

Department of Plant Protection

The department was established in the academic year 1996–1997 to address the growing need for well-qualified scientific cadres capable of assuming the responsibilities of the agricultural renaissance in the Republic of Yemen, particularly in the field of plant protection. The department focuses on three main areas: 1) economic entomology and agricultural zoology; 2) plant sciences and its diseases; and 3) pesticide and environmental pollution sciences.

The department currently has sixteen teaching staff, including six professors, five associate professors, and five assistant professors specializing in the aforementioned specializations. In addition, there are a number of teaching assistants, including technicians, instructors, demonstrators, and those abroad on scholarships.

The department has its own beehive building, which has enabled the training of cadres in beekeeping and honey production, as well as other bee products such as wax, royal jelly, and propolis, highlighting their therapeutic importance. In addition, the department has the capacity to establish and manufacture beehives.

Department Vision:

Excelling in teaching, learning, scientific research, and community service in the field of plant protection.

Department Mission:

The department aspires to prepare qualified cadres capable of competing in the local and regional labor market and meeting the research needs necessary for the sustainable development of human and natural resources in the field of plant protection. The department also aims to link with the local community by providing scientific and research support to those working in agriculture and solving agricultural problems in the field of plant protection.

Department Aims:

- 1- Preparing qualified and competent cadres with scientific and practical expertise to achieve the highest standards of quality and excellence by providing a conducive environment for higher education and scientific research.
- 2- Conducting applied scientific research and studies to address the challenges faced by the agricultural sector in the field of plant health.
- 3- Contributing to community service by diagnosing the causes of plant diseases and pests, analyzing pesticide residues and their environmental impact,

promoting the beekeeping sector and its products, and offering tailored scientific consultations.

- 4- Engaging faculty members in departmental seminars to foster knowledge and expertise exchange, leveraging discussions to pique the interest of faculty members and teaching assistants, instilling in students scientific thinking and discussion methodologies, and cultivating their critical research evaluation skills.
- 5- Equipping laboratories with all necessary resources to streamline the practical aspects of various courses, upgrading lecture halls and outfitting them with audiovisual equipment, enhancing the departmental library by stocking it with the latest specialized books and periodicals, and connecting it to the internet.
- 6- Formulating integrated management programs for the causes of plant diseases and pests in the local environment and devising modern, innovative, and non-traditional control methods.
- 7- Establishing postgraduate programs, commencing with a master's degree in economic insects and agricultural zoology; plant sciences and its diseases; and pesticide and environmental pollution sciences.
- 8- Emphasizing collaboration with various research institutions and the local private sector to hold specialized conferences, seminars, and scientific workshops. This collaboration aims to develop the fields of plant protection and higher education, contribute to enriching scientific research in crop protection and environmental preservation, and undertake research projects that help solve environmental problems and optimize pesticide use. Furthermore, the department keeps pace with modern developments and trends in pest control methods.

Community services provided by the department include the following:

- Organizing training courses and workshops in the fields of beekeeping, pest control, and plant diseases.
- Conducting examinations to identify the causes of plant diseases and pests and effective control methods.
- Providing consultations in the field of plant protection to relevant entities in the country and private agricultural sectors.
- Conducting research funded by both the public and private sectors to develop innovative solutions to address challenges related to plant diseases, pests, and their effective control.

Graduate Attributes:

Upon successful completion of the Plant Protection program, the graduate will be able to:

- 1- Demonstrate knowledge and understanding of the role of agricultural engineers in society.
- 2- Utilize and manage available agricultural resources.
- 3- Manage agricultural facilities related to plant protection and conservation.
- 4- Utilize appropriate technologies to address agricultural problems, particularly in the field of plant protection.
- 5- Effectively demonstrate professional skills.
- 6- Preserve natural resources and biodiversity.
- 7- Demonstrate a high level of awareness of legal, ethical, and social issues related to agriculture.
- 8- Demonstrate the ability to develop their performance and be qualified for self-directed and continuous learning.
- 9- Pursue postgraduate studies and engage in research.
- 10- Employ appropriate pest and disease control methods, prioritizing environmentally friendly approaches to minimize environmental impact.
- 11- Develop plans to prevent the spread of pests and diseases.
- 12- Plan and implement an integrated pest and disease management program.
- 13- Keep pests and diseases below the economic threshold of damage.
- 14- Assess the risks of pesticides to non-target organisms.

