

**UNIVERSITY OF HORTICULTURAL SCIENCES,
BAGALKOT, KARNATAKA**



**SELF STUDY REPORT FOR THE
Ph.D. IN VEGETABLE SCIENCE
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)

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6.4. SELF STUDY REPORT FOR PH.D. IN VEGETABLE SCIENCE AT KRCCH, ARABHAVI

6.4.1. Brief History of the Ph.D in Vegetable Science Degree Programme

The department is well poised to meet the challenges ahead that transforms vegetable sector into the engine of growth of Northern Karnataka's economy by providing the human resources and skills and technology for the sustainable vegetable production. In education at the Ph.D. level, professionalism would be strengthened through trainings in emerging areas integrating relevant disciplines such as crop breeding, biotechnology, natural resource management, environment, IPR and biodiversity, WTO and global trade etc.

The department of vegetable science is offering three years Ph.D Programme in Vegetable Science with six semesters. For Ph.D in Vegetable Science, the curriculum has been developed by designing courses in this discipline, which has been approved by the Board of Studies and Academic Council of the University of Horticultural Sciences, Bagalkot. Good and adequate facilities have been established in the college for imparting quality education.

Mandates

- Imparting quality education at post graduate level and research skills.
- Undertake basic, applied and adaptive research to address current and future challenges of farming community in cultivation of vegetable crops.
- Breeding for improved quality attributes, high yield and resistance to biotic and abiotic stresses in vegetable crops.
- Developing improved production technology including organic farming in vegetable crops.
- Off season vegetable production in open field and in poly house / protected cultivation and undertaking an extension education programme.

Statistics of Ph.Ds in Vegetable Science from 2016-17 to 2017-18

Year of Admission	Admitted			Dropped			Passed			Degree award during the year
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	
2016-17	-	1*	1	-	-	-	-	-	-	2018-19
2017-18	1*	1*	2	-	-	-	-	-	-	2019-20
2018-19	3**	1**	4	-	-	-	-	-	-	2020-21
Total	4	3	7	-	-	-	-	-	-	

* Admission of the students and research work at KRCCH Arabhavi, however course work at COH Bagalkot.

** Admission of the students and research work at KRCCH Arabhavi, however course work at COH Bangalore.

Gold Medals received by the Ph.D students of Vegetable Science of K.R.C. College of Horticulture, Arabhavi

Year	Ph.D. in Vegetable Science
2016-17	-
2017-18	-
2018-19	-

Award of UHS, Bagalkot, GOI & BCM authorities' Scholarships for the academic year 2017-18

Scholarship Type	Ph.D.				
	2013-14	2014-15	2015-16	2016-17	2017-18
Merit Scholarship	-	-	-	1	2
Students Aid fund	-	-	-	-	-
Category I EBL Scholarship	-	-	-	-	-
SC/ST Fellow Ship	-	-	-	-	-
GOI Scholarship (SC+ST)	-	-	-	-	-
Vidyasiri food & Accommodation	-	-	-	-	1
Muslim Minority	-	-	-	-	-
TOTAL	-	-	-	-	3

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	-	1	1	-	1	1	-	1	1	0	1	1	-
Associate Professor	1	-	1	1	1	-	1	-	1	1*	0	1	1*	0	-
Assistant Professor	2	2	-	2	2	-	2	2	-	2	2	0	2	2	-
Total	4	3	3	4	4	-	4	3	1	4	4	0	4	3	0
Contractual	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*One Assistant Professor shown against Associate Professor is on working arrangement at COH Bagalkot

Faculty Strength of vegetable science department at KRCCH, Arabhavi

Department	Sanctioned Faculty			Faculty in place			Vacant position			Recommended by ICAR			Diversion from ICAR recommendation		
	Prof.	Assoc. Prof.	Asst. Prof.	Pro.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.	Prof.	Assoc. Prof.	Asst. Prof.
Vegetable Science	1	1	2	1	0	2	0	1	0	1	1	2	0	1	0

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

6.4.3. TECHNICAL AND SUPPORTING STAFF

SL NO	POST	2018						Remarks
		S	F	V	Contractual service	Recommended by UHS	Diversion from recommendation (Sanctioned)	
1.	Field Assistant	1	1	-	-	-	-	Field assistant looks after the lab work
2.	Lab Assistant	1	-	1	-	-	-	
3.	Messenger	1	-	1	1	-	-	Messenger look after attainder work
4.	Farm Labour	1	1	-	-	-	-	-
	Total	4	2	2	1	-	-	-

S – Sanctioned, F-Filled , V- Vacant

6.4.4 CLASSROOMS AND LABORATORIES:

Vegetable science department has sufficient number of classrooms and laboratories as detailed below.

