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(54) Title: COMPOSITIONS COMPRISING A QUILLAY EXTRACT AND A PLANT GROWTH REGULATOR

(57) Abstract: The present invention relates to mixtures comprising a Quillay extract and at least one plant growth regulator as defined in the description, and to compositions comprising these mixtures.

Compositions comprising a Quillay extract and a plant growth regulator

Description

The present invention relates to mixtures comprising as active components a Quillay extract and a plant growth-regulating compound as defined herein.

Quillaja saponaria, Molina, the soapbark tree, is an evergreen tree in the family Quillajaceae, native to warm temperate central Chile.

Extracts of the barksoap tree (*Quillaja saponaria* Mol.) are well-known (CAS-No. 68990-67-0) and safe cosmetic, food and pharmaceutical additives e.g. used as adjuvant in vaccine solutions. Such soapbark tree, also called China bark extract, Murillo bark extract, Panama bark extract, Quillai extract, Quillaia extract or Quillay extract, generally comprises the milled inner bark or small stems and branches of the soapbark tree and contains saponins, polyphenols and other ingredients.

Quillay extract-based products (e.g. QL Agri 35, BASF SE) have been also applied as nematicides especially indicated for the control of nematodes in vineyards and citric trees. Further, an acaricidal mixture comprising the Quillay extract QL Agri 35 and sulfur (Acoidal WG) is marketed by BASF SE.

Quillay extracts based on water extraction are commercially available e.g. under the trademark QL Agri 35 produced by Natural Response S.A., Quilpué, Chile, and marketed by Desert King Chile and BASF SE. Usually the extraction step takes place at temperatures between 5°C and 95°C, preferably at 20°C to 90°C, even more preferably at 40°C to 90°C. It contains a minimum of 6 % of saponins, 15 % polyphenols and about 35 °Brix, and has a total solids content of 350 g/l (the total solids content, or dry mass content, containing in general a residual moisture content of at most 5% by weight, preferably at most 2% by weight, based on the total weight of the solids content). The percentages are weight percentages and relative to the volume of the extract. One degree Brix is 1 gram of sucrose in 100 grams of solution and represents the strength of the solution as percentage by weight (% w/w) (strictly speaking, by mass). If the solution contains dissolved solids other than pure sucrose, then the °Brix is only approximate the dissolved solid content. Further suitable Quillay extracts are commercially available (trademarks QL 1000, QP 1000, QL Ultra, QL 30B and Vax Sap, produced by Natural Response S.A. Quilpué, Chile).

The plant growth regulators II as defined herein, their preparation and activity are known (e.g.: http://www.alanwood.net/pesticides/; http://edis.ifas.ufl.edu/pi139); many of these substances are commercially available. An extract of Ecklonia maxima, commonly referred to as kelp, an edible species of brown seaweed is known as a not-toxic natural product (e.g. Kelpak SL, Kelp Products Ltd, South Africa) is known to stimulate root development, improve plant growth and in crease crop yield. The liquid extract Kelpak SL contains natural cytokinins (trans-zeatin, cis-zeatin, trans-ribosylzeatin, dihydrozeatin, isopentenyladenosine and isopentenyladenine – 0.031 mg/L in total), and auxins (indole-3-acetic acid, indole-3-carboxylic acid, indole-3-aldehyde, N,N-dimethyltryptamine and N-hydroxyethylphtalimide – 11 mg/L in total) (cf. J Fruit Ornamental Plant Res. Vol. 12, 2004: 2327).

Practical agricultural experience has shown that the repeated and exclusive application of an individual active compound for plant growth regulation in many cases is not satisfactory under

certain environmental conditions.

By combining active compounds or active biological extracts having different mechanisms of action, it is possible to ensure successful plant growth regulation over a relatively long period of time and to prevent unsatisfactory plant growth regulation under certain environmental conditions.

It is an object of the present invention to provide, with a view to effective plant growth regulation, at application rates which are as low as possible, compositions which, at a reduced total amount of active compounds applied, have improved plant growth regulating activity (synergistic mixtures) and a broadened activity spectrum.

We have accordingly found that this object is achieved by the mixtures and compostions defined herein, comprising a Quillay extract and a plant growth regulator as defined herein.

Thus, the present invention relates to mixtures comprising, as active components

1) a Quillay extract;

and

2) at least one plant growth regulating compound II selected from:
abscisic acid, amidochlor, ancymidol, 6-benzylaminopurine, brassinolide, butralin, chlormequat (chlormequat chloride), choline chloride, cyclanilide, daminozide, dikegulac, diflufenzopyr, dimethipin, 2,6-dimethylpuridine, ethephon, flumetralin, flurprimidol, fluthiacet, forchlorfenuron, gibberellic acid, inabenfide, indole-3-acetic acid , maleic hydrazide, mefluidide, mepiquat (mepiquat chloride), methyl jasmonate, naphthaleneacetic acid, N-6-benzyladenine, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, triapenthenol, tributyl phosphorotrithioate, 2,3,5-tri-iodobenzoic acid , trinexapac-ethyl, uniconazole and an extract of Ecklonia maxima.

The mixture according to the invention or to be used according to the invention is not restricted to a physical mixture of the Quillay extract and at least one compound II, but can be any combination of the Quillay extract and at least one compound II, it not being required for the Quillay extract and the at least one compound II to be present together in the same formulation. In the following, the mixture of the invention is partly also termed “composition”.

An example of a “mixture” (more correctly: a composition) according to the invention or to be used according to the invention in which the Quillay extract and the at least one compound II are not present together in the same formulation is a combipack. In a combipack, two or more components of a combipack are packaged separately, i.e., not jointly pre-formulated. As such, combipacks include one or more separate containers such as vials, cans, bottles, pouches, bags or canisters, each container containing a separate component for an agrochemical composition. One example is a two-component combipack. Accordingly the present invention also relates to a two-component combipack, comprising a first component which in turn comprises the Quillay extract, a liquid or solid carrier and, if appropriate, at least one surfactant and/or at least one customary auxiliary, and a second component which in turn comprises at least one compound II, a liquid or solid carrier and, if appropriate, at least one surfactant and/or

at least one customary auxiliary. More details, e.g. as to suitable liquid and solid carriers, surfactants and customary auxiliaries are described below.

In a specific embodiment, the mixture of the invention is a physical mixture.

Moreover, the invention relates also to a method for regulating plant growth, or for improving the health of the plants using mixtures of a Quillay extract and at least one compound II and to the use of the components 1) and 2) as defined herein for preparing such mixtures, and to compositions and seed comprising these mixtures. In a specific embodiment of the invention, the method of the invention does not include a treatment of a human or animal body.

Moreover, we have found that simultaneous, that is joint or separate, application of a Quillay extract and at least one compound II or successive application of a Quillay extract and of a compound II allows better plant growth regulation than is possible with the individual compounds alone (synergistic mixtures). Thus, the invention also relates to the use of a mixture of the invention as defined above or below or of an agricultural composition as defined below or of a Quillay extract in combination with at least one compound II as defined above or below and optionally also in combination with at least one active component 3) as defined below for regulating plant growth.

The use of the Quillay extract “in combination with” the at least one compound II on the one hand can be understood as using a physical mixture of Quillay extract and at least one compound II. On the other hand, the combined use may also consist in using the Quillay extract and the at least one compound II separately, but locus- and time-related (i.e. both components are applied to the same “substrate” (plant, part thereof, seed, soil etc.) within a sufficiently short time of one another), so that the desired effect can take place. More detailed illustrations of the combined use can be found in the specifications below.

Furthermore, synergistic effects in relation with the fungicidal, insecticidal and/or herbicidal action have been found with the inventive mixtures.

The term “plant growth regulator” (also known as growth regulators or plant hormones) is to be understood as active ingredients used to alter the growth of a plant or plant part. This definition includes any substance or mixture of substances or extracts intended for accelerating or retarding the rate of growth or maturation or for otherwise altering the behavior of ornamental or crop plants or parts or the produce thereof, including defoliants, desiccants and ripeners but not including substances intended as plant nutrients, trace elements, nutritional chemicals, plant inoculants, or soil amendments. Plant hormones are substances naturally produced by plants, substances that control normal plant functions, such as root growth, fruit set and drop, growth and other development processes.

According to one embodiment, the mixtures comprise component 1) and component 2) in a synergistically effective amount.

Compounds II can be present in different crystal modifications, which may differ in biological activity.

The active component 1) of the mixture can be found on the basis of the soap bark tree *(Quillaja saponaria),* from wood, branches and the bark of the tree, which are milled. Quillaja can as well be used as an extract of flakes from branches and the bark from the soap bark tree. The extract can be based on pure water extraction or a blend of water and alcohol as a means

of extraction. The extract can be used as a liquid product or it can be spray dried. The abovementioned commercially available extracts are also suitable.

According to one embodiment, the mixtures comprise as component 1) a water-based Quillay extract. The term “water-based Quillay extract” is to be understood that the extract of the material of the Quillay tree is obtained by solid-liquid extraction wherein the liquid is water or a water-based solution comprising water-soluble solvents (such as alcohols, e.g. ethanol, propanol, butanol, benzylalcohol, cyclohexanol; glycols; DMSO; ketones, e.g. cyclohexanone; esters) and/or other auxiliaries (such as liquid carriers, solid carriers or fillers, surfactants, dispersants, emulsifiers, wetters, adjuvants, solubilizers, penetration enhancers, protective colloids, adhesion agents, thickeners, humectants, bactericides, anti-freezing agents, anti-foaming agents, tackifiers and binders).

In some embodiments of the invention, the Quillay extract is obtained by extraction from the Quillay tree by employing water, alcohol or a water/alcohol solution. In some embodiments, the alcohol is ethanol or methanol.

