

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



**SELF STUDY REPORT FOR THE  
M. Sc. HORTICULTURE IN PLANTATION, SPICE  
MEDICINAL AND AROMATIC CROPS  
COH, BAGALKOT, 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**

The growth of Indian agriculture sector has had its moments of glory. The green revolution has been major success story of free India to achieve surplus today, nonetheless frequently plagued by famines and chronic food shortage. From food grain production around 55 million tons at the time of independence, now boast the production of 284.83 million tons of food grains (2017-18). Indian agriculture has witnessed wide variations in growth performance after independence in India. The record horticulture production (306.8 million tonnes estimated) during 2017-18 will mark the sixth straight year of horticulture production outstripping that of food grains. Further, the percentage share of horticulture in agriculture GDP is 33 per cent which is quite impressive. The horticulture sector plays vital role in nutritional security, economic sustainability and employment generation. It was realized only in mid-80s about the importance of horticulture and thus the Government of India recognized Horticulture as a prominent sector. Horticulture appears to be a viable means of diversification for making agriculture more profitable through efficient land use, optimum utilization of natural resources while creating skilled employment for the rural masses. Horticulture has invariably enhanced the economic status of farming community besides, without disturbing invaluable natural resources. In general the growth of horticulture sector has created ripples which consequently resulted in a wide spectrum of processing industries. In this context, quality seed and planting material supply, surge for hi-tech horticulture, better prospects for contract farming as well as cooperative farming, participatory approach in production and marketing have attained magnanimous stature. The higher growth rate in horticulture sector suggests a structural change in Indian agriculture where farmers are increasingly growing perishable commercial crops due to a growing market and a quicker cash flow as these crops require less time from sowing to marketing. Thus, there is a growing awareness about the advantages of the horticultural crop production and this is bound to go up with the improvement in socio-economic status of the people.

In the recent past R & D programmes in horticulture received an impressive support from the government. As a result, the research infrastructure has increased many-fold with the setting up of a number of new institutes, national research centres for several crops, important both from domestic as well as export point of view. The

establishment of educational institutions in the field of horticulture play a pivotal role in developing human infrastructure, which would cater to the needs of the emerging horticulture industry.

To develop the quality human infrastructure in the field of horticulture in general and to cater to the needs of the farmers of Northern Karnataka in particular, the College of Horticulture was established at Bagalkot on 07.07.2008 under the University of Agricultural Sciences, Dharwad. With the establishment of the University of Horticultural Sciences at Bagalkot the college of Horticulture came under the administrative control of the said university from 2009-10. The college offers undergraduate, postgraduate and Ph.D. courses. The college has the admission capacity of about 120 students annually for undergraduate, about 55 students for Master' degree programme and 25 students for Ph.D. programme. The students of this college have excelled not only in studies but also in extra-curricular activities and National level competitive examinations. The college has been making efforts to improve the quality of education offered in this direction. Since the college is due for accreditation, the present self study report provides all the necessary information about the college activities performed during last five years (01-01-2014 to 31-12-2018).

The University Level Task Force and Steering Committee have also 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 for providing valuable suggestions to improve the quality of presentation.

**College of Horticulture, Bagalkot  
March, 2019.**

  
**Dean  
(H.B.Patil)**

## **CONTENTS**

<b>Sl. No.</b>	<b>Title</b>	<b>Page No.</b>
6.4.1.	Brief History of the Degree Programme	1
6.4.2.	Faculty Strength	1
6.4.3.	Technical and Supporting staff	2
6.4.4.	Classrooms and Laboratories	2
6.4.5.	Conduct of Practical and Hands-on-Training	4
6.4.6.	Supervision of students in PG/PhD programmes	5
6.4.7.	Feedback of stakeholders (Students, parents, industries, employers, farmers etc.)	5
6.4.8.	Student intake and attrition in the programme for last five years	6
6.4.9.	ICT Application in Curricula Delivery	7

### 6.4.1. BRIEF HISTORY OF THE DEGREE PROGRAMME

#### A humble beginning

In the beginning, the College of Horticulture, Bagalkot started with 10 departments Plantation, Spice, Medicinal and Aromatic Crops, one of the major department had a small laboratory with minimum facilities to carry out UG practical classes in PMA. Over a period of 2 years, the department strengthened and upgraded the facilities utilizing university grants as well as external funds. Based on the facilities available at the laboratory and strength of the faculties, PG programme started in the year 2014-15.

