Self Study Report

M.Sc. (Ag.) Entomology

Submitted to
National Agricultural Education Accreditation Board Indian Council of Agricultural Research

Department of Plant Protection
Faculty of Agricultural Sciences
Aligarh Muslim University
Aligarh- 202002, U.P., India
6.4. Self-Study Report for M.Sc. (Ag.) Entomology

6.4.1. Brief History of the Programme

On the recommendation of Randhawa Committee 1993, the ICAR in VIII plan established the Institute of Agriculture at Aligarh Muslim University, named as R.A.K. Institute of Agricultural Sciences, which was taken over by the UGC in the IX plan. The Institute had four sections including Plant Protection. The Department of Plant Protection under the Faculty of Agricultural Sciences came into existence in 2000 (vide letter no. C-III-Stt.-1/613 dated 21.7.2000, Annexure-I). The Department of Plant Protection offers following Master’s and Doctoral courses.

- M.Sc. (Agriculture) Entomology
- M.Sc. (Agriculture) Plant Pathology
- M.Sc. (Agriculture) Nematology (To be introduced from the session 2019-20)
- Ph.D. Entomology
- Ph.D. Plant Pathology
- Ph.D. Plant Nematology

As per feedbacks received from the students and eligibility requirements of different agricultural universities/institutions, two specializations, viz., Entomology, and Plant Pathology & Nematology were introduced in M.Sc. (Ag.) Plant Protection from 1995 onwards. In 2004, the course structure was revised in a way to match with the curriculum of M.Sc. (Ag.) Entomology offered by premier ICAR universities/institutions, and the specialization “Entomology” was inscribed on the degree of M.Sc. (Ag.) Plant Protection since 2012. Introduction of the Choice Based Credit System (CBCS) by the UGC in 2015-16 provided an opportunity to adopt almost the entire course structure of M.Sc. (Ag.) Entomology as recommended by ICAR, BSMA Committee, 2008, because under CBCS, 96 credits were to be offered (Annexure-II). Under this major revision, the degree nomenclature, “M. Sc. (Ag.) Plant Protection specialization in Entomology” was also changed to “M.Sc. (Ag.) Entomology” and implemented from the session 2015-16 (Annexure III). However, from session 2018-19, the complete course structure as recommend by the BSMAC-ICAR has been adopted (Annexure IV).

Vision

To develop knowledge based well-trained and dedicated human resource for crop protection through sustainable pest management approaches.

Mission

1. To provide quality education and training to graduates to bring about solutions to insect problems at regional and national level.
2. To pursue innovative/ problem-based research on insect management by reducing agrochemical inputs through bio-intensive management approaches.
3. To accomplish lab to land concept by disseminating the package of practices of innovative sustainable insect management strategies developed in the department for farmers to enhance the agricultural productivity.

6.4.2. Faculty Strength

Regular Faculty

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Sanctioned Faculty</th>
<th>Faculty in place</th>
<th>Vacant position</th>
<th>Faculty recommended by the ICAR/UGC/VCI/other regulatory bodies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Professor</td>
<td>1(^a)</td>
<td>0</td>
<td>UGC</td>
</tr>
<tr>
<td>2.</td>
<td>Associate Professor</td>
<td>1(^b)</td>
<td>0</td>
<td>UGC</td>
</tr>
<tr>
<td>3.</td>
<td>Assistant Professor</td>
<td>3(^a)+2(^b)</td>
<td>0</td>
<td>UGC</td>
</tr>
<tr>
<td>4.</td>
<td>Guest Faculty</td>
<td>2 (1(^c)+1(^d))</td>
<td>0</td>
<td>UGC</td>
</tr>
</tbody>
</table>

\(^a\) Specialized faculty in Plant Pathology, \(^b\) Specialized faculty in Entomology
\(^c\) Faculty from PG Dip. Horticulture, \(^d\) Faculty from B.Sc. Agriculture
**Additional/Outsource Faculty (faculty from the other departments on EDA basis)**

