農業暨自然資源學院

檔號	年度號/分類號	保存年限
	案次號/卷次號/目次號	

亞蔬—世界蔬菜中心 【函】

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受文者：如正副本行文單位

擬辦：1. 掃描公文電子檔寄送各教學單位，請轉知所屬學生。如有意申請者，請於依限逕向該單位申請。
2. 辦畢文存查。

八爲決行

行政組 技正 張瀞文 鄧堯銓

教授兼農業暨自然資源學院院長 陳志峰 03/18

發文日期：中華民國 115 年 3 月 17 日
發文字號：世蔬字第 115033 號
速別：普通件
密等及解密條件：
附件：如文

主旨：本中心自即日起至本(115)年 4 月 20 日止，接受各大學相關科系大三以上(含暑假後為大三生)之在學學生暑期實習申請，實習時間自本年 7 月 1 日至 8 月 31 日止，地點為本中心臺南善化總部相關研究單位，詳如說明，請查照。

如有意願者，請於115年4月20日前逕向亞蔬-世界蔬菜中心申請。

說明：

一、請於 115 年 4 月 20 日前至亞蔬網站或 QR code 線上填妥表單後下載文件，簽名後將掃描檔寄回 training@worldveg.org。

二、申請者須經由學校教授推薦，請指導教授於申請表中簽名。

三、本中心不提供實習津貼，也不收取實習費用，餐宿、交通、保險自理。擬申請於本中心餐宿部住宿者，請於申請表中註明；以家住東部、北部和中部者為優先，額滿為止。住宿費用每月新臺幣參仟伍佰柒拾伍元，並加收冷氣機電費。

正本：國立臺灣大學、國立宜蘭大學、國立中興大學、國立嘉義大學、國立屏東科技大學、臺北醫學大學、天主教靜宜大學、天主教輔仁大學、東海大學、國立清華大學、國立成功大學、國立陽明交通大學、國立中央大學、國立高雄大學、國立中山大學

副本：

亞蔬—世界蔬菜中心

AVRDC - THE WORLD VEGETABLE CENTER 1971

農資學院 115.3.17 收件章

總收文 115.3.17

國立中興大學

1150051173

符合本校『文書處理要點』第18條、33條規定，以紙本公文辦理。

World Vegetable Center

2026 Summer Internship

- 實習日期：2026.07.01 - 2026.08.31
- 國內大學相關科系大三以上(含暑假後為大三生)之在學學生。

Join us!

報名表單請掃QR code 或 官網報名

報名截止日：2026.04.20

Open Position:

- Omics Breeding（多體學育種）
- Vegetable Breeding-Tomato/Pepper（蔬菜育種–番茄/番椒）
- Virology（病毒學）
- Food Science（食品科學）
- Agronomy/Agroecology（農藝/農業生態學）
- Entomology（昆蟲學）
- Plant Pathology（植物病理學）

2026 Summer Internship
2026年亞蔬暑期實習計畫

World Vegetable Center

亞蔬－世界蔬菜中心原名「亞洲蔬菜研究發展中心」，為我國、美國、日本、韓國、泰國、越南及菲律賓等7國政府於1971年5月與「亞洲開發銀行」（ADB）共同設立的國際農業研發機構，也是全球唯一專注於蔬菜作物研發的國際組織，旨在促進高營養價值蔬菜之生產與消費，以減輕開發中國家之貧窮與營養不良問題。

亞蔬－世界蔬菜中心致力研發提高營養蔬菜的生產、品質、消費及利潤，以克服營養不良及貧窮問題、增進人類健康，同時推廣作物多樣性及促進均衡飲食，改善健康，並透過推廣優良農業規範、有效提高採收後價值、改善行銷機制，幫助小農、無土地勞工及社區創造增加就業及收入的機會。

應備文件:

