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Plant protection products for organic agriculture

Use, regulations and European perspectives

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PHYTOPHARMACEUTICAL PRODUCTS STATUTORY POINT ON THEIR USE IN ORGANIC FARMING LES PREPARATIONS NATURELLES PEU PREOCCUPANTES (PNPP (RELATIVELY HARMLESS NATURAL PREPARATIONS)) EVOLUTIONS OF THE REGULATIONS

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Phytopharmaceutical products are defined under Article L.253-1 of the rural code as:
'*preparations containing one or more active substances and products composed wholly or partially of genetically modified organisms presented in the form in which they are delivered to the final user, intended for:*

a) Protecting plants or plant products against or preventing the action of all harmful organisms;
b) Influencing the vital processes of plants insofar as it does not involve nutrients;
c) Ensuring preservation of plant products, except substances and products that are subject of a specific community regulation on preservatives;
d) Destroying undesirable plants;
e) Destroying parts of plants, restricting or preventing an undesirable growth of the plants;'

Products known as elicitors, which stimulate of the natural defences of plants, and relatively harmless natural preparations (*Préparations Naturelles Peu Préoccupantes* (PNPP)) are included in the definition of phytopharmaceuticals. However, the provisions of Chapter III of the rural code (concerning marketing) do not apply to PNPPs, which are covered by a simplified procedure, set by Decree (Decree no. 2009 792 of 23 June 2009, appearing in the Official Journal of the French Republic of 25 June 2009).

Micro-organisms are also covered by Appendix I of Directive 91/414/EC (Art. R.253.5 of the rural code). Substances that are used to protect plants by a simple type of physical protection (a barrier) are not covered by Appendix I of Directive 91/414/EC (with the exception of kaolin). Macro-organisms are not covered by this Directive.

The use of a phytopharmaceutical product depends on the conditions set under Directive 91/414/EC being met, that is, on registering the active substance(s) included in its composition under Appendix I and respecting the conditions set by French legislation (holding a marketing authorisation (*Autorisation de Mise sur le Marché* (AMM)).

The use of a phytopharmaceutical product in Organic Farming depends on meeting the two preceding points as well as complying with the legislation on 'Organic Farming' (RCE 834/2007 and RCE 889/2008 - Parts 1 & 2) which lists the active substances that may be used in the context of Organic Farming.

The use of a commercial speciality clearly remains subordinate to respecting the conditions for award of the marketing authorisation (AMM) that includes the uses, the doses, the untreated areas and the general and specific instructions for use.

However, Regulation no. 889/2008 (Part 2) lists the active substances not included in Appendix I of Directive 91/414/EC. This difference makes readability difficult for users when using these molecules in Organic Farming. The commercial specialities that contain active substances listed in RCE no. 889/2008 but are not included in Appendix I of Directive 91/414/EC and/or that do not have marketing authorisation on the national territory are not authorised for use in France.

Regulation no. 889/2008 (Part 2) also indicates a 'biocompatibility' of certain families of molecules (vegetable oils, paraffin oils, pheromones and micro-organisms). The user should pay special attention by verifying the genuine registration of some molecule or another in Appendix I (91/414/EC)

and of the existence of commercial speciality(ies) that have marketing authorisation on the national territory.

The use of macro-organisms as auxiliaries, although not listed in RCE no. 889/2008, is authorised in Organic Farming.

Decree no. 2009-792 of 23 June 2009 on marketing relatively harmless natural preparations in phytopharmaceutical use appeared in the Official Journal of the French Republic of 25 June 2009.

This last amended the regulatory part of the rural code by adding section 7 to Chapter III of Title V of Book II (Arts. R.253-86 to R.253-96). It specifies, among other things, what is understood by 'relatively harmless natural preparations' (PNPP), that is, any preparation that satisfies the following two conditions:

- Being created exclusively from one or more natural elements not genetically modified.
- Being obtained by a process that is accessible to all final users.

The natural element(s) should nonetheless have been subject to a procedure to register it on the community list of active substances (in application of Arts. R.253-5 et. seq. of the rural code) and not subject of a decision to refuse to register. They must be 'as is', that is, not treated, or treated only manually, mechanically or gravitationally, by dissolving in water, by flotation, by water extraction, by steam distillation or by heating only to eliminate the water. These elements should not be identified as T+, T or CMR (Very Toxic, Toxic or Carcinogenic, Mutagenic, toxic to Reproduction).

A 'process accessible to all final users' corresponds to all processes for which the final user is capable of carrying out every stage of the preparation. Nonetheless, and without prejudice to the points previously raised, the ingredient may be acquired with outside undertakings when only these are capable of providing it and if the latter do not make the preparation themselves.

This Decree was followed by an implementation decree dated 8 December 2009 (Official Journal of the French Republic release of 13 December 2009). The latter defines two categories of PNPPs (natural elements manufactured from plants or manufactured from vegetable extracts) and establishes the method of registration and of instruction of the files in the context of the simplified PNPP procedure.

In addition to this provision, a list of the natural elements from which relatively harmless natural preparations can be created will be published in the official journal of the Minister for Agriculture.

Directive 91/414/EC will be repealed by Regulation no. 1107/2009 of 21 October 2009, which appeared in the OJEU of 24 November 2009 and which will enter into force on 14 June 2011 at the latest. This will be followed by a specific regulation containing the list of active substances already approved at the time RCE no. 1107/2009 was adopted. This last introduces the notions of the low-risk active substance (Art. 22) and phytopharmaceutical product (Art. 47).

Directive 2009/128/EC of 21 October 2009, introducing a framework of action that allows use of pesticides compatible with sustainable development, appeared in the OJEU of 24 November 2009. This last directive, in particular, promotes non-chemical methods and especially Organic Farming (Art. 14). It establishes general principles in integrated pest management (Appendix III) by promoting the means of prevention and/or eradication of harmful organisms and implementing organic and physical methods and other non-chemical methods to control crop pests.

Nationally, the Ecophyto Plan 2018, with its objective of reducing the use of phytopharmaceutical products, aims at making available to users inputs that assist in this reduction (covenant no. 126) and to make it easier to market alternative products, especially bio-control products (*Fiche Action 17B*).

PHYTOPHARMACEUTICAL PRODUCTS IN BELGIUM: CURRENT AND FUTURE LEGISLATION

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ABSTRACT

Every phytopharmaceutical product, regardless of whether it is intended for organic or conventional farming, must be certified before it may be used. The authorisation for marketing active substances falls within the European jurisdiction while the onus of accepting commercial products falls to the Member States. The list of active substances that can be used in organic farming is provided in Annex II to Commission Regulation (EC) no. 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) no. 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control.

On 21 October 2009, the European Parliament and the Council adopted a new legislative package on 'pesticides' the objective of which was to implement a thematic strategy on the sustainable use of pesticides. The objective of this new legislation is to improve protection of human health and of the environment. After a review of the current legislation, we will consider the chief requirements of these new texts and highlight the differences expected after this new legislative package is adopted.

IMPORTANCE OF PYREVERT IN PROTECTING VEGETABLE CROPPINGS (LETTUCE APHIDS AND CRUCIFER FLEA BEETLES)

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ABSTRACT

Systems of organic vegetable production in the north of France are very efficient as regards phytosanitary inputs. Nonetheless, it is necessary in some cases to resort to the use of insecticides, especially to control crucifer flea beetles or aphids. And yet, with the prohibition on the use of rotenone, French market gardeners no longer have any authorised alternative.

Therefore, FREDON Nord Pas-de-Calais carried out, at the request of the *Groupement des agriculteurs biologiques du Nord Pas-de-Calais* (GABNOR), trials the aim of which was to find alternatives to rotenone. This work was carried out in the framework of VETABIO[1].
Two trials were carried out on crucifer flea beetles to measure the effectiveness of PYREVERT, a speciality based on natural pyrethrins. Two trials were conducted to test this product on the main species of lettuce aphid found in the north of France: *Nasonovia ribinigri*, one trial to measure the efficiency of PYREVERT, and a second trial to measure its persistence. All four trials were carried out under controlled conditions in the climatic chamber at the *Research station* for biological, integrated and supervised controls. Plants grown in insect-proof cages were artificially infested with flea beetles for trials conducted on turnips or with aphids for the trials conducted on lettuces.

The results reveal the efficiency of the speciality, comparable to the benchmarks. The low persistence of the product allowed secondary fauna to settle quickly following treatment, in keeping with the principles of the specifications laid down for organic farming.

[1] *Project carried out in the framework of the Interreg IV France-Wallonie-Vlaanderen programme, with support from ERDF, the Conseil Régional Nord Pas-de-Calais, the Walloon Region and the Conseils Généraux du Pas-de-Calais et du Nord.*

IMPORTANCE OF SPINOSAD IN CABBAGE AND FRUIT CULTIVATION

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ABSTRACT

Spinosad, a natural insecticide produced by the *Saccharopolyspora spinosa* bacterium, was allowed for ue in organic agriculture by the European Commission in June 2008. The product has already been used for several years in common Flemish vegetable farming against, for instance, cabbage fly and caterpillars, thrips in leeks and leaf-miner fly in greenhouse crops and endives. In fruit cultivation, too, some applications are recognized.

Cabbage fly and caterpillars are well-known problem pests in the organic cultivation of cabbage. Experience has shown that protection against these insects is required to prevent or limit infestation. Long-term research shows that the most effective method to avoid egg deposits by *Delia radicum* L is to provide a cover of horticultural fleece or fine-meshed netting. The covering period must be at least four weeks in order for the cabbages to grow strong enough to be able to grow through a later infestation.

Covering the plants with netting as a barrier against egg deposits also appears to be the most effective control measure against caterpillars from the cabbage moth *Mamestra brassicae*. To this effect, netting with larger meshes may be used, similar to those used to keep pigeons away. Considering that the damage inflicted by the cabbage moth caterpillars in autumn can lead to crop reductions of more than 50%, the investment cost for this netting is quickly earned back. However, some practical disadvantages remain, such as the necessity to remove the netting for mechanical weeding. Furthermore, the side effects on crop growth and development have not been entirely identified so there is a potential risk of crop reduction with netting.

The approval of Spinosad in 2008, in that respect, offered new prospects in organic cabbage cultivation. The first test results indicate that a tray treatment before planting offers sufficient protection against cabbage fly in spring cultivation. For the pest control of cabbage moth caterpillars in autumn, based on test results in 2008 and 2009, (minimal) two Spinosad (TRACER®) spraying treatments are required during cultivation to achieve good results. To achieve comparable results with Bt (XENTARI®), a bacterium preparation based on *Bacillus thuringiensis*, at least five to six treatments are required. In other words, Spinosad offers advantages in terms of effectiveness against caterpillars but is nevertheless less selective than Bt.

ORGANIC PREVENTION OF SCLEROTINIA WITH CONIOTHYRIUM MINITANS IN LEAF CROPS

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ABSTRACT

Sclerotinia infestation in lettuce, caused by the pathogenic fungi *Sclerotinia minor* and *Sclerotinia sclerotiorum*, is a serious disease in most regions where lettuce is cultivated. The organic product Contans, based on the *Coniothyrium minitans* is available to control this fungus infestation. There has already been research on the effectiveness of this product for several years and in several places, whether or not in combination with chemical products.

