

**UNIVERSITY OF HORTICULTURAL SCIENCES
BAGALKOT, KARNATAKA**



**SELF STUDY REPORT FOR THE
Ph.D. IN FLORICULTURE AND LANDSCAPE
ARCHITECTURE, KRCCH, ARABHAVI
2014-15 to 2018-19**

SUBMITTED TO
Indian Council of Agricultural Research,
Krishi Bhavan, New Delhi.

SUBMITTED BY
University of Horticultural Sciences,
Udyanagiri, Bagalkot – 587 104
Karnataka

PREFACE

India faced the challenge of providing food security to millions of its people soon after independence. The Research and Development initiatives taken by the Government of India resulted in the 'Green revolution' in the late 60s and early 70s. As a result of 'Green revolution', India has made significant achievement through production of 228 million tonnes of food grains and gained self-sufficiency. But considering the nutritional security, economic sustainability and high generation of employment, Horticulture sector plays an important role. Hence, it was only in mid-80s that the Government of India recognized the importance of Horticulture sector and thus greater emphasis was given on this. It is a means of diversification for making agriculture more profitable through efficient land use, optimum utilization of natural resources and creating skilled employment for rural masses. Horticulture has invariably improved the economic status of our farmers. It has also played a significant role in improving floriculture, plantation, spices, medicinal, aromatic industry, fruit and vegetable production and processing, production of quality seed and planting materials, encouraging hi-tech horticulture, contract farming, cooperative farming, participatory approach of production and marketing, etc. Thus, there is a growing awareness about the advantages of the horticultural crop production and this is bound to go up with the increase in socio-economic status of the people.

The R & D programmes in horticulture have received an impressive support from the Eighth Five Year Plan onwards. As a result, the research infrastructure has increased manifold with the setting up of a number of new institutes, national research centres in several crops, important both from domestic as well as export point of view. The establishment of educational institutions in the field of horticulture plays a pivotal role in developing human resource, which would cater to the needs of horticulture industry.


To cater the horticulture needs of the farmers of northern Karnataka and to develop the quality human resource in the field of horticulture, the **Kittur Rani Channamma College of Horticulture, Arabhavi** was established at Arabhavi on **31.08.1994** under the University of Agricultural Sciences, Dharwad, and is presently functioning under the University of Horticultural Sciences, Bagalkot. The college offers undergraduate, postgraduate and Ph.D. courses and has the admission capacity of 50 students for undergraduate, 30 students for Masters and 8 students for Ph.D. degree

programme annually excluding ICAR quota students. Students of this college have excelled not only in curriculum but also in extracurricular activities and national level competitive examinations and the college is making continuous efforts to improve the quality of education offered here. The ICAR has introduced the procedure of accreditation, which help in assessing facilities available to impart the quality education offered by the college. The college was accredited by ICAR Peer Review committee for a period of **five years**. After accreditation, the financial support of ICAR and State Government has greatly facilitated the growth and developmental activities of the college to a greater extent, as a result the quality of education has improved. Since the college is due for further accreditation, the present report provides all the necessary information about the college activities performed during **last eight years**.

The University Level Task Force and Steering Committee has been gratefully acknowledged for their help, guidance and suggestions given in preparing the report.

The college level Steering Committee and Task Force have done a great job in compiling information and bringing out this report to be submitted to Accreditation Board of ICAR. My heartfelt thanks to all those who are involved in preparation of this report.

**K.R.C. College of Horticulture, Arabhavi
September-2018**


Dean
(Nagesh H. Naik)

CONTENTS

Sl. No.	Title	Page No.
6.4.1	Brief History of the Degree Programme	1
6.4.2	Faculty Strength	2
6.4.3	Technical and Supporting Staff	3
6.4.4	Classrooms and Laboratories	3
6.4.5	Conduct of Practical and Hands-on-Training	5
6.4.6	Supervision of students in PG / Ph.D. programmes	6
6.4.7	Feedback of stakeholders (Students, parents, industries, employers, farmers etc.)	6
6.4.8	Student intake and attrition in the programme for last five years	7
6.4.9	ICT Application and Curricula Delivery	7
6.4.12	Certificate	10