- 英文及中文版在學證明
- 學生證（正反面）
- 英文及中文版歷年成績單（含最近一學期在校成績）
- 完整線上報名表

（線上填妥表單後下載列印文件，申請者與推薦人簽名後將掃描檔寄回training@worldveg.org）

如要認列實習課程，請先與實習課程開課單位確認是否可認列，並瞭解實習課程之申請流程。

參與計畫時間:

需全程參與，原則上為7月1日至8月31日上班日（週一至週五）8:00-17:00，每日出勤8小時，各研究室會略有不同並得視實際狀況酌予調整出勤時間。

實習期間應遵守本中心出勤規定，不得遲到、早退及曠勤。如需請假，請務必事先與指導專家及團隊溝通使得離開中心。如果已經知道實習期間哪幾天要請假，請在報名文件中註明。 每月請假不得逾（含）7日。

實習任務:

於實習結束前完成英文口頭與書面研究報告。

學員透過參與暑期實習研究，可與國際農業專家及來自不同文化背景的學員交流合作，培養專業知識與技能並拓展國際視野。實習期間將有機會參與實驗室研究或田間試驗，並於最後以英文撰寫與發表研究報告，培養學術交流能力。

歡迎對農業領域有熱情且符合資格的學員報名參加，這將是一個寶貴的學習與成長機會！

Research Topics for the 2026 Summer Internship Program

Research Area	Tomato breeding		Omics Breeding	
Supervising Scientist	Dr. Assaf Eybishitz		Dr. Ya-Ping Lin	
Research Topic	Quantifying TYLCV Viral Load in Commercial-Like Heterozygous F1 Tomato Hybrids Carrying Different Ty Gene Pyramids 在攜帶不同 Ty 基因金字塔組合（gene pyramids）的類商業型F1雜交番茄品系中量化 TYLCV 病毒量	Evaluating the Effects of Insect Resistance Markers WF2 and WF3, Individually and in Heterozygous Combinations, on Whitefly Tolerance in Tomato 評估昆蟲抗性標記 WF2 與 WF3 單獨及異質組合對番茄粉蝨耐受性的影響	Gene-editing to enhance tomato disease resistance 利用基因編輯技術提升番茄抗病性	Using NIR sensor to predict lycopene content 利用近紅外線（NIR）感測器預測茄紅素含量
Research Introduction and Objective	This project evaluates TYLCV resistance in commercial-like heterozygous F1 tomato hybrids carrying different Ty gene pyramids using whitefly-mediated inoculation and qPCR-based viral load quantification. The objective is to identify the most effective Ty combinations that minimize viral accumulation and disease severity to support durable resistance deployment in tomato breeding.	This project evaluates the effects of the insect resistance markers WF2 and WF3, individually and in combination, on whitefly oviposition and tolerance in tomato by assessing insect behavior and egg-laying patterns under controlled bioassays. The study aims to quantify how each marker and their combined presence influence plant–insect interactions and contribute to improved resistance.	We has an ongoing gene-editing project, using CRISPR-Cas9 to knock-out a susceptible gene for tomato bacterial spot. We expect to harvest gene-editing plants and confirm the gene function.	NIR has been proven to be able to detect and predict metabolomic contents for food. We have harvested more than 100 tomato samples, detected their NIR reflection, and quantified the lycopene content using HPLC. We will use these data to build a prediction pipeline for pracitcal use.
Category of Summer Intern Tasks	Both - Laboratory and Non-Laboratory Operation	Both - Laboratory and Non-Laboratory Operation	Wet laboratory operation	Dry laboratory operation
Specific Tasks for Summer Interns	Support TYLCV inoculation trials, sample collection, qPCR analysis, and data analysis.	Marker verification (PCR), setup and management of choice and no-choice bioassays, egg counting and phenotyping, and recording and analyzing experimental data.	Gene-editing experiments in moleculare breeding lab.	Test prediction accuracy using the latest models.
Required Skills	Background in plant sciences with basic molecular biology and statistics skills.	Background in plant sciences with basic molecular biology and statistics skills.	Knowledge of molecular biology and molecular genetics.	Basic R programming
Preferred major(s)	Plant Science, Agriculture, Plant Breeding, Molecular Biology, Genetics, or related Plant Sciences.	Plant Science, Agriculture, Plant Breeding, Molecular Biology, Genetics, or related Plant Sciences.	Plant science, Molecular biology	Food science; Statistics