The results of these tests, both in the short term and in the long term, showed varying success. The tests, during which the effectiveness was only examined for one growing period, had positive results in both the PCG (Belgium) and the Pôle Légumes (France). However, three treatments were required for a positive result. The long-term test that was carried out over three growing periods in Pôle Légumes (France) showed rather poor results. The probable cause for this was the chemical pest control that was carried out against Bremia and Botrytis which had a negative effect on the working of Contans through contact. Also, this object was only treated twice with the fungus preparation *Coniothyrium minitans*, which may also explain this disappointing result. Nonetheless, we must not lose track of this product also in the long term seeing as the university of Arizona did produce very positive results after long-term research. The effectiveness of Contans against Sclerotinia was demonstrated, although the effectiveness is clearly influenced by various other factors.

IMPORTANCE OF QUASSIA AMARA AND PLANT EXTRACTS IN PROTECTING CROPS

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ABSTRACT

Known for some time for their ability to protect against pathogenic fungi or insect pests of crops, various plants are used in organic production in the form of decoctions or infusions (e.g.: garlic or stinging nettle against acarids, pyrethrins or comfreys against aphids, nasturtium or sorrel against cankers, etc.)
Nonetheless, these preparations are rarely the subject of laboratory or crop testing while questions are also raised regarding their efficiency and their methods of use.
This is the case in the decoction of *Quassia amara* L., whose inhibitive action on sucking insects (aphids) has been long known, but had not been stated for the apple sawfly until 1986. Since then, even if the various research has allowed for specifying its use in production conditions, its methods of use (positioning of the intervention, trigger level, quantity) and any limits have not been established. FREDON Nord Pas-de-Calais, in the framework of the Transorganic II project[1], and, since 2008, in collaboration with the CRA-W of Gembloux in the framework of the TransBioFruit project[2], has thus implemented a study programme on this subject. The initial results allowed providing growers with details regarding the efficiency and implementation methods for the technique. In fact, after six years of monitoring in the Nord Pas-de-Calais region, the efficiency of the application of a farm-prepared *Quassia amara* decoction was confirmed and various criteria of efficiency came to light, that is: the application of the decoction at a rate of (at least) 20kg/ha, at the beginning and at the end of the falling of the blossoms if the threshold of 20 sawflies per trap for the duration of blossoming is achieved.

At the same time, in 2008, FREDON Nord Pas-de-Calais started testing the efficiency of other farm preparations using pest control trials against lettuce aphids under controlled conditions. Completed in the framework of the VETABIO programme,[b] these first trials highlighted a very limited efficiency of fern slurry and of peppermint, lavender and elder infusions (7 to 20% at best). The method of action of the most pertinent plant extracts will be studied before proceeding any further with trials of these products.

[1] *Project carried out in the framework of the interregional programme III Nord Pas-de-Calais/Kent, funded by Europe and the Région Nord Pas-de-Calais*
[2] *projects carried out in the framework of the Interreg IV France-Wallonie-Vlaanderen, with the support of ERDF, the Conseil Régional Nord Pas-de-Calais, the Walloon Region and the Conseils Généraux du Pas-de-Calais et du Nord*

NEW MOLECULES FOR PLANTS PROTECTION PRESENTATION OF A NEW INTERREG PROJECT: PHYTOBIO

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ABSTRACT

The production system in conventional farming uses phytosanitary products to ensure production in sufficient quantities and quality, in keeping with market expectations and at a cost that is acceptable to the consumer. Even if the use of these products results in benefits for agricultural systems, they may nonetheless affect human health and the environment negatively. In France, and in Wallonia and Flanders, incentives have now been implemented to stimulate organic farming. For many conventional farmers, the absence of biological control agents is one of the chief obstacles to switching to organic farming. Furthermore, the farmers who are ready to launch into organic farming are petitioning, during the transition phase, to be supported in their cultivation management by local teams of advisers, as they are in conventional farming. The eligible and adjacent regions of the NPDC-Flanders-Wallonia programme have a variety of research teams of international renown (the universities of Champagne-Ardenne, Ghent, Liège (Gembloux Agro-BioTech), Lille and the Littoral), which are developing and studying new biomolecules, in particular biosurfactants, that are likely to be used as biological pest control agents against phytopathogens and in this way significantly reduce use of chemical pesticides. Many farming and horticultural associations or unions (GABNOR, PCG, PCBT) on either side of the border are also organising to promote new cultivation practices and a new integrated farming to reduced inputs and in particular phytosanitary products of non-organic origin. Finally, there exists on both sides of the border an industrial potential interested in the development of new biological pest control products.
The conditions are therefore combined to pioneer, in the framework of this cross-border area, a research project of general interest the objectives of which are as follows:

- Design and produce on a pre-industrial scale new phytosanitary bio-fungicide products intended for use in biological control of pathologies of certain cereals/vegetables produced in the cross-border region
- Validate the relevance of these products and their performance,
- Promote and pre-market these new products through a network of farming associations and unions.

One of the anticipated added values is the reduction of the quantities and volumes of pesticides of chemical origin and their substitution by products of organic origin. This reduction in chemical volumes should have the effect of, first, lowering the concentration of active chemical products in the soils and, second, increasing consumer safety since agri-food products from plants treated by new bio-fungicides will be less likely to be carriers of toxic substances. Moreover, the various partners have a level of expertise in a well-targeted domain (field crops (including barley and wheat), wine grapes, or cultivation of horticulture and of fruit and vegetables), each domain illustrating the diversified nature of farming in the area covered by the project. Through the project, these scientific competencies located in the different eligible and adjacent areas will be brought together to create a scientific platform for development, study and production on the pre-industrial scale of new biological control agents and bio-fungicides. The project will then lead to promoting these products and transfering information to the farmers so as to develop the design for a common cultivation of different branches in the three regions to limit the use of polluting phytosanitary products.

EUROPEAN MARKET OF BIOLOGICAL CONTROL AGENTS : ACTUAL SITUATION AND PERSPECTIVES

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ABSTRACT

Since thirty years, public institutes and privates companies work for the development of biocontrol agents and their associated markets. However, the size of the market is still very small in comparison with global plant protection world market. Europe is the largest market in the world for beneficial insects and the second largest market for microbial biopesticides. Biopesticides have been developed for agriculture, forestry, amenities and public health. However, the largest current market for biopesticides is low surface, high value crops, such as vegetable, fruits, nuts and ornamentals. In comparison with Europe, the US market offers the largest range of biopesticides based on more than 60 different biological control agents currently approved by the EPA. That situation is partially due to the European registration procedures. Many requirements must be met before introducing a new substance on the European market and the procedure remains slow and complicated. However, a novel regulation (Regulation No 1107/2009 of the European Parliament and of the Council) is now coming into force, giving hope that it will go towards a lightening of the procedure. Until now, the growth of the biopesticides market has been constrained by a number of internal and external factors. However, based on good perspective to solve these problems, a recent study predicts that the market will grow around 7 % a year over the next 10 years.

‘SUPPORT IN THE APPROVAL OF PHYTOPHARMACEUTICAL PRODUCTS FOR ORGANIC FARMING’ IN BELGIUM: IMPLEMENTATION INITIATIVE AND PERSPECTIVES

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ABSTRACT

Prior to 2007, the availability on the Belgian market of phytopharmaceutical products intended for organic agriculture was low.
To respond to this problem, the Pesticide and Fertilizer Service of the Federal Public Health Service, Food Chain and Environment Safety (*Service Pesticides et Engrais du Service Public Fédéral Santé publique, Sécurité de la Chaîne alimentaire et Environnement*) implemented a ‘BioPesticide’ project in the framework of the programme to reduce pesticides for agricultural use and of biocides (*Programme de Réduction des Pesticides à usages agricole et des Biocides* (PRPB)).

Various actions have been developed to improve the selection of these kinds of phytopharmaceutical products. This presentation summarises these and considers the results obtained after a little less than three years in operation.

