

Bacillus Amyloliquefaciens

1x 10¹¹ cfu/g B. amyloquefaciens powder

Introduction

Bacillus amyloliquefaciens is one of the most promising bacteria for plant growth promotion (PGP) without harmful side effects. First, *Bacillus amyloliquefaciens* can improve soil nutrient availability, including improving nitrogen supply, solubilizing phosphate and potassium, and producing siderophores. Second, BA can change the soil microbial community and improve the availability of minerals and plant growth conditions. Third, *Bacillus amyloliquefaciens* can secrete hormones and volatile organic compounds (VOCs) associated with plant cell growth and root development and further improve nutrient uptake by plants. Fourth, *Bacillus amyloliquefaciens* can enhance plant resistance against biotic stresses from soil pathogens through competition of niches and nutrients, producing substances such as cyclic lipopeptides, polyketides, and VOCs to antagonize pathogens directly, and induction of system resistance of the plants. Similarly, inoculation with *Bacillus amyloliquefaciens* can promote plant growth by inducing systematic tolerance to abiotic stresses by leading to genetic, chemical, and physical changes in the host plant.



Specification

Bacteria count : 1 x 10¹¹ cfu/g

Fineness: 200 mesh screen

Moisture: 8%

100% water-soluble type

Application

Agriculture, Biofertilizer, Soil Treatment, Crop Protection, Foliar Spray

Antagonistic activity

Bacillus amyloliquefaciens inhibits some pathogenic fungal diseases:

- ✓ F1, *Verticillium dahliae*;
- ✓ F2, *Fusarium solani*;
- ✓ F3, *Fusarium oxysporum* f. sp. *cucumerinum*;
- ✓ F4, *Exserohilum turcicum*;
- ✓ F5, *Fusarium oxysporum* f. sp. *melonis*;
- ✓ F6, *Alternaria dauci*;
- ✓ F7, *Sclerotinia sclerotiorum*;
- ✓ B1, *Ralstonia solanacearum*.

