Department of Floriculture and Landscape Architecture
ASPEE College of Horticulture
Navsari Agricultural University
Navsari – 396450

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ACTIVITIES AND ACHIEVEMENTS

ACADEMIC ACTIVITIES

List of Courses offered by the Department for Under Graduate Programme

B. Sc. (Hons.) Horticulture				
SN	**Sem.**	**Course No.**	**Title of Course**	**Credit hrs**
According to the 6th Dean's Committee				
1	I	FLS 1.1	Commercial Production of Flower Crops	3 (2+1)
2	II	FLS 2.2	Plant Propagation and Nursery Management in Vegetables, Flowers and Medicinal crops	3 (2+1)
3	II	SEC 4	Landscape Gardening (FLS)	2 (0+2)
According to the 5th Dean's Committee				
4	III	FLA-3.2	Commercial Floriculture	3 (2+1)
5	IV	FLA-4.3	Principles of Landscape Architecture	2 (1+1)
6	VI	FLA-6.5	Medicinal and Aromatic Crops	3 (2+1)
			Sub Total (A)	**16 (9+7)**
STUDENT READY-I: Experiential Learning Programme				
ModuleNo.1	VII	HWE7.1	Protected Cultivation of High Valued Horticultural Crops	
		HWE7.1.1	Production of High Valued Crops	6(0+6)
		HWE7.1.2	Packaging and Marketing of High Valued Horticultural Crops	4(0+4)
	VII	HWE7.4	Floriculture and Landscape Architecture	
		HWE7.4.1	Planning, Layout and Design of Landscape	6(0+6)
		HWE7.4.2	Consultancy and Maintenance of Garden	4(0+4)
			SubTotal (B)	**20 (0+20)**
STUDENT READY-II: Rural Horticultural Work Experience				
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			Sub Total (C)	**0 (0+0)**
			Total (A+B+C)	**36 (9+27)**

List of Courses offered by the Department for Post Graduate Programme

M. Sc. Horticulture				
SN	**Sem.**	**Course No.**	**Title of Course**	**Credit hrs**
1	Odd	FLS–501*	Systematics of Ornamental Plants	2 (1+1)
2	Even	FLS–502*	Breeding of Ornamental Plants	3 (2+1)
3	Odd	FLS–503*	Commercial Production of Cut Flowers	3 (2+1)
4	Even	FLS–504*	Commercial Production of Loose Flowers	3 (2+1)
5	Odd	FLS–505*	Ornamental gardening and Landscaping	3 (2+1)
6	Even	FLS-506	Indoor Plants and Interiorscaping	2 (1+1)
7	Odd	FLS–507	Nursery Management in Ornamental Plants	3 (2+1)
8	Even	FLS-508	Turf Grass Management	3 (2+1)
9	Odd	FLS-509	Value Addition in Floriculture	3 (2+1)
10	Even	FLS–510	Protected Cultivation of Flower Crops	3 (2+1)
11	Odd	FLS-511	CAD for Landscaping	3 (1+2)
12	Even	FLS-512	Seed Production in Flower Crops	2 (1+1)
			Sub Total (A)	**33 (20+13)**
COMPULSORY NON-CREDIT COURSES				
1	Odd	PGS501	Library and Information Services	1 (0+1)
2	Even	PGS502	Technical Writing and Communication Skills	1 (0+1)
3	Odd	PGS503	Intellectual Property and its Management in Agriculture (e- Course)	1 (1+0)
4	Even	PGS504	Basic Concepts in Laboratory Techniques	1 (0+1)
5	Odd	PGS505	Agricultural Research, Research Ethics and Rural Development Programmes (e-Course)	1 (1+0)
6	Odd	PGS506	Disaster management	1 (1+0)
			Sub Total (B)	**6 (3+3)**
			Total (A+B)	**39 (23+16)**