Potential Career Opportunities for Graduates:

- In the Ministry of Agriculture and its affiliated bodies and institutions
- As a plant protection researcher in research centers and universities
- As a plant quarantine officer at various customs ports
- As a honeybee breeding and production specialist and in apiary management
- In the private sector, companies investing in the agricultural sector
- Organizations and funds implementing agricultural projects
- As a specialist in the control of grain pests, stored materials, and public health pests
- As an advisor for companies working in the field of pesticide import and trade.

Plant Protection Program

Program Mission:

Striving to fulfill the department's mission by providing outstanding courses in plant protection, delivered by a diverse and professional teaching staff, to achieve the desired outcomes and competencies, contributing to the achievement of the aims of the department, faculty, and university, and attaining excellence at the local and regional levels.

Program Aims:

The program aims to achieve the aims of the department and the faculty by producing outstanding graduates who:

1. Demonstrate knowledge and understanding of the role of agricultural engineers in society.
2. Utilize appropriate technologies to address agricultural problems, particularly in the field of plant protection.
3. Participate in the management of agricultural establishments and possess comprehensive knowledge of effective natural resource management practices and conservation methods.
4. Demonstrate proficiency in legal, ethical, and social issues pertaining to agriculture, with particular emphasis on plant protection.
5. Elevate their performance in the labor market by developing their capacity for continuous self-learning.
6. Develop their language skills, computer utilization, and research involvement.
7. Implement the most appropriate pest and disease management strategies following accurate diagnosis to protect the environment while demonstrating expertise in designing and analyzing experiments in the plant protection field.
8. Plan and implement integrated pest and disease management programs to achieve maximum productivity from cultivated crops.
9. Design plans and programs to prevent pest outbreaks or the spread of diseases in an epidemic manner, keeping them below the economic threshold of damage.
10. Assess the risks of pesticides to non-target organisms to preserve biodiversity and the surrounding environment.

Program Intended Learning Outcomes (PILOs):

Upon successful completion of the program, the graduates are expected to be able to:

A. Knowledge and Understanding:

- A1. Demonstrate an understanding of the classification of plant pathogens (fungi, bacteria, viruses, and nematodes) and agricultural pests (insects and animals), including the detrimental effects they have on plants and their productivity throughout the production, transportation, and storage phases.
- A2. Explain biodiversity, its importance, and effective methods for conserving natural resources in the environment.
- A3. Demonstrate the fundamentals of apiculture, its products, and silkworm rearing.

- A4. Discuss the fundamentals of integrated pest management (IPM) for various pests and plant pathogens, including modern control methods.
- A5. Identify the chemical groups of pesticides while adhering to local and international regulations and standards regarding their safe application and their potential impact on the quality and safety of agricultural and food products.
- A6. Demonstrate a comprehensive understanding of the fundamentals of basic and applied sciences and modern technologies relevant to agriculture and food, as well as the principles of planning and implementing agricultural operations.

B. Cognitive/ Intellectual Skills:

- B1. Predict the incidence of plant pests and diseases, identify methods for field monitoring, investigate field census, and assess the extent and severity of infestation.
- B2. Compare the magnitude of problems and risks arising from pest and disease infestations throughout all stages of production and storage, identifying mechanisms for managing these problems and estimating potential risk factors.
- B3. Analyze data and information to identify the most appropriate solutions to agricultural problems.
- B4. Develop control programs to prevent pest and disease infestations and curtail their spread, thus optimizing agricultural productivity and ensuring safe food production.
- B5. Select the most effective among the proposed solutions to address a particular agricultural issue, attaining optimal efficiency for the agricultural establishment and harnessing available natural resources to achieve sustainable agricultural development.
- B6. Distinguish the structure of living organisms in terms of cells, tissues, organs, their functions, and the interactions that take place within them.

C. Practical and Professional Skills:

- C1. Develop appropriate practical methods for biological pest and plant pathogen control, as well as breeding parasitoids, predators, and antagonistic organisms to identify the most effective solutions for their resistance.
- C2. Diagnose plant pests and pathogens, their symptoms, and implement good agricultural practices for integrated pest management to enhance agricultural productivity and ensure safe food production.
- C3. Conduct practical research on pests, pathogens, and their hosts to develop resistance strategies throughout all production and storage stages, achieving sustainable agricultural development.
- C4. Implement modern and suitable techniques in agricultural operations, food production, apiary management, honey production, and pest control.
- C5. Utilize laboratory equipment and computers to predict pest outbreaks and plant epidemics, operate agricultural machinery for pest and disease control, and maintain such machinery.
- C6. Assess pesticide residues in plants, their products, and environmental samples to diagnose pesticide poisoning symptoms and administer first aid measures.