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Faculty</th>
<th>Designation</th>
<th>Specialization</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dr. Zainab Sarwat</td>
<td>Asst. Professor</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>2.</td>
<td>Dr. Sudharma Haridasan</td>
<td>Assoc. Professor</td>
<td>Library Science</td>
<td>Library &amp; Information Science</td>
</tr>
<tr>
<td>3.</td>
<td>Dr. M. Masoom Raza</td>
<td>Assoc. Professor</td>
<td>Library Science</td>
<td>Library &amp; Information Science</td>
</tr>
<tr>
<td>4.</td>
<td>Dr. Nishat Fatima</td>
<td>Assoc. Professor</td>
<td>Library Science</td>
<td>Library &amp; Information Science</td>
</tr>
<tr>
<td>6.</td>
<td>Dr. Shahid Bin Zia</td>
<td>Professor</td>
<td>Entomology</td>
<td>Zoology</td>
</tr>
<tr>
<td>7.</td>
<td>Dr. KamillUsmani</td>
<td>Professor</td>
<td>Entomology</td>
<td>Zoology</td>
</tr>
<tr>
<td>8.</td>
<td>Dr. M. Saghir Khan</td>
<td>Professor</td>
<td>Microbiology</td>
<td>Microbiology</td>
</tr>
<tr>
<td>9.</td>
<td>Dr. Shams T. Khan</td>
<td>Assoc. Professor</td>
<td>Microbiology</td>
<td>Microbiology</td>
</tr>
<tr>
<td>10.</td>
<td>Dr. Almas Zaidi</td>
<td>Guest Teacher</td>
<td>Microbiology</td>
<td>Microbiology</td>
</tr>
</tbody>
</table>

*A proposal for sanction of additional faculty (3 Assistant Professors) has been approved by the AC and submitted to the UGC (Annexure-V)*

### 6.4.3. Faculty Profile

The faculty profile in tabular form has been detailed under Annexure-VI. Further, the present profile of the faculty is sufficient to meet the academic requirement of the department as well as the course.

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualification</th>
<th>Designation</th>
<th>Specialization</th>
<th>No. of Years of Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Akhtar Haseeb</td>
<td>M. Phil., Ph.D.</td>
<td>Professor</td>
<td>Plant Pathology &amp; Nematology</td>
<td>40 years</td>
</tr>
<tr>
<td>Dr. Parvez Qamar Rizvi</td>
<td>Ph. D.</td>
<td>Professor</td>
<td>Entomology</td>
<td>29 years</td>
</tr>
<tr>
<td>Dr. Mujeebur Rahman Khan</td>
<td>M. Phil., Ph.D.</td>
<td>Professor</td>
<td>Plant Pathology &amp; Nematology</td>
<td>29 years</td>
</tr>
<tr>
<td>Dr. Mohd. Shafiq Ansari</td>
<td>Ph.D.</td>
<td>Professor</td>
<td>Entomology</td>
<td>27 years</td>
</tr>
<tr>
<td>Dr. Shabbir Ashraf</td>
<td>M. Phil., Ph.D.</td>
<td>Professor</td>
<td>Plant Pathology</td>
<td>27 years</td>
</tr>
<tr>
<td>Dr. Masarrat Haseeb</td>
<td>M. Phil., Ph.D.</td>
<td>Professor</td>
<td>Entomology</td>
<td>40 years</td>
</tr>
<tr>
<td>Dr. Raees Ullah Khan</td>
<td>Ph.D.</td>
<td>Assoc. Prof.</td>
<td>Plant Pathology</td>
<td>27 years</td>
</tr>
<tr>
<td>Ms. Arshi Jamil</td>
<td>M.Sc. &amp; NET</td>
<td>Guest Teacher</td>
<td>Plant Pathology</td>
<td>01 Years</td>
</tr>
<tr>
<td>Dr. S. Mehboob Ashraf</td>
<td>Ph.D.</td>
<td>Guest Teacher</td>
<td>Horticulture</td>
<td>15 Years</td>
</tr>
</tbody>
</table>