Research Topics for the 2026 Summer Internship Program

Research Area	Food Science	Virology	
Supervising Scientist	Dr. Ee Von Goh	Dr. Ram B. Khadka	
Research Topic	Fermentation to increase nutritional value/ decrease antinutritional factors 利用發酵技術提升營養價值並降低抗營養因子	Newly emerged viruses in vegetable crops: Evidence from scientometric and systematic review 蔬菜作物中新興病毒：基於文獻計量學與系統性回顧的證據	Identification of Low-Cost FTA Card Alternatives for Preservation and Downstream Analysis of RNA and DNA Viruses 低成本 FTA 卡替代材料的鑑定：用於 RNA 與 DNA 病毒的保存與後續分析
Research Introduction and Objective	Fermentation has long been used as a traditional food processing technique across many cultures, not only for preservation and flavour development but also for improving the nutritional quality of foods. In recent years, growing reliance on plant-based diets and climate-resilient crops has renewed scientific interest in fermentation as a strategy to enhance nutrient availability. Many plant foods—including cereals, legumes, and certain vegetables—contain antinutritional compounds such as phytates, tannins, oxalates, and enzyme inhibitors that can reduce the bioavailability of essential minerals and impair protein digestibility. Microbial fermentation can mitigate these limitations through enzymatic degradation and biochemical transformation of these compounds, thereby improving mineral absorption, protein digestibility, and overall nutrient utilization. In addition, fermentation may lead to the synthesis of beneficial metabolites such as organic acids, vitamins, and bioactive peptides, further contributing to the nutritional value of fermented foods. Consequently, fermentation is increasingly recognized as a low-cost, sustainable processing approach that can simultaneously enhance food quality, support dietary diversity, and contribute to healthier and more resilient food systems.	Emerging and re-emerged viruses in vegetable crops: Evidence from scientometric and systematic review Vegetable-infecting viruses represent one of the most dynamic and rapidly emerging groups of plant pathogens, posing substantial threats to global food security, trade, and sustainable crop production. Despite their increasing economic and epidemiological significance, a comprehensive synthesis of newly emerged and re-emerged vegetable viruses remains lacking. Scientometric and systematic review approaches—widely adopted in ecological and medical sciences—have rarely been rigorously applied within plant virology to quantify research trends, identify knowledge gaps, and elucidate drivers of viral emergence. The proposed study aims to conduct a comprehensive scientometric and systematic review of newly emerged viruses in vegetable crops using standardized, published review protocols. The literature will be systematically screened at title, abstract, and full-text levels by two independent reviewers to ensure methodological rigor and minimize bias. Extracted data from eligible studies will be synthesized using advanced analytical frameworks and AI-assisted tools to identify temporal publication trends, geographic hotspots, host range expansion patterns, transmission pathways, and underlying ecological and anthropogenic drivers of emergence. This integrative evidence synthesis will generate a consolidated global perspective on the status, determinants, and research trajectories of emerging vegetable viruses, ultimately guiding future surveillance, risk assessment, and strategic management interventions in vegetable virology.	This study evaluates low-cost alternatives to FTA cards for preserving plant RNA and DNA viruses for downstream molecular analysis. Virus-infected leaf samples will be imprinted onto various matrices, including Whatman FTA cards (reference), filter paper, 903 Protein Saver cards, nitrocellulose membranes, chromatography paper, and silica-dried leaves. Samples will be stored at room temperature for 7, 15, and 21 days. Nucleic acids will be extracted using commercial kits and optimized low-cost protocols, then assessed by RT-PCR and qPCR to determine virus detectability and sensitivity. The study aims to identify cost-effective, reliable preservation methods for resource-limited diagnostic and surveillance programs.
Category of Summer Intern Tasks	Laboratory and desk research	Non-Laboratory	Laboratory
Specific Tasks for Summer Interns	Literature review, lab experiments	TThe interns will receive hands-on training in scientometric and systematic review methodologies, including the use of standardized protocols and reporting frameworks. They will independently screen the literature according to predefined inclusion and exclusion criteria at the title, abstract, and full-text levels to ensure methodological rigor and transparency. In addition, they will gain practical experience in structured data extraction, bibliometric mapping, and quantitative synthesis for both scientometric and systematic analyses.	Nucleic acid extraction, RT PCR, data analysis
Required Skills	Lab experience	Background in plant sciences.	Background in plant sciences with basic molecular biology and statistics skills.
Preferred major(s)	Food Science	Agriculture, Horticulture, and Plant Science	Agriculture, Horticulture, and Plant Science

