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like in i) Potato ~~tuber~~ treated seed with antagonists, 5.33% increase in yield.

ii) Treated sugarbeet  $\rightarrow$  4-6 tons increase in yield. iii) Raddish Treated seeds increase in yield 60-144%.

$\Rightarrow$  These bacterial antagonists effectively control

i) Pythium 2) Phytophthora 3) Fusarium  
iv) Rhizoctonia v) Gaeumannomyces

$\Rightarrow$  Bacillus cereus strain UW85 control damping off & legume diseases.

$\Rightarrow$  Pseudomonas fluorescens & Pantoea effectively control seedling death & by using these both 200kg/ha per acre yield increase

Root knot nematodes are effectively control by Pasturia penetrans.

$\Rightarrow$  Aerial borne diseases

Phytophthora bacteria +ve & -ve

+ve = Bacillus, Lactobacillus; ~~Erwinia~~ Corynebacterium  
-ve : Erwinia; Pseudomonas; Xanthomonas.

eg  $\rightarrow$  Fire blight of Apple caused by Erwinia amylovora controlled by Erwinia herbicola.

$\rightarrow$  Leaf streak of Rice Disease caused by Xanthomonas translucens controlled by

spraying of epiphytic bacteria Pseudomonas <sup>> trans</sup> ~~spp~~  
& Erwinia spp.

- spray of Pseudomonas florescence on Fungal leaf spot diseases Drechslera
- Bacillus subtilis control Apple leaf scar caused by Nectaria 'galligena'
- Similarly on Peanuts & Tobacco plants aerial spray of Pseudomonas cepacia or Bacillus spp effectively control leaf spot diseases of Peanuts & tobacco: like Cercospora leaf spots of peanuts

⇒ Biocontrol of Postharvest Diseases by Bacterial Antagonists

- sol. of Pseudomonas bacteric <sup>spl</sup> & dipping citrus fruit in it can effectively control Penicillium Green mold
- Sol. of Pseudomonas spp & dipping pears in it. control pear rot.
- Pseudomonas syringae (commercial product BIO-SAVE) spore suspension <sup>dipping</sup> controls stone fruit decay of Apple, pear, cherry, plum & brown rot of stone fruits (Monilinia fructicola)  
controlled by P. subtilis

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⇒ Some viral parasites also present which reduce plant pathogens like Bacteriophages (viruses) phaging bacteria effective against bacterial disease.

⇒ Some viruses like Tobacco mosaic virus by using their mild strains.

Cross protection: in which viruses are controlled by applying their own mild strains.

⇒ Satellite RNA (sat-RNA) spray-competes with viruses when applied.