More and more consumers ask for food that is free of residues and has been produced according to standards that respect the environment. At Andermatt Biocontrol, we develop alternative solutions to chemical pesticides and make them available to farmers all over the world. We are absolutely convinced about the advantages of biocontrol and would be pleased to demonstrate our products and solutions to you and your clients. Together with you we can contribute to healthy food and a healthy environment.
### Baculoviruses
- Characteristics of baculoviruses: 4
- Our baculovirus products: 5
- Madex: 6
- Madex Twin: 7
- Capex: 8
- Cryptex: 9
- Helicovex: 10
- Spexit: 11
- Tutavir: 12
- Littovir: 13
- Spodovir: 14
- Loopovir: 15
- Loopex: 16
- Abietiv: 17
- Lymantria dispar MNPV: 17

### Other Insecticides
- Bb-Protec: 18
- Nomu-Protec: 19

### Bio-Fungicides
- AmyProtec 42: 20
- T-77: 21

### Biostimulants / Bioinnoculants
- T-Gro: 22
- T-Gro Easy-Flow: 23
- RhizoVital 42 / C5 / P45: 24
- RootWin-S / RootWin-A: 25

### Monitoring systems / Mass trapping
- Drosal Pro: 26
- DrosaLure: 26
- Rebell – Coloured sticky traps: 27
- aPhinity EAB: 27
- PheroNorm: 28

### Rodent control
- topcat – The vole trap: 29
- tosnap – The clever mousetrap: 29
- standby – The vole fence: 29

### Macroorganisms
- Beneficial insects: 30
- Insect feed: 30
- Insects for research: 30
- Entomopathogenic nematodes: 31

### Diverse products
- Curatio: 32
- Vitsan: 32
- SilicoSec: 33
- InsectoSec: 33
- Fenicur: 34
- Pyrethrum FS: 34
- Quassan: 34

### About us
- Structure of the Andermatt Holding: 36
- Subsidiaries of Andermatt Biocontrol: 37
- Your technical support: 38
Characteristics of baculoviruses

What are baculoviruses?
Baculoviruses are natural pathogens of insects, mainly lepidopteran species. Baculoviruses consist of one or several virions, that contain the viral DNA. These virions are encapsulated in a protein occlusion body, which protects the virus from destructive influences in the environment. Baculoviruses can be separated into two genera: granulovirus (GV) and nucleopolyhedrovirus (NPV), both of which may be used as natural insecticides.

Baculoviruses are safe
Due to the narrow host range of baculoviruses, beneficial insects such as bees, bumble bees, predatory mites, and parasitoids are not harmed. Baculoviruses are safe for the environment and do not affect aquatic species, birds, mammals, and humans. Baculoviruses do not produce any toxins or secondary compounds.

How do baculoviruses work?
Baculoviruses must be ingested by the insect larvae. Once in the midgut of the host, the protein capsules of the baculoviruses are dissolved and release virions, which infect the insect’s midgut cells. The multiplication of virions within infected cells cause the infection to spread inside the host. A few days later, the larvae die and release millions of new viruses into the environment.
Our baculovirus products

We offer a large number of plant protection products based on baculoviruses against a range of different pest insects.

Our baculoviruses are formulated into a stable and highly concentrated product, which is ready-to-use and can easily be combined with other plant protection products.

Our baculovirus products are manufactured in our production facilities in Switzerland or Canada. Every produced batch undergoes a systematic bioassay process. The high virulence of each batch is tested against a standard reference. Each batch is proven to be free of relevant human pathogens and proven not to exceed microbial contamination thresholds, as defined by the directives of plant protection registrations in each country.

Our baculovirus products are approved and listed for the use in organic farming in many countries. We received certificates from the Research Institute of Organic Agriculture (FiBL), OMRI, SGS, BFA, BioGro New Zealand, and others.

We also offer unformulated raw material.

CHARACTERISTICS

✔ Highly effective pest control
✔ Zero residues
✔ Unique mode of action
✔ Safe for user
✔ Harmless to beneficials and the environment
MADEX

Pest
Codling moth (Cydia pomonella) is one of the world’s most serious pests in apples and pears. Since it is able to adapt to various climatic conditions, management strategies need to be adjusted according to its local developmental characteristics.

Product
Madex contains a Cydia pomonella granulovirus and offers highly effective control of codling moth. Due to the alternative mode of action the product is an excellent tool for the sustainable management of the codling moth.

Madex was the first commercially available product based on baculovirus and has been successfully applied for 30 years. Madex can be used for organic production, but is also an effective product for use in IPM and conventional control programs against codling moth.

Madex Max, Madex Plus, Madex Top
The Madex line includes several products based on different CpGV isolates. They provide the necessary tools for a successful prevention and management of CpGV-resistant codling moth populations.

PRODUCT-FACTS

<table>
<thead>
<tr>
<th>Against</th>
<th>Codling moth (Cydia pomonella)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active ingredient</td>
<td>Cydia pomonella granulovirus (CpGV)</td>
</tr>
<tr>
<td>Formulation type</td>
<td>Suspension concentrate</td>
</tr>
<tr>
<td>Concentration</td>
<td>$3 \times 10^{13}$ GV/liter</td>
</tr>
<tr>
<td>Standard dosage</td>
<td>100 ml per ha</td>
</tr>
<tr>
<td>Crops</td>
<td>Apple, pear, walnuts, quinces and others</td>
</tr>
</tbody>
</table>
**MADEX TWIN**

**Pest**
Oriental fruit moth (*Grapholita molesta*) is a serious pest in stone fruit. It frequently migrates to pome fruit orchards in the late season, where it can cause substantial fruit damage before harvest. Oriental fruit moth is able to complete its entire life cycle on alternative hosts such as apple, cherry, plum and quinces.