BIOCONTROL PRODUCTS: STATUS AND PERSPECTIVES UNDER EUROPEAN LEGISLATION

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SUMMARY

In the EU, biocontrol products for plant protection fall into the scope of directive 91/414/EEC. Data requirements for microbial substances and products are fixed in directive 2001/36/EC. Different requirements are often difficult if not impossible to be met, but apparently no revision of this is scheduled for the near future. Peer reviews of biocontrol substances recently included in annex I on the base of provisional conclusions have been postponed until 2012. Provisions in the new regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market establishes the new categories of low-risk active substances and basic substances. While many biocontrol substances can be expected to qualify as low-risk substances, after submission of a heavy dossier and the complex evaluation process, the basic substance approach appears to be without significant interest for biocontrol industry. The sustainable use directive 2009/128/EC creates promising opportunities for non-chemical methods and organic farming which must not be missed. IBMA asks for a specific regulatory approach to biocontrol substances and products including biopesticide schemes, the setting-up of an EU biocontrol expert group, improved guidance, data waivers and ultimately a specific regulation.

PREPARATIONS OF NATURAL ORIGIN AND RESEARCH PROVISIONS IN FRANCE

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ABSTRACT

Research, whether fundamental, industrial or even experimental into natural preparations is often diverse, specific and very dispersed. Over the last three years various initiatives have appeared that allow structuring of research and experiment networks, among which PO^2N or the national experimental working groups of the Ctifl, and so on. Moreover, driven by socio-political factors (Grenelle de l'envionment, Plan Ecophyto 2018, etc.), research projects specific to this theme are starting to obtain national financing. It is worth noting that some areas of competitiveness (eg, Q@limed) make it a priority the reduction of input and the innovation in the plant health. Finally, some private structures (Bioprotec, AkiNaO, etc.) have completed this list of actors, which should allow research in this sector to be stimulated.

RESEARCH ON ORGANIC PEST CONTROLS FOR PLANT PATHOGENIC FUNGI

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ABSTRACT

The research into organic pest control of plant pathogenic fungi can be divided in two broad areas. First, the pathogen can be controlled by directly applying antagonistic fungi and bacteria, and second, the natural population of antagonists in the soil can be stimulated by adding disease suppressing organic material. Antagonists are fungi or bacteria that counteract other micro-organisms. The modus operandi differs for each antagonist and is based on one or more mechanisms which include the production of antibiotics and biosurfactants, competition for nutrients or space, induced resistance and mycoparasitism. The best known antagonistic bacteria belong to the *Pseudomonas* spp. or *Bacillus* spp. The most researched antagonistic fungi are no doubt the *Trichoderma* spp. The functioning of these antagonists, however, is strain dependent.

The Phytopathology Lab at the University of Gent has been conducting research on the disease suppressing effect of Pseudomonads for years. The Pseudomonad strains CMR12a and CMR5c, which were isolated in Cameroon, for instance, have proven their effectiveness against various soil-bound pathogens including *Pythium* spp., *Rhizoctonia solani* and *Verticillium longisporum*. To guarantee effectiveness in all circumstances, it is of the utmost importance to understand the working mechanisms behind this organic pest control and to research which parameters play a role in this. It explains why fundamental research is also being conducted on the mechanisms that are involved in organic pest control. In the case of *Pseudomonas* CMR12a, mainly biosurfactants and phenazine antibiotics appear to play a role in the pest control of soil pathogens.

Many of the commissioned projects were initiated on request from the field and are therefore conducted in collaboration with the experimental gardens. At the moment, there is ongoing practice-oriented collaboration with the *Hogeschool Gent* concerning biofungicides. In the framework of this project we are screening a great number of biological fungicides at a semi-commercial or commercial phase for important pathogens in horticulture (*Rhizoctonia solani, Sclerotinia sclerotiorum, Verticillium longisporum, Phytophthora porri*). We are looking for the optimal method of application and examining how these remedies can be integrated in current and organic pest control frameworks.