Brief publication profile of the faculty members

A. Research Publications: 208 (Annexure VII)
B. Books: 7(Annexure VIII)
C. Book Chapters, Review articles etc.: 16 (Annexure IX)
D. Patents: 4 (India) (Annexure X)
E. National/International symposia attended: 81 (Annexure XI)
F. Awards/Recognitions: 30 (Annexure XII)
G. Fellows of Academic Societies: 11 (Annexure XIII)
H. Conference sessioncommittee Chaired/co-Chaired: 14
I. Projects (Completed/Ongoing): 03 (Annexure XIV)
J. Conference/Workshop/Kisan Mela/Refresher courses etc. organized: 03 (Annexure XV)
K. Ph. D. produced: 17 (Annexure XVI)
L. M.Sc. Dissertation: 76 (Annexure XVII)
6.4.4. **Technical and Supporting Staff:** Whether the College has appointed (in place) sufficient technical/ laboratory/ farms staff to cater the need of practical and field experiments. Mention department wise distribution of technical, supporting and fields staff in the tabular form.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Technical/Administrative staff</th>
<th>Sanctioned</th>
<th>Filled</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Technical Asstt.</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2.</td>
<td>Lab. Asstt.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>L.D.C. (Admin)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>M.T.S. (O/A)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>Safaiwala</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6.</td>
<td>D/W (Farm and Field worker)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The above staff support the PG courses in the Department on sharing basis. However, a separate proposal for Field Assistant (01) & MTS (01) has been submitted to the UGC for approval.

6.4.5. **Classroom and Laboratories:** Clearly mention about laboratories, instructional farm, workshops, dairy plant, veterinary clinic, hatchery, ponds etc. facilities available in the College with its numbers, space, especially to conduct practical/hands on training.

- **Smart Classroom:** 01
- **Classrooms:** 01
- **Laboratories:** 02 (Entomology)
- **PG Research Lab:** 01 (Centralized)
- **Instructional Farm:** 01 (Small Instruction Farm is available within the faculty premises for demonstration of crops and pests)
- **Agriculture Farm and Orchard:** One large agriculture farm and orchards (about 100 acres) is available in the University for Teaching and research.
- **Implement Shed:** 01 (Implement shed, Centralized facility)

6.4.6. **Conduct of Practical and Hands on Training**

It is important to have a sound grasp of the theory that underlies any professional degree. But there are some skills that can only be learned through hand-on-practice. It is important that much of the learning material in any given course should be provided in a way that allow students to get as involved as possible to increase their knowledge and abilities. Clearly mention how far students are getting desired practical and hands-on-training as per the curriculum and meeting above mentioned requirements.

- The practical and hands on training are provided to the students through systematic laboratory and field-based experimentation, course-wise, for each semester and under the guidance of teachers and skilled technical staff.
- Semester wise experiments designed for students are enlisted under Annexure-XVIII.

6.4.7. **Supervision of students M. Sc. (Ag.) Entomology degree programme:** 1-2 students /teacher among 3 teachers as detailed under.

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>M. Sc Thesis Total/yearly</th>
<th>Ph.D. Students Total/yearly*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Parvez Qamar Rizvi</td>
<td>Professor</td>
<td>27/1-2 per year</td>
<td>10/1 or nil per year</td>
</tr>
<tr>
<td>Dr. Shafiq Ansari</td>
<td>Professor</td>
<td>32/1-2 per year</td>
<td>12/1 or nil year</td>
</tr>
<tr>
<td>Dr. Masarrat Haseeb</td>
<td>Professor</td>
<td>18/1-2 per year</td>
<td>5/1 or nil year</td>
</tr>
</tbody>
</table>

*Based on available seats under individual supervisor as per UGC norms.
6.4.8. **Student Intake and Attrition:** The information about student intake and attrition, for the College as a whole but separate in UG, PG and PhD categories shall be provided in tabular form for last five years.