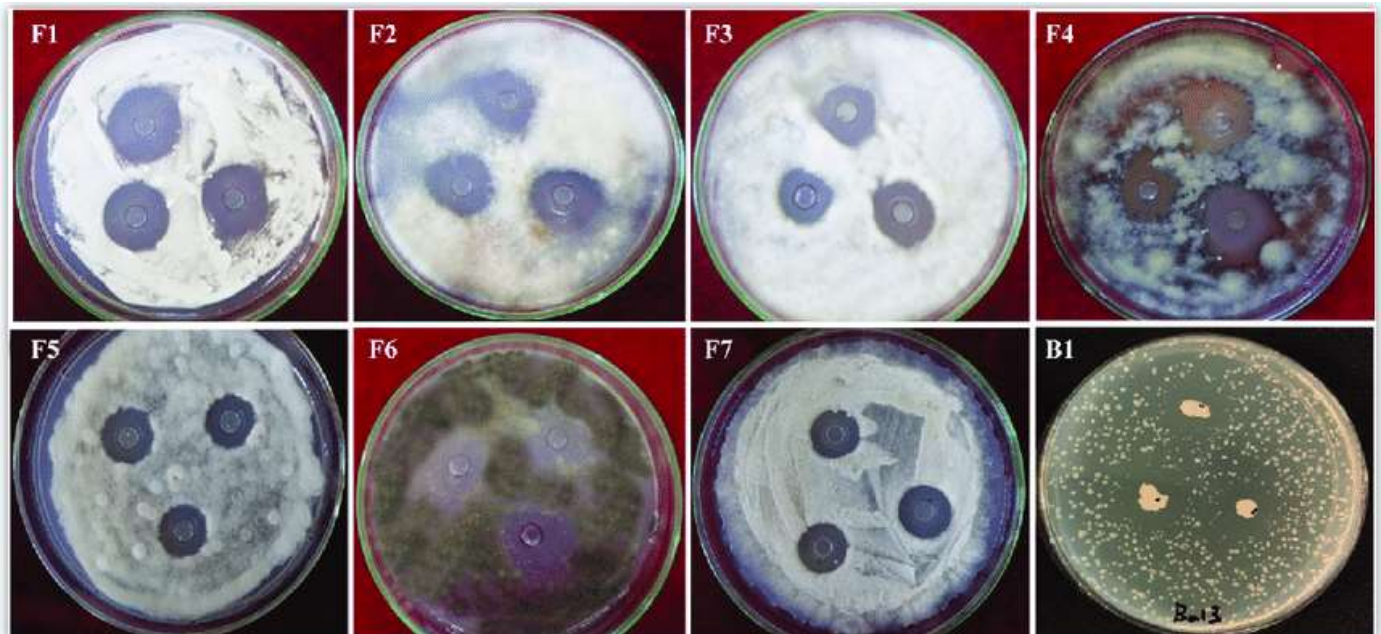


Figure 1: Antagonistic activity of *B. amyloliquefaciens* against fungal and bacterial pathogens grown on potato dextrose agar in petri dishes;

Principle

- ✓ Suppress other soil pathogens by competing with them for nutrients such as iron
- ✓ Producing antibiotics or bacterial-destructive (lytic) enzymes
- ✓ Promotes general plant disease defenses and
- ✓ Increases the "immunity" (acquired resistance) of inoculated plants.
- ✓ Controlling a range of root-knot, cyst, lesion, and ring plant parasitic nematodes.

Benefit

- ✓ Disease resistance and bacteriostatic: The product has significant control effect on the soil borne disease pathogen such as *Alternaria solani*, *Botrytis cinerea*, *Bacteriostasis*, *Fusarium oxysporum*, *Phytophthora infestans*, etc
- ✓ Stress resistance and senescence prevention: the product can increase the stress resistance and photosynthetic efficiency of crops and promote the growth of plants.
- ✓ Increase soil fertility and improve soil: the product can improve crop rhizosphere micro ecological balance, activate the potential nutrient phosphorus and potassium, promote crops taking root quickly.
- ✓ Degradation of pesticide residue composition, increasing production: the product can degrade the pesticide residue in the soil and reduce the nitrite accumulation.
- ✓ The *Bacillus amyloliquefaciens* promote hormones ,such as protease, amylases enzyme ,which could effective increase plant resistibility ,prevent leaf fungi disease.

Dosage & Method

- ✓ Apply 3 kg per acre before or at or short after planting, as early as possible to the crop for optimal effect.
- ✓ Reapply after 30 days to extend performance for season-long control
- ✓ Can be applied by broadcast, hill dressing, drill fertilization, root-irrigation, Turn the soil after watering.
- ✓ *Bacillus amyloliquefaciens* must be used preventively, as it will not cure diseased plants

Caution

Do not mix use with bleach, caustics, disinfectants or other chemicals

Packing and shelf life

2 year shelf life, 1 kg per foil bag, 25 kg per bag

Storage

Store in cool, dry location, keep out of direct sunshine and moisture. Once opened, should be use it within 30 days to prevent activation. Keep out of reach of children.

Effects of *B. amyloliquefaciens* on pepper growth promotion and biocontrol effect