Much research has also already been carried out into adding disease suppressing organic material to control soil-bound pathogens. Promising results were achieved with, among other things, working in lignin rich material to control survival structures, the sclerotia from for instance *Verticillium longisporum* and *Rhizoctonia solani.* Based on the results obtained, it can be assumed that the incorporation of lignin rich material into the soil stimulates lignin decomposing fungi which, in turn, produces lignin decomposing enzymes. In addition to lignin, these can also break down melanin. Sclerotia with melanin that has been broken down become much more sensitive to antagonists like *Trichoderma* spp., Actinomycetes and Gram-negative bacteria.

The use of one antagonist or one type of organic material is not sufficient in all cases to keep the pathogen concerned fully under control. Therefore, in many cases, an integration of several strategies will be required. The integration of several pest control strategies is therefore also an important aspect in the research into organic pest control. Before combining two strategies it is necessary to examine whether both strategies are compatible. The combination of Lignin and Contans (*Coniothyrium minitans*), for instance, appears to have a positive effect on the destruction of the sclerotia of *Sclerotinia sclerotiorum*.

FACILITATING THE REGISTRATION OF BIOCONTROL ORGANISMS, PLANT EXTRACTS AND SEMIOCHEMICALS IN EUROPE AND CURRENT TRENDS IN SWITZERLAND

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ABSTRACT

The legal regulation of plant protection products is a bottleneck in the market introduction of new microbial biocontrol agents, plant extracts and pheromones. The EU-funded project REBECA suggests improvements to accelerate the regulation process and make it more cost-effective, without compromises to the level of safety. These relate to the European regulation process in general, but also to the specific data requirements for microbial biocontrol agents, plant extracts, semiochemicals and invertebrate biocontrol agents.
Switzerland has a long history of use of biopesticides and biocontrol organisms and emphasis was placed to register these products as plant protection agents. All products permitted to organic farmers are listed in the FiBL-Betriebsmittelliste. However, registration has become much more difficult recently, as the regulatory framework has been adapted to EU standards, albeit without allowing for exeptions found elsewhere such as the category of ‘plant strengtheners’.

ORGANIC CROP PROTECTION IN THE NETHERLANDS

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ABSTRACT

In organic cultivation, problems with diseases, infestations and weeds in a crop must be avoided as much as possible by selecting proper cultivation practices like variety selection, crop rotation, fertilizing, cultural control and use of natural enemies. In spite of the use of a variety of cultivation practices not all problems can be avoided. The greatest problems in The Netherlands in organic cultivation of vegetables in the open and fruit culture in terms of diseases and infestations are Phytophthora in potatoes, downy mildew in onions and scabs on appels and pears. Thripses cause great problems in cabbage, leek, onion and strawberry crops. Apart from these great problems, there are also others like :

- carrot fly and black spots in carrots
- diamondback moth and cabbage aphids in cabbage crops
- pea aphid in peas
- septoria in celery and celeriac

In The Netherlands, it is permitted to use some products in organic agriculture and horticulture to control diseases and infestations. In addition to this, some products are used that fall under the exception. This list of products is gradually growing smaller. The use of products in organic agriculture in The Netherlands is limited.

GERMAN REGULATIONS ON LOW-RISK PRODUCTS FOR PLANT PROTECTION

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The use of so-called "low-risk products" to protect plants from harmful organisms is regulated under different sections of the German Plant Protection Act.

HERBAL EXTRACTS AND OTHER RAW MATERIALS

One option is to manufacture and utilize teas, washes, brews, slurries and extracts made from plants or other raw materials (inorganic substances) harvested and used on or in the immediate vicinity of one's own farm. This includes stinging nettle brew and horsetail extract. We emphasize that these extracts are to be used only on one's own farm and are not authorized for sale. Conversely, the manufacture and use of extracts of plants such as tobacco (*Nicotiana tabacum*) is not allowed. Because tobacco is not a native plant, it must be planted and cultivated in our region and therefore cannot be used for plant protection purposes. Furthermore, any persons manufacturing herbal extracts must be aware of their responsibility to ensure that the plants they use for plant protection purposes are not poisonous (e.g., tobacco) as this could endanger the health of both farm-workers and consumers.