D. General Skills:

- D1. Effectively present and interpret information and phenomena orally or in writing.
- D2. Communicate effectively in both Arabic and English.
- D3. Effectively demonstrate professional skills.
- D4. Show self-learning and continuous learning abilities to develop their knowledge and professional skills.
- D5. Develop satisfactory skills in management, time management, and group leadership.

Undergraduate Program Courses for Departments of the Faculty of Agriculture, Foods, and Environment - First and Second Levels

First Level Courses					
First Semester			Second Semester		
Course code	Course Title	Credit Hours	Course code	Course Title	Credit Hours
UR001	Arabic Language (1)	2	FR001	Physics & Meteorology	3
UR006	Islamic Culture	3	FR006	Principles of Statistics	2
FR111	General Chemistry	3	FR111	Organic Chemistry	3
FR112	General Botany	3	FR112	Principles of Agricultural Economics	2
FR113	Mathematics	2	FR113	General Zoology	3
FR114	Agriculture in Yemeni Environment	1	FR114	Principles of Ecology	2
UR007	National culture	2	UR002	Arabic Language (2)	2
FR115	Geology	1	UR008	Conflict with the Israeli enemy	2
Total		17	Total		19

Undergraduate Program Courses for Departments of the Faculty of Agriculture, Foods, and Environment - First and Second Levels

Second Level Courses					
First Semester			Second Semester		
Course code	Course Title	Credit Hours	Course code	Course Title	Credit Hours
FR211	Soil Fundamentals	2	FR221	Principles of Food Science	2
FR112	General Microbiology	3	FR222	Principles of Crops Protection	2
FR113	Biochemistry	3	UR004	English Language (2)	2
FR114	Principles of Animal Production	2	FR127	Principles of Genetics	2
UR003	English Language (1)	2	FR223	Principles of Horticulture	2
FR114	Principles of Crops Production	2	FR224	Plant Physiology	2
FR215	Principles of Agricultural Engineering	2	FR225	Principles of Human Nutrition	2
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Total		16	Total		17

**Undergraduate Courses for the Plant Protection Program (PLP) -
Department of Plant Protection**

Third Level Courses					
First Semester			Second Semester		
Course code	Course Title	Credit Hours	Course code	Course Title	Credit Hours
PLP311	Insects Morphology and Physiology	3	PLP321	Plant Pathogenic Viruses	3
PLP312	Field Crops Diseases	3	PLP322	Pesticide Residues Analysis and Environmental Pollution	3
PLP313	Economic Entomology	3	PLP323	Plant Pathogenic Bacteria	3
CRP318	General of Crops Production	2	HRT318	Production of Horticultural Crops	2
PLP314	General Pesticides	3	PLP324	Storage & Food Plants Pests	2
FR315	Agricultural Extension and Rural community	2	PLP325	Anatomy and Classification of Plant	2
PLP315	Plant Pathogenic Fungi	3	PLP326	Plant Pathogens Pesticides	3
PLP316	Biological Control	1	PLP327	Summer Training	1
Total		21	Total		19

Fourth Level Courses					
First Semester			Second Semester		
Course code	Course Title	Credit Hours	Course code	Course Title	Credit Hours
PLP411	Medical and Veterinary Insects	2	PLP421	Horticulture Crops Diseases	3
PLP412	Biotechnology and Resistance to Plant Disease	3	PLP422	Apiculture	3
PLP413	Plant Pathogenic Nematodes	3	PLP423	Non-insect Agricultural Pests	2
CRP322	Design and Analysis of Agricultural Experiments	2	PLP424	Integrated Pest Management	3
PLP414	Ecology of Pests and Diseases	3	PLP425	Physiological Plant Diseases	2
PLP415	Pesticides Chemistry	3	PLP426	Pesticides Formulation Technology	2
PLP416	Insect Ecology and Ethology	3	PLP427	Bioassay of Pesticides	2
PLP417	Toxicology Pesticides	3	PLP428	Research Project	1
Total		21	Total		18