



**SPEECH INFORMATION (For Conference Program Book)**

Topic	<b>Guardians of Agriculture: <i>Bacillus</i> for Healthy Crops and a Safer Environment</b>  <b>【 中文 】</b> <b>農業的守護者-保護作物健康與維護環境安全的芽孢桿菌</b>
Abstract	<p>Since the 20th century, chemical fertilizers and pesticides have significantly increased food production and helped solve food shortages. However, long-term reliance on these chemicals has also led to problems such as soil acidification, environmental pollution, and loss of microbial diversity in the soil. To balance food security and environmental sustainability, agricultural probiotics have gained growing attention. These beneficial microbes, much like the good bacteria in the human gut, help plants absorb nutrients, resist diseases, and tolerate better with stresses such as drought and flooding. Since 2006, our research team has isolated various native probiotics from farmlands in Taiwan, including species such as, <i>Bacillus subtilis</i>, <i>Bacillus licheniformis</i>, and <i>Bacillus mycoides</i>. We have successfully developed them into liquid, powder, and granular products that are widely used in crop cultivation, livestock farming, and aquaculture. These probiotics not only help prevent common plant diseases in crops like tomatoes, strawberries, and rice, but also promote better health and growth in pigs, chickens, fishes, and shrimps, while improving the farming environment. Some strains can even degrade pesticide residues and enhance soil carbon sequestration, contributing to climate change mitigation. In summary, <i>Bacillus</i> based probiotics offer diverse applications that protect plant and animal health while being environmentally friendly, making them a key component of sustainable agriculture.</p> <p><b>【 中文 】</b>            自20世紀以來，化學肥料與農藥幫助我們大幅提升糧食產量，解決了不少溫飽問題。但長期使用這些化學品，也帶來一些副作用，比如土壤變酸、環境污染，還有土壤中有益微生物的多樣性減少。為了兼顧糧食安全與環境永續，越來越多科學家開始關注「農業益生菌」的應用。這些益生菌就像人腸胃裡的好菌，能幫助植物吸收養分、抵抗病蟲害，還能提升作物面對乾旱、淹水等極端天氣的能力。我們的研究團隊從2006年起，從台灣本地農田中找出多種具有潛力的益生菌，像是蕈狀芽孢桿菌、枯草桿菌和地衣芽孢桿菌等芽孢桿菌，並成功開發成液體、粉末和顆粒狀產品，廣泛用在種植作物、飼養禽畜和水產養殖中。這些益生菌不只可以防治番茄、草莓、水稻等常見的病害，也能幫助豬、雞和魚蝦變得更健康，成長得更快，還能改善養殖環境。部分菌種還有分解農藥殘留、促進土壤儲存碳的能力，這對減緩氣候變遷也有幫助。總結來說，芽孢桿菌的多元用途，不但能保護農作物和畜產的健康，也對環境友善，是實現永續農業的重要關鍵。</p>