**Product**
Madex Twin provides a highly specific and residue-free combined control of oriental fruit moth and codling moth. Madex Twin is the right choice for commercial pome fruit orchards with Oriental fruit moth and codling moth infection and also offers a new biological control option of Oriental fruit moth in stone fruit.

---

**PRODUCT-FACTS**

<table>
<thead>
<tr>
<th>Against</th>
<th>Oriental fruit moth and codling moth (<em>Grapholita molesta, Cydia pomonella</em>)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active ingredient</strong></td>
<td><em>Cydia pomonella granulovirus (CpGV)</em></td>
</tr>
<tr>
<td><strong>Formulation type</strong></td>
<td>Suspension concentrate</td>
</tr>
<tr>
<td><strong>Concentration</strong></td>
<td>$3 \times 10^{13}$ GV/liter</td>
</tr>
<tr>
<td><strong>Standard dosage</strong></td>
<td>100 ml per ha</td>
</tr>
<tr>
<td><strong>Crops</strong></td>
<td>Peach, nectarine, apple, pear, quince, apricot, almond, cherry, plum and walnut</td>
</tr>
</tbody>
</table>

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OMRI Listed
For organic use
CAPEX

Pest
Summer fruit tortrix (Adoxophyes orana) is present in Europe and Asia. The polyphagous caterpillars feed on leaves, buds and fruits, and can cause serious damage to various crops. In Asia, this species is a pest in tea plantations.

Product
Capex offers highly effective control of summer fruit tortrix populations. The infected larvae are killed in the last larval instar. On apples, the early application of Capex on overwintering larvae effectively reduces pest damage.

Infected larvae produce large amounts of new viruses, providing a high infection potential for the next generation. Capex can be combined with mating disruption and other insecticides.

PRODUCT-FACTS

Against
Summer fruit tortrix (Adoxophyes orana)

Active ingredient
Adoxophyes orana granulovirus (AoGV)

Formulation type
Suspension concentrate

Concentration
$5 \times 10^{13}$ GV/liter

Standard dosage
100 ml per ha

Crops
Apple, pear, rose, plum, cherry, apricot, peach, currant, gooseberry and others
CRYPTEX

Pest
The larvae of the false codling moth (*Thaumatotibia leu- cotreta*) are extremely polyphagous. They are responsible for major damage to citrus in Southern Africa, and to a large number of other crops in Sub-Saharan Africa. False codling moth is also present in Israel where it is causing damage in citrus crops, macadamia, avocado, pomegranates as well as other crops.

Product
Cryptex contains an isolate of *Cryptophlebia leucotreta* granulovirus (CrleGV) which was isolated from a population of false codling moth originating in South Africa.

Cryptex offers highly effective control of false codling moth populations. Cryptex can be applied without additives such as molasses or sugar and will prevent damage within the first year of application. Moreover, the use of Cryptex has a long term control effect on false codling moth populations if applied early in the season.
HELICOVEX

Pest
The cotton bollworm (Helicoverpa armigera) and other Helicoverpa species belong to the most damaging pests of economic importance on a global level. They are known to gradually develop resistance against several chemical substances. The larvae are extremely polyphagous and feed on many different plant structures including stems, leaves, flower heads and fruits. Moths are known to migrate over long distances.

Product
Helicovex is a tool for efficient and sustainable control of the cotton bollworm and other Helicoverpa species, such as Helicoverpa zea or Helicoverpa virescens. Considering its favourable toxicological and residue-free profile and the high compatibility with other products, Helicovex is well suited for organic production, integrated plant protection strategies and resistance management programs.

PRODUCT-FACTS

Against
Cotton bollworm (Helicoverpa armigera), corn earworm (Helicoverpa zea) and other Helicoverpa species

Active ingredient
Helicoverpa armigera nucleopolyhedrovirus (HearNPV)

Formulation type
Suspension concentrate

Concentration
$7.5 \times 10^{12}$ NPV/liter

Standard dosage
50 – 200 ml per ha (depending on the crop)

Crops
Soybean, tomato, sweet pepper, sweet corn, cotton, bean, tobacco, lettuce, sunflower and many others
**SPEXIT**

**Pest**
The beet armyworm (*Spodoptera exigua*) is one of the most destructive polyphagous pest species of worldwide economic importance. Beet armyworms occur in the warmer regions of Mediterranean countries, North America, Asia and Africa, and invade the cooler northern regions as temperatures permit.

Young beet armyworm larvae feed on the lower surface of leaves. Fully-grown larvae devour foliage completely, leaving only major veins.

**Product**
Spexit is suited for the efficient control of *Spodoptera exigua* larvae on various crops. The use of Spexit significantly reduces crop damage and pest population. Due to its high selectivity, Spexit is a valuable and efficient tool for integrated pest control programs using beneficial insects.

**PRODUCT-FACTS**

**Against**
Beet armyworm (*Spodoptera exigua*)

**Active ingredient**
*Spodoptera exigua* nucleopolyhedrovirus (SeNPV)

**Formulation type**
Suspension concentrate

**Concentration**
$3.75 \times 10^{12}$ NPV/liter

**Standard dosage**
200 ml per ha

**Crops**
Sweet pepper, tomato, melon, strawberry, sugar-beet, cotton, cabbage, lettuce, sweet corn, onion and many others

*OMRI Listed*
TUTAVIR

Pest
The tomato leafminer (Tuta absoluta) is a key pest in tomato production which shows resistance against several classes of pesticides. Introduced to Spain in 2006, it is now a major issue for European and African tomato producers and is rapidly spreading towards the Far East. Larvae mine into leaves and fruits where they feed and lead to severe damage.