In some embodiments, the extraction is achieved by employing a water/alcohol solution. In some embodiments, the water/alcohol solution has a water/alcohol ratio of from 80:20 to 20:80. In further embodiments, the water/alcohol solution has a water/alcohol ratio of from 60:40 to 40:60. In further embodiments, the water/alcohol solution is 80:20 water/alcohol, 60:40 water/alcohol, 50:50 water/alcohol, 40:60 water/ alcohol ratio or 20:80 water/alcohol. The water/alcohol ratios given are volume/volume. Specifically, the extractant is water.

The extraction time may vary without limitation from 1 to 8 hours, at or above room temperature (20°C-30°C), e.g., above 30°C, 40°C, 50°C or 60°C. In some embodiments, the extraction is carried out at a temperature between 30°C and 70°C.

In some embodiments, the extraction process comprising: treating the Quillay material in a water or water/alcohol solution.

Optionally, the so-extracted material may subsequently be purified by any means known in the art, including: filtration, centrifugation, re-crystallization, distillation, adsorption, chromatographic methods, fractionation, etc.

In some embodiments, the Quillay material is first dried and ground before being treated in the water or water/alcohol solution.

Optionally, the Quillay extract may be concentrated e.g. by evaporating or drying the extract-containing solution to obtain a concentrated liquid extract or a dried extract.

According to a further embodiment, the Quillay extract contains a minimum of 2 % of saponins and 5 % polyphenols and at least 15 °Brix; more preferably a minimum of 4 % of saponins and 10 % polyphenols and at least 25 °Brix. The percentages are weight percentages and relative to the volume of the extract. In an alternative embodiment, the Quillay extract contains a minimum of 5 % by weight of saponins and at least 10 % by weight of polyphenols, relative to the dry mass of the extract, and at least 15 °Brix; e.g. at least 9 % by weight of saponins and at least 20 % by weight of polyphenols, relative to the dry mass of the extract, and at least 15 °Brix; more preferably a minimum of 4 % by weight of saponins and at least 10 % by weight of polyphenols, relative to the dry mass of the extract, and at least 25 °Brix; e.g. at least 10 % by weight of saponins and at least 25 % by weight of polyphenols, relative to the dry mass of the extract, and at least 25 °Brix. The dry mass contains at most 5% by weight, preferably at most 2% by weight of residual liquid components, such as extractants (in general water,

possibly also alcohol; mostly however residual moisture), based on the total weight of the dry mass.

In a specific embodiment, the Quillay extract is obtained by a process as described for example in CL 2573-2002. Chipped or milled wood, branches and/or the bark or flakes from branches and/or the bark of *Quillaja saponaria* are submitted to a solid/liquid extraction process using water as extractant. The extraction temperature may vary between 20 and 95°C (i.e. is of from 20 to 95°C), e.g. 40 to 90°C, but is specifically ca. 60°C (+/- 10°C, preferably +/- 5°C). The extraction time is in inverse proportion to the extraction temperature and is in general of from 0.5 to 5 h. For an extraction temperature of ca. 60°C, it is specifically ca. 2 to 3 h. After extraction, undesired products are generally removed. To this purpose, clarifying (precipitation-inducing) additives, such as albumen, bovine or fish gelatin, polyvinyl pyrrolidone (OVP), polyvinyl polypyrrolidone (PVPP), silica or, in particular, bentonite are added. Filtration of the mixture over suitable means, e.g. over diatomaceous earth or silica pads, is followed by concentration and pasteurization. For preservation purposes, the concentrate is brought to a pH of 3-4, especially 3.5 to 4.5, very especially ca. 3.9 (+/- 0.2). Very specifically, the Quillay extract used is QL Agri® 35. Further details of this product are given above and in the examples (minimum of 6 % of saponins, ca. 15 % polyphenols, about 35 °Brix, ca. 350 g/l of solids content).

According to a further embodiment, the mixtures comprise a compound II selected from abscisic acid, brassinolide, chlormequat (chlormequat chloride), cyclanilide, diflufenzopyr, ethephon, forchlorfenuron, gibberellic acid, indole-3-acetic acid, mepiquat (mepiquat chloride), methyl jasmonate, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, tributyl phosphorotrithioate, trinexapac-ethyl, uniconazole and an extract of Ecklonia maxima.

According to a further embodiment, the mixtures comprise as compound II chlormequat (chlormequat chloride), mepiquat (mepiquat chloride), prohexadione (prohexadione-calcium) or trinexapac-ethyl.

According to a further embodiment, the mixtures comprise as compound II mepiquat (mepiquat chloride) or prohexadione (prohexadione-calcium).

According to a further embodiment, the mixtures comprise as compound II an extract of Ecklonia maxima, preferably a water-based extract of Ecklonia maxima.

According to a further embodiment, the mixtures comprise as compound II cyclanilide, diflufenzopyr, ethephone, thidiazuron or tributyl phosphorotrithioate.

According to a further embodiment, the mixtures comprise as compound II gibberellic acid or indole-3-acetic acid and in particular gibberelic acid.

The mixtures and compositions thereof according to the invention can, in the use form as plant growth regulators, also be present together with other active substances, e. g. with herbicides, insecticides, growth regulators, fungicides or else with fertilizers, as pre-mix or, if appropriate, not until immeadiately prior to use (tank mix).

Mixing a water-based Quillay extract and a compound II and the compositions comprising them, respectively, in the use form as plant growth regulator with other plant growth regulators results in many cases in an expansion of the plant growth regulating spectrum. Furthermore, in many cases, synergistic effects are obtained.

According to the present invention, it may be preferred that the mixtures comprise besides a

Quillay extract and a compound II as component 3) a further active compound, preferably in a synergistically effective amount. Another embodiment relates to mixtures wherein the component 3) is an active compound III selected from groups A) to O):

The following list of active substances, in conjunction with which the compounds according to the invention can be used, is intended to illustrate the possible combinations but does not limit them:

A) Respiration inhibitors

- Inhibitors of complex III at Q_o site (e.g. strobilurins): azoxystrobin, coumethoxystrobin, coumoxystrobin, dimoxystrobin, enestroburin, fenaminstrobin, fenoxy-strobin/flufenoxystrobin, fluoxastrobin, kresoxim-methyl, mandestrobin, metominostrobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, trifloxystrobin, 2-(2-(3-(2,6-dichlorophenyl)-1-methyl-allylideneaminooxymethyl)-phenyl)-2-methoxyimino-N-methyl-acetamide, pyribencarb, triclopyricarb/chlorodincarb, famoxadone, fenamidone;
- inhibitors of complex III at Q_i site: cyazofamid, amisulbrom, [(3S,6S,7R,8R)-8-benzyl-3-[(3-acetoxy-4-methoxy-pyridine-2-carbonyl)amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate, [(3S,6S,7R,8R)-8-benzyl-3-[[3-(acetoxymethoxy)-4-methoxy-pyridine-2-carbonyl]amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate, [(3S,6S,7R,8R)-8-benzyl-3-[(3-isobutoxycarbonyloxy-4-methoxy-pyridine-2-carbonyl)amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate, [(3S,6S,7R,8R)-8-benzyl-3-[[3-(1,3-benzodioxol-5-ylmethoxy)-4-methoxy-pyridine-2-carbonyl]amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate; (3S,6S,7R,8R)-3-[[(3-hydroxy-4-methoxy-2-pyridinyl)carbonyl]amino]-6-methyl-4,9-dioxo-8-(phenylmethyl)-1,5-dioxonan-7-yl 2-methylpropanoate
- inhibitors of complex II (e. g. carboxamides): benodanil, benzovindiflupyr, bixafen, boscalid, carboxin, fenfuram, fluopyram, flutolanil, fluxapyroxad, furametpyr, isofetamid, isopyrazam, mepronil, oxycarboxin, penflufen, penthiopyrad, sedaxane, tecloftalam, thifluzamide, N-(4'-trifluoromethylthiobiphenyl-2-yl)-3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxamide, N-(2-(1,3,3-trimethyl-butyl)-phenyl)-1,3-dimethyl-5-fluoro-1H-pyrazole-4-carboxamide, 3-(difluoromethyl)-1-methyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, 3-(trifluoromethyl)-1-methyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, 1,3-dimethyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, 3-(trifluoromethyl)-1,5-dimethyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, 1,3,5-trimethyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, N-(7-fluoro-1,1,3-trimethyl-indan-4-yl)-1,3-dimethyl-pyrazole-4-carboxamide, N-[2-(2,4-dichlorophenyl)-2-methoxy-1-methyl-ethyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide;
- other respiration inhibitors (e.g. complex I, uncouplers): diflumetorim, (5,8-difluoroquinazolin-4-yl)-{2-[2-fluoro-4-(4-trifluoromethylpyridin-2-yloxy)-phenyl]-ethyl}-amine; nitrophenyl derivates: binapacryl, dinobuton, dinocap, fluazinam; ferimzone; organometal compounds: fentin salts, such as fentin-acetate, fentin chloride or fentin hydroxide; ametoctradin; and silthiofam;

B) Sterol biosynthesis inhibitors (SBI fungicides)