Research Topics for the 2026 Summer Internship Program

Research Area	Entomology		Agronomy
Supervising Scientist	Dr. Stephen Othim		Dr. Lukas Pawera
Research Topic	Evaluating the Effects of Insect Resistance Markers WF2 and WF3, Individually and in Heterozygous Combinations, on Tuta absoluta Tolerance in Tomato 評估昆蟲抗性標記 WF2 與 WF3 單獨及異質組合對番茄潛葉蛾（Tuta absoluta）耐受性的影響	Performance of selected EPF isolates under temperature and UV stress conditions 選定 EPF（昆蟲病原真菌）分離菌株在溫度與紫外線逆境條件下的表現評估	Testing of plant- and soil-based sensors for precision nitrogen management 測試以植物與土壤為基礎的感測器於精準氮素管理中的應用
Research Introduction and Objective	This project evaluates the effects of the insect resistance markers, individually and in combination, on the biology and behaviour of the tomato leaf miner (Phthorimaea absoluta) tomato. This will be achieved through an assessment of the egg laying patterns and developmental parameters under controlled bioassays. The study aims to quantify how each marker and their combined presence influence plant–insect interactions and contribute to improved resistance.	This research focuses on identifying and testing beneficial microorganisms that can help control important vegetable pests such as broad mites, spider mites, and whiteflies. The goal is to develop environmentally friendly pest management solutions that could eventually be used as biological pesticides. During the project, microbial strains will be tested in laboratory experiments to determine how effective they are at controlling these pests. The microbes will be applied to plant leaves using simple spraying or dipping methods, and their ability to reduce pest populations will be evaluated. In addition to testing their effectiveness, the project will also assess how well these microbes survive environmental stresses such as high temperatures and sunlight (UV exposure). This is important because biological control agents must remain effective under real field conditions.	This research topic focuses on evaluating emerging sensing technologies for precision nitrogen management in vegetable production. Through controlled pot experiments conducted at the World Vegetable Center (in Shanhua), the student will compare soil-based sensors and plant-based sensors for their ability to assess soil mineral nitrogen (NH_4^+, NO_3^-) and plant nitrogen status, and predict precise crop N requirements that will be supplied accordingly. The experiment involves simultaneous collection of sensor data and conventional laboratory measurements, including ion chromatography and colorimetric analysis for soil nitrogen, as well as SPAD readings, spectral parameters (NDVI, HUE, greenness), and plant tissue nitrogen analysis for crop N status. By integrating sensor outputs with laboratory reference data, the study will assess the accuracy, reliability, and practical feasibility of different sensing approaches to guide the precision application of fertilizer and water.
Category of Summer Intern Tasks	Laboratory	Laboratoty	Both laboratory and non-laboratory
Specific Tasks for Summer Interns	Insect rearing, insect bioassays, data collection, data analysis	Insect rearing, insect bioassays, data collection, data analysis	Monitoring sensors and collecting data measuring crop growth and leaf color Collecting soil and plant samples Analyzing data
Required Skills	Insect assays, data analysis	Insect assays, data analysis	Background in agriculture. Experience with statistical data analysis. Experiences with lab instruments or sensors is beneficial.
Preferred major(s)	Biological sciences,Agriculture	Biological sciences, Agriculture	Background in agronomy, soil science, agricultural technologies, electronics, engineering

