

21GPBR312 CROP IMPROVEMENT - II

(FIBRES, SUGARS, STARCHES, NARCOTICS,
VEGETABLES, FRUITS AND FLOWERS)

Hours Per Week :

L	T	P	C
1	-	2	2

Total Hours :

L	T	P
15	-	30

COURSE DESCRIPTION AND OBJECTIVES:

This course impart knowledge to the students on the botanical description, origin, distribution and various breeding approaches used for the development of varieties / hybrids in Fibre, Sugar, Starches, Narcotics, Vegetables, Fruits, Flowers and other crops

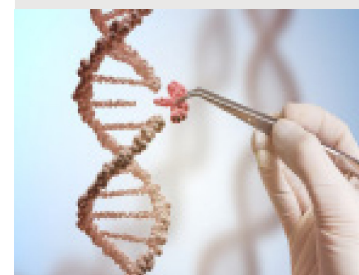
COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes
1	Acquire knowledge on crop improvement technologies of fibre, sugar, starches, narcotics, vegetables, fruits and flowers and advice farmers on selection and proper use of varieties, hybrids and other types of varieties
2	Able to practice and enable farmers in maintaining purity and uniformity of the improved varieties of fibre, sugar, starches, narcotics, vegetables, fruits and flower crops in his / her own and other farms

SKILLS:

- ✓ *Develop standard procedure to produce quality seed of cotton, vegetables, fruits and flowers crops*
- ✓ *Practice breeding and pollination techniques*
- ✓ *Handle equipment's used in biotechnology laboratory*



Source:

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ACTIVITIES:

- o *Experiment on effect of seed size on germination and seedling vigor*
- o *Demonstrate effect of sowing depth on germination*
- o *Calculate fertilizers requirement*
- o *Detailed knowledge of floral biology and different pollination techniques*

UNIT - 1

Centers of origin, distribution of species, wild relatives in different fibres, sugars, starches, narcotics, vegetables, fruits and flower crops. Plant genetic resources, its utilization and conservation

UNIT - 2

Floral biology; study of genetics of qualitative and quantitative characters

UNIT - 3

Important concepts of breeding self pollinated, cross pollinated and vegetatively propagated crops

UNIT - 4

Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical and nutritional)

UNIT - 5

Ideotype concept and climate resilient crop varieties for future

LABORATORY EXPERIMENTS

LIST OF EXPERIMENTS

1. Hybridization techniques and precautions to be taken - Floral morphology, selfing, emasculation and crossing techniques in field crops
2. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Cotton and Jute
3. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Sugarcane and Tobacco
4. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Tomato and Brinjal
5. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Chilli and Okra
6. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in and Cucumber, Cabbage and Cauliflower
7. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Garlic and Onion
8. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Bitter gourd and Water melon
9. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Banana and Mango
10. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Papaya and Guava
11. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Lime and Lemon

12. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Rose and Jasmine
13. Floral biology, anthesis, pollination, selfing, emasculation and crossing techniques in Marigold and Chrysanthemum
14. Visit to Agricultural Research Stations / AICRP Centres of crops
15. Sources of donors for different characters in various crops & Parentage of released varieties / hybrids of important crops. Study of special quality characters in various crops

REFERENCES

1. Allard, R.W. 1960. *Principles of Plant Breeding*. John Wiley & Sons, New York
2. Phundan Singh. 2006. *Essential of Plant Breeding*. Kalyani Publishers, Ludhiana
3. Poehlman, J.M. and Borthakur, D. 1995. *Breeding of Asian Field Crops*. Oxford & IBH Publishing Co.Pvt. Ltd. New Delhi
4. Sharma, J.R. 1994. *Principles and Practice of Plant Breeding*. Tata McGraw-Hill Publishing Co. Ltd., New Delhi
5. Kalloo, G.1994. *Vegetable Breeding*. Panima Educational Book Agency, New Delhi
6. Kumar, N. 2006. *Breeding of Horticultural Crops - Principles and Practices*. New India Publishing Agency, New Delhi
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