- C14 demethylase inhibitors (DMI fungicides): triazoles: azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, diniconazole-M, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole,

imibenconazole, ipconazole, metconazole, myclobutanil, oxpoconazole, paclobutrazole, penconazole, propiconazole, prothioconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triticonazole, uniconazole, 1-[rel-(2*S*;3*R*)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)-oxiranylmethyl]-5-thiocyanato-1H-[1,2,4]triazole, 2-[rel-(2*S*;3*R*)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)-oxiranylmethyl]-2H-[1,2,4]triazole-3-thiol; chlorophenoxy)-2-(trifluorometh¬yl)phenyl]-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-3-methyl-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)¬phenyl]-1-(1,2,4-triazol-1-yl)propan-2-ol, 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-3-methyl-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)¬phenyl]-1-(1,2,4-triazol-1-yl)pentan-2-ol, 2-[4-(4-fluorophenoxy)-2-(trifluoromethyl)-phenyl]-1-(1,2,4-triazol-1-yl)propan-2-ol; imidazoles: imazalil, pefurazoate, prochloraz, triflumizol; pyrimidines, pyridines and piperazines: fenarimol, nuarimol, pyrifenox, triforine, [3-(4-chloro-2-fluoro-phenyl)-5-(2,4-difluorophenyl)isoxazol-4-yl]-(3-pyridyl)methanol;

- Delta14-reductase inhibitors: aldimorph, dodemorph, dodemorph-acetate, fenpropimorph, tridemorph, fenpropidin, piperalin, spiroxamine;
- Inhibitors of 3-keto reductase: fenhexamid;

C) Nucleic acid synthesis inhibitors

- phenylamides or acyl amino acid fungicides: benalaxyl, benalaxyl-M, kiralaxyl, metalaxyl, metalaxyl-M (mefenoxam), ofurace, oxadixyl;
- others: hymexazole, octhilinone, oxolinic acid, bupirimate, 5-fluorocytosine, 5-fluoro-2-(p-tolylmethoxy)pyrimidin-4-amine, 5-fluoro-2-(4-fluorophenylmethoxy)pyrimidin-4-amine;

D) Inhibitors of cell division and cytoskeleton

- tubulin inhibitors, such as benzimidazoles, thiophanates: benomyl, carbendazim, fuberidazole, thiabendazole, thiophanate-methyl; triazolopyrimidines: 5-chloro-7-(4-methyl-piperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine
- other cell division inhibitors: diethofencarb, ethaboxam, pencycuron, fluopicolide, zoxamide, metrafenone, pyriofenone;

E) Inhibitors of amino acid and protein synthesis

- methionine synthesis inhibitors (anilino-pyrimidines): cyprodinil, mepanipyrim, pyrimethanil;
- protein synthesis inhibitors: blasticidin-S, kasugamycin, kasugamycin hydrochloride-hydrate, mildiomycin, streptomycin, oxytetracyclin, polyoxine, validamycin A;

F) Signal transduction inhibitors

- MAP / histidine kinase inhibitors: fluoroimid, iprodione, procymidone, vinclozolin, fenpiclonil, fludioxonil;
- G protein inhibitors: quinoxyfen;

G) Lipid and membrane synthesis inhibitors

- Phospholipid biosynthesis inhibitors: edifenphos, iprobenfos, pyrazophos, isoprothiolane;
- lipid peroxidation: dicloran, quintozene, tecnazene, tolclofos-methyl, biphenyl, chloroneb, etridiazole;
- phospholipid biosynthesis and cell wall deposition: dimethomorph, flumorph, mandipropamid, pyrimorph, benthiavalicarb, iprovalicarb, valifenalate and N-(1-(1-(4-cyano-phenyl)ethanesulfonyl)-but-2-yl) carbamic acid-(4-fluorophenyl) ester;

- compounds affecting cell membrane permeability and fatty acides: propamocarb, propamocarb-hydrochlorid
- fatty acid amide hydrolase inhibitors: oxathiapiprolin, 2-{3-[2-(1-{[3,5-bis(di¬flu¬oromethyl-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2 oxazol-5-yl}phenyl methanesulfonate, 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl) 1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5 yl}-3-chlorophenyl methanesulfonate

H) Inhibitors with Multi Site Action

- inorganic active substances: Bordeaux mixture, copper acetate, copper hydroxide, copper oxychloride, basic copper sulfate, sulfur;
- thio- and dithiocarbamates: ferbam, mancozeb, maneb, metam, metiram, propineb, thiram, zineb, ziram;
- organochlorine compounds (e.g. phthalimides, sulfamides, chloronitriles): anilazine, chlorothalonil, captafol, captan, folpet, dichlofluanid, dichlorophen, hexachlorobenzene, pentachlorphenole and its salts, phthalide, tolylfluanid, N-(4-chloro-2-nitro-phenyl)-N-ethyl-4-methyl-benzenesulfonamide;
- guanidines and others: guanidine, dodine, dodine free base, guazatine, guazatine-acetate, iminoctadine, iminoctadine-triacetate, iminoctadine-tris(albesilate), dithianon, 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetraone;

I) Cell wall synthesis inhibitors

- inhibitors of glucan synthesis: validamycin, polyoxin B; melanin synthesis inhibitors: pyroquilon, tricyclazole, carpropamid, dicyclomet, fenoxanil;

J) Plant defence inducers

- acibenzolar-S-methyl, probenazole, isotianil, tiadinil, prohexadione-calcium; phosphonates: fosetyl, fosetyl-aluminum, phosphorous acid and its salts;

K) Unknown mode of action

- bronopol, chinomethionat, cyflufenamid, cymoxanil, dazomet, debacarb, diclomezine, difenzoquat, difenzoquat-methylsulfate, diphenylamin, fenpyrazamine, flumetover, flusulfamide, flutianil, methasulfocarb, nitrapyrin, nitrothal-isopropyl, oxathiapiprolin, picarbutrazox, tolprocarb, 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-(prop-2-yn-1-yloxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2-yl)piperidin-1-yl]ethanone, 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-fluoro-6-(prop-2-yn-1-yl¬oxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thi¬azol-2-yl)piperidin-1-yl]ethanone, 2 [3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-chloro-6-(prop-2-yn-1-yl¬oxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2 yl)piperidin-1-yl]ethanone, oxin-copper, proquinazid, tebufloquin, tecloftalam, triazoxide, 2-butoxy-6-iodo-3-propylchromen-4-one, N-(cyclo-propylmethoxyimino-(6-difluoro-methoxy-2,3-difluoro-phenyl)-methyl)-2-phenyl acetamide, N'-(4-(4-chloro-3-trifluoromethyl-phenoxy)-2,5-dimethyl-phenyl)-N-ethyl-N-methyl formamidine, N'-(4-(4-fluoro-3-trifluoromethyl-phenoxy)-2,5-dimethyl-phenyl)-N-ethyl-N-methyl formamidine, N'-(2-methyl-5-trifluoromethyl-4-(3-trimethylsilanyl-propoxy)-phenyl)-N-ethyl-N-methyl formamidine, N'-(5-difluoromethyl-2-methyl-4-(3-trimethylsilanyl-propoxy)-phenyl)-N-ethyl-N-methyl formamidine, 2methoxy-acetic acid 6-tert-butyl-8-fluoro-2,3-dimethyl-quinolin-4-yl ester, 3-[5-(4-methylphenyl)-2,3-dimethyl-isoxazolidin-3-yl]-pyridine, 3-[5-(4-chloro-phenyl)-2,3-dimethyl-isoxazolidin-3-yl]-pyridine (pyrisoxazole), N-(6-methoxy-pyridin-3-yl) cyclopropanecarboxylic acid amide, 5-chloro-1-(4,6-dimethoxy-

pyrimidin-2-yl)-2-methyl-1H-benzoimidazole, 2-(4-chloro-phenyl)-N-[4-(3,4-dimethoxy-phenyl)-isoxazol-5-yl]-2-prop-2-ynyloxy-acetamide, ethyl (Z) 3 amino-2-cyano-3-phenyl-prop-2-enoate, pentyl N-[6-[[(Z)-[(1-methyltetra¬zol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, 2-[2-[(7,8-di¬fluoro-2-methyl-3-quinolyl)oxy]-6-fluoro-phenyl]propan-2-ol, 2-[2-fluoro-6-[(8-flu¬oro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol, 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroiso¬quinolin-1-yl)quinoline, 3-(4,4-difluoro-3,3-dimethyl-3,4-dihydro¬isoquinolin-1-yl)¬quinoline, 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline;

L) Biopesticides

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus amyloliquefaciens, B. mojavensis, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis var. amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis (bacteriophages), Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, Clonostachys rosea f. catenulate (also named Gliocladium catenulatum), Gliocladium roseum, Lysobacter antibioticus, L. enzymogenes, Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor albus, Paenibacillus polymyxa, Pantoea vagans, Phlebiopsis gigantea, Pseudomonas sp., Pseudomonas chloraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperellum, T. atroviride, T. fertile, T. gamsii, T. harmatum, T. harzianum; mixture of T. harzia¬num and T. viride; mixture of T. polysporum and T. harzianum; T. stromaticum, T. virens (also named Gliocladium virens), T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia, zucchini yellow mosaic virus (avirulent strain);

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: chitosan (hydrolysate), harpin protein, laminarin, Menhaden fish oil, natamycin, Plum pox virus coat protein, potassium or sodium bicarbonate, Reynoutria sachlinensis extract, salicylic acid, tea tree oil;

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: Agrobacterium radiobacter, Bacillus cereus, B. firmus, B. thuringiensis, B. thuringiensis ssp. aizawai, B. t. ssp. israelensis, B. t. ssp. galleriae, B. t. ssp. kurstaki, B. t. ssp. tenebrionis, Beauveria bassiana, B. brongniartii , Burkholderia sp., Chromobacterium subtsugae, Cydia pomonella granulosis virus, Cryptophlebia leucotreta granulovirus (CrleGV), Isaria fumosorosea, Heterorhabditis bacteriophora, Lecanicillium longisporum, L. muscarium (formerly Verticillium lecanii), Metarhizium anisopliae, M. anisopliae var. acridum, Nomuraea rileyi, Paecilomyces fumosoroseus, P. lilacinus, Paenibacillus popilliae, Pasteuria spp., P. nishizawae, P. penetrans, P. ramose, P. reneformis, P. thornea, P. usgae, Pseudomonas fluorescens, Steinernema carpocapsae, S. feltiae, S. kraussei;

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: L-carvone, citral, (E,Z)-7,9-dodecadien-1-yl acetate, ethyl formate, (E,Z)-2,4-ethyl decadienoate (pear ester), (Z,Z,E)-7,11,13-hexadecatrienal, heptyl butyrate, isopropyl myristate, lavanulyl senecioate, cis-jasmone, 2-methyl 1-butanol, methyl eugenol, methyl jasmonate, (E,Z)-2,13-octadecadien-1-ol, (E,Z)-2,13-octadecadien-1-ol acetate,

(E,Z)-3,13-octadecadien-1-ol, R-1-octen-3-ol, pentatermanone, potassium silicate, sorbitol actanoate, (E,Z,Z)-3,8,11-tetradecatrienyl acetate, (Z,E)-9,12-tetradecadien-1-yl acetate, Z-7-tetradecen-2-one, Z-9-tetradecen-1-yl acetate, Z-11-tetradecenal, Z-11-tetradecen-1-ol, Acacia negra extract, extract of grapefruit seeds and pulp, extract of Chenopodium ambrosiodae, Catnip oil, Neem oil, Quillay extract, Tagetes oil;

L5) Microbial pesticides with plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity: Azospirillum amazonense A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium sp., B. elkanii, B. japonicum, B. liaoningense, B. lupini, Delftia acidovorans, Glomus intraradices, Mesorhizobium sp., Paenibacillus alvei, Penicillium bilaiae, Rhizobium leguminosarum bv. phaseoli, R. l. trifolii, R. l. bv. viciae, R. tropici, Sinorhizobium meliloti;

L6) Biochemical pesticides with plant stress reducing, plant growth regulator and/or plant yield enhancing activity: abscisic acid, aluminium silicate (kaolin), 3-decen-2-one, formononetin, genistein, hesperetin, homobrassinlide, humates, jasmonic acid or salts or derivatives thereof, lysophosphatidyl ethanolamine, naringenin, polymeric polyhydroxy acid, Ascophyllum nodosum (Norwegian kelp, Brown kelp) extract and Ecklonia maxima (kelp) extract;

M) Growth regulators

abscisic acid, amidochlor, ancymidol, 6-benzylaminopurine, brassinolide, butralin, chlormequat (chlormequat chloride), choline chloride, cyclanilide, daminozide, dikegulac, diflufenzopyr, dimethipin, 2,6-dimethylpuridine, ethephon, flumetralin, flurprimidol, fluthiacet, forchlorfenuron, gibberellic acid, inabenfide, indole-3-acetic acid , maleic hydrazide, mefluidide, mepiquat (mepiquat chloride), methyl jasmonate, naphthaleneacetic acid, N-6-benzyladenine, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, triapenthenol, tributyl phosphorotrithioate, 2,3,5-tri-iodobenzoic acid , trinexapac-ethyl and uniconazole;

N) Herbicides

- acetamides: acetochlor, alachlor, butachlor, dimethachlor, dimethenamid, flufenacet, mefenacet, metolachlor, metazachlor, napropamide, naproanilide, pethoxamid, pretilachlor, propachlor, thenylchlor;
- amino acid derivatives: bilanafos, glyphosate, glufosinate, sulfosate;
- aryloxyphenoxypropionates: clodinafop, cyhalofop-butyl, fenoxaprop, fluazifop, haloxyfop, metamifop, propaquizafop, quizalofop, quizalofop-P-tefuryl;
- Bipyridyls: diquat, paraquat;
- (thio)carbamates: asulam, butylate, carbetamide, desmedipham, dimepiperate, eptam (EPTC), esprocarb, molinate, orbencarb, phenmedipham, prosulfocarb, pyributicarb, thiobencarb, triallate;
- cyclohexanediones: butroxydim, clethodim, cycloxydim, profoxydim, sethoxydim, tepraloxydim, tralkoxydim;
- dinitroanilines: benfluralin, ethalfluralin, oryzalin, pendimethalin, prodiamine, trifluralin;
- diphenyl ethers: acifluorfen, aclonifen, bifenox, diclofop, ethoxyfen, fomesafen, lactofen, oxyfluorfen;
- hydroxybenzonitriles: bomoxynil, dichlobenil, ioxynil;
- imidazolinones: imazamethabenz, imazamox, imazapic, imazapyr, imazaquin, imazethapyr;

- phenoxy acetic acids: clomeprop, 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4-DB, dichlorprop, MCPA, MCPA-thioethyl, MCPB, Mecoprop;
- pyrazines: chloridazon, flufenpyr-ethyl, fluthiacet, norflurazon, pyridate;
- pyridines: aminopyralid, clopyralid, diflufenican, dithiopyr, fluridone, fluroxypyr, picloram, picolinafen, thiazopyr;
- sulfonyl ureas: amidosulfuron, azimsulfuron, bensulfuron, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethoxysulfuron, flazasulfuron, flucetosulfuron, flupyrsulfuron, foramsulfuron, halosulfuron, imazosulfuron, iodosulfuron, mesosulfuron, metazosulfuron, metsulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron, prosulfuron, pyrazosulfuron, rimsulfuron, sulfometuron, sulfosulfuron, thifensulfuron, triasulfuron, tribenuron, trifloxysulfuron, triflusulfuron, tritosulfuron, 1-((2-chloro-6-propyl-imidazo[1,2-b]pyridazin-3-yl)sulfonyl)-3-(4,6-dimethoxy-pyrimidin-2-yl)urea;
- triazines: ametryn, atrazine, cyanazine, dimethametryn, ethiozin, hexazinone, metamitron, metribuzin, prometryn, simazine, terbuthylazine, terbutryn, triaziflam;
- ureas: chlorotoluron, daimuron, diuron, fluometuron, isoproturon, linuron, metha-benzthiazuron,tebuthiuron;
- other acetolactate synthase inhibitors: bispyribac-sodium, cloransulam-methyl, diclosulam, florasulam, flucarbazone, flumetsulam, metosulam, ortho-sulfamuron, penoxsulam, propoxycarbazone, pyribambenz-propyl, pyribenzoxim, pyriftalid, pyriminobac-methyl, pyrimisulfan, pyrithiobac, pyroxasulfone, pyroxsulam;
- others: amicarbazone, aminotriazole, anilofos, beflubutamid, benazolin, bencarbazone,benfluresate, benzofenap, bentazone, benzobicyclon, bicyclopyrone, bromacil, bromobutide, butafenacil, butamifos, cafenstrole, carfentrazone, cinidon-ethyl, chlorthal, cinmethylin, clomazone, cumyluron, cyprosulfamide, dicamba, difenzoquat, diflufenzopyr, *Drechslera monoceras*, endothal, ethofumesate, etobenzanid, fenoxasulfone, fentrazamide, flumiclorac-pentyl, flumioxazin, flupoxam, flurochloridone, flurtamone, indanofan, isoxaben, isoxaflutole, lenacil, propanil, propyzamide, quinclorac, quinmerac, mesotrione, methyl arsonic acid, naptalam, oxadiargyl, oxadiazon, oxaziclomefone, pentoxazone, pinoxaden, pyraclonil, pyraflufen-ethyl, pyrasulfotole, pyrazoxyfen, pyrazolynate, quinoclamine, saflufenacil, sulcotrione, sulfentrazone, terbacil, tefuryltrione, tembotrione, thiencarbazone, topramezone, (3-[2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-trifluoromethyl-3,6-dihydro-2H-pyrimidin-1-yl)-phenoxy]-pyridin-2-yloxy)-acetic acid ethyl ester, 6-amino-5-chloro-2-cyclopropyl-pyrimidine-4-carboxylic acid methyl ester, 6-chloro-3-(2-cyclopropyl-6-methyl-phenoxy)-pyridazin-4-ol, 4-amino-3-chloro-6-(4-chloro-phenyl)-5-fluoro-pyridine-2-carboxylic acid, 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxy-phenyl)-pyridine-2-carboxylic acid methyl ester, and 4-amino-3-chloro-6-(4-chloro-3-dimethylamino-2-fluoro-phenyl)-pyridine-2-carboxylic acid methyl ester.

O) Insecticides

- organo(thio)phosphates: acephate, azamethiphos, azinphos-methyl, chlorpyrifos, chlorpyrifos-methyl, chlorfenvinphos, diazinon, dichlorvos, dicrotophos, dimethoate, disulfoton, ethion, fenitrothion, fenthion, isoxathion, malathion, methamidophos, methidathion, methyl-parathion, mevinphos, monocrotophos, oxydemeton-methyl, paraoxon, parathion, phenthoate, phosalone, phosmet, phosphamidon, phorate, phoxim, pirimiphos-methyl, profenofos, prothiofos, sulprophos, tetrachlorvinphos, terbufos, triazophos,

trichlorfon;

- carbamates: alanycarb, aldicarb, bendiocarb, benfuracarb, carbaryl, carbofuran, carbosulfan, fenoxycarb, furathiocarb, methiocarb, methomyl, oxamyl, pirimicarb, propoxur, thiodicarb, triazamate;
- pyrethroids: allethrin, bifenthrin, cyfluthrin, cyhalothrin, cyphenothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, zeta-cypermethrin, deltamethrin, esfenvalerate, etofenprox, fenpropathrin, fenvalerate, imiprothrin, lambda-cyhalothrin, permethrin, prallethrin, pyrethrin I and II, resmethrin, silafluofen, tau-fluvalinate, tefluthrin, tetramethrin, tralomethrin, transfluthrin, profluthrin, dimefluthrin;
- insect growth regulators: a) chitin synthesis inhibitors: benzoylureas: chlorfluazuron, cyramazin, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, teflubenzuron, triflumuron; buprofezin, diofenolan, hexythiazox, etoxazole, clofentazine; b) ecdysone antagonists: halofenozide, methoxyfenozide, tebufenozide, azadirachtin; c) juvenoids: pyriproxyfen, methoprene, fenoxycarb; d) lipid biosynthesis inhibitors: spirodiclofen, spiromesifen, spirotetramat;
- nicotinic receptor agonists/antagonists compounds: clothianidin, dinotefuran, flupyradifurone, imidacloprid, thiamethoxam, nitenpyram, acetamiprid, thiacloprid, 1-2-chloro-thiazol-5-ylmethyl)-2-nitrimino-3,5-dimethyl-[1,3,5]triazinane;
- GABA antagonist compounds: endosulfan, ethiprole, fipronil, vaniliprole, pyrafluprole, pyriprole, 5-amino-1-(2,6-dichloro-4-methyl-phenyl)-4-sulfinamoyl-1H-pyrazole-3-carbothioic acid amide;
- macrocyclic lactone insecticides: abamectin, emamectin, milbemectin, lepimectin, spinosad, spinetoram;
- mitochondrial electron transport inhibitor (METI) I acaricides: fenazaquin, pyridaben, tebufenpyrad, tolfenpyrad, flufenerim;
- METI II and III compounds: acequinocyl, fluacyprim, hydramethylnon;
- Uncouplers: chlorfenapyr;
- oxidative phosphorylation inhibitors: cyhexatin, diafenthiuron, fenbutatin oxide, propargite;
- moulting disruptor compounds: cryomazine;
- mixed function oxidase inhibitors: piperonyl butoxide;
- sodium channel blockers: indoxacarb, metaflumizone;
- ryanodine receptor inhibitors: chlorantraniliprole, cyantraniliprole, flubendiamide, N [4,6-dichloro-2-[(diethyl-lambda-4-sulfanylidene)carbamoyl]-phenyl]-2-(3-chloro-2 pyridyl)-5-(trifluoromethyl)pyr¬azole-3-carboxamide; N-[4-chloro-2-[(diethyl-lambda-4-sulfanylidene)carbamoyl]-6 methyl-phenyl]-2-(3-chloro-2-pyridyl)-5-(triflu¬oromethyl)pyrazole-3-carboxamide; N-[4-chloro-2-[(di-2-propyl-lambda-4-sulfanyli¬dene)carbamoyl]-6-methyl-phenyl]-2 (3-chloro-2-pyridyl)-5-(trifluoromethyl)pyrazole-3-carboxamide; N-[4,6-dichloro-2 [(di-2-propyl-lambda-4-sulfanylidene)carbamoyl]-phenyl]-2-(3-chloro-2-pyridyl)-5 (trifluoromethyl)pyrazole-3-carboxamide; N-[4,6-di¬chloro-2-[(diethyl-lambda-4 sulfanylidene)carbamoyl]-phenyl]-2-(3-chloro-2-pyridyl)-5-(difluoromethyl)pyr-azole-3-carboxamide; N-[4,6-dibromo-2-[(di-2-propyl-lambda-4 sulfanylidene)carba¬moyl]-phenyl]-2-(3-chloro-2-pyridyl)-5-(trifluoromethyl)pyr-azole-3-carboxamide; N [4-chloro-2-[(di-2-propyl-lambda-4-sulfanylidene)carba-moyl]-6-cyano-phenyl]-2 (3-chloro-2-pyridyl)-5-(trifluoromethyl)pyrazole-3-carbox¬amide; N-[4,6-

dibromo-2 [(diethyl-lambda-4-sulfanylidene)carbamoyl]-phenyl]-2 (3 chloro-2-pyridyl)-5 (tri¬fluoromethyl)pyrazole-3-carboxamide;

- others: benclothiaz, bifenazate, cartap, flonicamid, pyridalyl, pymetrozine, sulfur, thiocyclam, cyenopyrafen, flupyrazofos, cyflumetofen, amidoflumet, imicyafos, bistrifluron, pyrifluquinazon, and 1,1'-[(3S,4R,4aR,6S,6aS,12R,12aS,12bS)-4-[[(2-cyclopropylacetyl)oxy]methyl]-1,3,4,4a,5,6,6a,12,12a,12b-decahydro-12-hydroxy-4,6a,12b-trimethyl-11-oxo-9-(3-pyridinyl)-2H,11H-naphtho[2,1-b]pyrano[3,4-e]pyran-3,6-diyl] cyclopropaneacetic acid ester.

The compounds III of chemical nature described by common names, their preparation and their biological activity e.g. against harmful fungi, pests or weed is known (e.g.: http://www.alanwood.net/pesticides/); many of these substances are commercially available.

The compounds III described by IUPAC nomenclature, their preparation and their pesticidal activity is also known (cf. Can. J. Plant Sci. 48(6), 587-94, 1968; EP A 141 317; EP-A 152 031; EP-A 226 917; EP A 243 970; EP A 256 503; EP-A 428 941; EP-A 532 022; EP-A 1 028 125; EP-A 1 035 122; EP A 1 201 648; EP A 1 122 244, JP 2002316902; DE 19650197; DE 10021412; DE 102005009458; US 3,296,272; US 3,325,503; WO 98/46608; WO 99/14187; WO 99/24413; WO 99/27783; WO 00/29404; WO 00/46148; WO 00/65913; WO 01/54501; WO 01/56358; WO 02/22583; WO 02/40431; WO 03/10149; WO 03/11853; WO 03/14103; WO 03/16286; WO 03/53145; WO 03/61388; WO 03/66609; WO 03/74491; WO 04/49804; WO 04/83193; WO 05/120234; WO 05/123689; WO 05/123690; WO 05/63721; WO 05/87772; WO 05/87773; WO 06/15866; WO 06/87325; WO 06/87343; WO 07/82098; WO 07/90624, WO 11/028657, WO2012/168188, WO 2007/006670, WO 11/77514; WO13/047749, WO 10/069882, WO 13/047441, WO 03/16303, WO 09/90181, WO 13/007767, WO 13/010862, WO 13/127704, WO 13/024009 and WO 13/024010).

The biopesticides from group L) of pesticides III, their preparation and their pesticidal activity e.g. against harmful fungi or insects are known (e-Pesticide Manual V 5.2 (ISBN 978 1 901396 85 0) (2008-2011); http://www.epa.gov/opp00001/biopesticides/, see product lists therein; http://www.omri.org/omri-lists, see lists therein; Bio-Pesticides Database BPDB http://sitem.herts.ac.uk/aeru/bpdb/, see A to Z link therein).

The biopesticides from group L1) and/or L2) may also have insecticidal, acaricidal, molluscidal, pheromone, nematicidal, plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity. The biopesticides from group L3) and/or L4) may also have fungicidal, bactericidal, viricidal, plant defense activator, plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity. The biopesticides from group L5) and/or L6) may also have fungicidal, bactericidal, viricidal, plant defense activator, insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity.

Many of these biopesticides are registered and/or are commercially available: aluminium silicate (Screen™ Duo from Certis LLC, USA), Agrobacterium radio¬bacter K1026 (e.g. NoGall® from Becker Underwood Pty Ltd., Australia), A. radiobacter K84 (Nature 280, 697-699, 1979; e.g. GallTroll® from AG Biochem, Inc., C, USA), Ampelomyces quisqualis M-10 (e.g. AQ 10® from Intrachem Bio GmbH & Co. KG, Germany), Ascophyllum nodosum (Norwegian kelp, Brown kelp) extract or filtrate (e.g. ORKA GOLD from Becker Underwood, South Africa; or

