

## 技術推廣表



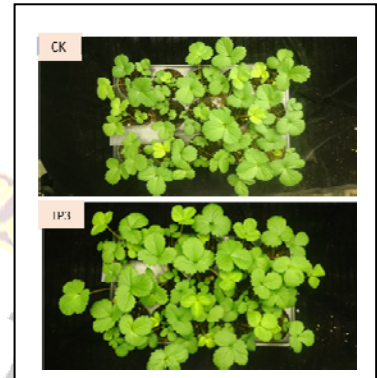
### 多黏類芽孢桿菌(*Paenibacillus polymyxa*) TP3 之生物肥料應用

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#### 市場及需求：

微生物肥料可作為化學肥料替代用肥料，在有機耕作流行的台灣，微生物肥料需求多，需要新的菌種加入微生物肥料選項，提供農民新選擇。

#### 技術摘要：

多黏類芽孢桿菌 *Paenibacillus polymyxa* 菌株 TP3 具有促進植物生長和誘導植物抗性的能力，在草莓上可促進組培苗生長、增加產果量以及誘導草莓對炭疽病菌和灰黴病菌的抗性，利於其作為生物肥料之用途。

#### 優勢：

根據目前農糧署 (109 年) 推薦之微生物肥料一覽表，多數菌株以溶磷菌為主。菌株 TP3 具有溶磷之外的特性得以促進植物生長，此外本菌株與市面上常見菌株不同屬，可以提供農民不同的微生物肥料菌株選擇。

#### 競爭產品：

目前農糧署推薦的含 *Bacillus safensis*、*B. mycodies*、*B. amyloliquefaciens*、*B. licheniformis*、*B. subtilis* 等的微生物肥料。

#### 專利簡述：

本實驗室團隊在微生物資材上的研究已有 16 年之久，包含 *B. cereus* 28-9、*B. cereus* C1L 和 *B. amyloliquefaciens* 37-1，前後已發表 10 篇相關研究在不同國際期刊上。近年來則是以 *P. polymyxa* TP3 研究為主，從基因體到田間應用逐步完善，相關發表也在準備中。

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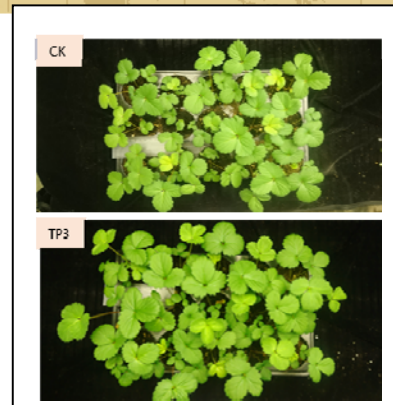
## Application of *Paenibacillus polymyxa* strain TP3

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Department of Plant Pathology and Microbiology,  
National Taiwan University.

**Experience:**

Professor, Department of Plant Pathology and  
Microbiology, National Taiwan University.  
Professor (Joint Appointment), Master Program  
for Plant Medicine, National Taiwan University.



**Market Needs:**

In Taiwan, organic farming has become a fashion, thus microbial fertilizers is an alternative to chemical fertilizers. More microbial fertilizers are needed and new species of fertilizer microbes are demanded for the market.

**Our Technology:**

*Paenibacillus polymyxa* strain TP3 is able to improve plant growth vigor and enhance plant defense. In strawberry, this bacterium can improve the growth of tissue culture-propagated plants, the fruit production in the field, and the plant defense against pathogens such as *Botrytis cinerea* and *Colletotrichum actinatum* as shown in the pot experiments. These traits make strain TP3 a potential microbial fertilizer.

**Strength:**

According to Agriculture and Food Agency-suggested microbial fertilizers (109/08/11), phosphorus-solubilizing bacteria are the main ones. *P. polymyxa* TP3 has abilities to improve plant growth involving abilities other than phosphorus-solubilizing. Moreover, it is in the genus different from the microbial fertilizers in the market. *P. polymyxa* TP3-derived product can be a new choice for the farmers.

**Competing Products:**

The current strains of *Bacillus safensis*, *B. mycodies*, *B. amyloliquefaciens*, *B. licheniformis* and *B. subtilis* in the market.

**Intellectual Properties:**

Our laboratory team has been researched in microbial materials for over 16 years and have released 10 papers in different international journals about the studies in *B. cereus* 28-9, *B. cereus* C1L and *B. amyloliquefaciens* 37-1. *P. polymyxa* TP3 is the main focus in the present time from the genome to the field application. The manuscript for the related results are preparing.

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