6.4. SELF STUDY REPORT FOR Ph.D. IN FLORICULTURE AND LANDSCAPE ARCHITECTURE AT KRCCH, ARABHAVI

6.4.1. Brief History of the Degree Programme

The Department of Floriculture and Landscape Architecture was established in the year 1994 and has started PG programme from 1998 with two students. During 2011-12, Ph.D. programme was initiated in the department but degree was awarded in general horticulture, later in 2016-17 separate Ph.D. degree was started in the department. There are more than 60 students who have obtained the Master Degree and 3 students who have obtained the Doctoral Degree from the Department. The department faculty and students have involved in the research programme on crop improvement, production technology, protected cultivation, biotechnological work, post harvest handling and value addition. In total more than 100 research papers, 150 popular articles and 10 books were published by the faculty and students. The department is well equipped with separate UG and PG labs, CAD lab, PG class room and field facilities for teaching and research. The department is also involved in the establishment and maintenance of landscape in the campus.

Vision

- To create flori-hub in the district
- Collaborative research with national institutes
- Development of F₁ hybrids in flower crops
- Exploitation of underutilized flowers
- Establishment of tissue culture and molecular labs in the department

Mandates / objectives

- Teaching for UG, PG and Ph.D. degrees including use of Auto-CAD in landscape designing
- 2. Research work on flower crops w.r.t production technology, crop improvement, post harvest handling and value addition
- Extension: Organizing training programmes, field visits, demonstrations etc.

Statistics of Ph. D. degree programme from 2013-14 to 2017-18

Year of Admission	No. of Students Admitted			No. of Students dropped/Cancelled/Discontinued			No. of Students left over			Year of Passing								
										2012-13			2013-14			2014-15		
	B	G	T	B	G	T	B	G	T	B	G	T	B	G	T			
2011-12	1	-	1	-	-	-	1		1				1	-	1			
2012-13	1	-	1	-	-	-	1		1							1	-	1
2013-14	1	-	1	-	-	-	1		1									
2014-15	-	1	1	-	-	-	-	1	1									
2015-16	-	1	1	-	1	1	-	-	0									
2016-17	1	3	4	-	-	-				-	-	-	-	-	-	-	-	-
2017-18	-	-	-	-	-	-				-	-	-	-	-	-	-	-	-
Cumulative Total	4	5	9	-	1	1	3	1	4	-	-	-	1	-	1	1	-	1

B – Boys, G- Girls , T- Total

Award of UHS, Bagalkot, GOI & BCM authorities' Scholarships to Ph.D. students for the academic year 2017-18

Scholarship Type	Ph.D.(Hort.)				
	2013-14	2014-15	2015-16	2016-17	2017-18
Merit Scholarship	-	-	-	1	-
Students Aid fund	-	-	-	-	1
Category I EBL Scholarship	-	-	-	-	-
SC/ST Fellow Ship	-	-	--	-	-
GOI Scholarship (SC+ST)	-	-	-	-	-
Vidyasiri food & Accommodation	-	-	-	-	-
Muslim Minority	-	-	-	-	-
TOTAL	0	0	0	1	1

6.4.2 FACULTY STRENGTH**Faculty Strength (Cadre-wise)**

Designation / Cadre	2014			2015			2016			2017			2018		
	S	F	V	S	F	V	S	F	V	S	F	V	S	F	V
Professor	1	1	0	1	1	0	1	0	1	1	0	1	1	0	1
Associate Professor	1	1	0	1	1	0	1	2	0	1	3	-2	1	3	-2
Assistant Professor	2	2	0	2	2	0	2	2	0	2	2	0	2	2	0
HEEU								1			1			1	
Total	4	4	0	4	4	0	4	5	1	4	6	1	4	6	-2
Contractual		1			1			1			1		-	1	-

Faculty Strength (Department wise) Department wise Faculty position at KRCCH, Arabhavi -2018

Department	Sanctioned Faculty			Faculty in place			Vacant position			Recommended by ICAR			Deviation from ICAR recommendation		
	Prof.	Assoc. Prof.	Asst. Prof.	Prof	Assoc. Prof.	Asst. Prof.	Prof	Assoc. Prof.	Asst. Prof.	Prof	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.
Floriculture & Landscape Architecture	1	1	2	0	3	2	1	-1	0	1	1	2	1	-2	0
Hort. Extension Education Unit						1									
Total	1	1	2	0	3	3	1	-1	0	1	1	2	1	-2	0

Negative Value in Diversion from ICAR=Excess staff,

Vacant positions in Asst. Professor are filled on Contractual service/Adjunct/Working arrangement

6.4.3 TECHNICAL AND SUPPORTING STAFF

Sl.No.	POST	2018				
		Sanction	Filled	Vacancy	Recommended by UHS	Diversion from recommendation (Sanctioned)
1	Field Assistant	1	1	0		
2	Lab Assistant	1	1	0		
3	messenger	1	1	0		
4	gardener	1	1	0		
5	farm labour	1	1	0		
	Total	5	5	0		

Average Number of Students in Theory and Practical Classes

Postgraduate students as they are less in number are grouped into one theory batch and one practical batch.

Sl. No.	Name of the department	Theory Batch	Practical Batch
1.	Floriculture and Landscape Architecture	Full strength	Full strength

6.4.4 CLASSROOMS AND LABORATORIES:

College has sufficient number of classrooms and laboratories as detailed below.

Classrooms

Sl. No.	Class room No.	Area (M ²)	Seating capacity	Other facilities (LED, Projectors, Computers, Smart board etc.)
1.	Floriculture and Landscape Architecture	58.00	45	LCD-Projectors, Computers, smart boards

Laboratory

Sl. No.	Name of the laboratory	Area (M ²)	Seating capacity
1.	Floriculture and Landscape Architecture	116.00	30
2.	Central Laboratory	80.00	15

Common central laboratory to all departments

Major equipments

Sl. No.	Name of the equipment	Quantity
1.	Water still (4lit/hr)	1
2.	Samsung Refrigerator	1
3.	Aqua Sure water purifier	1
4.	Blue star deep freezer	1
5.	Lawn mover	1
6.	Portable power sprayer	1

Sl. No.	Name of the equipment	Quantity
7.	Petrol power sprayer	1
8.	Portable autoclave (Cos Lab)	1
9.	Water bath	1
10.	Vertex shaker	1
11.	Incubator	1
12.	Clevenger apparatus	1
13.	Digital conductivity meter	1
14.	Electrophoresis unit	1
15.	Electrophoresis power supply unit	1
16.	Bajaj cooler	1
17.	Sony cyber shot	1
18.	Chaff cutter (5hp)	1
19.	LG refrigerator	1
20.	Drawing boards	10
21.	Hedge trimmer	1

Farm facilities

Sl. No.	Name of the Department	Farm Area (ha)	Irrigated (ha)	Crops grown
1.	Floriculture & Landscape Architecture	3.22	3.22	Protected structures and nursery, China Aster, Rose. Tuberose, Gladiolus, Spider lily, Chrysanthemum, Annual chrysanthemum,

Poly house and Shade nets

Particulars	No.	Area (M ²)	Details	Remarks
Poly houses	5	2500.00	Chrysanthemum, Orchids Rose	
Shade nets	5	1251.00	Nursery management	
Mist house	1	100.00	Ornamental nursery	

Instructional farms

Department	Area (ha)	Details	Remarks
Floriculture and Landscape Architecture	1.10	China Aster, Rose. Tuberose, Gladiolus	

Water storage ponds, wells etc...

Department	Particulars	No.	Size
Floriculture and Landscape Architecture	Open well	1	40 x 20 ft

Average Number of Students in Theory and Practical Classes

Ph.D. students as they are less in number are grouped into one theory batch and one practical batch.

Sl. No.	Name of the department	Theory Batch	Practical Batch
1.	Floriculture and landscape architecture	Full strength	Full strength

6.4.5 CONDUCT OF PRACTICAL AND HANDS-ON-TRAINING

Practical Credit details

Sl.No.	Discipline	Number of credits for practical	Per cent of time spent	
			In laboratory	In field*
1.	Floriculture and landscape architecture	5	30	70