List of Courses offered by the Department for Ph. D. Programme

Ph. D. Horticulture				
SN	**Sem.**	**Course No.**	**Title of Course**	**Credit hrs**
1	Odd	FLS-601**	Crop Regulation in Ornamental Crops	3 (2+1)
2	Even	FLS-602**	Postharvest Biology of Floricultural Crops	3 (2+1)
3	Odd	FLS-603	Specialty Flowers, Fillers and Cut Greens	2 (1+1)
4	Even	FLS-604	Biotechnological Approaches in Floricultural Crops	3 (2+1)
5	Odd	FLS-605**	Vertical Gardening	3 (1+2)
6	Even	FLS-606	Advances in Breeding of Flower Crops	3 (2+1)
7	Odd	FLS-607	Advances in Production Technology of Flower Crops	3 (2+1)
8	Even	FLS-608#	Advances in Protected Cultivation of Flower Crops	3 (2+1)
9	Odd	FLS-609	Advances in Landscape Gardening	3 (1+2)
****Compulsory**			**Sub Total (A)**	**26 (15+11)**
COMPULSORYNON-CREDITCOURSES				
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			Sub Total (B)	**0 (0+0)**
			Total (A+B)	**26 (15+11)**

Activities under ELP

Course No.	Name of Model	No. of Students trained
HWE 7.1	Protected Cultivation of Hi-value Horticultural Crops	50

Plant protection measures and Plant Propagation -High Tech Horticulture

Inauguration of Exhibition cum sale of ELP products (Indoor plants) on 22 October, 2024

ELP Batch 2024-25

RESEARCH ACTIVITIES

Focus Areas

1. Development of hybrid variety in important vegetable crops for stable production. to minimize yield gap between zone, area and soil type
2. Development of genetically modified variety

Research Schemes in Operation

SN	Title of Project	Budget Head	PI & Co-PI
A	**Plan Schemes**		
1	Establishment of Research Project on Floriculture	B.H.:329/12046-01	**PI**:Dr. S.L. Chawla **Co-PI**:Dr.M. A.Patel Dr.SudhaPatil
2	Landscaping at University Campus	B.H. :12712/02	**PI**:Dr.MA. Patel
3	Landscaping and Gardening Training Programme (*Mali Talim*)	B.H.: 329/12508	**PI**:Dr.H.P. Shah
4	Establishment of Practical Training Centre of Horticulture Students for the Hi-tech Horticulture	B.H. :329/12970	**PI**:Dr.Alka Singh Co-PI: Dr.H. P. Shah
5	Advanced Technology Centre for Soilless System for Production of Various Crops	B.H. :329/12041	**PI**: Dr.Alka Singh Co-PI: Dr. G. D.Patel
6	Floriculture Mission for south Gujarat	329/12086	**PI**: Dr. S.L. Chawla **Co-PI**: Dr.M. A.Patel, Dr. R. A.Gurjar
B	**Non-Plan Schemes**		
1	Model Nursery for Ornamental plants	B.H.: 9510 N-50 :(RF)	**PI**: Dr.M.A. Patel
2	ELP on Hi- Tech Protected Cultivation of Horticultural Crops	B.H.:9510-N-60 (RF)	**PI:** Dr.Alka Singh
3	AICRP on Floriculture	B.H. :329/2100/00	**PI:** Dr. S.L. Chawla **Co-PI:** Dr. Dipal Bhatt
C	**Other Agency**		
1	Development of DUS guideline for Adenium	B.H.: 329/18271	**PI**: Dr. Alka Singh **Co-PI**: Dr. G. D. Patel, Dr. A. K. Pandey, Dr. V. B. Patel

: ResearchRecommendations:

1. ADENIUM:GNAd-3 (Aabha) (2021)

The nursery men dealing with ornamental plants, landscape designers and plant lovers are recommended to grow adenium variety GNAd3 (Aabha) under polyhouse for higher commercial value as well as in garden and house plant. Adenium variety GNAd3 is novel that it bears pink coloured flowers having multi petalous flower form with dual whorls of petals (10) in each flower with prominent red streaks in the center of the petals alongwith good flower size, flower clusters per plant and flowering duration. It can be propagated by grafting on local pink root stock.