<table>
<thead>
<tr>
<th>Name of the Degree Programme</th>
<th>Actual student admitted in last five years</th>
<th>Attrition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y1 2013-3</td>
<td>Y2 2014-5</td>
</tr>
<tr>
<td>M. Sc. (Ag.) Plant Protection (Specialization in Entomology)*</td>
<td>04 06 - - - -</td>
<td>00% 00%</td>
</tr>
<tr>
<td>M. Sc. (Ag.) Entomology*</td>
<td>- - 05 05 06 - -</td>
<td>00% 00% 00%</td>
</tr>
<tr>
<td>Ph.D. (Ag.) Plant Protection (Specialization in Entomology)</td>
<td>02 01 02 - - - -</td>
<td>00% 00% 50% - -</td>
</tr>
<tr>
<td>Ph.D. (Ag.) Entomology</td>
<td>- - - 01* 03 - - - -</td>
<td>00% 00%</td>
</tr>
</tbody>
</table>

* Includes one seat under ICAR quota.

6.5.4.1. **List of major equipments, laboratories, farm facilities, workshops and other instructional units being utilized for the award of the Degree Programme may be given.**:

<table>
<thead>
<tr>
<th>Laboratory</th>
<th>Equipment housed in individual laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Graduate Laboratory (Plant Pathology)</td>
<td>Compound and stereo microscopes, Refrigerators, Temperature controlled Shaker</td>
</tr>
<tr>
<td>Post Graduate Laboratory (Entomology)</td>
<td>BOD Incubators, Stereo microscopes, Compound microscopes, Oven, Microtome</td>
</tr>
<tr>
<td>Inoculation Room (Centralized)</td>
<td>Laminar Flow (3)</td>
</tr>
<tr>
<td>Culture room (Centralized)</td>
<td>BOD incubators, Deep Freezer, Refrigerators</td>
</tr>
<tr>
<td>Bioassay Lab (Centralized)</td>
<td>Potter’s Spray Tower, Sprayers and dusters</td>
</tr>
<tr>
<td>Computer Lab (Centralized)</td>
<td>Desktop Computer systems with internet connectivity</td>
</tr>
<tr>
<td>Research Lab (Centralized)</td>
<td>Desktop computers with internet connectivity, Photosynthesis system, Thermal Cycler, Gel Electrophoresis Unit, Research microscopes, Centrifuge*, Lyophilizer*, Electrophoresis, Electronic Balance</td>
</tr>
<tr>
<td>Microscope Room (Centralized)</td>
<td>High resolution microscopes with micro photographic attachment</td>
</tr>
<tr>
<td>Sterilization Unit (Centralized)</td>
<td>Autoclaves (Capacity 187 lit., 152 lit. &amp; 55 lit.), Hot air oven</td>
</tr>
<tr>
<td>Nematode Isolation Unit (Centralized)</td>
<td>Nematode isolation/extraction equipments, Soil testing equipments, pH, conductivity, temperature, moisture meters etc.</td>
</tr>
<tr>
<td>Centralized Equipment Unit</td>
<td>Atomic Absorption Spectrophotometer, Gas Chromatograph*, Spectrophotometer, UV Spectrophotometer</td>
</tr>
<tr>
<td>Simulated Exposure Facility (Centralized)</td>
<td>Ambient CO₂ Monitor, Ambient SO₂ Monitor, OPT Exposure Chambers</td>
</tr>
</tbody>
</table>

* *under process of repair/ upgradations.*
Atomic Spectrophotometer and Gas Chromatograph

Simulated Exposure Facility

CO₂ Analyzer

SO₂ Analyzer

Open-top Exposure chambers

Photosynthesis system and Fluorometer
Faculty Farm to conduct field trails

Extension programme for generating awareness on soil health on the occasion of World Soil Day
Field visits of students and staff to study pest and disease problems in farmer's fields

Visit of students and staff to Agricultural Universities and Institutes
6.4.9. ICT Application in Curricula Delivery: The ICT is now an integral part of the teaching programme. ICAR has also been promoting the use of ICT in teaching and practical. Mention whether the Degree Programme is meeting the expectations. If there is any shortfall, it shall be clearly mentioned:

- One ICT enabled Smart Class Room available.
- Internet Services available to the students as well as to the staff of the department to meet the requirements of teaching program and research activities.
- A small computer lab with internet facility available for P.G. students.
- Desk-tops with internet facility available for Research.
6.4.10. The information pertaining to 6.4.1 to 6.4.9 shall be provided for each one of UG, PG and PhD Degree Programmes, separately, and to be presented College-wise.

