Preparation for prevention and fight against bacterial diseases of agricultural plants. Methods of treatment.

Description:

Prevention and fight against bacterial diseases of agricultural plants are carried out using a mixture of bacteriophages specific to strains of the bacteria. Bacteriophages are used to treat the following objects: infected seeds, ill plants or plant materials, soil, etc. where the infected plants are growing, irrigating water, soil in other sites, soil supplements. The set of bacteriophages and the method of its application have been described.

The invention is expected to be used in agriculture, production of means protecting agricultural plants; it may be used against pathogens of diseases of agricultural plants, too.

The **goal** of the invention is to prevent and treat bacterial diseases of plants by the methods which are an alternative to chemical bactericidal preparations contaminating environment. The **objectives** of the invention are to create bactericidal preparations suppressing pathogens of the following diseases caused by the phytopathogenic bacteria: cotton gummosis, rice scorch, bacteriosis of cabbage, potato and tomatoes, bacterial blight of beans, bacteriosis of vegetables, melons and gourds. The preparation has been created on the basis of a composite of bacteriophages which selectively kill phytopathogenic bacteria. The task has been solved through development of a preparation which contains a complex of bacteriophages specific to phytopathogenic bacteria. Lysing bacteriophages, bacterial viruses, have narrow "specialization" in damaging and dissolving phytopathogenic bacteria but do not contaminate environment. The set of bacteriophages has been isolated using well-known techniques (F.B. Iriarte et al, 2007, A. Sulakvelidze, 2005) from environmental objects which contain phytopathogenic bacteria: soil, water – both irrigating and draining, herbarium of ill plants, seeds of infected plants, etc. The bacteriophages' composite includes phages' mutants which affect mutants of *Xanthomonas* resistant to them. Bacteriophages' concentrate is able to dissolve *Xanthomonas* bacteria in a specific way. The treating preparation is a sterile filtrate of *Xanthomonas* phagolysate. The composite of virus mutants is placed on the source of bacteria spread (e.g. seeds) by two methods: infiltration or superficial soaking. The bacteriophages' composite can also be introduced directly to soil or irrigating water. The composite can be sprayed on vegetating plants or put on affected plants with a swab. A polyvalent concentrate of bacteriophage reduces infection of plants with bacterial diseases by 50-90% contributing to increasing the yield.

Innovative aspect and main advantages:

The main advantage of the invention is development of a preparation to treat and prevent bacterial plant diseases by the method which is an alternative to chemical bacteriocides that can have negative effects on the environment. Prevention and fight against bacterial diseases of agricultural plants are carried out using a mixture of bacteriophages specific to strains of the bacteria. Bacteriophages are used to treat the following objects: infected seeds, diseased plants or plant materials, soil, etc. where the infected plants are growing, irrigation water, soil in other sites, soil supplements. The set of bacteriophages and the method of its application have been described. A polyvalent concentrate of bacteriophage reduces infection of plants with bacterial diseases by 50-90% contributing to increased yield.

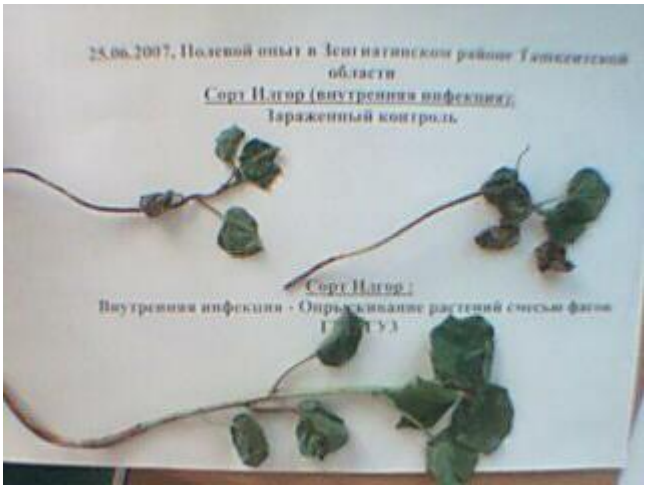
Areas of Application:

The invention is related to agriculture and means of protection of plants from bacterial diseases in particular.

Stage of Development:

Tested, available for demonstration – field tested

Photos/Pictures:



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- **Targeted Companies:**

Phage International, Inc. (Info@PhageInternational.com),
Exponential Biotherapies, Inc. (http://www.ebi.org),
Phage Therapeutics International, Inc. (PhageTx) (http://www.phagetx.com),
Biophage, Inc. (www.biophage.com),
Emerging Technology Partners, Rockville.