2. ADENIUM:GNAd-4 (Shobhita) (2021)

The nursery men dealing with ornamental plants, landscape designers and plant lovers are recommended to grow adenium variety GNAd-4 (Shobhita) under polyhouse for higher commercial value as well as in garden and houseplant. Adenium variety GNAd4 is novel that it bears flowers having single whorl of pinkish red coloured petals (5) with dark red coloured margin and pointed tip and scores higher in terms of number of flowers/ cluster, maximum open flowers/cluster and flowers/plant/year. It can be propagated by grafting on local pink rootstock.

3. Effect of different growing media on Haworthia pot plant (2021)

Nurserymen raising haworthia as pot culture under naturally ventilated polyhouse are recommended to grow in media comprising of Sand: Vermicompost (9:1v/v) for better plant growth and quality.

4. Development of plant architecture through pinching and pruning in adenium pot plant under soilless growing system (2021)

Nursery men or farmers raising adeniums as pot culture are recommended to follow the pruning treatment (leaving 2 inches of new growth) after four and eight months of grafting to obtain better architecture with plant canopy as well as more flower clusters per plant and flowers per cluster.

5. Effect of different growing media and foliar application of nitrogen on garlic, fenugreek and spinach (2021)

Farmers growing green garlic and spinach under polyhouse in off-season are recommended as below:

(1) To grow green garlic: Fill tray with sand media and apply foliar spray of nitrogen @ 150 mg/l at weekly interval for higher yield with good pungency.

(2) To grow spinach: Fill tray with sand media and apply foliar spray of nitrogen @ 150 mg/l at weekly interval for higher yield.

*Note: For N@150mg/l=326mg/lUrea, For N@50mg/l=108mg/l Urea

6. Effect of different growing media on fern under benching system in polyhouse (2022)

Recommendation for farmers

Farmers of Gujarat growing ferns for cut greens as secondary crop under benching system in naturally ventilated polyhouse are recommended to growing media comprising of cocopeat for better plant growth, cut greens yield and net returns.

7. Effect of different bio-chemicals for increasing suckers in Haworthia pot plant (2022)

Recommendation for farmers

Nurserymen of Gujarat growing haworthia as pot plant under naturally ventilated polyhouse are recommended to spray Benzyladenine @ 25 mg/l twice after two months of pot planting at 15 days interval to obtain early and more number of suckers for propagation.

8. Accessing compatibility of different scion to develop multigrafted adenium under soilless growing system (2022)

Recommendation for farmers

Nurserymen and garden amateurs are recommended to develop multigrafted adeniumon single local rootstock with scion combination as mentioned below:

1. For triple grafted adenium:G.Ad1 + G.Ad2 + Aabha to obtain maximum flowers/plant, flower clusters/plant and synchronization of flowering days with high overall quality score.
2. For dual grafted adenium with multipetalous flowers: G.Ad1 + Aabha or G.Ad2 + Aabha to obtain maximum synchronization of days for flowering and number of flowers during most part of the year with higher aesthetic value.

For dual grafted adenium with single type flowers: NASDUS2 + NAPVW1 to obtain earliest flowering as well as more number of flowers/plant with high aesthetic value.

9. Effect of foliar application of nutrients on growth and flowering of Orchid (Dendrobium) under NVPH (2022)

Recommendation for farmers

The farmers of Gujarat growing Dendrobium orchid under naturally ventilated polyhouse are recommended to give foliar application of 400 ppm N, 200 ppm P and 400 ppm K (782.61 mg/l urea, 327.80 mg/l 12:61:00 and 800.00 mg/l 00:00:50 two times per week for getting higher yield and better flower quality.

10. Effect of different bio-stimulants on growth, quality and yield of Dendrobium orchid under NVPH (2023)

Recommendation for farmers

Farmers of Gujarat growing *dendrobium* orchid under naturally ventilated polyhouse are recommended to spray Novel Prime @ 2% (20 ml in 1 L water) at every 15 days interval to obtain higher cut flower yield and better quality.

11. Studies on phenophase based nutrient scheduling on flower yield and quality in China aster (2023)

Recommendation for farmers

Farmers of South Gujarat agro climatic zone growing China aster are recommended to apply 180:120:60 kg NPK/ha.Wherein, 25% shouldbe applied as basal dose and remaining 75

% through drip system in three splits in the following manner for higher yield as well as net realization.

