

# NovaFerm®



Spore-forming technology®



Manufacturer:

**Nova Scienta Ltd.**

6230 Soltvadkert, Átrium Üzletház 1094/2/A/5.

E-mail: [info@novascienta.com](mailto:info@novascienta.com)

[www.novascienta.com](http://www.novascienta.com)

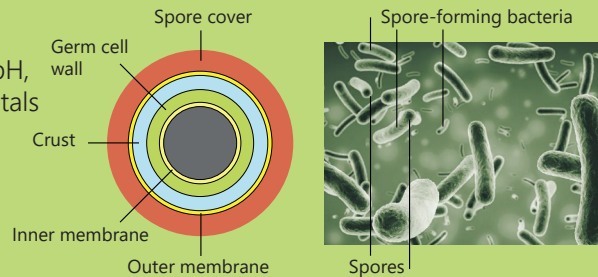
# Bacterial spores

## Persistent, longevity form

(endospore, cysts, cocon)

- rest form; inactive;
- tolerance against UV and solar radiation, heat, cold, pH, high tolerance to heavy metals (Cu, Zn)
- long shelf life of product
- wide range of biological activity; long lifespan

## "Armored Knight"



# Spore formation

## 0 - 1. phase

In phase 0 - 1. unequal cell division occurs within the vegetative cell.

## 2. phase

As a result of detachment and encapsulation, so-called pre-spores are formed in phase 2, which can move freely within the cytoplasm of the stem cell.

## 3. phase

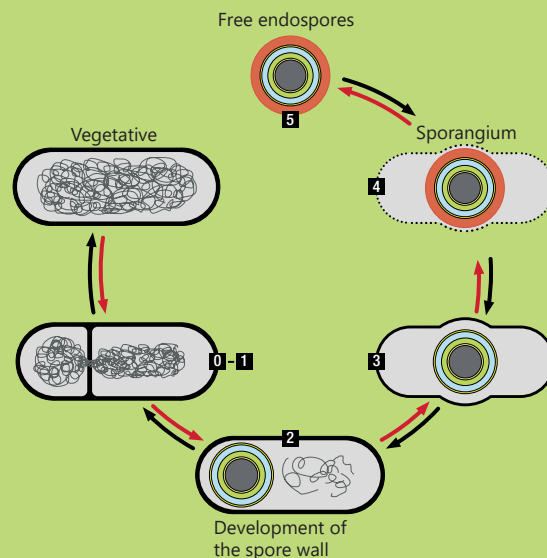
In phase 3, the peptidoglycan is taken up between the two membranes to form a crust.

## 4. phase

In phase 4. the spores are further matured by hydration to form a loosely intertwined spore coat.

## 5. phase

In the 5th and final phase, the stem cell is autolyzed, during which thick-walled, mature spores will be released.

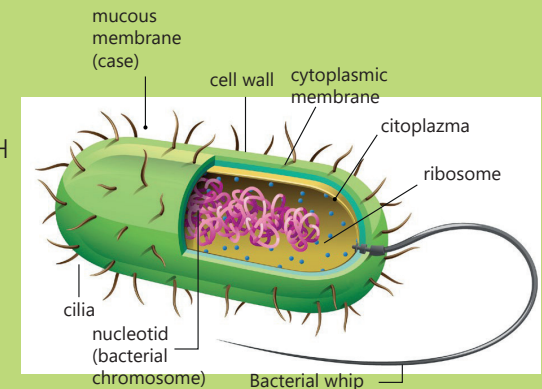


# Vegetative bacterial cells

## Vegetative form only

- functional, active;
- highly sensitive to UV and solar radiation, heat, cold, PH
- demolished by excess of heavy metals (Cu, Zn);
- short self life of product
- weak range of biological activity, short lifespan

## "Nude man"

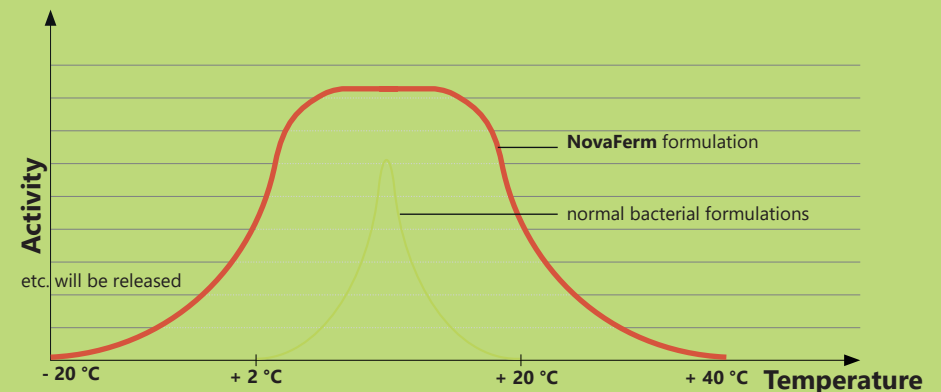


# Efficiency

Bacteria versus bacterial spores or other persistent forms.

Based on the positive properties of our new bacterial preparation, we aim at a broad spectrum of effects against conventional bacteria.

According to its cold and heat tolerance, our preparations are active at both low and high temperatures.