- Field/Nursery/Protected structures

Glimpses of Practical's and hands-on training

Sl.No.	Department	Hands on Training and Methodology
1.	Floriculture and Landscape Architecture	<p>Greenhouse management; Soil decontamination techniques; Micro-irrigation systems; Nutrition and fertigation.</p> <p>Special practices- Pinching, netting, disbudding, defoliation and chemical pruning;</p> <p>Photoperiodic and chemical induction of flowering;</p> <p>Extraction of floral concrete and oils; case studies.</p> <p>Design making by different garden styles and types.</p> <p>Landscape engineering (Topographical survey and designing concept), Special techniques in garden landscaping (Burlaping, water-scaping, hard-scaping, lawn making, topiary styles specializing, bio-aesthetic planning).</p> <p>Preparation and drawing of site plan,</p> <p>Handling soft landscape materials (AUTOCAD & ARCHICAD), GIS as a tool for spatial designing.</p> <p>Budget/ Project cost estimating, Execution.</p> <p>Growing structures, basic considerations in establishment and operation of greenhouses,</p> <p>Environmental control systems in greenhouse, containers, substrate culture, soil decontamination techniques,</p> <p>Extraction of flower pigments – xanthophylls, carotenoids and anthocyanins.</p> <p>In vitro seed germination- callus culture and organ culture- Cell suspension culture – cell plating and regeneration- clonal propagation through Meristem culture, induction of multiple shoots</p> <p>AntherPollen- Ovule and Embryo culture-</p> <p>Synthetic seed production,</p> <p>in vitro mutation induction,</p> <p>in vitro rooting hardening at primary and secondary nurseries,</p> <p>Project preparation for establishment of low, medium and high cost tissue culture laboratories,</p> <p>DNA isolation from economic flower crop varieties –</p> <p>Quantification and amplification,</p> <p>DNA and Protein profiling – molecular markers for economic flower crops, restriction enzymes, vectors for cloning and particle bombardment,</p> <p>DNA fingerprinting of flower crop varieties.</p> <p>Field visits, visits to commercial production units, protected cultivation units, tissue culture production units, parks, botanical gardens, turf maintaining units etc</p>

This college is offering M.Sc. and Ph.D. programme in Horticultural sciences where the students are specifically guided in relevant fields of knowledge. The courses in PG of different disciplines have been framed to include more of research oriented lab and field experiments. PG students are thoroughly exposed to specific and need based hands-on trainings and they are trained to review, plan and formulate the research programmes under the guidance of advisory committee.

Course curriculum for PG has been designed with special emphasis on specialized horticultural techniques. Further as a part of their course curriculum, the PG students are taken to exposure visits to different research institutes, progressive farmers' field and private industries. A study tour of seven days to different research institutes and commercial hubs specifically engaged in particular research field is organized by each department which is contributing for better understanding of the subject and to enrich their practical knowledge.

6.4.6 SUPERVISION OF STUDENTS IN PG/PHD PROGRAMME

Every student shall have Advisory Committee with a Major Advisor and at least four members among whom two members shall be from outside the major field of specialization. Programme of Research proposed by the Advisory Committee and approved by the Dean (Post Graduate Studies) will be carried out by the student under the supervision of Advisory Committee. Research work was carried out by students on the major crops which are grown in this area

Sl. No.	Year	No. of PG recognized teachers			Intake of students		Student to teacher ratio
		KRCCH, Arabhavi	Off Campus	Total	Ph.D.	Total (PG students)	
1.	2013-14	04	02	06	01	01	1:1
2.	2014-15	04	00	04	01	01	1:1
3.	2015-16	06	00	06	01	01	1:1
4.	2016-17	05	00	05	04	04	1:1
5.	2017-18	05	00	05	00	00	0

6.4.7 FEEDBACK OF STAKEHOLDERS

(STUDENTS, PARENTS, INDUSTRIES, EMPLOYERS, FARMERS ETC.)

SI No.	Feedback	Action Taken/Attended
Student		
1.	Students' request for provision of financial support through PG grants for their research activities	Provision has been made
2.	As practical exposure students are giving feedback that there should be frequent exposure visits to different institutes, private companies etc.	Provision has been made through SAU / University grant

SI No.	Feedback	Action Taken/Attended
Farmers		
1.	Nurserymen request for supply of genuine ornamental planting material	Established Shade houses and mist chamber to develop and supply quality ornamental planting material on request
2.	Farmers' opinion for supply of genuine planting materials/ seedlings viz., Marigold, chrysanthemum, china aster etc...	Being attended regularly

6.4.8 STUDENT INTAKE AND ATTRITION IN THE PROGRAMME FOR LAST FIVE YEARS

Year wise information on sanctioned strength, actual intake and attrition during the last five years of the Degree Programme are furnished in the tabular form. This attrition is due to shifting of students to some other degree programme like medical sciences and veterinary sciences etc..

PG- Ph.D. in . Horticulture

These PG students discontinued their degree programme due to appointment in State govt. jobs and also banking and other sectors.

