

**UNIVERSITY OF HORTICULTURAL SCIENCES
BAGALKOT, KARNATAKA**



**SELF STUDY REPORT FOR THE
Ph.D. IN ENTOMOLOGY
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)**

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6.4.1. BRIEF HISTORY OF THE DEGREE PROGRAMME

Evolution of the P.G. programme:

The Bagalkot and surrounding districts such as Vijayapura, Koppal and Belgaum have high potential to grow various fruits, vegetables and spices viz., grapes, pomegranate, lime, banana, sapota, guava, brinjal, onion, chilli, Tomato, Gourds and Turmeric. The pest's scenario in above mentioned crops has been changed because of increase in area and advanced management practices. As consequences, several insects and mite pests are attaining major pest's status. The yield loss caused due to insect pests is enormous and this leads to need conducting area specific research to develop effective, economical and ecologically sound pest management practice. With this background, the Department of Entomology started Ph.D. degree programme in Udyangiri campus during 2014-15 with in take of 03 students.

Mandates

- Systematic documentation of insect–pest and their economic importance on the horticultural crops.
- Development of pest forecast models, IPM (Integrated Pest Management) modules, low cost plant protection technologies.
- Research, production and popularization of bio-control agents.
- Human resource development at master's and doctoral levels.
- Training and entrepreneurial development, advisory consultancy to farmers, extension functionaries.

Objectives

- Timely prediction and forecasting of important pests of Horticultural crops.
- Promotion of ecofriendly and sustainable pest management technologies.
- Promotion of beekeeping for enhancing production and productivity of Horticultural crops.
- Validation and promotion of low cost, ITK (Indigenous technology knowledge), bio-rationales and botanical insecticides.
- Evaluation of newer molecules of insecticides.
- Skill oriented hands on training programme to masters and doctoral students.
- Consultancy services to farmers in person, phone and field visits.

Ph.D. in Entomology				
Sl.No.	Student name, I.D. No. and Chairman	Thesis Title	Year of passing	Outcome
1.	Poornima m. Holeyannavar UHS15PGD125 Dr. J. B. Gopali	Integrated Management of Major Insect Pests of Mango Under High Density Planting System	2018	Developed newly designed fruit fly trap (two liter transparent plastic container) with lure (plywood block). Trap density @ 10 traps/ha were highly effective and persistent four to five months in mass trapping of mango fruit flies under high density planting system.

6.4.2. FACULTY STRENGTH

Faculty strength

Sl. No.	Cadre	Sanctioned strength	Faculty in place	Vacant position	Faculty recom. by ICAR	Deviations from ICAR recom.
1.	Professor	1	2	-	1	+1
2.	Asso. Professor	2	-	2	2	-2
3.	Asst. Professor	2	2	-	2	Nil
Faculty from UHS directorates and other stations						
4.	Professor Director of Extension, UHSB	-	01	-	-	-
5.	Asso. Professor KRCCH, Arabhavi	-	01	-	-	-
6.	Asst. Professor DE office, UHSB	-	01	-	-	-
7.	Asst. Professor HRS, Tidagundi	-	01	-	-	-
8.	Asst. Professor HRS, Kumbapur	-	01	-	-	-

6.4.3. TECHNICAL AND SUPPORTING STAFF

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

6.4.4. CLASS ROOMS AND LABORATORIES

Class rooms

Sl.No.	Class room No.	Area	Seating capacity	Other facilities (LED projector, Computer etc.)
1.	P.G. Class room 01	13.5 x8m	50	LCD projector, Computer and smart board facility

Laboratories

Sl.No.	Name of the laboratory	Area	Seating capacity (No.)
1.	P.G. Lab	11.0 x 8.0 m	30
2.	Insect Culture room/ Insectary	7.5x 5.0 m	10
3.	Inoculation chamber	5.0 x 5.0 m	03
4.	Insect catalogue room	11.0 x 8.0 m	15
5.	Honey testing lab	8.0 x 5.0 m	04
6.	Corcyra rearing room	5.0x 2.5 m	02

Major equipments

Sl.No.	Name of the equipment	Quantity	Cost (In lakhs)
1.	Motic stereo zoom microscope	01	0.86
2.	MSZ Bi microscope Std. set	02	0.47
3.	Spectroscopic binocular	04	0.22
4.	Olympus trinocular Stereo zoom microscope (model SZx7)	01	0.48
5.	Trinocular Compound Microscope	01	0.87
6.	Binocular Research Microscope Having battery backup	01	0.95
7.	3D trinocular stereo zoom digital USB microscope with 6MP HDMI camera	01	7.39
8.	LCGC Electronic weighing balance cap 600 g read	01	0.22
9.	LCGC Electronic weighing balance cap 300 g read	01	0.22
10.	Analytical balance (Readability 0.001gm)	03	0.26
11.	Canon Digital camera 80D 18-55	01	0.79
12.	DSLR camera, D5500 (18-15m) compatible SB.900 flash	01	2.33
13.	Motic Multi output camera with adapter	01	0.76
14.	Spectrophotometer double beam wavelength 190-1100nm 8"	01	3.98
15.	LCD projector (sealing mount kit)	01	0.85
16.	Centrifuge	01	2.24
17.	Laminar air flow (Horizontal) Size 4x2x2	01	2.20
18.	Hot air oven make symbiont Chamber (10x4)	01	0.88
19.	Hot air oven	01	0.96
20.	Hot plate cum magnetic stirrer	01	0.45
21.	Interactive Model board GMB85 minimum diagonal size 1950 mm	01	0.75
22.	Make bio techniques (ISO 90012008) model BTI-06 Incubator) Size HxWxD (50x50x50)	01	2.50
23.	Refrigerator Videocon V.C.P 314 IBH 310 lit double door	01	0.49
24.	Insect rearing cages	20	1.20
25.	All bee Appliances	01 Set	0.90