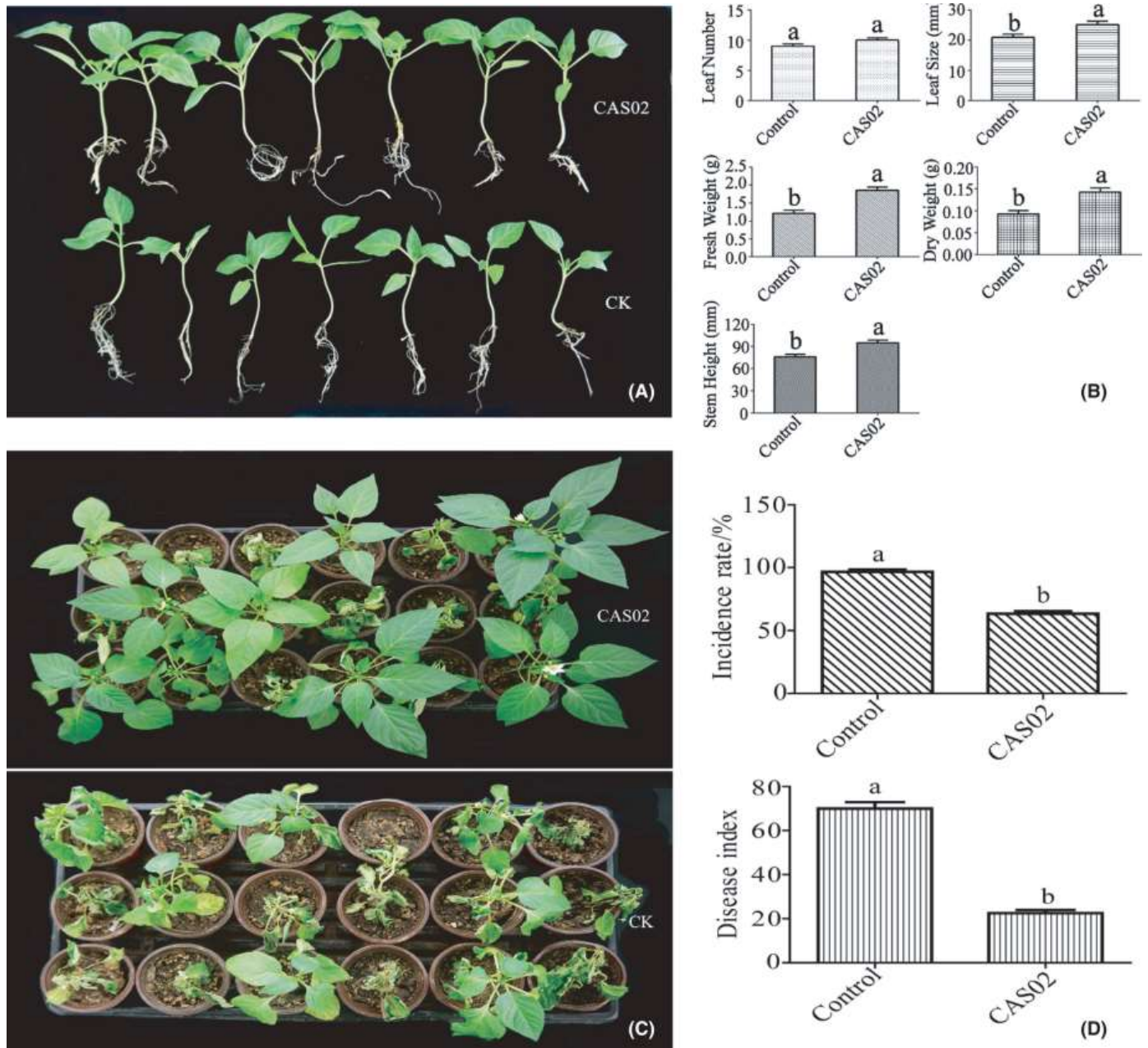


Figure 2 : Pepper growth promotion and biocontrol effect of strain Cas02 in green house condition. A. The images of pepper seedling growth with or without Cas02 treatment. B. The leaf number, leaf size, stem height, fresh and dry weight and chlorophyll of the pepper seedlings with or without Cas02 treatment C. The images of pepper plant wilt disease symptoms with or without Cas02 treatment. D. The disease rate and disease index of pepper plant with or without Cas02 treatment.

Bacillus amyloliquefaciens ameliorative response to tomato growth during disease incidence

