi

**Number of seats:** The maximum number of participants per batch will be 25. Batch will be run only if participants are more than 20. The selection of participants will be done based on merit and first come first basis.

**Admission fee:** Rs. 6,000/- excluding food and accommodation facility

**Boarding and Lodging:** Accommodation facilities will be arranged for the participants in the guest house or Hostel of College of Horticulture and Forestry, Jhalawar on payment basis and on request.

**Course content (Theory and practical)**

**Credit hours :** 06

**Maximum Marks:** 100

**Lecture schedule:****Theory:**

S.No.	Topic	No. of lecture
1.	Importance, current status, future prospectus and problems of protected cultivation	01
2.	Green house and factors for selection of greenhouse technology	01
3.	Design and construction of greenhouse	02
4.	BIS standards of greenhouse structures & components.	01
5.	Climate control mechanism in greenhouse environment (Structure, Equipment's & Instruments)	01
6.	Nursery growing and its management- Plug tray nursery raising technology, sterile media	01
7.	Vegetable grafting	01
8.	Mulching in greenhouse-types, merits and demerits	01
9.	Fertigation in greenhouse technology	01
10.	Nutrient management including use of PGRs	02
11.	Field preparation and pasteurization	01
12.	Hydroponics-structure and production technology	01
13.	Do and Don't in greenhouse cultivation	01
14.	Government policies in promotion of greenhouse technology including banking loan	01
15.	Production technology of tomato	01
16.	Production technology of capsicum	01



17.	Production technology of cucumber	01
18.	Production technology of muskmelon	01
19.	Production technology of rose	01
20.	Production technology of gerbera	01
21.	Production technology of carnation	01
22.	Integrated pest management in greenhouse	02
23.	Integrated disease management greenhouse	02
24.	Post harvest management of different vegetable and flowers including harvesting, packaging, storing, transportation and cool chain system	02
25.	Marketing and cost estimation and economic analysis	01
	<b>Total</b>	<b>30</b>

**Practical:**

S.No.	Topic	No. of lecture	No of lecture for practice
1.	Repairing of damaged polyhouse and practice of using different components	01	01
2.	Bed preparation, soil sterilization, use of mulch	01	02
3.	Nursery raising of different vegetables and flowers- preparation of media, filling of media in protray, sowing, management of vegetable nursery	01	02
4.	Transplanting of vegetable and flower crops	01	01
5.	Vegetable grafting technique-growing of suitable rootstock and grafting	01	01
6.	Preparation of nutrient solution	01	00
7.	Training and pruning system in tomato, capsicum, cucumber	02	02
8.	Training and pruning system in rose, gerbera, carnation	02	02
9.	Preparation of insecticide/fungicide solution and their use in different crops	02	02
10.	Harvesting and grading of different vegetable and flower crops	01	01
11.	Packaging of vegetables and flowers	01	01
12.	Calculation of cost of cultivation	01	00
	<b>Total</b>	<b>15</b>	<b>15</b>

**Note:** One practical class will be exclusively for practice of individual practical by the trainees

**Examination:** After completion of the course, examination will be held. The candidates securing minimum of 40 marks out of 100 will get certificate.