Splits of NPK	Phenophase	75% RDF through Fertigation (kg/ha)			Remarks
		Urea	12:61:00 (MAP)	00:00:50 (K_2SO_4)	
First (40:20: 20 %)	Vegetative phase	109. 49	29.52	18.00	Three equal splits of Fertilizers at weekly interval
Second (30:40: 40 %)	Bud phase	72.51	59.04	36.00	Two equal splits of fertilizers at weekly interval
Third (30:40: 40 %)	Flowering phase	72.51	59.04	36.00	Two equal splits of Fertilizers at weekly interval

Note:

- 25% of RDF (Urea:97.65 kg, SSP:187.50 kg and KCl:25.05 kg/ha) should be applied as basal dose.
- Paddy straw @ 7.5 t/ha as much should be applied on raised beds.

12. Collection and evaluation of filler (Asparagus) (2023)

Recommendation for farmers

The farmers of South Gujarat agro climatic zone growing asparagus **(***Asparagus densiflorus* Sprengeri**)** as cut greens are recommended to grow in pot under 50 % green shade net house for getting higher cut foliage production and net profit.

13. Collection and evaluation of filler (Dracaena) (2023)

Recommendation for farmers

Farmers of South Gujarat agro climatic zone growing Dracaena (*Dracaena fragrans* 'Massangeana') as cut foliage are recommended to grow in pot under 50% green shade net house to obtain higher production and net realization.

14. Collection and evaluation of filler (Fern) (2023)

Recommendation for farmers

Farmers of South Gujarat agro climatic zone growing fern (*Nephrolepis exaltata*) as cut foliage are recommended to grow in pot under 50 % green shade net house to obtain higher production and net realization.

15. Effect of IBA and season on rooting of African marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gainda cutting under poly tunnel (2023)

Recommendation for farmers

The farmers and nurserymen of the Gujarat growing marigold are advised that the lower portion of tip cuttings treated with IBA 1500 mg/L for 5 (five) seconds and insert in slanting position in sand under polytunnel gave higher number of rooted cuttings, number of roots per rooted cutting and higher survival percentage of marigold in all the seasons.

16. Integrated weed management in African marigold (*Tagetes erecta* L.) var. Pusa Narangi Gainda (2023)

Recommendation for Scientist

It is inform to scientific community that spray of early post emergence pendimethalin 30 % EC@ 0.75 kg a.i./ha (3.33 L/ha) within 24 hours of transplanting followed by mulching of paddy straw (5 cm thickness layer) and one hand weeding at 50 days after transplanting effectively controls weed and gives higher yield in African marigold var. Pusa Narangi Gainda during *Kharif* season.

17. Adenium variety Gujarat Adenium 5(GAd-5:Shashank) (2023)

Recommendation for farmers

The nursery men dealing with ornamental plants, landscape designers and plant lovers are recommended to grow adenium variety GAd5 (Shashaank) under polyhouse for higher commercial value as well as in garden and house plant. Adenium variety GAd 5 is novel that it bears white coloured flowers having multipetalous flower form with dual whorls of petals (10) in each flower along with more flowers per cluster and flowering duration. It can be propagated by grafting on local pink rootstock.

18. Turfgrass: Gujarat Turf Grass 1 (GTG1:Arna) (2023)

The farmers, nurserymen and professional landscapers of the Gujarat state are advised to grow turf grass (Lawn) variety Gujarat Turf Grass1 (GTG 1: Arna) with early establishment rate (minimum days taken for 90% coverage), high turfing ability, root depth and lower shoot-root ratio than the check Selection 1. The proposed variety having good aesthetic appearance, require less number of mowing and less incidence of pest and disease in proposed variety.

19. Evaluation of Ferns in different growing media under benching system in Orchid (Dendrobium) NV polyhouse (2024)

Recommendation for farmers

Farmers growing orchid in NV polyhouse are recommended to grow *Nephrolepis exaltata* fern as a secondary crop in cocopeat growing media under benching system for obtaining better plant growth and yield as cut greens.