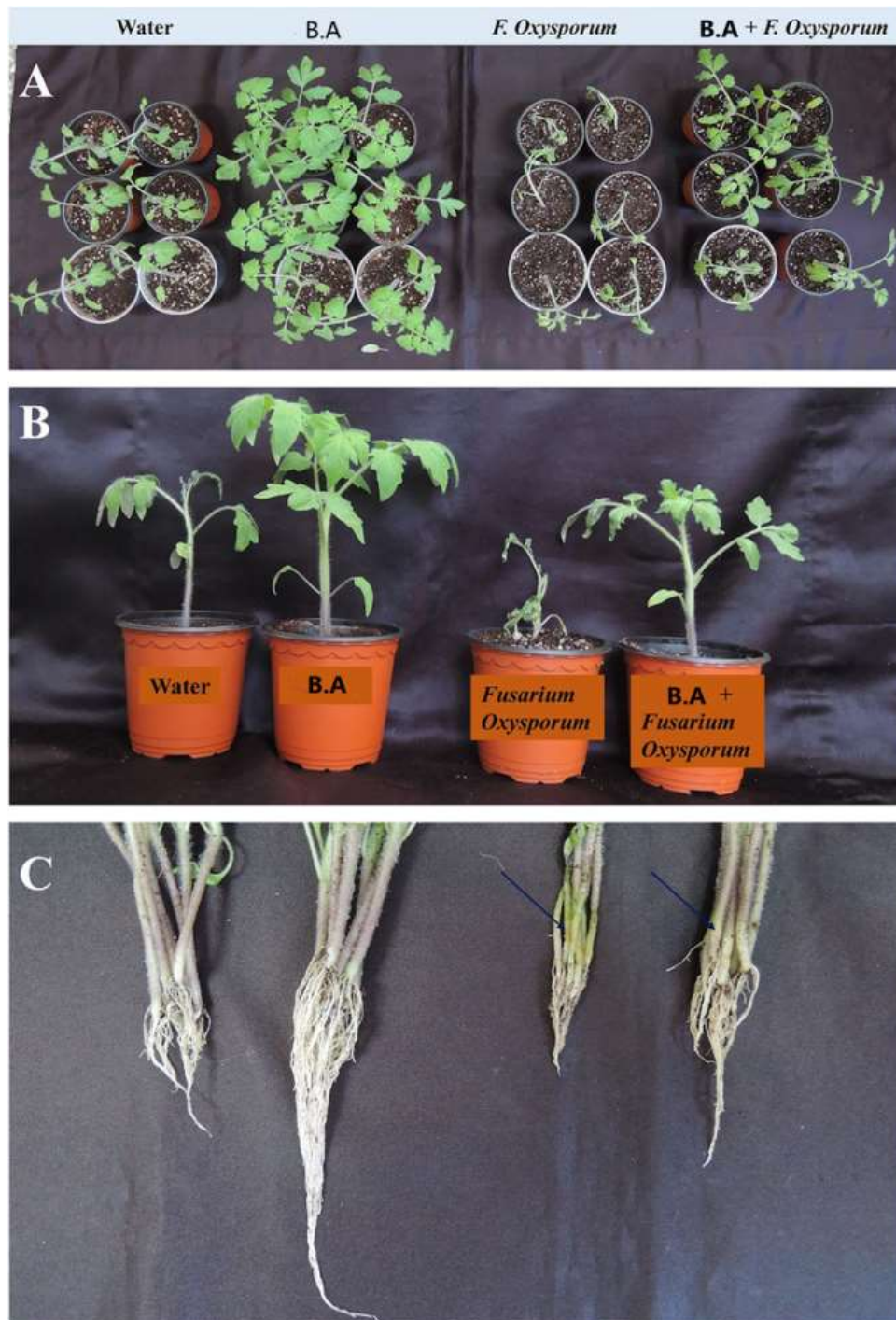


Figure 3: Pathogenic effect of *F. oxysporum* f. sp. lycopersici on tomato plant inoculated with *Bacillus amyloliquefaciens*. (A) The aerial view and effects of RWL-1 inoculation under control condition and *F. oxysporum* f. sp. lycopersici infection. (B) The effect of RWL-1 inoculation and *F. oxysporum* f. sp. lycopersici infection. (C) The intensity of damage caused by *F. oxysporum* f. sp. lycopersici in the roots/stem diameter.

Specification

Specification	BA1000
Viable count (CFU/g)	100 billion (1.0x10 ¹¹)
Color	Brown
Recommended dosage	3 kg per acre
Key component	Bacillus Amyloliquefaciens with culture media
Form	Powder
Odor	Slight fermentation odor
Particle size	More than 98% pass through standard sieve of 80 mm meshes
Loss on drying	≤9%
Total Arsenic (As)	≤2 mg/kg
Plumbum (Pb)	≤5 mg/kg
Mercury (Hg)	≤0.1 mg/kg
Cadmium (Cd)	≤0.5 mg/kg
Microbial contamination rate	≤1.0%
Coli group	≤100 CFU/g
Salmonella	None/25g
Total count of mold	≤2.0x10 ⁴ CFU/g
Pathogenic bacteria	Negative