Research Topics for the 2026 Summer Internship Program

Research Area	Pepper Breeding	Plant Pathology	
Supervising Scientist	Dr. Derek Barchenger	Dr. Lourena Maxwell	
Research Topic	Developing a speed breeding protocol in pepper 建立辣椒快速育種（Speed Breeding）技術流程	Biocontrol of tomato southern blight 番茄白絹病（southern blight）的生物防治研究	Evaluation of bacterial spot resistance in tomato lines carrying bacterial wilt resistance genes. 攜帶青枯病抗性基因之番茄品系對細菌性斑點病抗性的評估
Research Introduction and Objective	Pepper (Capsicum spp.) breeding cycles are inherently long due to extended juvenile phases, photoperiod sensitivity, and the need for multi-environment testing. Under conventional field and greenhouse conditions, only one to two generations can typically be advanced per year, slowing genetic gain and delaying the delivery of improved varieties to farmers. In the context of increasing climate variability, evolving pest and disease pressures, and rising market demands, accelerating breeding cycles is essential. Speed breeding integrates controlled environment manipulation—including optimized photoperiod, light intensity, temperature regimes, and early generation seed harvest—to shorten generation time and increase the number of breeding cycles per year. While speed breeding protocols have been established in several major crops, optimized, standardized systems for pepper remain limited. Developing a robust and reproducible speed breeding protocol for pepper will enhance rapid generation advancement, accelerate trait introgression, and increase annual genetic gain. Objectives To quantify achievable generations per year under controlled speed breeding conditions. To evaluate genotype-specific responses across diverse Capsicum backgrounds. To develop a standardized protocol for rapid generation advancement applicable to breeding programs.	Southern blight is one of the most destructive diseases in tomato production. Producers often rely on pesticides to control this disease, which may pose risks to human health and the environment. Biological control offers an alternative approach that is more environmentally friendly and safer for people. This study aims to develop optimal biocontrol treatments under greenhouse conditions. The results may contribute to further field trials and serve as a component of integrated disease management strategies.	Tomato production is significantly affected by bacterial diseases, particularly bacterial wilt caused by Ralstonia solanacearum and bacterial spot caused by Xanthomonas spp. Tomato lines carrying resistance genes to bacterial wilt have been developed and widely used in breeding programs to reduce losses from this soil-borne disease. However, it remains unclear whether these bacterial wilt–resistant lines exhibit altered responses to bacterial spot infection. This study aims to evaluate the resistance response of tomato lines carrying bacterial wilt resistance genes to bacterial spot, providing information for breeding tomato cultivars with resistance to multiple bacterial diseases.
Category of Summer Intern Tasks	Non-laboratory	Laboratory and /or field research	Laboratory and Wet laboratory operation
Specific Tasks for Summer Interns	Collect phenological data in the speed breeding facility and conventional greenhouse on: >Days to flowering >Days to fruit set >Days to fruit maturity Compare developmental timelines between production systems. Identify environmental parameters associated with accelerated development. Summarize findings to inform protocol refinement for rapid generation advancement.	bioassay in the Lab and greenhouse	Bacteria culture and inoculation, data collection and analysis
Required Skills	Data collection and analysis	Elemental microbiology (mycology especially) and phytopathology	Elemental microbiology (bacteriology especially) and phytopathology
Preferred major(s)	Agriculture, Horticulture, and Plant Science	Plant Pathology	Plant Pathology, Plant protection