

教育目標

本系設立宗旨為以生物學與昆蟲學為重點，從事基礎科學與應用科學研究，並將成果推廣應用於農業害蟲與病媒昆蟲之防治、生態環境與生物多樣性保育、生物晶片與生物醫學應用等等。大學部教育目標為培育基礎科學研究與實務能力之人才；碩博士班之教育目標為培養具獨立研究、創新、明辨是非與邏輯思考能力之高級科學研究與應用人才。

課程規劃

本系設有大學部與碩、博士班，課程朝生態、生理、分類、防治等四大領域規畫，除讓學生接受各方面的基礎訓練，培養學生使之具有充分基礎昆蟲學知識及解決問題的能力，更有效地組織、統整與呈現學理與知識，亦鼓勵學生依個人性向與生涯規劃選擇領域為主修方向，加強選修相關課程為未來進入職場做準備。為此課程規劃係以：以生命科學與昆蟲學為基礎學科，以強化於應用學科，包括農林漁牧業害蟲防治、都市及居家害蟲防治及昆蟲保育、資源利用與推廣教育等各類應用科學；在此專業課程之學習與訓練同時，我們亦注重學生中英文論文閱讀、分析與寫作、演講能力。最終目標在使學生同時具備基礎與應用之專業知識與技能。

主要研究領域

- ◆**生理生化**：包含生長、發育、內分泌、神經生理、抗藥性、遺傳、分子機制等。
- ◆**生態與保育**：有化學生態學、理論生態學、電腦模擬、生態保育等。
- ◆**分類與演化**：有昆蟲分類及演化、防檢疫害蟲鑑定、昆蟲生物多樣性調查、生物地理等。
- ◆**害蟲防治**：有生物防治、微生物防治、蟲生線蟲、化學防治、有機農業、環境衛生害蟲等。全體教師均能從事跨領域研究，並互相合作。

教研成果

本系在昆蟲生理學、病理學、毒理學、生態學、分類學、生物防治與生物技術等各方面均有傑出研究成果。未來將以既有成果為基礎，持續提升以昆蟲為材料之生命科學、昆蟲學、害蟲防治之研究與教學水準；應用最新生命科學知識與技術研究昆蟲生理、病理與毒理學等；發展無公害之蟲害管理技術與電腦模擬系統；以生態學為基礎探討昆蟲



▲田間作物蟲害診斷
Insect pest diagnosis in the field



▲野外昆蟲採集
Insect collection in the wild

族群變動，並應用於害蟲發生監測和蟲害管理等工作，以尋求更經濟、有效與安全的害蟲防治方法。除協助農民從事農業害蟲防治外，並協助政府衛生單位防治病媒蚊蠅等衛生與醫學昆蟲，在病媒昆蟲與農林業害蟲防治、農產品安全及生態環境與物種保育等各方面扮演重要角色。

昆蟲標本對本系之研究與教學極為重要，不但可提供國內外學術機構標本交流服務與合作，對於中小學生物教育亦提供高水準之課外教學。本系自98年2月亦開始同步建立昆蟲典藏標本與數位影像資料庫，未來可上網提供學術界使用，有助於國內之植物防疫檢疫、植物保護、生物多樣性及生物資源保育等各項工作。

本系畢業系友超過2200餘人，分佈於各行各業，在各方面表現卓著，於公私立大專院校與中央農政與農試改良場所擔任要職，其中江安世系友獲選為中央研究院院士。本系教師亦獲學術界與校內多項獎項，如科技部（國科會）傑出研究獎、全國十大傑出農業專家、產學績優等。本系教師與國內外各公私立機構合作研究計畫，研究成果發表於國際SCI期刊、國內重要學術期刊、專利、研討會、專書章節等。本系全體教師未來將以既有成果為基礎，進一步提升研究與教學水準，與農政衛生單位合作發展無公害之蟲害管理技術、病媒昆蟲防治技術，以尋求更經濟、有效與安全的害蟲防治方法，推動永續農業與生態保育。在分子生物學研究方面，將繼續利用分子生物技術研究分類學、演化生物學、生物化學與生理學，亦將繼續與榮總等醫學單位合作從事蜂毒、蜂膠、基因轉植昆蟲細胞株、病媒昆蟲等各種醫藥科學之學術與應用研究。

Mission

The department aims to provide educational, scientific, and technological advancements through teaching, research, and extension. The department offers excellent academic programs for both undergraduate and graduate students preparing for a career in the pure and applied sciences. Graduate programs are focused on independent research and critical thinking. We train students for careers in life science research, plant protection, quarantine, ecology, and conservation.

Curriculum

The department offers degrees of the Bachelor of Science (BS), Master of Science (MS), and Doctor of Philosophy (Ph.D.) in entomology. The department aims to provide educational, scientific, and technological advancements through teaching, research, and extension. The department offers excellent academic programs for both undergraduate and graduate students preparing for a career in the pure and applied sciences. Graduate programs focus on independent research and critical thinking. We train students to have basic knowledge and research skills of life science and entomology, physiology, biochemistry and biotechnology, pest identification, pest control and field sampling, ecology and environmental conservation, taxonomy and phylogenetic evolution, paper reading, analysis and writing, and presentation skills. Ultimately, students can become specialists in life science research, plant protection and quarantine, and ecology and conservation in terms of their career.

Core Research Topics

- ◆ **Insect Physiology and Biochemistry** : Growth and development, endocrinology, pesticide resistance, neurophysiology, genetics, and molecular mechanisms.
- ◆ **Insect Ecology and Conservation** : Chemical ecology, theoretical ecology, computer simulation, and ecology conservation.
- ◆ **Insect Taxonomy and Evolution** : The classification and evolution of insects, the identification of quarantine pests, and insect biodiversity and geography.



▲系標本館
Insect museum



▲研究室一隅
Corner of a laboratory



▲野外採集—燈光誘集
Field collection - light trapping



▲昆蟲特展及教育推廣
Insect exhibition and promotion

- ◆ **Insect Pest Control** : Biological, microbiological, and chemical control; entomogenous nematodes; organic agriculture, and sanitary pests.

Achievements

Our research projects are numerous and diverse. We use the latest technology to study physiological and biochemical mechanisms of insects (e.g., growth, development, endocrinology and neurophysiology, and behavior). Students study chemical ecology in insect-plant interactions (e.g., the effects of plant chemicals on the growth and development of insects, and insect-borne plant viruses). We develop and apply various strategies including biological, microbial, and chemical control for controlling agricultural and medical pests. Furthermore, the knowledge of both traditional and molecular biology is used in the study of insect taxonomy, systematics, and evolution, as well as in the identification of quarantine pests, insect diversity studies, and insect conservation. Ecological theories and computer simulations are studied. To pursue sustainable agriculture and ecological conservation, the effects of biotic and abiotic factors on insect population dynamics are also studied.