Note:

- **Fertilizer application**: Urea-50 mg/l of 100 ml/pot (Once a month in the first week) 19:19:19 NPK-50 mg/l of 100 ml/pot (Once a month in third week)
- **Pot size**: Height 19 cm, top diameter 19 cm, bottom diameter: 15cm

20. Effect of type and height of rootstock for grafting in Moon Cactus (2024)

Recommendation for farmers

Nurserymen raising cactus under naturally ventilated polyhouse are recommended to graft *Gymnocalycium mihanovichii* (as Scion) cactus on 3 edged and 5 cm height of *Hylocereus monacanthus* rootstock to develop moon cactus for higher graft survival, more number of flowers and baby cactus.

21. Effect of pinching and foliar application of nutrients on growth, quality and yield of African marigold (*Tagetes erecta* L.) (2024)

Farmers of South Gujarat, growing African marigold are recommended to pinch at 20 and 35 days after transplanting along with Novel Organic Liquid Nutrients @ 1% (1liter/100/liter water) spray during 6th and 7th week of transplanting with the recommended dose of fertilizer

(150:100:100 kg NPK/ha) along with 10 ton of well rotten Farm Yard Manure (FYM) per hectare to achieve maximum production and profit.

Production of planting material

Year: 2024-25			
S.N.	**Planting material**	**Crop and Cultivar**	**Quantity**
B.H.:12046-1 (Plan Project)			
1	Seeds/Bulbs/Corms	Tuberose bulbs, lily bulbs, Gladiolus corms, Heliconia rhizomes, Ornamental ginger rhizomes (No.)	73841
2	Nursery plants	Rooted cuttings & seedlings of different Ornamental plants (No.)	
3	Cut flowers	Gladiolus, rose, tuberose, goldenrod, orchid, heliconia ornamental ginger etc. (No.)	3969
4	Loose flowers (kg)	Marigold, Chrysanthemum, Rose, gaillardia etc.	115.500 kg
5	Flower decoration	Flower bouquets (small & big), bowl and Channels (No.)	378
B.H.12970			
1	Cut flowers	Gerbera	200
		Dendrobium Orchid(small)	-
		Dendrobium Orchid (big)	-
2	Flower bouquet	Small, medium, large, floral bowl etc.	57
3	Plants	Small bags (7”-5”)	57
		Medium bags (10”-8”)	24
		Large bags (14”-12”)	22
B.H.12041			
1	Nursery plants	Grafted Adenium	143
		Haworthia (Small pot)	123
		Cactus	28
		Succulents	23
		Indoor Plant Pot	5
B.H.:9510N-50 (Revolving Fund)			
1	Nursery plants	Ornamental plants, Medicinal plants, Trees, Palms, Cycus	3110
B.H. : 329/2100			
1	Nursery plants	Ornamental plants, Medicinal plants, Trees, Palms, Cycus	969
	Cut flowers	Tuberose, Gladiolus	50
B.H.:9510N-60 (Revolving Fund)			
1	Cut flowers	Gerbera, orchid and Rose etc.	11
2	Flower bouquet	Small, medium, large, floral bowl etc.	903

3	Dish garden	Small (6”),	10
		Medium (8”)	10
		Large (10”)	10
4	Terrarium	Large (10”)	-
		Small (6”-8”)	10
5	Hanging basket and pot plants	Rooted cuttings/plant with pot and media	12641

EXTENSION ACIVITIES

- Participation of all the faculties in *Rabi Krishi Mahotsava*-2024 during 6-7 December, 2024.
- All the faculties delivered the lectures in training of farmers on green house/net house (Protected cultivation) at SSK, NAU, Navsari during 9 to 18 December,2024
- Organized one day skill development workshop on “*Phool Sajavat ni Kala*” under the Floriculture Mission for south Gujarat project at Swami vivekananda hall on 8 January, 2025