Year	Departments	Sanctioned seats	Actual intake	Attrition	Attrition Percentage
Ph.D- programme					
2014-15	Horticulture	1	1	0	0
2015-16	Horticulture	1	1	1	100
2016-17	Floriculture &	2	4	0	0
2017-18	Landscape	1	1	0	0
2018-19	Architecture	1	3	0	0

6.4.9 ICT APPLICATION IN CURRICULA DELIVERY

ICT enabled teaching-learning encompasses a variety of techniques, tools, content and resources aimed at improving the quality and efficiency of the teaching-learning process. At KRCCH Arabhavi for effective teaching and learning, teachers participate in selection and critical evaluation of digital content and resources. For this each individual staff allotted with high configured computer system and connected with high speed Internet facilities for sharing digital contents.

Below mentioned ICT facilities established in the college are being utilized for PG programme at Department of Biotechnology and crop improvement

S.No.	Name of Lab	Equipment	Usage
1.	ICT Enabled Class Room	1 PG Class room with Computer System and LCD Projector	For educational video, PPT, conferencing, teaching and learning
2.	PG -Computer Lab	16 HP Computers Systems	Statistical software programmes for research data analysis
3.	ICT Enabled Smart Boards	One Smart Board installed in PG class room	Teaching, Learning
4.	ICT Enabled Conference Hall	High Definition CISCO Camera System with High Speed Internet of 4 Mbps lease Line connectivity	For online interaction with University key officials by students and staff, online interaction with different subject experts in different streams

Library : Digitalized college library:

KOHA, CeRA, e- books, e-Journals, Krishikosh

The KOHA (library management)

Open wear software is implemented to automate the library activities. The charging and discharging of documents is automated and e-mail reminder facility has been introduced.

CeRA and other online e-resources

CeRA is the ICAR Consortium of e-resources in Agriculture. This covers more than 3500 scholarly journals pertaining to the Agriculture and allied sciences which are available in full text.

e - books & e - journals

Library is having access to Springer e-books for the copy right years 2014-16, which covers nearly 1900 books in virtual format with full text availability and at a time 25 users can open an e-book. In addition library has access to 200 Indian e-books and also library having excess to e-journals for Hortsci and Journal of American society for Horticulture Science.

Krishikosh

Krishikosh is database of thesis submitted to the Agriculture universities and ICAR institutions. The UHS Library is a member for Krishikosh and all thesis submitted to the UHS are being uploaded regularly.

Internet

The library is provided with separate internet link line with speed of 100mbps. There is a separate digital library section made in the library which is equipped with 05 computers with facility of internet connected to all computers. Web OPAC of Kittur Rani Channamma College of Horticulture, Arabhavi library is available in the net. EZ-proxy remote access server is

installed in main campus library through which we are accessing the e-resources, CeRA, and Agristat.

Wi-fi facility

Wi-fi is available in the library premises. One can have net facility in the campus through IP based network. Through which students and faculty members can browse CeRA and e-resources of the library and college premises.

Different ICT Software's used by PG students at KRCCH Arabhavi


Sl. No	ICT Application	Usage
1.	Academic Management System Software	Online PG Student Admission, POW , POR, Thesis Submission, Qualifying Examination etc. Complete activities of Student, Staff, Academic section activities, automated in this software
2.	Horti App	Provide information about the horticulture trends, technologies and methods being used. HortiApp is a useful app in cultivation of all kinds of crops, where it gives detailed information of each crop.
3.	SYSTAT	Statistical Software for analysis of Statistical Data
4.	Window STAT	Statistical Software for analysis of Statistical Data
5.	HERBIQ	Windows Form Application that stores data in encrypted XML files to track the progress of plants, nutrient levels, environment, smoke effects, strain characteristics for breeding, etc. Output to single file with embedded images like a pdf file or some open format to show others
6.	English Digital Laboratory	16 HP P-IV Computer Systems for English Learning
7.	AutoCAD	Landscape and Gardening designs using software

6.4.12.

CERTIFICATE

I the Dean, Kitturu Rani Channamma College of Horticulture, Arabavi hereby certify that the information contained in the Section 6.4.1 to 6.4.9 are furnished as per the records available in the college and degree awarding university.

Date: March, 2019



Dean
K.R.C. College of Horticulture
Arabhavi-591218. Tq:Gokak