Classrooms

Sl. No.	Class room	Area (M ²)	Seating capacity	Other facilities (LCD, Projectors, Computers, Smart board etc.)
1.	Vegetable Science	58.40	30	LCD, Projectors, Computers
2.	Seminar Hall*	120.00	80	LCD, Projectors, Computers

* Common Seminar hall for all PG Departments

PG Laboratory

Sl. No.	Name of the laboratory	Area (M ²)	Seating capacity
1	Vegetable Science	120.00	30
2	Central Lab*	80.00	15

* Common Central Lab for all PG Departments

Major equipments

Sl. No.	Name of the equipment	Quantity
1.	Electronic Balance	1
2.	Stereo Zoom Microscope make symbiotic moxlis-450	1
3.	Vacuum pump model chemva-30	1
4.	Laboratory working table	1
5.	Digital gel Documentation system (Biobee TM economy)	1
6.	PCR Machine	1
7.	SMF Battery	1 set

Sl. No.	Name of the equipment	Quantity
8.	Kjeldhal distillation heating unit	1
9.	Penetrometer MAC-MSW-532	1
10.	Weswox trianacular research microscope. Model: TRHA-66H, 4x10x40 DL 100xSL oil immersion eye pieces HVY6xwide field	1
11.	Refrigerator 310 L, Whirlpool with voltage stabiliser stand	1
12.	Godrej Refrigerator 215 liter with Stabilizer	1
13.	Hot air oven. Make: Toshniwal, 600 x 600 x 600 mm	1
14.	LUX meter (digital), Make: Taiwan	1
15.	Electronic table top scale JPF-10	1
16.	PH meter	1
17.	Seed germintor	1
18.	Deep freezer (vest frost) 344 lit	1
19.	Spectrophotometer	1
20.	Digital electronic balance	1
21.	Hand Refractrometer (0-32)	1
22.	Vernier calliper Digital	1
23.	Penectrometer	1
24.	LCD Projector	1
25.	Smart Board	1
26.	Digital camara	1
27.	UV Spectrophotometer Modal: 7315	1
28.	Electronic balance 150kg Capacity	1
29.	Waring Blender 60w (Grander)	1
30.	Seedling machine/ Entry level seeder	1

Farm facilities

The college has total area of 50.40 hectares, out of which 4.67 hectares area is available for cultivation and research for vegetable science department. All the fields are well connected with approach roads and internal roads. Entire farm is irrigated by Ghataprabha left bank canal apart from number of open wells. The details of farm facilities in Vegetable Science Department are given below.

Sl. No.	Name of the Department	Farm Area (ha)	Irrigated / Non-irrigated (ha)	Crops grown
1.	Vegetable Science	4.67	4.67	Brinjal, Drumstick, Cucurbits, Pumpkin, Tomato etc.,

Poly house and Shade nets

Sl. No	Particulars	No.	Area (m ²)	Details	Remarks
1.	Poly houses	3	4552.00	Tomato Capsicum, cucumber	
2.	Shade nets	4	1720.00	Tomato, Capsicum, Bitter gourd	

Ponds/open well

Sl. No.	Details	Area/No	Size
1.	Open well	1	40 ft x 20ft

Average Number of Students in Theory and Practical Classes

At present course work for Ph.D in Vegetable Science is being carried out at College of Horticulture, Bangalore, where the students are grouped into one theory and one practical batch

Sl. No.	Name of the department	Theory Batch	Practical Batch
1.	Vegetable Science	Full strength	Full strength

6.4.5 CONDUCT OF PRACTICAL AND HANDS ON TRAINING

Ph.D. degree in vegetable science aimed to develop skilled and professionally sound human resource to serve the booming Horticulture sector of India. As the quote says, “I hear I forget, I see I remember and I do I understand”, the students who are practicing what they learnt in class room through hands on training, are more likely to have retention of the learnt skills, which is helping them to graduate with a better understanding and better field knowledge and skills.

Practical Credit details

Sl. No.	Discipline	Number of credits for practical	Per cent of time spent	
			In laboratory	In field*
1.	Vegetable science	06	30	70

Field / Nursery / Protected structures

Out of total 15 credit hours, 06 credit hours are prescribed for practical's. Regular practical for the students are conducted in the lab/field in respective courses. Lab and field assistants take care of practical's in lab/field under the guidance of course teachers. Practical knowledge gained by the student is assessed through a practical exam at the end of each course.