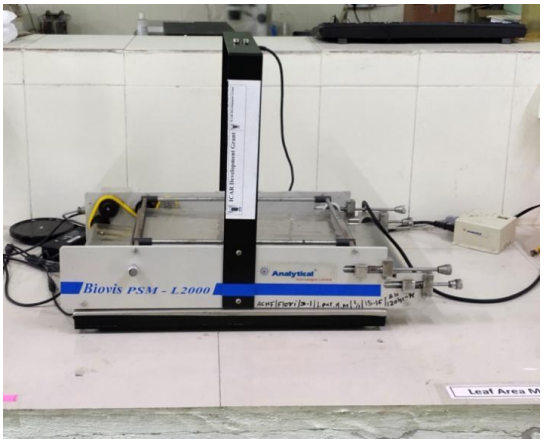
Infrastructure Available

Department

- Different Laboratories: FLA 5 (For value addition in Flowers), FLA 6 (For Biochemical work) and FLA 7 (For general Floriculture work)
- Wi-Fi facility: Available
- Gardens (Rooftop garden, Zen garden, Sand garden, Strolling garden, Courtyard garden): 05

Sr. No.	Infrastructure or Facilities available	Area/No.
1.	Laboratory-FLA 7 (For Biochemical work)	1
2.	Laboratory-FLA 6 (For general Floriculture work)	1
3.	Gardens (Rooftop garden, Zen garden, Sand garden, Strolling garden)	5
4.	Laboratory-FLA 5 (For Value Addition in Flowers)	1

Laboratory - FLA 5
(For Value Addition in Flowers)



Laboratory-FLA7
(For Biochemical work)

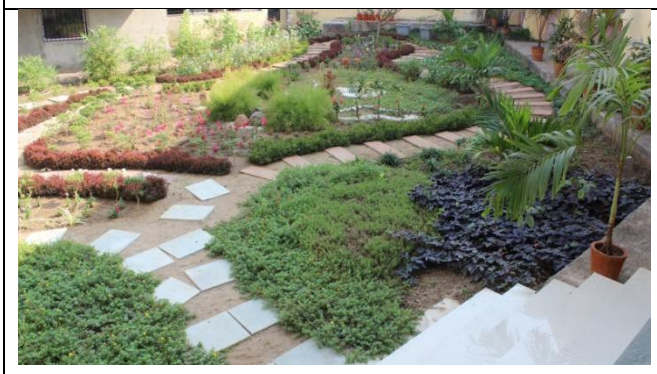
College garden

Roof Top garden

Bio wall

Miniature Garden

Sand Garden

Zen Garden	Container Garden
	
	
	
Strolling Garden	

***"Tsuboniwa"* Courtyard garden**

Farm

Sr.No.	Infrastructure or Facilities available	Area/No.
1.	**Floriculture Research farm**	
	Total area	4 ha
	Naturally Ventilated Polyhouse for orchid	500 m^2
	Net house for Heliconias	1500m^2
	Net house for Bird of Paradise	500 m^2
	Selling unit net house	750 m^2
	Net house for cut greens, foliage plants etc.	175 m^2
	Rain shelter for chrysanthemum, gypsophila etc.	200 m^2
	Propagation unit	550 m^2
	Net house for orchids and anthurium	150 m^2
	Godown cum store	22 m^2
	Propagation unit with rain shelter	175 m^2
	Polytunnel (covered with UV stabilized plastic sheet)	54.0 sq. m
2.	**Green House Complex**	
	Naturally Ventilated Polyhouse	2 nos.
	Fan and Pad type Polyhouse	2 nos.
	Net house	2
3.	**Advanced Training Centre on Soilless Growing system for various crops**	
	Total area	2 acres
	Naturally Ventilated Polyhouse	1
	Polyhouse with Fan and Pad system	1
	Ornamental Plant Nursery	1

	
Rain shelter	**Store room**
Floriculture Research Farm	
	
Chrysanthemum	**Gladiolus**
Floriculture Research Farm	

Infrastructure or Facilities created at Green House Complex

	
Fan & Pad Polyhouse	**NV Polyhouse**
Green House Complex	

Infrastructure or Facilities created at ATC Soilless System for various crops

	
Haworthia	**Adenium**
ATC Soilless System for various crops	