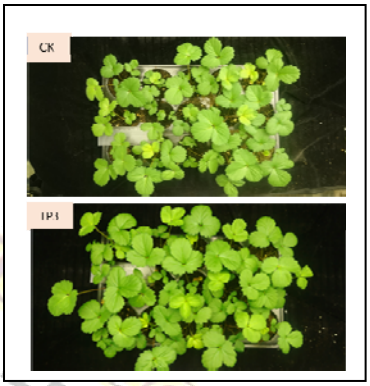
技術推廣表

# 多黏類芽孢桿菌增進作物生產之應用

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**市場及需求:**

以多黏類芽孢桿菌為活性組成的生物肥料及生物農藥，市場涵蓋慣行農業及有機農業，可與化學肥料及農藥輪替或混合使用，或直接應用，進一步可能發展應用於苗木繁殖、魚蝦養殖、禽畜生產等。

**技術摘要:**

植物群系有多元豐富的微生物相，包括許多對植物有幫助的細菌種類，可棲息於土壤、植物根部，為植物促生根圈細菌，是相當具有發展潛力的生物防治菌。多黏類芽孢桿菌可產生抑菌物質，誘導植物之系統性抗病能力，可抑制病害的發生；此有益菌具有固氮及溶磷的能力，可促進植物生長、開花及果實增產。多黏類芽孢桿菌可為生物農藥及生物肥料之活性組成，在永續農業及生物科技發展上是重要的微生物資源。

**優勢:**

本技術研究團隊長期收集及研究可應用於作物生產的微生物資源，近年來之技術開發主要針對多黏類芽孢桿菌，從基因體到田間應用逐步完善，此類細菌可產生內生孢子及多種抗菌代謝物，適合長期保存。所應用菌株具有溶磷及固氮的能力，相關商品在國內市場少見，可以增加農業微生物應用菌種的多樣化。

**競爭產品:**

市售生物肥料或生物農藥中分類相近的菌種 *Bacillus safensis*、*B. mycodies*、*B. amyloliquefaciens*、*B. licheniformis*、*B. subtilis* 等。。

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# Application of *Paenibacillus polymyxa* to improve crop productivity

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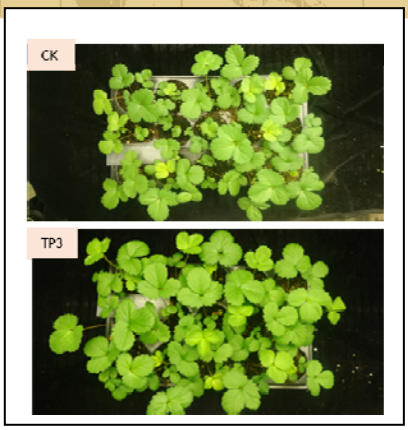


**Market Need:**

Market needs of *Paenibacillus polymyxa*-based biofertilizers and biopesticides cover traditional and organic agriculture in which the products can be applied alternately or in combination with fungicides or use singly. The products can be extended to nursery, fish, shrimp, livestock and poultry farming, etc.

**Our Technology:**

Plentiful and various microbes are the constituents of phytobiomes and many individuals are beneficial for plant growth, which present in the soils and plant roots as plant growth-promoting rhizobacteria and potential biocontrol agents. *Paenibacillus polymyxa* bacterial strains are able to produce antimicrobial metabolites and induce plant systemic resistance, capable of preventing disease prevalence. This beneficial bacterium can promote plant growth, flowering and fruit production. *P. polymyxa* strains are the active ingredients of biofertilizers and biopesticides as microbial resources for sustainable agriculture and biotechnology development.

**Strength:**

Our group invests in the culture collection and researches of microbial resources for many years and mainly focuses on the product development of *Paenibacillus polymyxa* these years from genomic study and field trials. The products of endospore and antimicrobial metabolite-producing *P. polymyxa* are suitable for long-term preservation. In addition, this bacterial strain has phosphorus-solubilizing and nitrogen-fixation abilities beneficial for plant growth. Related products are rare in domestic market. Thus, the target product can increase the items of applied microbial resources for crop production.

**Competing Products:**

Similar strains in the biofertilizers and biopesticides of current markets are *Bacillus safensis*, *B. mycodies, B. amyloliquefaciens*, *B. licheniformis* and *B. subtilis*.

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