# NovaFerm® Viva

For soil treatment



## Cultures

arable-farming and horticulture

## Enabled

as a microbiological preparation

## Active substance

*Bacillus thuringiensis* strains ( $10^8$  cfu/ml)

*Phothabdus luminescens* strains ( $10^8$ )

**pH-value** 6,5-7,5

**Density** 1,02

## Miscibility

It can be mixed with most pesticides.  
Do not mix with antibacterial products.

## Recommended dose

10 l/ha per treatment/200-300 l water

## Date of application

Apply to the entire surface before  
sowing, incorporated to soil/seed-bed

## Packaging

20 L CAN and IBC tank

## Advantages

- These bacterial spores are only activated after release.
- **UV-resistant** and non-sensitive to direct light
- **Not sensitive to copper, zinc and sulfur**
- **Tolerate extreme weather conditions** (heat, cold)
- It can be mixed with herbicides
- **Not dangerous for bees**
- **No** awaiting time
- **No** risk of resistance
- Wide **spectrum of effects**;

## Plant strengthening microbiological preparations

Experts are looking for alternatives to synthetic pesticides in agriculture, priority crops and cottage gardens. The use of biological preparations is possible here, as awaiting times and other precautionary statements must be taken into attention. The basis of the mechanism of biological preparations differs from that of plant protection products.

## Mode of action

The conventional plant protection have a direct effect on insects, thereby preventing their further development. Microbiological products, on the other hand, stimulate overall plant growth through complex mechanisms of action and increase pest resistance. In NovaFerm® Viva, a mixture of natural spore-forming bacteria has a positive effect on soil life in the root zone of the plant.

## General mechanism of action: production of bioactive factors

- Production of biotensides
- Production of siderophores (binding of heavy metals)
- Various protease and other enzymes
- Other competitive /antagonistic biological factors

# NovaFerm® Orion

For foliar treatment



## Cultures

arable-farming and horticulture

## Enabled

as a microbiological preparation

## Active substance

*Bacillus thuringiensis* (du  $10^9$  cfu/ml)  
*Photobacterium luminescens* (du  $10^8$ )

**pH-value** 6,5-7,5,5

**Density** 1,02

## Miscibility

It can be mixed with most pesticides.  
Do not mix with antibacterial products.

## Recommended dose

7- 10 l/ha in 300 l water in arable farming and vegetables and 10-15 l/ha in min. 100 l water in orchards

## Date of application

As a preventive application in preemergence

## Packaging

20 L CAN and IBC tank

## Advantages

- These bacterial spores are only activated after release.
- **UV-resistant and non-sensitive to direct light**
- **Not sensitive to copper, zinc and sulfur**
- **Tolerate extreme weather conditions** (heat, cold)
- It can be mixed with herbicides
- **Not dangerous for bees**
- **No** awaiting time
- **No** risk of resistance
- Wide **spectrum of effects**;

## Plant strengthening and microbiological preparations

Experts are looking for alternatives to synthetic pesticides in agriculture, priority crops and cottage gardens. The use of biological preparations is possible here, as waiting times and other precautionary statements must be taken into attention. The basis of the mechanism of biological preparations differs from that of plant protection products.

## Mode of action

Plant protection products have a direct effect on pests, thereby preventing their further development. Microbiological products, on the other hand, stimulate overall plant growth through complex mechanisms of action and increase pest resistance. In NovaFerm(R) Orion, a mixture of natural spore-forming bacteria has a positive effect on the foliage surface in the leaf zone of the plant.

## General mechanism of action: production of bioactive factors

- Production of biotenzides
- Production of siderophores (binding of heavy metals)
- Production of protease and other enzymes
- Competitive /antagonistic biological factors

# NovaFerm® Sirius

Fungistatic spore-forming bacteria  
for foliar treatment



## Cultures

arable-farming and horticulture

## Enabled

as a microbiological preparation

## Active substance

*Bacillus licheniformis* ( $10^8$  cfu/ml)

**pH-value** 6,5-7,0,5

**Density** 1,02

## Miscibility

It can be mixed with most pesticides.

## Recommended dose

7-10 l/ha in 300 l water in arable farming and vegetables, and 10-20 l/ha in min. 100 l water in orchards

## Date of application

As a preventive application in preemergence

## Packaging

20 L CAN and IBC tank

## Advantages

- These bacterial spores are only activated after release.
- **UV-resistant and non-sensitive to direct light**
- **Not sensitive to copper, zinc and sulfur**
- **Tolerate extreme weather conditions** (heat, cold)
- It can be mixed with herbicides
- **Not dangerous for bees**
- **No** awaiting time
- **No** risk of resistance
- Wide **spectrum of effects**;

## Plant strengthening and microbiological preparations

Experts are looking for alternatives to synthetic pesticides in agriculture, priority crops and cottage gardens. The use of biological preparations is possible here, as waiting times and other precautionary statements must be taken into attention. The basis of the mechanism of biological preparations differs from that of plant protection products.

## Mode of action

The fungistatic effect is based on activation of resistance against fungal diseases. This natural preparation NovaFerm® Sirius has a positive effect on the vegetative processes of the plant, thereby increasing its resistance against plant-diseases.

## General mechanism of action: bioactive factors

- It colonizes the whole plant, and show competition and concurrence on the surface of the plant against pathogens
- Settling on the whole plant
- Production of enzymes: production of wide-specificity chitinase
- Production of phytohormone-like substances with growth-promoting effects
- Strengthening the plant's defense (induced resistance)  
Production of biotensides

## Notes: