Preliminary analysis showed that most of them are presumably cyclic lipopeptides.
Conclusions: Developed biopesticides may be used to form self-defense system of winter wheat and other crops protection or included in the system or integrated protection, reducing the pesticide load on agrocnosises.
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P N-CCO 158
Evaluation of the efficacy of antifungal activity of the heat treated culture filtrate of *Streptomyces philanthi* RM-1-138 against rice sheath blight disease
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Rice sheath blight disease caused by *Rhizoctonia solani* is an economically important disease in rice production and accounted about 20% of the yield loss in Thailand. Biocontrol is a promising method to control the disease and species of *Streptomyces* have a very potential application. They are ubiquitous in the environment and many of them produce various secondary metabolites with diverse antifungal activities. *S. philanthi* RM-1-138 isolated from the rhizosphere soil of chili peppers grown in southern Thailand, was found to produce a strong antifungal metabolite that inhibited a range of plant pathogens both in volatiles and non-volatile forms. In this study, the efficacy of the antifungal activity of the heat treated culture filtrate of *S. philanthi* RM-1-138 against *R. solani* PTRRC-9 *in vitro* and on rice plants was evaluated. Results indicated that the heat treatment on the culture filtrate at 40ºC, 60ºC, 80ºC, and 100ºC for 30 min and 121ºC for 15 min had no negative effect on the suppression of antifungal activity against *R. solani* PTRRC-9 tested on both solid and liquid culture. The results indicated the thermal stability of the antifungal substance in the culture filtrate. The effective dose (>80% inhibition) of culture filtrate in liquid culture was found to be at 5.0% (v/v) while it was at 10% (v/v) in solid culture. The greenhouse experiment revealed that using either culture filtrate or the autoclaved culture filtrate of *S. philanthi* RM-1-138 could effectively suppressed the rice sheath blight disease up to 65.6 and 60.8%, respective.

P N-CCO 159
Effectiveness of bee propolis to control bacterial wilt of tomato caused by *Ralstonia solanacearum*
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Bacterial wilt (***Ralstonia solanacearum***) of tomato causes a considerable amount of damage to tomato all over the world. Propolis is a resinous mixture that honey bees collect from botanical sources. Based on antagonistic activity against ***R. solanacearum***, three concentrations of aqueous propolis extract (1, 10 and 100 mg/ml) (***PC1***, ***PC2*** and ***PC3***) were selected to study their effect on bacterial wilt of tomato under greenhouse and field conditions. In both greenhouse and field experiments, the ***PC3*** gave the highest reduction of disease severity than ***PC1*** and ***PC2***, also this concentration, ***PC3,*** caused higher biomass, 18.27 % than control plants. As recorded after treatment in field experiments, the control efficacy caused by ***PC3*** were 76.9 and 71.7%, respectively in the two trials seasons. and yield increases of ***PC3*** was about 82.3% in both trials. This is the first report of using propolis against bacterial wilt of tomato in the world and may be the first in bacterial plant disease management.

P N-CCO 161
In vivo* assay to compare efficacies of biotechnological plant protection agents against *Phytophthora infestans
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Question: In a research project, supported by funds of the Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) based on a decision of the Parliament of the Federal Republic of Germany via the Federal Office for Agriculture and Food (BLE) under the innovation support programme, biotechnological fungicides to control oomycetes are under development.

These fungicides contain antagonistic bacterial or yeast strains as active ingredients. Artificial inoculations of tomato leaf discs with *Phytophthora infestans* were used as an *in vivo* test system to test the influence of theproduction processes and formulations on the efficacy of the antagonists.
Methods: For strain selection the toxicity and pathogenicity data from literature were considered. The efficacy of selected bacterial and yeast strains against *P. infestans* were tested on tomato leave discs in different formulations. For evaluation of the tests the sporangia formation was quantified and compared to the sporangia formation in untreated control and of leave discs treated with a chemical standard. Furthermore different steps in the production and formulation processes were investigated to compare the efficacy against *P. infestans*.
Results: The efficacy of test preparations based on antagonistic microorganisms was at the same level as the efficacy of copper. In addition the combination of microorganisms and copper allowed a copper reduction to a tenth of the recommended dose compared to copper standalone treatments. The influence of various steps in the production processes and formulations on efficacy against *P. infestans* was identified and conclusions for the optimized production and formulation of the antagonists can be realized.
Conclusion: An improved leaf disc assay to test the efficacy of fungicides based on bacterial and yeast strains against *P. infestans* was developed. Regarding the formation of sporangia of *P. infestans* and not only the infected leaf disc area increased the selectivity of the test system. The production procedures and formulations of the antagonists were optimized for efficacy of the preparation.

P N-CCO 162
A New Potential Biological Control Agent for Field Bindweed in Turkey: *Titanio* sp.
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Field bindweed (*Convolvulus arvensis* L.) is a problematic weed species in cultivated areas, especially wheat and cotton fields in Turkey. *Titanio* sp. was firstly seen on this weed species in an organic farm in Sanlıurfa province, which is located Southeast Anatolia region of Turkey. Medicinal and aromatic plants are grown, pesticides have not been used for 15 years, field binweed is dense and widespread in this farm.
Field bindweed can be suppressed by feeding of *Titanio* sp. according to our field observations. The larvae of *Titanio* sp. feeds between the two epidermis level of leaves, causes a transparent state and swell of the leaves like a balloon and mature larvae gets pupa under the soil. This review presents potentiel of this biological agent for controlling field bindweed.

P N-CCO 163
Transformation of plants with bacteriocins for pathogen resistance
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Antimicrobial peptides (AMPs) are short peptides produced by plants, animals, and other organisms. They are part of a primitive defence system with a narrow or broad spectrum of activity against plant pathogens. Bacteriocins are the type of AMPs produced by bacteria and and archaea. Based on their activity, they can be recruited as defensive tools against resistant pathogens like *Pseudomonas syringae*. In this study, several different classes of bacteriocins with different modes of action have been chosen as suitable candidates for plant transformation. They were synthesised and cloned into suitable binary vectors for plant transformation, including Arabidopsis and tomato. Plants expressing bacteriocins will be challenged with pathogens to find resistant lines. The results will be used to generate crops with multiple disease resistance.

P N-CCO 164
Impact of entomopathogenic bacterial symbionts, *Photorhabdus luminescens,* and *Bacillus thuringiensis* subsp. *tenebrionis* on management of red palm weevil, *Rhynchophorus ferrugineus* (Olivier) in Egypt
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The red palm weevil, ***Rhynchophorus ferrugineus*** (Olivier), is considered to be one of the most lethal pests affecting date palms in Egypt, where the average rate of annual infestation is about 2.5. After its detection in the Egyptian palm area at 1992, it