6.4.11. Since the accreditation of Programmes is related to the All India Admission from ICAR and also having weightage for College accreditation, therefore the data presented in the section 6.4 is liable to the verification at any stage.

6.4.12. Certificate (Applicable when SSR is submitted for Programme)

I, the Dean .............................................. 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. Signature of Dean of the College with Date & Seal

Signature of the Chairman
Department of Plant Protection
A.M.U., Aligarh

Signature of the Dean
Faculty of Agricultural Sciences
A.M.U., Aligarh

Enclosures:

1. Annexure-I (Establishment of D/o Plant Protection)
2. Annexure-II (Course outline of CBCS)
3. Annexure-III (Change in course nomenclature)
4. Annexure-IV (Restructured Course Outline as per BSMAC-ICAR guideline)
5. Annexure-V (Additional posts approved by AC)
6. Annexure-VI (Faculty Credentials)
7. Annexure-VII (Research Publications)
8. Annexure-VIII (Books)
9. Annexure-IX (Book Chapters, Review articles etc.)
10. Annexure-X (Patents)
11. Annexure XI (National/ International symposia attended)
12. Annexure XII (Awards/ Recognitions)
13. Annexure XIII (Fellows of Academic Societies)
14. Annexure XIV (Projects -Completed/ Ongoing)
15. Annexure XV (Conference/ Workshop/ Kisan Mela organized/ Refresher/ Training course)
16. Annexure XVI (Ph. D. produced)
17. Annexure XVII (M.Sc. Dissertation)
18. Annexure XVIII (Semester-wise list of Experiments)
Annexure-VII : Conduct of Practical and Hands on Training

I Semester

S. No. Experiments
1. Dissection of cockroach/ grass hoppers to study comparative anatomical details of different systems.
2. Study of insect segmentation, various tagmata and their appendages;
3. Preparation of permanent mounts of different body parts and their appendages of taxonomic importance including male and female genitalia.
5. Keying out families of insects of different major Orders.
6. Field visits to collect insects of different orders.
7. Methods of collection and preservation of insect pests.
10. Training on the use of Potters Spray Tower.
11. Insect rearing techniques.
12. Preparation of artificial diets.
14. Laboratory equipments and their use and maintenance
15. Microscopy.

II Semester

1. Dissection of different insects to study comparative anatomical details of digestive, circulatory, reproductive and other systems; preparation of permanent mounts of internal systems.
2. Collection, identification and preparation of life cycle of important insect pests of fruit, vegetable, plantation, and ornamental crops.
3. Preparation of permanent mounts of internal systems
4. Insecticide formulations and mixtures
5. Laboratory and field evaluation of bio-efficacy of insecticides
6. Bioassay techniques and Probit analysis
7. Pesticide appliances and their maintenance.
8. Working out doses and concentrations of pesticides
9. Field visits, collection and identification of important pests and their natural enemies;
10. Study of life history of important insect pests.
11. Collection and identification of important insect pests and their natural enemies on different Horticultural and Plantation Crops

III Semester

1. Collection, identification and rearing of important stored grain pests.
2. Identification of different groups of insect pathogens and symptoms of infection.
3. Isolation, culturing and testing pathogenicity of different groups of pathogens.
4. Identification, distribution, host range, nature of damage, biology and management of insect pests.

IV Semester

1. Identification of common natural enemies of crop pests (parasitoids, predators, microbes) and weed killers.
2. Visits (only where logistically feasible) to bio-control laboratories to learn rearing and mass production of parasitoids, microbial agents, predators and phytophagous natural enemies of weeds.
3. Field collection of parasitoids and predators.