#### Objectives

- Human resource development at master's levels having good practical knowledge of Plantation, Spice, Medicinal and Aromatic Crops
- Systematic documentation of the agronomical, crop management practices and quality improvement of Plantation, Spice, Medicinal and Aromatic Crops
- Research and development of eco friendly and low cost new technologies for the crop production and productivity.
- Production and popularization of quality planting material and POP of Plantation, Spice, Medicinal and Aromatic Crops.
- Development of new varieties.
- Consultancy services to farmers through phone, discussions, demonstrations and field visits.

### 6.4.2 FACULTY STRENGTH

The Department of Plantation, Spice, Medicinal and Aromatic Crops, is managing the PG programme with the faculties present in the Department and also by utilizing the services of faculties of (other departments), Directorates and other institutes (Research centers / Colleges). In addition to teaching and research, the faculties of the department are involved in other administrative / University activities.

#### Existing faculty strength:

Sl. No.	Cadre	Faculty in place	Vacant position	Faculty recom. by ICAR	Deviations from ICAR recom.
1.	Professor (PMA)	01	0	0	0
2.	Assoc. Professor (PMA)	00	0	0	0

Sl. No.	Cadre	Faculty in place	Vacant position	Faculty recom. by ICAR	Deviations from ICAR recom.
3.	Asst. Professor (PMA)	02	0	0	0
<b>Faculty support from other departments, directorates and stations</b>					
4.	Asst. Professor (Agronomy)	2	-	-	-
5.	Asst. Professor (Agro Forestry)	1	-	-	-
6.	Asst. Professor (Microbiology)	1	-	-	-
7.	Assoc. Professor (Microbiology)	1	-	-	-
8.	Asst. Professor (Agril. Engineering)	1	-	-	-
9.	Asst. Professor (Soil Science)	1	-	-	-
10.	Asst. Professor (PHT)	1	-	-	-

### 6.4.3. TECHNICAL AND SUPPORTING STAFF

The department has 2 supporting staff members provided by the college the college has provided one assistant and 1 helper to support and for the smooth conduction of UG and PG practical classes.

Sl.No.	Designation	Sanctioned strength	Faculty in place	Vacant position	Faculty recom. by ICAR	Deviations from ICAR recom.
1	Lab Assistant	01	00	01	01	-1
2	Field Assistant	01	01	00	01	0

### 6.4.4 CLASS ROOMS AND LABORATORIES

#### Class rooms

Sl.No.	Class room No.	Area	Seating capacity	Other facilities (LED projector, Computer etc.)
1.	M. Sc class room		20	LED Projector and Computer

#### Laboratories

Sl.No.	Name of the laboratory	Area	Seating capacity (No.)
1.	UG Laboratory	36 x 26 ft	30
2.	PG Laboratory	36 x 26 ft	30

#### Major equipment

Laboratory facilities available at the Department of Plantation, Spice, Medicinal and Aromatic Crops for PG Research

Sl.No.	Name of the Equipment	Qty
1.	Scientific Microscope	01
2.	Hot Plate With Energy Regulators	01
3.	Magnetic Stirrer With Hot Plate	01
4.	Table Top pH Meter	01
5.	Table Top Digital Conductivity / TDS Meter 5 Ranges	01

<b>Sl.No.</b>	<b>Name of the Equipment</b>	<b>Qty</b>
6.	Weighing Balance Of 6 Kg Lcd	01
7.	Induction cook top	01
8.	Scientific Balance	01
9.	Flat Table Balance	01
10.	Refrigerator	01
11.	Digital Vernier Calipers	04
12.	Manual Vernier Calipers	04
13.	Clevenger apparatus 2000ml	04
14.	Clevenger apparatus 5000ml	04
15.	Abbe refractometer	01
16.	Clevenger apparatus set of 6 complete with heater and retort clamp 500ml clamp	01
17.	Hot air oven	01
18.	Water distillation unit	01
19.	Stem distillation unit (10 kg capacity)	01
20.	Lux meter	01
21.	Hand refractometer	02
22.	Water circulator	01
23.	Vaccum pump	01
24.	Digital electronic balance (60 kg)	01
25.	Soxlet apparatus	01

(**Miscellaneous:** Filing cabinets (steel 4 drawer), Lab stools, Office tables, Office executive chairs, Assistant tables, , Pigeon hole steel Almeria, Almeria, Glass door Almeria, Slotted angle rack steel, Computers, Printers, Notice board, Hand lens 10x, Lab tables fixed with reagent racks, Glass block board(6X4)(8x4, Wooden key board, Acrylic display stands and raw drugs museum).

### **Farm facilities**

The department has about an hectare of land exclusively for conducting PG research, demonstration block, crop based nutrition research. During lean periods, the land is cultivated with green manure crops, under MHREC of the campus.

<b>Sl.No.</b>	<b>Farm Area</b>	<b>Irrigated/ Non-Irrigated</b>	<b>Crops grown</b>
1.	5 acres	Irrigated	Lemongrass, citronella, vetiver, garden rue and

**Workshops if any: Nil**

### 6.4.5. CONDUCT OF PRACTICAL'S AND HANDS ON TRAINING

Sl.No.	Course	Skills / Method of Hands on training
1.	PMA-501 Production technology of Plantation crops (Palms, Cashew and Rubber)	<ul style="list-style-type: none"> <li>* Propagation and nursery techniques</li> <li>* Layout and planting, nutritional and cultural aspects</li> <li>* Characteristics of varieties and hybrids</li> <li>* Harvesting, drying, storage, packaging, and processing</li> <li>** Coconut, arecanut, cashew, oil palm and rubber</li> </ul>
2.	PMA-502 Production technology of Beverage crops	<ul style="list-style-type: none"> <li>* Propagation and nursery techniques</li> <li>* Layout and planting, nutritional and cultural aspects</li> <li>* Characteristics of varieties and hybrids</li> <li>* Harvesting, drying, storage, packaging, and processing</li> <li>** Tea, coffee and cocoa</li> </ul>
3.	PMA-503 Production technology of major spice crops	<ul style="list-style-type: none"> <li>* Propagation and nursery techniques</li> <li>* Layout and planting, nutritional and cultural aspects</li> <li>* Characteristics of varieties and hybrids</li> <li>* Harvesting, drying, storage, packaging, and processing</li> <li>**Black pepper, cardamom, clove, cinnamon, nutmeg, allspice, turmeric, ginger, garlic, tamarind and vanilla</li> </ul>
4.	PMA-504 Production technology of Medicinal crops	<ul style="list-style-type: none"> <li>* Identification and botanical description of important medicinal plants of herbaceous, Shrubby and climber in nature.</li> <li>* To study the home remedies of important medicinal plants of herbaceous and shrubby in nature.</li> <li>* To study the home remedies of important medicinal plants of Trees in nature.</li> <li>** Medicinal yams, sarpagandha, periwinkle, safed musli, stevia, senna, aloe vera, isabgol and cinchona</li> </ul>
5.	PMA-505 Production technology of Aromatic crops	<ul style="list-style-type: none"> <li>* Identification, plant profile and botanical description of important aromatic plants of herbaceous/grassy in nature.</li> <li>* To study the propagation techniques and nursery management of important aromatic plants of herbaceous in nature</li> <li>* To study the propagation techniques and nursery management of important aromatic plants of trees in nature</li> <li>** Frech jasmine, tuberose, basils, davana, rosemary, sandalwood, patchouli, mints, grasses, marjoram and celery</li> </ul>
6.	PMA-506 Breeding of Plantation, Spice, Medicinal and Aromatic Crops	<ul style="list-style-type: none"> <li>* Comparative study of spices</li> <li>* Morphology and seed production in breeding behaviour</li> <li>* Induction and evaluation of autotetraploids</li> <li>* Evaluation of biometrical traits and quality traits</li> <li>** plantation, spice, medicinal and aromatic crops</li> </ul>



### 6.4.6. SUPERVISION OF STUDENTS IN PG PROGRAMMES

For allotment of the research topic and major advisors, the students are encouraged to search literature and come out with the appropriate research areas. The allotment will be made by the HOD/ Dean of the respective colleges.

Advisory Committee of M.Sc. student shall consist of at least four members including Major advisor among whom, two members shall be from outside the major field of specialization. The members from the major field shall be chosen to form a closely knit team in the area of specialization giving a co-ordinated approach to help the student to complete the research work. At any given time, a PG teacher shall not be a major advisor for more than six PG students.

Student's plan of work shall be decided by the advisory committee taking into consideration of student's research topic. The programme of research of the students is thoroughly discussed by the advisory committee and approved by the Dean (PGS).

### 6.4.7 FEEDBACK OF STAKEHOLDERS (STUDENTS, PARENTS, INDUSTRIES, EMPLOYERS, FARMERS ETC.)

Information were collected from the outgoing students (after thesis submission) to know their future plans and to get their feedbacks for further improvements. Some of the suggestions and their inclusions in the department are given below.