Product
Tutavir contains a Phthorimaea operculella granulovirus for highly effective and selective control of the tomato leafminer. It is well suited for population and damage control. Due to its high specificity, Tutavir is the best candidate for integrated pest management programs, for example in greenhouses where beneficial insects are used. Furthermore, because of its unique mode of action, Tutavir is an important tool for resistance management in conventional and biological production systems.

PRODUCT-FACTS

Against
Tomato leafminer (Tuta absoluta)

Active ingredient
Phthorimaea operculella granulovirus

Formulation type
Suspension concentrate

Concentration
$2 \times 10^{13}$ GV/liter

Standard dosage
50 – 200 ml per ha

Crops
Tomatoes and other solanaceous crops
LITTOVIR

Pest
The egyptian cotton leafworm (Spodoptera littoralis; bottom right) and the fall armyworm (Spodoptera frugiperda; bottom left) are extremely polyphagous pests that attack more than 180 plant species of economic importance. The egyptian cotton leafworm is widespread in Africa, Middle East and the countries of the Mediterranean basin. The fall armyworm is widespread in South America and is spreading in North America and Africa.

While young larvae cause feeding damage to leaves, older caterpillars completely defoliate plants, bore into young stalks, buds, fruits and balls. Due to their biology and the risk of developing resistance against chemical insecticides, the control of Spodoptera littoralis as well as Spodoptera frugiperda is challenging.

Product
Littovir is a highly selective larvicide against the egyptian cotton leafworm and the fall armyworm. Littovir offers residue-free and effective control, resulting in more flexibility when included in existing pest control and resistance management strategies.

PRODUCT-FACTS

Against
Egyptian cotton leafworm (Spodoptera littoralis) and fall armyworm (Spodoptera frugiperda)

Active ingredient
Spodoptera littoralis nucleopolyhedrovirus (SpliNPV)

Formulation type
Suspension concentrate

Concentration
$5 \times 10^{11}$ NPV/liter

Standard dosage
50 – 200 ml per ha

Crops
Corn, strawberry, lettuce, tomato, sweet pepper, cotton, cabbage, potato, maize, melon, cocoa, rice, soybean, wheat and many others
**SPODOVIR**

**Pest**
The fall armyworm (*Spodoptera frugiperda*) is a highly polyphagous lepidopteran pest, feeding on at least 180 plant species from over 40 families and is causing major damage to economically important crops such as maize, sorghum, rice and soybean. *Spodoptera frugiperda* has its origin in the Americas and was first detected in Africa in 2016. Since then, fall armyworm is spreading rapidly across the African continent and cleaves its way east into Asia, where it is already present on the Indian subcontinent.

**Product**
Spodovir is a highly effective larvicide against the fall armyworm based on the *Spodoptera frugiperda* nucleopolyhedrovirus (SfMNPV). It offers farmers a safe and highly efficient tool against one of today’s most destructive and fast spreading agricultural pests.

**PRODUCT-FACTS**

- **Against**
  - Fall armyworm (*Spodoptera frugiperda*)

- **Active ingredient**
  - *Spodoptera frugiperda* nucleopolyhedrovirus (SfMNPV)

- **Formulation type**
  - Wettable Powder (WP)

- **Concentration**
  - $6 \times 10^9$ NPV/g

- **Standard dosage**
  - 25 – 100 g per ha

- **Crops**
  - Maize, Sorghum, Rice, Soybean and many others
LOOPOVIR

Pest
The soybean looper (Chrysodeixis includens) can be found on the American continent from Argentina to Canada. Its wide distribution and its polyphagous behavior, feeding on plants in 28 families, underlines the importance to develop adequate control tools and strategies. Although, soybean looper is feeding on a wide range of host plants, it is generally considered to be a major pest of soybean and tomato. On soybean, larvae start feeding on foliage in the lower canopy, once totally defoliated, pods are attacked.

Product
Loopovir is a highly effective biological tool to control soybean looper (Chrysodeixis includens). Loopovir also offers the farmer an important resistance management tool that can be included in every integrated pest management program (IPM).

PRODUCT-FACTS

Against
Soybean looper (Chrysodeixis includens)

Active ingredient
Chrysodeixis includens nucleopolyhedrovirus (ChinNPV)

Formulation type
Suspension concentrate

Concentration
$5 \times 10^{11}$ NPV/liter

Standard dosage
50 – 200 ml per ha

Crops
Soybean and others
**LOOPEX**

**Pest**
The cabbage looper (*Trichoplusia ni*) is a highly migratory and destructive pest of various crops, especially in greenhouses in North America, but is also widely distributed in the tropics and subtropics. Cabbage loopers can severely defoliate plants. Early instar larvae feed on the lower surfaces of leaves, while larger caterpillars cause more conspicuous damage. Resistances to various insecticides have become a severe problem in cabbage looper control.

**Product**
Loopex offers highly efficient biological control of *Trichoplusia ni* larvae, prevents damage and controls *T. ni* populations. Loopex is a valuable tool that can be included in any pest control program, especially as an additional resistance management tool and for the control of insecticide resistant *T. ni* populations. Due to its high selectivity, Loopex is a safe option for cabbage looper control in production systems using beneficial insects.

**PRODUCT-FACTS**

<table>
<thead>
<tr>
<th>Against</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabbage looper (<em>Trichoplusia ni</em>)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Active ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Autographa californica</em> nucleopolyhedrovirus (<em>AcMNPV</em>)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formulation type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspension concentrate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5 \times 10^{11}$ NPV/liter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 ml per ha</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typically on brassica crops e.g. cabbage, broccoli, collards, kale. Also present on: tomato, lettuce, pea, potato, etc.</td>
</tr>
</tbody>
</table>

**OMRI Listed**
For organic use.
**Baculovirus products for forest pests**

**Abietiv**
The balsam fir sawfly (*Neodiprion abietis*) is a native sawfly species that occurs throughout North America. Its larvae are a significant defoliating pest of balsam fir (*Abies balsamea*). *Neodiprion abietis* nucleopolyhedrovirus (*NeabNPV*) is a naturally occurring biocontrol agent for aerial application, isolated from sawfly populations in Newfoundland, Canada.

**Lymantria dispar MNPV**
The gypsy moth (*Lymantria dispar*) is present in North America, Europe, North Africa and Asia. Its larvae feed on developing leaves of more than 300 tree species causing significant growth loss in forested ecosystems. *Lymantria dispar* MNPV (*LdMNPV*) is a baculovirus product for efficient control of the gypsy moth larvae. *LdMNPV* is the specific solution for interfering in a complex and diverse ecosystem.
BB-PROTEC

**Beauveria bassiana for control of agricultural insect and mite pests**

Bb-Protec contains the insect-pathogenic fungus *Beauveria bassiana* strain R444 which infects and controls whitefly, spider mite, mealybug, and various other agricultural insect pests. Bb-Protec’s unique formulation prevents the fungal spores from drying out and enhances penetration and infection of the pest.

The active ingredient *Beauveria bassiana* R444, is a naturally-occurring, soil-borne entomopathogenic fungus. Beauveria spores attach to and penetrate through the “skin” or cuticle of the insect. Once inside the insect, the fungus grows and multiplies. Death is caused by internal tissue destruction. In numerous greenhouse and field trials Bb-Protec proved to be highly effective against mealybug, woolly aphid, spider mite, whitefly, false codling moth and other pests on a variety of crops.

**Advantages**
- Unique formulation
- Control of a broad spectrum of insect pests
- No residues and no withholding period after application
- Effective against all stages of the life cycle of most pests

**PRODUCT-FACTS**

**Against**
Various agricultural insect pests such as mealybug, woolly aphid, whitefly, spider mite, false codling moth, citrus red mite, and other insect pests

**Active ingredient**
*Beauveria bassiana* strain R444

**Formulation type**
Wettable powder

**Concentration**
$\geq 2 \times 10^9$ spores/g

**Standard dosage**
300 – 1000 g/ha as a full cover spray or drench into soil

**Crops**
Wide range of crops
NOMU-PROTEC


Metarhizium rileyi¹ for the control of various agricultural lepidopteran insect pests

Nomu-Protec contains the insect-pathogenic fungus *Metarhizium rileyi* strain 1705 which infects and controls pests from the Noctuidae family. Nomu-Protec’s unique formulation prevents the fungal spores from drying out and enhances penetration and infection through the “skin” or cuticle of the insect.

Once inside the insect, the fungus grows and multiplies. Death is caused by internal tissue destruction. Sporulation and further spread of *Metarhizium rileyi* in the field is possible.

Advantages

- Unique formulation
- Control of various lepidopteran pests, especially Noctuids
- No residues and no withholding period after application
- Well mixable with baculoviruses

PRODUCT-FACTS

**Against**

*Helicoverpa* spp., *Spodoptera* spp., *Chrysodeixis* spp. and various other Noctuids

**Active ingredient**

*Metarhizium rileyi* strain 1705

**Formulation type**

Wettable powder

**Concentration**

≥1 x 10⁹ spores/g

**Standard dosage**

300 – 1000 g/ha as a full cover spray

**Crops**

Wide range of crops

¹ Previously known as *Nomuraea rileyi*
AMYPROTEC 42

Protects your root system
AmyProtec 42 is a biological soil fungicide, containing spores of the naturally occurring soil bacteria *Bacillus amyloliquefaciens* FZB42. In the root zone, the bacteria outcompete soil-borne pathogens, such as Rhizoctonia and Erwinia, by accessing space and nutrients and creating a disease-inhibiting protective shield. AmyProtec 42 activates the plant's natural defence mechanisms through induced systemic resistance. Enhanced root growth allows the plant to faster escape the susceptible state before plant emergence. These elements combined prevent from damping off and stem infections caused by soil-borne pathogens.

AmyProtec 42’s unique mode of action helps the plant to build stronger and healthier roots and to improve its tolerance towards biotic (pathogens) and abiotic (water deficiency, salinity) stress.

A perfect tool for integrated programs
AmyProtec 42 can be mixed with almost all agrochemicals, using a wide range of application methods. Start treatments in early plant development and use AmyProtec 42 as an efficient part of integrated plant protection programs, as residue free resistance management tool and to reduce the use of conventional fungicides.

PRODUCT-FACTS

**Key benefits**
Pathogen displacement and induction of systemic resistance

**Active ingredient**
*Bacillus amyloliquefaciens* FZB42

**Formulation type**
Suspension concentrate

**Concentration**
> 2.5 × 10⁹ CFU/ml

**Standard dosage**
0.5 – 2 l/ha depending on crop and application method

**Application methods**
Seed treatment, drenching, soil-spraying, injection into hydroponics, in combination with agrochemical, etc.

UNTREATED CONTROL

AMYPRETEC 42
T-77

For Botrytis control and plant wound protection

T-77 contains the beneficial fungus *Trichoderma atroviride* 77B, a very effective aerial Trichoderma strain. The Trichoderma fungus colonizes any plant wound or senescing plant tissue, and prevents pathogens such as Botrytis and trunk diseases (e.g. *Eutypa lata*) from penetrating the plant. Thus, T-77 is effective against Botrytis on stems, leaves, flowers and fruits. In the same way, pruning wounds on grapevines and other fruit trees are protected against the entrance of pathogens. Grapevine trials have shown that the protecting fungus may still be present one year after application. Furthermore, T-77 also has the ability to parasitize and destroy fungal pathogens.

T-77 can either be applied as full cover spray or as a directed spray on pruned surfaces.

**Advantages**

- Prevents pathogen infection in senescing or damaged plant tissues
- Efficient Botrytis protection in greenhouses and open fields
- Fewer plant and yield losses
- Vineyard’s productive life is extended as a result of disease prevention (e.g. *Eutypa lata*)
- Increased postharvest shelf life

**PRODUCT-FACTS**

**Key benefits**
Colonizes damaged or senescing plant tissues and prevents pathogen infection, such as Botrytis spp., trunk diseases (e.g. *Eutypa lata*), Monilinia spp. etc.

**Active ingredient**
*Trichoderma atroviride* 77B

**Formulation types**
Wettable powder

**Concentration**
≥ 2 × 10⁹ spores/g

**Standard dosage**
250 – 750 g/ha

**Crops**
Grapes, tomato, onion, strawberry, nectarines, soybeans, etc.

[Image of grapes and tomatoes]
**T-GRO**

**For improved nutrient uptake and tolerance towards abiotic stress**

T-Gro contains spores of *Trichoderma asperellum* strain kd, a soil-borne strain selected through extensive research. *Trichoderma* spores germinate in the soil and colonize the root zone of the plant. T-Gro enhances nutrient mobilization and plant resistance to stress caused by sub-optimal conditions, such as waterlogging, drought or others. Thus, T-Gro supports the plant to develop a larger, healthier and more effective root system and can be applied to most crops.

Good results have been achieved on various crops, including potatoes, vegetables, nursery crops, pastures, fruit trees and turf. The method of application is flexible and depends on the crop type. T-Gro can be applied as a seed treatment, as an in-furrow spray or as a soil drench.

**Advantages**
- Enhanced nutrient mobilization
- Increase in crop quality and yield possible
- Improved tolerance to abiotic stress
- Versatile application methods
- Fully compatible with organic and residue free production

---

**PRODUCT-FACTS**

- **Key benefits**
  - Growth stimulation and enhanced nutrient mobilization

- **Active ingredient**
  - *Trichoderma asperellum* strain kd

- **Formulation type**
  - Wettable Powder

- **Concentration**
  - $\geq 2 \times 10^9$ spores/g

- **Standard dosage**
  - 250 – 500 g/ha

- **Crops**
  - Wide range of crops
T-GRO EASY-FLOW

Specific Trichoderma formulation for crops sown with mechanical planters
T-Gro Easy Flow is a specially formulated Trichoderma asperellum product on a graphite and talc based carrier. It is the perfect seed flow lubricant to use with mechanical planters. T-Gro Easy Flow improves nutrient mobilization and helps buffering stress caused by extreme conditions such as waterlogging, drought or others. The formulation offers additional benefits to planting efficiency, such as a more even plant stand, no more skipped or doubled seeds, and more seeds planted per hectare.

The powder is sprinkled on top of the seed in the seed hopper and stirred into the top seed layers. As the tractor moves, the bouncing of the seed hopper ensures even distribution of the powder throughout the hopper. T-Gro Easy-Flow is the perfect Trichoderma seed treatment for broad acre crops like maize or wheat.

PRODUCT-FACTS

Key benefits
Specially designed to use with mechanical planters, more even plant stand, enhanced nutrient mobilization, improved tolerance towards abiotic stress and improved seed flow

Active ingredient
Trichoderma asperellum strain kd

Formulation type
Graphite and talc based dry powder formulation

Concentration
$\geq 2 \times 10^9$ spores/g

Standard dosage
1 – 40 g/kg seed (depending on seed size)

Crops
For crops sown with mechanical planters
RHIZOVITAL 42 / C5 / P45

The next generation plant inoculant

The product-line RhizoVital offers a range of biostimulating microbial inoculants, containing spores of the naturally occurring soil bacteria *Bacillus amyloliquefaciens* or *Bacillus atrophaeus*. The bacteria germinate in the soil and release enzymes which stimulate nutrient mobilization. RhizoVital supports the availability of plant nutrients which can lead to an increase in yield response. Tolerance to stress caused by unfavorable climatic conditions and field management can be improved. Use RhizoVital as an integral part of a future oriented production strategy.