Goemar® from Laboratoires Goemar, France), Aspergillus flavus NRRL 21882 isolated from a peanut in Georgia in 1991 by the USDA, National Peanut Research Laboratory (e.g. in Afla-Guard® from Syngenta, CH), mixtures of Aureobasidium pullulans DSM14940 and DSM 14941 (e.g. blastospores in BlossomProtect® from bio-ferm GmbH, Germany), Azospirillum amazonense BR 11140 (SpY2T) (Proc. 9th Int. and 1st Latin American PGPR meeting, Quimara, Medellín, Colombia 2012, p. 60, ISBN 978-958-46-0908-3), A. brasilense AZ39 (Eur. J. Soil Biol 45(1), 28-35, 2009), A. brasilense XOH (e.g. AZOS from Xtreme Gardening, USA or RTI Reforestation Technologies International; USA), A. brasilense BR 11002 (Proc. 9th Int. and 1st Latin American PGPR meeting, Quimara, Medellín, Colombia 2012, p. 60, ISBN 978-958-46-0908-3), A. brasilense BR 11005 (SP245; e.g. in GELFIX Gramíneas from BASF Agricultural Specialties Ltd., Brazil), A. lipoferum BR 11646 (Sp31) (Proc. 9th Int. and 1st Latin American PGPR meeting, Quimara, Medellín, Colombia 2012, p. 60), B. amyloliquefaciens IN937a (J. Microbiol. Biotechnol. 17(2), 280–286, 2007; e.g. in BioYield® from Gustafson LLC, TX, USA), B. amyloliquefaciens IT-45 (CNCM I 3800) (e.g. Rhizocell C from ITHEC, France), B. amyloliquefaciens subsp. plantarum MBI600 (NRRL B-50595, deposited at United States Department of Agriculture) (e.g. Integral®, Subtilex® NG from Becker Underwood, USA), B. cereus CNCM I-1562 (US 6,406,690), B. firmus CNCM I-1582 (WO 2009/126473, WO 2009/124707, US 6,406,690; Votivo® from Bayer Crop Science LP, USA), B. pumilus GB34 (ATCC 700814; e.g. in YieldShield® from Gustafson LLC, TX, USA), and Bacillus pumilus KFP9F (NRRL B-50754) (e.g. in BAC-UP or FUSION-P from Becker Underwood South Africa), B. pumilus QST 2808 (NRRL B 30087) (e.g. Sonata® and Ballad® Plus from AgraQuest Inc., USA), B. subtilis GB03 (e.g. Kodiak® or BioYield® from Gustafson, Inc., USA; or Companion® from Growth Products, Ltd., White Plains, NY 10603, USA), B. subtilis GB07 (Epic® from Gustafson, Inc., USA), B. subtilis QST-713 (NRRL B 21661 in Rhapsody®, Serenade® MAX and Serenade® ASO from AgraQuest Inc., USA), B. subtilis var. amylolique¬faciens FZB24 (e.g. Taegro® from Novozyme Biologicals, Inc., USA), B. subtilis var. amyloliquefaciens D747 (e.g. Double Nickel 55 from Certis LLC, USA), B. thuringiensis ssp. aizawai ABTS-1857 (e.g. in XenTari® from BioFa AG, Münsingen, Germany), B. t. ssp. aizawai SAN 401 I, ABG-6305 and ABG-6346, Bacillus t. ssp. israelensis AM65-52 (e.g. in VectoBac® from Valent BioSciences, IL, USA), Bacillus thuringiensis ssp. kurstaki SB4 (NRRL B-50753; e.g. Beta Pro® from Becker Underwood, South Africa), B. t. ssp. kurstaki ABTS-351 identical to HD-1 (ATCC SD-1275; e.g. in Dipel® DF from Valent BioSciences, IL, USA), B. t. ssp. kurstaki EG 2348 (e.g. in Lepinox® or Rapax® from CBC (Europe) S.r.l., Italy), B. t. ssp. tenebrionis DSM 2803 (EP 0 585 215 B1; identical to NRRL B-15939; Mycogen Corp.), B. t. ssp. tenebrionis NB-125 (DSM 5526; EP 0 585 215 B1; also referred to as SAN 418 I or ABG-6479; former production strain of Novo-Nordisk), B. t. ssp. tenebrionis NB-176 (or NB-176-1) a gamma-irridated, induced high-yielding mutant of strain NB-125 (DSM 5480; EP 585 215 B1; Novodor® from Valent BioSciences, Switzerland), Beauveria bassiana ATCC 74040 (e.g. in Naturalis® from CBC (Europe) S.r.l., Italy), B. bassiana DSM 12256 (US 200020031495; e.g. BioExpert® SC from Live Sytems Technology S.A., Colombia), B. bassiana GHA (BotaniGard® 22WGP from Laverlam Int. Corp., USA), B. bassiana PPRI 5339 (ARSEF number 5339 in the USDA ARS collection of entomopathogenic fungal cultures; NRRL 50757) (e.g. BroadBand® from Becker Underwood, South Africa), B. brongniartii (e.g. in Melocont® from Agrifutur, Agrianello, Italy, for control of cockchafer; J. Appl. Microbiol. 100(5),1063-72, 2006), Bradyrhizobium sp. (e.g. Vault® from

Becker Underwood, USA), B. japonicum (e.g. VAULT® from Becker Underwood, USA), Candida oleophila I-182 (NRRL Y-18846; e.g. Aspire® from Ecogen Inc., USA, Phytoparasitica 23(3), 231-234, 1995), C. oleophila strain O (NRRL Y-2317; Biological Control 51, 403–408, 2009),, Candida saitoana (e.g. Biocure® (in mixture with lysozyme) and BioCoat® from Micro Flo Company, USA (BASF SE) and Arysta), Chitosan (e.g. Armour-Zen® from BotriZen Ltd., NZ), Clonostachys rosea f. catenulata, also named Gliocladium catenulatum (e.g. isolate J 1446: Prestop® from Verdera Oy, Finland), Chromobacterium subtsugae PRAA4-1 isolated from soil under an eastern hemlock (Tsuga canadensis) in the Catoctin Mountain region of central Maryland (e.g. in GRANDEVO from Marrone Bio Innovations, USA), Coniothyrium minitans CON/M/91-08 (e.g. Contans® WG from Prophyta, Germany), Cryphonectria parasitica (e.g. Endothia parasitica from CNICM, France), Cryptococcus albidus (e.g. YIELD PLUS® from Anchor Bio-Technologies, South Africa), Cryptophlebia leucotreta granulovirus (CrleGV) (e.g. in CRYPTEX from Adermatt Biocontrol, Switzerland), Cydia pomonella granulovirus (CpGV) V03 (DSM GV-0006; e.g. in MADEX Max from Andermatt Biocontrol, Switzerland), CpGV V22 (DSM GV-0014; e.g. in MADEX Twin from Adermatt Biocontrol, Switzerland), Delftia acidovorans RAY209 (ATCC PTA-4249; WO 2003/57861; e.g. in BIOBOOST from Brett Young, Winnipeg, Canada), Dilophosphora alopecuri (Twist Fungus from Becker Underwood, Australia), Ecklonia maxima (kelp) extract (e.g. KELPAK SL from Kelp Products Ltd, South Africa), formononetin (e.g. in MYCONATE from Plant Health Care plc, U.K.), Fusarium oxysporum (e.g. BIOFOX® from S.I.A.P.A., Italy, FUSACLEAN® from Natural Plant Protection, France), Glomus intraradices (e.g. MYC 4000 from ITHEC, France), Glomus intraradices RTI-801 (e.g. MYKOS from Xtreme Gardening, USA or RTI Reforestation Technologies International; USA), grapefruit seeds and pulp extract (e.g. BC-1000 from Chemie S.A., Chile), harpin (alpha-beta) protein (e.g. MESSENGER or HARP-N-Tek from Plant Health Care plc, U.K.; Science 257, 1–132, 1992), Heterorhabditis bacteriophaga (e.g. Nemasys® G from Becker Underwood Ltd., UK), Isaria fumosorosea Apopka-97 (ATCC 20874) (PFR-97™ from Certis LLC, USA), cis-jasmone (US 8,221,736), laminarin (e.g. in VACCIPLANT from Laboratoires Goemar, St. Malo, France or Stähler SA, Switzerland), Lecanicillium longisporum KV42 and KV71 (e.g. VERTALEC® from Koppert BV, Netherlands), L. muscarium KV01 (formerly Verticillium lecanii) (e.g. MYCOTAL from Koppert BV, Netherlands), Lysobacter antibioticus 13-1 (Biological Control 45, 288-296, 2008), L. antibioticus HS124 (Curr. Microbiol. 59(6), 608-615, 2009), L. enzymogenes 3.1T8 (Microbiol. Res. 158, 107-115; Biological Control 31(2), 145-154, 2004), Metarhizium anisopliae var. acridum IMI 330189 (isolated from Ornithacris cavroisi in Niger; also NRRL 50758) (e.g. GREEN MUSCLE® from Becker Underwood, South Africa), M. a. var. acridum FI-985 (e.g. GREEN GUARD® SC from Becker Underwood Pty Ltd, Australia), M. anisopliae FI-1045 (e.g. BIOCANE® from Becker Underwood Pty Ltd, Australia), M. anisopliae F52 (DSM 3884, ATCC 90448; e.g. MET52® Novozymes Biologicals BioAg Group, Canada), M. anisopliae ICIPE 69 (e.g. METATHRIPOL from ICIPE, Nairobe, Kenya), Metschnikowia fructicola (NRRL Y-30752; e.g. SHEMER® from Agrogreen, Israel, now distributed by Bayer CropSciences, Germany; US 6,994,849), Microdochium dimerum (e.g. ANTIBOT® from Agrauxine, France), Microsphaeropsis ochracea P130A (ATCC 74412 isolated from apple leaves from an abandoned orchard, St-Joseph-du-Lac, Quebec, Canada in 1993; Mycologia 94(2), 297-301, 2002), Muscodor albus QST 20799 originally isolated from the bark of a cinnamon tree in Honduras (e.g. in development products Muscudor™ or QRD300 from AgraQuest, USA), Neem

oil (e.g. TRILOGY®, TRIACT® 70 EC from Certis LLC, USA), Nomuraea rileyi strains SA86101, GU87401, SR86151, CG128 and VA9101, Paecilomyces fumosoroseus FE 9901 (e.g. NO FLY™ from Natural Industries, Inc., USA), P. lilacinus 251 (e.g. in BioAct®/MeloCon® from Prophyta, Germany; Crop Protection 27, 352-361, 2008; originally isolated from infected nematode eggs in the Philippines), P. lilacinus DSM 15169 (e.g. NEMATA® SC from Live Systems Technology S.A., Colombia), P. lilacinus BCP2 (NRRL 50756; e.g. PL GOLD from Becker Underwood BioAg SA Ltd, South Africa), mixture of Paenibacillus alvei NAS6G6 (NRRL B-50755), Pantoea vagans (formerly agglomerans) C9-1 (originally isolated in 1994 from apple stem tissue; BlightBan C9-1® from NuFrams America Inc., USA, for control of fire blight in apple; J. Bacteriol. 192(24) 6486–6487, 2010), Pasteuria spp. ATCC PTA-9643 (WO 2010/085795), Pasteuria spp. ATCC SD-5832 (WO 2012/064527), P. nishizawae (WO 2010/80169), P. penetrans (US 5,248,500), P. ramose (WO 2010/80619), P. thornea (WO 2010/80169), P. usgae (WO 2010/80169), Penicillium bilaiae (e.g. Jump Start® from Novozymes Biologicals BioAg Group, Canada, originally isolated from soil in southern Alberta; Fertilizer Res. 39, 97-103, 1994), Phlebiopsis gigantea (e.g. RotStop® from Verdera Oy, Finland), Pichia anomala WRL-076 (NRRL Y-30842; US 8,206,972), potassium bicarbonate (e.g. Amicarb® fromm Stähler SA, Switzerland), potassium silicate (e.g. Sil-MATRIX™ from Certis LLC, USA), Pseudozyma flocculosa PF-A22 UL (e.g. Sporodex® from Plant Products Co. Ltd., Canada), Pseudomonas sp. DSM 13134 (WO 2001/40441, e.g. in PRORADIX from Sourcon Padena GmbH & Co. KG, Hechinger Str. 262, 72072 Tübingen, Germany), P. chloraphis MA 342 (e.g. in CERALL or CEDEMON from BioAgri AB, Uppsala, Sweden), P. fluorescens CL 145A (e.g. in ZEQUANOX from Marrone BioInnovations, Davis, CA, USA; J. Invertebr. Pathol. 113(1):104-14, 2013), Pythium oligandrum DV 74 (ATCC 38472; e.g. POLYVERSUM® from Remeslo SSRO, Biopreparaty, Czech Rep. and GOWAN, USA; US 2013/0035230), Reynoutria sachlinensis extract (e.g. REGALIA® SC from Marrone BioInnovations, Davis, CA, USA), Rhizobium leguminosarum bv. phaseoli (e.g. RHIZO-STICK from Becker Underwood, USA), R. l. trifolii RP113-7 (e.g. DORMAL from Becker Underwood, USA; Appl. Environ. Microbiol. 44(5), 1096-1101), R. l. bv. viciae P1NP3Cst (also referred to as 1435; New Phytol 179(1), 224-235, 2008; e.g. in NODULATOR PL Peat Granule from Becker Underwood, USA; or in NODULATOR XL PL bfrom Becker Underwood, Canada), R. l. bv. viciae SU303 (e.g. NODULAID Group E from Becker Underwood, Australia), R. l. bv. viciae WSM1455 (e.g. NODULAID Group F from Becker Underwood, Australia), R. tropici SEMIA 4080 (identical to PRF 81; Soil Biology & Biochemistry 39, 867–876, 2007), Sinorhizobium meliloti MSDJ0848 (INRA, France) also referred to as strain 2011 or RCR2011 (Mol Gen Genomics (2004) 272: 1–17; e.g. DORMAL ALFALFA from Becker Underwood, USA; NITRAGIN® Gold from Novozymes Biologicals BioAg Group, Canada), Sphaerodes mycoparasitica IDAC 301008-01 (WO 2011/022809), Steinernema carpocapsae (e.g. MILLENIUM® from Becker Underwood Ltd., UK), S. feltiae (NEMASHIELD® from BioWorks, Inc., USA; NEMASYS® from Becker Underwood Ltd., UK), S. kraussei L137 (NEMASYS® L from Becker Underwood Ltd., UK), Streptomyces griseoviridis K61 (e.g. MYCOSTOP® from Verdera Oy, Espoo, Finland; Crop Protection 25, 468-475, 2006), S. lydicus WYEC 108 (e.g. Actinovate® from Natural Industries, Inc., USA, US 5,403,584), S. violaceusniger YCED-9 (e.g. DT-9® from Natural Industries, Inc., USA, US 5,968,503), Talaromyces flavus V117b (e.g. PROTUS® from Prophyta, Germany), Trichoderma asperellum SKT-1 (e.g. ECO-HOPE® from

Kumiai Chemical Industry Co., Ltd., Japan), T. asperellum ICC 012 (e.g. in TENET WP, REMDIER WP, BIOTEN WP from Isagro NC, USA, BIO-TAM from AgraQuest, USA), T. atroviride LC52 (e.g. SENTINEL® from Agrimm Technologies Ltd, NZ), T. atroviride CNCM I-1237 (e.g. in Esquive WG from Agrauxine S.A., France, e.g. against pruning wound diseases on vine and plant root pathogens), T. fertile JM41R (NRRL 50759; e.g. RICHPLUS™ from Becker Underwood Bio Ag SA Ltd, South Africa), T. gamsii ICC 080 (e.g. in TENET WP, REMDIER WP, BIOTEN WP from Isagro NC, USA, BIO-TAM from AgraQuest, USA), T. harzianum T-22 (e.g. PLANTSHIELD® der Firma BioWorks Inc., USA), T. harzianum TH 35 (e.g. ROOT PRO® from Mycontrol Ltd., Israel), T. harzianum T-39 (e.g. TRICHODEX® and TRICHODERMA 2000® from Mycontrol Ltd., Israel and Makhteshim Ltd., Israel), T. harzianum and T. viride (e.g. TRICHOPEL from Agrimm Technologies Ltd, NZ), T. harzianum ICC012 and T. viride ICC080 (e.g. REMEDIER® WP from Isagro Ricerca, Italy), T. polysporum and T. harzianum (e.g. BINAB® from BINAB Bio-Innovation AB, Sweden), T. stromaticum (e.g. TRICOVAB® from C.E.P.L.A.C., Brazil), T. virens GL-21 (also named Gliocladium virens) (e.g. SOILGARD® from Certis LLC, USA), T. viride (e.g. TRIECO® from Ecosense Labs. (India) Pvt. Ltd., Indien, BIO-CURE® F from T. Stanes & Co. Ltd., Indien), T. viride TV1 (e.g. T. viride TV1 from Agribiotec srl, Italy) and Ulocladium oudemansii HRU3 (e.g. in BOTRY-ZEN® from Botry-Zen Ltd, NZ).

Strains can be sourced from genetic resource and deposition centers: American Type Culture Collection, 10801 University Blvd., Manassas, VA 20110-2209, USA (strains with ATCC prefic); CABI Europe - International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TYNRRL, UK (strains with prefices CABI and IMI); Centraalbureau voor Schimmelcultures, Fungal Biodiversity Centre, Uppsalaan 8, PO Box 85167, 3508 AD Utrecht, Netherlands (strains with prefic CBS); Division of Plant Industry, CSIRO, Canberra, Australia (strains with prefix CC); Collection Nationale de Cultures de Microorganismes, Institut Pasteur, 25 rue du Docteur Roux, F-75724 PARIS Cedex 15 (strains with prefix CNCM); Leibniz-Institut DSMZ-Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH, Inhoffenstraße 7 B, 38124 Braunschweig, Germany (strains with prefix DSM); International Depositary Authority of Canada Collection, Canada (strains with prefix IDAC); Interntional Collection of Micro-orgniasms from Plants, Landcare Research, Private Bag 92170, Auckland Mail Centre, Auckland 1142, New Zealand (strans with prefix ICMP); IITA, PMB 5320, Ibadan, Nigeria (straisn with prefix IITA); The National Collections of Industrial and Marine Bacteria Ltd., Torry Research Station, P.O. Box 31, 135 Abbey Road, Aberdeen, AB9 8DG, Scotland (strains with prefix NCIMB); ARS Culture Collection of the National Center for Agricultural Utilization Research, Agricultural Research Service, U.S. Department of Agriculture, 1815 North University Street, Peoria, Illinois 61604, USA (strains with prefix NRRL); Department of Scientific and Industrial Research Culture Collection, Applied Biochemistry Division, Palmerston North, New Zealand (strains with prefix NZP); FEPAGRO-Fundação Estadual de Pesquisa Agropecuária, Rua Gonçalves Dias, 570, Bairro Menino Deus, Porto Alegre/RS, Brazil (strains with prefix SEMIA); SARDI, Adelaide, South Australia (strains with prefix SRDI); U.S. Department of Agriculture, Agricultural Research Service, Soybean and Alfalfa Research Laboratory, BARC-West, 10300 Baltimore Boulevard, Building 011, Room 19-9, Beltsville, MD 20705, USA (strains with prefix USDA: Beltsville Rhizobium Culture Collection Catalog March 1987 USDA-ARS ARS-30: http://pdf.usaid.gov/pdf_docs/PNAAW891.pdf); and Murdoch University, Perth, Western Australia (strains with prefix WSM). Further strains may be found at the Global catalogue of

Microorganisms: http://gcm.wfcc.info/ and http://www.landcareresearch.co.nz/resources/collections/icmp and further references to strain collections and their prefixes at http://refs.wdcm.org/collections.htm.

Bacillus amyloliquefaciens subsp. plantarum MBI600 (NRRL B-50595) is deposited under accession number NRRL B-50595 with the strain designation Bacillus subtilis 1430 (and identical to NCIMB 1237). Recently, MBI 600 has been re-classified as Bacillus amyloliquefaciens subsp. plantarum based on polyphasic testing which combines classical microbiological methods relying on a mixture of traditional tools (such as culture-based methods) and molecular tools (such as genotyping and fatty acids analysis). Thus, Bacillus subtilis MBI600 (or MBI 600 or MBI-600) is identical to Bacillus amyloliquefaciens subsp. plantarum MBI600, formerly Bacillus subtilis MBI600. Bacillus amyloliquefaciens MBI600 is known as plant growth-promoting rice seed treatment from Int. J. Microbiol. Res. 3(2) (2011), 120-130 and further described e.g. in US 2012/0149571 A1. This strain MBI600 is e.g. commercially available as liquid formulation product INTEGRAL® (Becker-Underwood Inc., USA).

Bacillus subtilis strain FB17 was originally isolated from red beet roots in North America (System Appl. Microbiol 27 (2004) 372-379). This B. subtilis strain promotes plant health (US 2010/0260735 A1; WO 2011/109395 A2). B. subtilis FB17 has also been deposited at ATCC under number PTA-11857 on April 26, 2011. Bacillus subtilis strain FB17 may be referred elsewhere to as UD1022 or UD10-22.