Sl. No.	Name (year of completion)	Remarks/ Feedback for improvement	Introduced Changes (if any)
1.	Vittal Dharmatti (2016)	<ul style="list-style-type: none"> <li>• Internet facility for students</li> <li>• Exclusive person for handling equipments</li> </ul>	<ul style="list-style-type: none"> <li>• Internet facility made available for PG students</li> <li>• One lab assistant was nominated exclusively for handling equipments</li> </ul>
2.	Venkateshamurty (2016)	<ul style="list-style-type: none"> <li>• Internet facility for the students</li> <li>• To have a separate departmental library</li> </ul>	<ul style="list-style-type: none"> <li>• Internet facility made available</li> </ul>
3.	Pushpa D S (2017)	<ul style="list-style-type: none"> <li>• Internet facility for students at the dept</li> </ul>	<ul style="list-style-type: none"> <li>• Internet facility made available for PG students</li> </ul>
4.	Rajashree S S (2017)	<ul style="list-style-type: none"> <li>• Maintenance of high end equipments by exclusive staff</li> </ul>	<ul style="list-style-type: none"> <li>• Presently, one lab assistant has been kept exclusively for this.</li> </ul>
5.	Srigandha D D (2017)	<ul style="list-style-type: none"> <li>• Internet and Library facility at the department</li> </ul>	<ul style="list-style-type: none"> <li>• Both Internet and Library facilities have been established at the</li> </ul>

		<ul style="list-style-type: none"> <li>• A separate room for girl students</li> </ul>	<ul style="list-style-type: none"> <li>• department level</li> <li>• Now, there is a separate room for girls in the department</li> </ul>
6.	Ganesh N B (2018)	<ul style="list-style-type: none"> <li>• Special classes for ARS</li> </ul>	<ul style="list-style-type: none"> <li>• Classes arranged for Sr. M.Sc. Students</li> </ul>
7.	Sinchana N S (2018)	<ul style="list-style-type: none"> <li>• To have a separate departmental library</li> </ul>	<ul style="list-style-type: none"> <li>• The Department has its own library now with JISSS journals and Current Science Journals</li> </ul>

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

Academic year	Sanctioned seats	Actual intake	Completed	Attrition <sup>#</sup>	
				Number	Per cent
2013-14	-	-	-	-	
2014-15	2	2	2	0	0
2015-16	3*	3	3	0	0
2016-17	3*	3	2	1	33.33
2017-18	06	06	0	0	0
2018-19	05	05	0	0	0

\* Admitted for Bagalkot campus; 1<sup>st</sup> Year- at KRCCH, Arabhavi and 2<sup>nd</sup> Year at CoH, Bagalkot.

# Two of them got AHO posts during their study period

#### Accomplishments/Achievements

- Till date, 7 students out of 19 have been awarded with Master's degree programme and 11 students are on the role. The present status of students admitted to PMA are given below
  - Serving as Horticultural Officers in the State Dept. - 2
  - Serving in marketing/ extension of Private Agri-input companies - 1
  - Pursuing higher education -
  - Teaching in Private University -
  - Agri- Entrepreneurs (input dealers) -
  - In University (Permanent/ Temporary)-
  - To be settled (seeking employment) -
- Miss **Rajashree S Sarthi** secured Univeristy Gold Medal for merit (2016-17)
- The details of Scientific Publications made by the students and faculties of the Department during the last 5 years are given below

---

▪ International Journals	-
▪ National Journals with > 5 NAAS ratings	-
▪ National Journals with < 5 NAAS ratings	-06
▪ Book chapters	-03

### 6.4.9. ICT APPLICATION AND CURRICULA

The College of Horticulture, Bagalkot has adopted Academic Management System (AMS). All PG correspondences such as Plan of Work, Programme of Research etc are being executed through AMS. Approvals by the Chairman, The Head, Advisory Committee, Dean (PGs) and Registrar are given through AMS to save time as well as resources. The faculty members have adopted multimedia approach for better teaching.

The Koha (library management) open wear software has been implemented by the University library. 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 3000 scholarly journals pertaining to the Agriculture and allied sciences which are available in full text.

**E-books:** 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.

**Krishikosh:** Krishikosh is database of theses submitted to the Agriculture universities and ICAR institutions, The UHS Library is member for Krishikosh and all the theses 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 25 computers with facility of internet connected to all computers. Web OPAC of the main campus library is available in the net. EZ-proxy remote access server is installed in the library through which one can access e-resources, CeRA, and Agristat in distant places also.

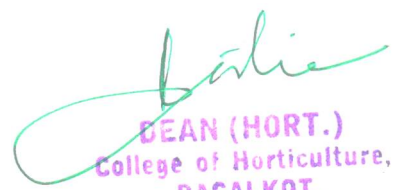
**Wi-fi facility:** Wi-fi is available in the library premises. One can have net facility in the main campus through IP based network. Through which students and faculty members can browse CeRA and e-resources of the library in hostels and Departments, respectively.

**6.4.12.**

**CERTIFICATE**

I the Dean, College of Horticulture, Bagalkot 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 (HORT.)  
College of Horticulture,  
BAGALKOT.