<table>
<thead>
<tr>
<th>RhizoVital 42</th>
<th>RhizoVital P45</th>
<th>RhizoVital C5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria species</td>
<td><em>Bacillus amyloliquefaciens</em></td>
<td><em>Bacillus atrophaeus</em></td>
</tr>
<tr>
<td>Strain</td>
<td>FZB42</td>
<td>FZB45</td>
</tr>
<tr>
<td>Key properties</td>
<td>Increased plant nutrient mobilization</td>
<td>Increased phytase-production favors P-mobilization</td>
</tr>
<tr>
<td>Temperature range for spore germination</td>
<td>12 – 45 °C</td>
<td>8 – 42 °C</td>
</tr>
<tr>
<td>Formulations</td>
<td>SC (liquid suspension concentrate) 2.5 × 10^10 cfu/ml</td>
<td>TB (talcum based dry powder) 1 × 10^9 cfu/g</td>
</tr>
<tr>
<td>WG (starch based wettable granulate) 5 × 10^10 cfu/g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shelf-life</td>
<td>2 years, when stored &lt; 25 °C, dry and protected from sunlight</td>
<td></td>
</tr>
<tr>
<td>Compatibility</td>
<td>Compatible with fungicides and other plant protection products</td>
<td></td>
</tr>
</tbody>
</table>

† All Bacillus strains are also available as raw material e.g for the formulation with fertilisers, seed coatings, etc.
ROOTWIN-S / ROOTWIN-A

Effective Rhizobium inoculants for optimal nitrogen fixation in soya and alfalfa crops
Crop specific Rhizobium strains guarantee a maximum level of N₂-fixation. Both products contain bacterial cells of specific nitrogen fixing Rhizobium strains with high nodulation and fixation abilities. The unique granular formulation offers high concentration of bacterial cells within protective capsules giving the products natural sticking properties for seed treatments.

Advantages
- Easy to use and compatible with standard seed treatment equipment
- Increased yields and improved crop uniformity
- N-fertilizer application is not needed
- No additional stickers required
- High nodulation and N₂-fixation

RootWin PLUS – Best results are obtained in combination with T-Gro (Trichoderma asperellum, page 22): The RootWin PLUS Packs provide a unique combination of both microbial innoculants in one pack.
**DROSAL PRO**

Drosal Pro is a cup trap system for the monitoring or mass trapping of spotted-wing drosophila (Drosophila suzukii).

The cup traps can be filled with specific lures for Drosophila suzukii. The lures attract spotted-wing drosophila into the body of the trap, where they drown. The cup traps can be reused for several years. The Drosal Pro cup trap system is suited to be a component of a comprehensive control strategy in combination with other measures against spotted-wing drosophila.

**ADVANTAGES OF DROSAL PRO**

- Very easy set-up
- Reusable
- Can be filled with the preferred lure (i.e. DrosaLure)
- Shown to work in commercial operations
- No waiting periods, no residue problem

**DROSALURE**

DrosaLure is a highly attractive and stabilised attractant for spotted-wing drosophila. It is composed of cider vinegar, red wine, sugar and natural flavors and can be used with Drosal Pro or any other kind of liquid trap.

**ADVANTAGES OF DROSALURE**

- Specific attractant for Drosophila suzukii
- Natural ingredients
- Compatible with any kind of liquid trap
REBELL – Coloured sticky traps

Rebell amarillo  Yellow traps for reliable monitoring or mass trapping of fruit flies
Rebell bianco     Monitoring of sawflies and for the control of raspberry beetles
Rebell blu        Monitoring of thrips
Rebell giallo     Monitoring of white flies, leafminers, sciarid flies, etc.
Rebell orange     Monitoring of carrot flies
Rebell rosso      Monitoring or mass trapping of shothole borers in orchards and vineyards
Glurex forte      Biodegradable solvent for the cleaning of Rebell traps
Tangle-Trap glue Insect glue for the reuse of Rebell traps

APHINITY EAB

Combination of a pheromone, a host leaf volatile, together with a green sticky trap for monitoring and early detection of Emerald Ash Borer (Agrilus planipennis).

ADVANTAGES OF REBELL TRAPS

✔ Specific, cadmium-free colours ensure high reliability and low by-catches
✔ Integrated UV-filter assuring long-lasting colour fastness
✔ Strong polypropylene protects the traps from deformation
✔ Very strong glue performs even under severe weather conditions
✔ Possible to clean and re-use
PHERONORM

Andermatt Biocontrol offers a large range of lures for monitoring of economically important pest species:

<table>
<thead>
<tr>
<th>Pest Species</th>
<th>Lure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrolepiopsis assectella</td>
<td>Leek moth</td>
</tr>
<tr>
<td>Adoxophyes orana</td>
<td>Summer fruit tortrix</td>
</tr>
<tr>
<td>Agrotis ipsilon</td>
<td>Black cutworm</td>
</tr>
<tr>
<td>Agrotis segetum</td>
<td>Turnip moth</td>
</tr>
<tr>
<td>Anarsia lineatella</td>
<td>Peach tree borer</td>
</tr>
<tr>
<td>Anthonomus rubi</td>
<td>Strawberry blossom weevil</td>
</tr>
<tr>
<td>Autographa gamma</td>
<td>Sylver-Y moth</td>
</tr>
<tr>
<td>Bactrocera oleae</td>
<td>Olive fly</td>
</tr>
<tr>
<td>Byturus tomentosus</td>
<td>Raspberry beetle</td>
</tr>
<tr>
<td>Cameraria ohridella</td>
<td>Chestnut leafminer</td>
</tr>
<tr>
<td>Ceratitis capitata</td>
<td>Medflies</td>
</tr>
<tr>
<td>Contarinia nasturtii</td>
<td>Swede midge</td>
</tr>
<tr>
<td>Cossus cossus</td>
<td>European goat moth</td>
</tr>
<tr>
<td>Cydia nigricana</td>
<td>Pea moth</td>
</tr>
<tr>
<td>Cydia pomonella</td>
<td>Codling moth</td>
</tr>
<tr>
<td>Cydia splendana</td>
<td>Chestnut tortrix</td>
</tr>
<tr>
<td>Dasineura gledichiae</td>
<td>Honey locust pod gall midge</td>
</tr>
<tr>
<td>Diabrotica virgifera</td>
<td>Western corn rootworm</td>
</tr>
<tr>
<td>Diaphania perspectalis</td>
<td>Box tree moth</td>
</tr>
<tr>
<td>Enarmonia formosana</td>
<td>Cherry bark tortrix</td>
</tr>
<tr>
<td>Eupoecilia ambiguella</td>
<td>European grape berry moth</td>
</tr>
<tr>
<td>Grapholita funebrana</td>
<td>Plum fruit moth</td>
</tr>
<tr>
<td>Grapholita lobarzewskii</td>
<td>Small-fruittortrix</td>
</tr>
<tr>
<td>Grapholita molesta</td>
<td>Oriental fruit moth</td>
</tr>
<tr>
<td>Holyomorpha halys</td>
<td>Brown marmorated stink bug</td>
</tr>
<tr>
<td>Helicoverpa armigera</td>
<td>Cotton bollworm</td>
</tr>
<tr>
<td>Helicoverpa virescens</td>
<td>Tobacco budworm</td>
</tr>
<tr>
<td>Leucophaea scitella</td>
<td>Pear leaf blister moth</td>
</tr>
<tr>
<td>Lobesia botrana</td>
<td>Grapevine moth</td>
</tr>
<tr>
<td>Lygus rugulipennis</td>
<td>European tarnished plant bug</td>
</tr>
<tr>
<td>Lymantria dispar</td>
<td>Gypsy moth</td>
</tr>
<tr>
<td>Mamestra brassicae</td>
<td>Cabbage moth</td>
</tr>
<tr>
<td>Ostrinia nubilalis (Z)</td>
<td>European corn borer</td>
</tr>
<tr>
<td>Pammene rhadiella</td>
<td>Fruitlet mining tortrix</td>
</tr>
<tr>
<td>Pandemis heparana</td>
<td>Apple brown tortrix</td>
</tr>
<tr>
<td>Pennistia hylaeiformis</td>
<td>Raspberry clearing moth</td>
</tr>
<tr>
<td>Phthorimaea operculella</td>
<td>Potato tuber moth</td>
</tr>
<tr>
<td>Plodia interpunctella</td>
<td>Indian meal moth</td>
</tr>
<tr>
<td>Plutella xylostella</td>
<td>Diamond back moth</td>
</tr>
<tr>
<td>Quadraspidiotus perniciosus</td>
<td>San Jose scale</td>
</tr>
<tr>
<td>Resseliella theobaldae</td>
<td>Raspberry cane midge</td>
</tr>
<tr>
<td>Rhagoletis cerasi</td>
<td>Cherry maggot</td>
</tr>
<tr>
<td>Sparganothis pilleriana</td>
<td>Grape leaf roller</td>
</tr>
<tr>
<td>Spilonota ocellana</td>
<td>Eye-spotted bud moth</td>
</tr>
<tr>
<td>Spodoptera exigua</td>
<td>Beet armyworm</td>
</tr>
<tr>
<td>Spodoptera frugiperda</td>
<td>Fall armyworm</td>
</tr>
<tr>
<td>Spodoptera littoralis</td>
<td>Egyptian cotton leafworm</td>
</tr>
<tr>
<td>Synanthedon myopaeformis</td>
<td>Apple clearing moth</td>
</tr>
<tr>
<td>Synanthedon tipuliformis</td>
<td>Currant clearing moth</td>
</tr>
<tr>
<td>Tuta absoluta</td>
<td>Tomato leafminer</td>
</tr>
<tr>
<td>Zeuzera pyrina</td>
<td>Leopard moth</td>
</tr>
</tbody>
</table>

Lures for other pest species available on demand
Smart solutions for efficient rodent control

topcat – The vole trap.
The internationally patented topcat-trap is a very efficient, high-quality trap for catching voles from both tunnel directions. topcat is characterized by its sensitive release mechanism and its ability for above ground control of capture. topcat allows for quick and easy handling in a comfortable and hygienic operating position.

topsnap – The clever mousetrap.
topsnap is exceptionally effective: its tunnel-like body awakens the natural curiosity of mice and guarantees in combination with the highly sensitive, two-sided trapping mechanisms, excellent results. topsnap is the environmental- and user-friendly alternative to toxic bait, for long-term use in indoor- and outdoor-areas.

standby – The vole fence.
The internationally patented standby system is an easy and effective tool to prevent (re-)immigration of voles into a valuable area. Once installed, the reliable and proven system is self-governed. Natural predators (foxes, cats and others) empty the live-catch traps along the fence by lifting the flip-top of the traps.

ADVANTAGES OF THE TOPCAT-TRAP
✔ High quality product made of stainless steel (rust-free)
✔ Quick and easy handling
✔ Catches from both tunnel directions
✔ Very sensitive release mechanism
✔ Can be used against voles, field mice, etc.

ADVANTAGES OF THE TOPSNAP-TRAP
✔ Innovative two-sided trapping system against small mice moving above ground
✔ High quality product made of stainless steel and solid plastic
✔ Easy, fast and secure activation of the trap from the outside
✔ Contact-free release of catch
✔ Safe for users, infants and domestic animals
Beneficial insects

Adalia bipunctata against aphids and Phytoseiulus persimilis against spider mites.

Insect feed

_Ephestia kuehniella_  
Frozen eggs of _Ephestia kuehniella_ serve as a main food source in the production of many different beneficial insects.