Glimpses of Practical's and exposure visits

Sl.No.	Department	Methodology
1.	Vegetable Science	Varietal and Hybrids development techniques Precision and high-tech vegetable farming Visit to R & D units involved in vegetable breeding and seed production. Visit to research stations working on vegetable crops and model vegetable crop fields.

Post-Graduate Programme

This college is offering **Ph.D** programme in vegetable science where the students are specifically guided in relevant fields of knowledge. The courses for vegetable science discipline have been framed to include more of research oriented lab and field experiments. **Ph.D** 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 **Ph.D** 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 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	Depart.	No. of PG recognized teachers			Intake of students		Student to teacher ratio
			KRCCH Arabhavi	Off Campus	Total	Ph.D	Total (Ph.D students)	
1.	2013-14	Vegetable Science	04	01	05	00	00	1: 1.2
2.	2014-15	Vegetable Science	04	00	04	04	04	1: 1
3.	2015-16	Vegetable Science	03	02	05	02	02	1: 1.8
4.	2016-17	Vegetable Science	03	02	05	01	01	1: 1.8
5.	2017-18	Vegetable Science	02	06	08	02	02	1: 1.25

6.4.7. FEEDBACK OF STAKEHOLDERS

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

Sl. No.	Feed back	Action taken
2013-14		
Farmers :		
1.	Exposure visit to PG students to progressive/ awardee farmers fields to enrich the practical knowledge on implementation of SAU's/ICAR Institutes/farmers innovative technologies.	Exposure visits for PG students are being made to the following progressive/awardee farmers fields: Sri. Mahadev Jodatti, Savasuddi, Rayabagh, Sri. Raju Bhairugol, Rajapura, Gokak(Tq), Sri.SannayamunappaRajapure, Pamaladinni, Gokak (Tq), Smt. Prema Ganigar, Gokak (Tq) Sri. Dareppa Kittur, Terdal, Jamakhandi(Tq) Bagalkot (Dist.) in practical classes of different courses
2014-15		
Pvt. Entrepreneur Dr. Jayathirta Kulkarni, Managing Director, Veg Fresh Pvt. Ltd., Bailahongal, Belagavi		

2.	Exposure visit to PG students to different industries to become entrepreneurs after the completion of degree programme.	PG students have visited the following industries/different entrepreneur units during their degree programme. Veg Fresh Pvt. Ltd, Bailahongal, Belagavi – with respect to commercial mushroom production and exporting of vegetables. Commercial vegetable nurseries, Ghataprabha, Gokak(Tq), Belagavi.
2016-17		
Students and Parents		
3.	Personality development programmes to students	The personality development programmes conducted for PG students are as follows : Organized workshop on preparation to competitive examination on 16.02.2016. Mr. P.C. Srinivas, IAS, Personal Secretary of President, GOI. Mr. Shivasanker, E, IFS, Bengaluru, DyamappaIrani, IRS, Belagavi delivered series of lectures. Sri. Nirbayanand SaraswathiSwamiji, Ramakrishnashrama, Gadag delivered guest lecture on Role of youths for retaining Indian Culture on 20.03.2017.
2017-18		
Students		
4.	Dress code for PG students	Dress Code for PG students has been implemented from 2017-18
Employer Hon. Vice-Chancellor, UHS, Bagalkot		
5.	Implementation of Interactive PG seminar for PG students Establishment of Digitalization of library e-sources in library, CAB Abstrats, Krishikosh and CeRA Digital English language laboratory.	Interactive PG seminars for PG students were organized at University of Horticultural Sciences, Bagalkot in 2016 and 2017 Digitalization of library, e-sources in library, CAB Abstracts, Krishikosh and CeRA were established in the library from 2015-16 onwards. English digital language laboratory is an audio visual installation used in modern teaching methods to learn English language. Modest lab offers an exclusive result oriented teaching and efficient to enrich the language learning process. It is developed on the methodology of LSRW skills.

6.4.8 STUDENT INTAKE AND ATTRITION IN THE PROGRAMME

Ph.D in Vegetable science

Ph.D 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
2016-17	Ph.D.	2	1	0	0
2017-18	Ph.D.	2	2	0	0
2018-19	Ph.D.	2	4	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

SL.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 software)

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 the 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

SI. 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 Laboratory	Digital 16 HP P-IV Computer Systems for English Learning

6.4.12.

CERTIFICATE

I the Dean, Kitturu Rani Channamma College of Horticulture, Arabhavi 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
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