(Miscellaneous: Insect cage, Mixer Philips, Insect rearing cage, Filing cabinet steel 4 drawer, Lab stools, Office table, Office executive chairs, Insect cabinets rack, Insect dissection trays Aluminum, Solar insect light trap, Riker mounts teak wood, Assistant table t8,

Electronic lab table, Pigeon hole steel Almeria, Almeria steel prier, Glass door Almeria, Slotted angle rack steel, Wooden stools teak wood, Computer, HCL, Printer 2 h p 1020 LESER, Notice board, Steel class room bench, Insect dissection box with, Hand lens 10ximported counting box, Lab table modern fixed with reagent racks , Glass block board(6X4)(8x4, Wooden key board with 12 locks, Air cooler kemstar 60 liter, Air cooler kemstar 40 liter , Acrylic display stand (steel), Dell all in one computer 4GB Ram)

Farm facilities

Sl.No.	Farm Area	Irrigated/ Non-Irrigated	Crops grown
1.	2 Acre	Irrigated	Pigeon pea, Cabbage, Tomato, Onion, Bhendi, Brinjal, Cucumber, Capsicum, Chilly, Water melon etc.

Workshops if any: Nil

6.4.5. CONDUCT OF PRACTICAL AND HANDS ON TRAINING

Sl.No.	Course	Skills / Method of Hands on training
1.	Recent Trends in Biological Control, HET-606 (1+1)	Maintaining of Corcyra culture, mass production of bio agents, collection and isolation of entomo-pathogens
2.	Advances in host plant resistance in horticultural crops, HET-609 (1+1)	Estimation of biochemical constituents viz., phenols, tannins, total sugars etc.
3.	Advances in Insect systematics, HET-601 (1+2)	Development of taxonomic skills for keying out of insect specimens, drawing and dissection of genital organs etc.
4.	Advances in Toxicology of insecticides, HET-605 (1+1)	Bioassay of insecticides, Safe handling of insecticides.
5.	Advances in Insect Ecology, HET-604 (1+1)	Understanding of insect-plant relationships. Insect sampling devices, insect loss estimation technique and pheromone studies.
6.	Application of biotechnology in pest management, HET-516	DNA isolation PCR techniques Transformation and cloning.

6.4.6. SUPERVISION OF STUDENTS IN PH.D. PROGRAMMES

Every student shall have Advisory Committee with a Major Advisor and at least five members among whom three 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. Only, 01 Ph.D student has passed out from the Department of Entomology, College of Horticulture, Bagalkot during 2017- 18. Research work was carried

out by students on the major crops which are grown in this area viz., tomato, guava, watermelon, drumstick etc and Research related to insect taxonomy, integrated pest management modules, biological control, pesticide residue analysis, bee pollination etc. are being carried out.

With respect to the allotment of the students to the PG teacher the major advisor shall not have more than 6 PG students (not more than 04 Ph.D. students) and also the PG teacher shall not be a member of the advisory committee for more than 15 PG students.

Sl. No.	Academic year	No. of PG recognized teachers	Intake of Students Ph.D.	Students : Teachers ratio
1.	2014-15	4+4*	03	1.7:1
2.	2015-16	4+4*	4	3:1
3.	2016-17	4+4*	01	2.7:1
4.	2017-18	4+4*	03	2.7:1

*Faculty working in nearest stations

Short Note on Sufficiency of staff and how the shortage of faculty is taken care

For post-graduation degree programme every semester Four/ five Ph.D. courses are being offered. The faculty present in Department (02 Professors and 02 Asst. Professors) are handling courses along with under graduate and diploma courses. If any shortage of faculty for handling the courses the PG recognized teachers from nearest stations will be deputed for the handling the courses.

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

Feedback by the Ph. D students

Sl. No.	Name	Important remarks/feed back
1.	Mahesh Math	At present lab facilities are good. Need based lab materials should be provided if not available to the student to conduct research work. With respect degree award Horticultural entomology needs to be accredited at ICAR level. Already we have missed opportunities to get jobs in Quarantine officers post (SSC) because of problem with degree award. Not yet clear about accreditation of Horticultural Entomology.

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

Academic year	Sanctioned seats	Actual intake -h.D.	Attrition (No)	Attrition (%)
2013-14	-	-	0	00
2014-15	-	03	1	30
2015-16	-	04	0	00
2016-17	-	01	0	00
2017-18	-	03	0	00

6.4.9. ICT APPLICATION AND CURRICULA DELIVERY

In the college the students were paid the fees and registered through Academic Management System (AMS). All PG correspondences like Plan of Work, Programme of Research and Submission of all PG forms by the students were through AMS. All approvals by the Head of the Department, Chairman and members of the Advisory Committee, Dean (PGS) and Registrar approval through on line by using AMS in order to make paperless transactions. Teaching will be done by using PPT and smart boards.

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 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:

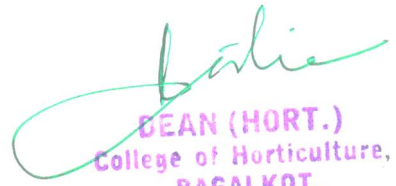
Wi-fi is available in the library premises. One can have net facility in the main campus through IP based network. Through which students and faculty members can browse CeRA and e-resources of the library in hostels and Departments, respectively.

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.