Insect diet  
Artificial diet for the rearing of insects.

Insects for research

African cotton leafworm (Spodoptera littoralis), Balsam fir sawfly (Neodiprion abietis), Beet armyworm (Spodoptera exigua), Cabbage looper (Trichoplusia ni), Codling moth (Cydia pomonella), Cotton bollworm (Helicoverpa armigera), Diamondback moth (Plutella xylostella), Gypsy moth (Lymantria dispar), Oriental fruit moth (Grapholita molesta), Potato tuber moth (Plthorimaea operculella), Summerfruit tortrix (Adoxophyes orana)

PRODUCT-FACTS

Andermatt Biocontrol has many years of experience in the production of beneficial insects.

PRODUCT-FACTS

In the course of the production of baculovirus products, Andermatt Biocontrol and its Canadian subsidiary Sylvar have an interesting range of insects on offer for research purposes.
Entomopathogenic nematodes

Entomopathogenic nematodes occur naturally in the environment as parasites of many insect larvae. The mass release of these nematodes provides an efficient and curative control of key insect pests in a wide range of crops. Once released, nematodes actively seek out their hosts and penetrate into the insect releasing symbiotic bacteria that multiply and rapidly kill the insect.

Heterorhabditis bacteriophora
Black vine weevil (Otiorhynchus sulcatus), Garden chafer (Phyllopertha horticola), Hazelnut borer (Balaninus nucum), Welsh chafer (Hoplia spp.), Dung beetle (Aphodius spp.) and many others

Steinernema feltiae
Fungus gnat (Sciaridae), Overwintering codling moth (Cydia pomonella), Western flower thrips (Frankliniella occidentalis), Leafminers

Steinernema carpocapsae
Mole cricket (Gryllothalpa gryllothalpa), Overwintering codling moth (Cydia pomonella), Crane flies (Tipula spp.), Cutworms (Agrotis spp.), Red palm weevil (Rhynchophorus ferrugineus), Palm borer (Paysandisia archon), Duponchelia fovealis, Sycamore lace bug (Corythucha ciliata) and many others

ADVANTAGES

Entomopathogenic nematodes are a natural product and safe for users, consumers and the environment.

Andermatt Biocontrol has more than 20 years of experience related to the production of entomopathogenic nematodes.

Easy application with AquaNemix.
CURATIO

Curatio is based on the active ingredient lime sulphur and is suited for controlling fungal diseases like scab, sooty blotch, Marssonina and powdery mildew. Curatio with its unique mode of action is a curative and preventive fungicide which is able to protect apples during long-lasting rainfalls without risk of resistance development.

VITISAN

Vitisan is a contact fungicide with preventive and curative effects against a wide range of fungal diseases. The effective fungicide is based on potassium bicarbonate with compelling advantages against oidium and botrytis in grapes. Vitisan also controls powdery mildew and botrytis in vegetables, soft fruits and ornamentals as well as scab and sooty blotch in pome fruits.

For further information please contact contact@biofa-profi.de
SilicoSec is a non-chemical natural alternative for the control of insects in stored grains and storage rooms. SilicoSec is a contact insecticide, active against all kinds of crawling insects, also against moth larvae. It is applied to the preferred hiding places and travel routes of the insects.

InsectoSec is a natural dustable powder which controls effectively the red fowl mite. Besides red fowl mites, all kind of hygiene pests such as ants, silver fish, cockroaches and woodlice can be controlled with InsectoSec effectively. The effect is based on absorption of the lipid layer, of the arthropod chitin exoskeletons. By destroying the natural water barrier InsectoSec is leading to death of the harmful insects through desiccation.

For further information please contact contact@biofa-profi.de
Fenicur, Pyrethrum FS and Quassan are manufactured in Switzerland.

Each of these products are registered as plant protection product in Switzerland and listed by the Swiss Research Institute of Organic Agriculture (FiBL) for the use in organic farming.

Fenicur

A fennel oil based fungicide that is used against powdery mildew and rust.

Pyrethrum FS

A biopesticide based on Pyrethrin (without Piperonyl butoxide) that is used against aphids, spider mites, whiteflies, thrips, etc.

Quassan

A biopesticide based on Quassia amara, that is used against apple sawflies, aphids, etc.
Andermatt Biocontrol is certified according to ISO 9001:2015
Structure of the Andermatt Holding

Andermatt Biocontrol is embedded in the family- and employee-owned Andermatt Holding, which has more than 200 highly motivated employees. The company owns shares of several other companies listed below:
Subsidiaries of Andermatt Biocontrol

Sylvar Technologies Inc.
www.sylvar.ca
Stefan Richard  — srichard@sylvar.ca

Andermatt do Brasil Soluções Biológicas Ltda.
www.andermatt.com.br
Markus Ritter  — info@andermatt.com.br

Andermatt USA Corporation
www.andermattusa.com
Russell Blair  — contact@andermattusa.com

Madumbi Sustainable Agriculture
www.madumbi.co.za
Andre Fox  — support@madumbi.co.za

Madumbi East Central Africa
Andre Fox  — support@madumbi.co.za

Madumbi East Africa
Stephen Musyoka  — stephen@madumbi.co.za

Plant Health Products (Pty) LTD
www.plant-health.co.za
Mike Morris  — info@plant-health.co.za

Andermatt Biocontrol UK Ltd.
www.andermattuk.com
Andrew Brown  — contact@andermattuk.com

Andermatt France
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Biofa AG
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Stefan Reissner, Frank Volk  — contact@biofa-profi.de
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