Examples of inorganic raw materials used for pest management include clay and loam. These substances often occur naturally in the surroundings and may be used as brews and washes intended for spraying or brushing on wood and trees.

PLANT STRENGTHENING PRODUCTS

In Europe, the class designation "plant strengthening products" has only been used in Germany and Austria so far. Plant strengthening product provisions are intended to ensure that traditional, conventional products may continue to be used without the need to take them over the same "high hurdles" that chemical pesticides must undergo for approval.

Plant strengthening products are substances:

- designed exclusively to enhance the resistance of plants to harmful organisms,
- designed to protect plants from non-parasitic damage and
- intended for use on cut ornamental plants with the exception of cultivation material.

Plant strengthening products may be placed on the market only if they have been included on a list of authorized plant strengthening products. A request for inclusion of a product on this list must be submitted. The most important condition for inclusion of such a product on this list is that, when used properly, the product is not expected to cause any harmful effects, in particular, on human and animal health, the ground water or the natural balance, either directly or indirectly. Decisions regarding the inclusion of substances on the list are made by the approval authority in collaboration with the appropriate professional institutions. Proof of efficacy must not be submitted with the application. Most plant strengthening products are neither chemical nor synthetic products but natural in origin.

PROVISIONS REGULATING THE SELF-MANUFACTURE AND USE OF PLANT PROTECTION PRODUCTS ON ONE'S OWN FARM

In many cases, natural substances are not suitable for use as a plant protection product (PPP) because of their relatively low efficacy. Moreover, the uses for such plant protection products in organic farming are limited. Quassia, a compound derived from the wood of the tropical bitter-wood

tree (*Quassia amara*), is an exemplary natural PPP. It is the only product providing effective control of sawflies in organic fruit farming. Considering that this is a very small segment of the organic farming market, companies have little interest in developing and manufacturing acceptable products specifically designed for these farmers because the expected profits are small and the development costs high. Most of these substances are toxicologically harmless. To allow their use as plant protection products, the materials and preparations that must be additionally purchased in order to self-manufacture and use these substances as PPPs are treated as pesticides. In accordance with the Plant Protection Act, the approval authority keeps a list of substances and preparations approved for commercial purposes or for marketing or introduction in the scope of other economic enterprises and intended for the purpose of manufacturing plant protection products for personal use on one's own farm.
As a rule, substances and preparations are included on the list only under the following conditions:
New evidence is available showing that, when used properly, the product is not expected to cause any harmful effects, in particular, on human and animal health, the ground water or the natural balance, either directly or indirectly.
The substances and preparations are approved for use as plant protection products in organic farming under the EU organic farming regulations.

The approval authority will therefore assess whether it is responsible to leave both the manufacture and the observance of preventive measures relating to the use of plant protection products up to the self-manufacturers and users themselves. In determining whether to permit the self-manufacture of plant protection products, even if made from supposedly harmless substances and preparations, the approval authority must exercise due diligence because it cannot determine the dose used, the date of treatment, or the purity of the substances based on inspection or testing. Substances included in the EU regulation on organic farming that are not relevant for agriculture in Germany (e.g., hydrolyzed protein and diammonium phosphate) are not included on the list. Microorganisms are not classifiable as harmless; as such, they are generally unsuitable for PPP self-manufacture and use on one's own farm. However, it was justifiable to include microorganisms suitable for controlling forest pests on the list for the following reason: Official agencies (e.g., forest research and experimental stations) with specially qualified personnel are responsible for plant protection in forests. Therefore, one can assume with reasonable certainty that these individuals will carry out the production and use of microbial pesticides with the necessary knowledge and diligence.