Bacillus amyloliquefaciens AP-136 (NRRL B-50614), B. amyloliquefaciens AP-188 (NRRL B-50615), B. amyloliquefaciens AP-218 (NRRL B-50618), B. amyloliquefaciens AP-219 (NRRL B-50619), B. amyloliquefaciens AP-295 (NRRL B-50620), B. japonicum SEMIA 5079 (e.g. Gelfix 5 or Adhere 60 from Nitral Urbana Laoboratories, Brazil, a BASF Company), B. japonicum SEMIA 5080 (e.g. GELFIX 5 or ADHERE 60 from Nitral Urbana Laoboratories, Brazil, a BASF Company), B. mojavensis AP-209 (NRRL B-50616), B. solisalsi AP-217 (NRRL B-50617), B. pumilus strain INR-7 (otherwise referred to as BU-F22 (NRRL B-50153) and BU-F33 (NRRL B-50185)), B. simplex ABU 288 (NRRL B-50340) and B. amyloliquefaciens subsp. plantarum MBI600 (NRRL B-50595) have been mentioned i.a. in US patent appl. 20120149571, US 8,445,255, WO 2012/079073. Bradyrhizobium japonicum USDA 3 is known from US patent 7,262,151.

Jasmonic acid or salts (jasmonates) or derivatives include without limitation potassi-um jasmonate, sodium jasmonate, lithium jasmonate, ammonium jasmonate, dimethyl-ammonium jasmonate, isopropylammonium jasmonate, diolammonium jasmonate, diethtriethanolammonium jasmonate, jasmonic acid methyl ester, jasmonic acid amide, jasmonic acid methylamide, jasmonic acid-L-amino acid (amide-linked) conjugates (e.g., conjugates with L-isoleucine, L-valine, L-leucine, or L-phenylalanine), 12-oxo-phytodienoic acid, coronatine, coronafacoyl-L-serine, coronafacoyl-L-threonine, methyl esters of 1-oxo-indanoyl-isoleucine, methyl esters of 1-oxo-indanoyl-leucine, coronalon (2-[(6-ethyl-l-oxo-indane-4-carbonyl) -amino]-3-methyl -pentanoic acid methyl ester), linoleic acid or derivatives thereof and cis-jasmone, or combinations of any of the above.

Humates are humic and fulvic acids extracted from a form of lignite coal and clay, known as leonardite. Humic acids are organic acids that occur in humus and other organically derived materials such as peat and certain soft coal. They have been shown to increase fertilizer

efficiency in phosphate and micro-nutrient uptake by plants as well as aiding in the development of plant root systems.

It is preferred that the mixtures comprise as compounds III fungicidal compounds that are independently of each other selected from the groups A), B), C), D), E), F), G), H), I), J), K) and L), more preferably in combination with an organic acid such as citric acid, lactic acid or ascorbic acid.

According to another embodiment of the invention, mixtures comprise as compound III a herbicidal compound that is selected from the group N).

It is preferred that the mixtures comprise as compounds III fungicidal compounds that are independently of each other selected from the group M), more preferably selected from prohexadion-calcium, ehephon and cyclanilide.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group A) and particularly selected from azoxystrobin, dimoxystrobin, fluoxastrobin, kresoxim-methyl, orysastrobin, picoxystrobin, pyraclostrobin, trifloxystrobin; famoxadone, fenamidone; benzovindiflupyr, bixafen, boscalid, fluopyram, fluxapyroxad, isopyrazam, penflufen, penthiopyrad, sedaxane; ametoctradin, cyazofamid, fluazinam, fentin salts, such as fentin acetate.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group B) and particularly selected from cyproconazole, difenoconazole, epoxiconazole, fluquinconazole, flusilazole, flutriafol, metconazole, myclobutanil, penconazole, propiconazole, prothioconazole, triadimefon, triadimenol, tebuconazole, tetraconazole, triticonazole, prochloraz, fenarimol, triforine; dodemorph, fenpropimorph, tridemorph, fenpropidin, spiroxamine; fenhexamid.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group E) and particularly selected from cyprodinil, mepanipyrim, pyrimethanil.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group G) and particularly selected from dimethomorph, flumorph, iprovalicarb, benthiavalicarb, mandipropamid, propamocarb.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group H) and particularly selected from copper acetate, copper hydroxide, copper oxychloride, copper sulfate, sulfur, mancozeb, metiram, propineb, thiram, captafol, folpet, chlorothalonil, dichlofluanid, dithianon.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group J) and particularly selected from acibenzolar-S-methyl, probenazole, tiadinil, fosetyl, fosetyl-aluminium, H_3PO_3 and salts thereof.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group K) and particularly selected from cymoxanil, proquinazid and *N*-methyl-2-{1-[(5-methyl-3-trifluoromethyl-1H-pyrazol-1-yl)-acetyl]-piperidin-4-yl}-*N*-[(1R)-1,2,3,4-tetrahydronaphthalen-1-yl]-4-thiazolecarboxamide.

Preference is also given to mixtures comprise as compound III (component 3) at least one active substance selected from group L) and particularly selected from *Bacillus subtilis* strain NRRL No. B-21661, *Bacillus pumilus* strain NRRL No. B-30087 and *Ulocladium oudemansii* .

According to a further embodiment, mixtures comprise as compound III a further insecticidal

compound that is selected from the group O).

According to a further embodiment of ternary mixtures, component 3) is an extract of Acacia negra (see WO 2006/0210264), more preferably a water-based extract of Acacia negra.

The mixtures and compositions according to the invention are suitable as plant growth regulators. They are distinguished by an outstanding effectiveness for accelerating or retarding the rate of growth or maturation or for otherwise altering the behavior of ornamental or crop plants or the produce thereof.

An example of a plant growth regulator application is influencing the elongation of the aerial part of the plant (growth-regulatory). This extends to virtually all of the developmental stages of a plant.

Thus, for example, it is possible to severely inhibit the vegetative growth of the shoot of plants, which manifests itself in particular in reduced elongation. Accordingly, the growth of the treated plants is stunted; also, the leaves are darker in color. Advantageous for practice conditions is a reduced intensity of the growth of grasses on verges, hedges, canal embankments and on lawned areas such as parks, sports grounds and orchards, ornamental lawns and airports, so that grass cutting, which is laborious and expensive, can be reduced. Also, more compact growth is desirable in a number of ornamental species.

Increasing the standing ability of crops which are prone to lodging, such as cereals, corn, oilseed rape and sunflowers, is also of economic interest. The resultant shortened and strengthened stem axis reduces or eliminates the danger of “lodging” (breaking) of plants under adverse weather conditions before harvesting. Another important aspect is the growth-regulatory application for inhibiting elongation and for modifying the course of maturation over time in cotton. This makes possible completely automated harvesting of this crop plant. In fruit trees and other trees, pruning costs can be saved by means of growth regulation. At the same time, the ratio which is achieved between vegetative growth and fruit development is more advantageous. Moreover, biennial bearing of fruit trees may be avoided by means of growth regulation. Also, the growth-regulatory application may increase or inhibit lateral branching of the plants. This is of interest if, for example in tobacco plants, the development of side shoots (lateral shoots) is to be inhibited in order to favor foliar growth.

Also, frost hardness may be increased substantially by means of plant growth regulation, for example in the case of winter oilseed rape. Here, the vegetative development of the young oilseed rape plants after sowing and before the onset of winter frost is slowed down despite favorable growth conditions. Elongation and the development of too lush a foliar or plant biomass (which is therefore particularly sensitive to frost) are inhibited. Thus, the risk of frost damage of plants which tend toward premature breakdown of floral inhibition and tend to switch over to the generative phase is also reduced. In other crops too, for example in winter cereals, it is advantageous for the stands to be well into the tillering phase in autumn owing to growth-regulatory treatment, but to enter the cold season without unduly lush growth. This prevents increased sensitivity to subzero temperatures and - owing to the relatively low quantity of foliar biomass or plant biomass - attack by a variety of diseases (for example fungal disease). Moreover, inhibiting the vegetative growth makes possible denser planting of the soil in a number of crop plants so that higher yields based on the acreage can be achieved. Moreover, higher yields both in terms of plant parts and in terms of plant constituents can be achieved by

means of growth regulation. Thus, it is possible for example to induce the growth of larger amounts of buds, flowers, leaves, fruits, seed kernels, roots and tubers, to increase the sugar content in sugar beet, sugar cane and citrus fruits, to increase the protein content in cereals or soybeans or to stimulate increased latex flux in rubber trees. In this context, the active compounds may bring about increased yields by intervening in the plant metabolism or by promoting or inhibiting the vegetative and/or the generative growth. Finally, plant growth regulation may also bring about shortened or extended developmental stages or acceleration or delay in maturity of the harvested plant parts pre– or post–harvest.

Of economical interest is, for example, the facilitation of harvesting which is made possible by the concentration, over time, of the dehiscence or reduced adhesion to the tree in the case of citrus fruits, olives or in other varieties and cultivars of pome fruit, stone fruit and shelled fruit. The same mechanism, that is to say the promotion of the development of abscission tissue between, on the one hand, the fruit or leaf portion and, on the other hand, the shoot portion of the plant is also essential for a thoroughly controlled defoliation of useful plants such as, for example, cotton.

Defoliants, desiccants and ripeners are classified as harvest aid chemicals because they are commonly used to facilitate mechanical harvesting of cultivated plants or improve the quality of the harvested crop. Desiccation, defoliation and/or ripening of cultivated plants (crops) is a standard pre-harvest practice in certain cultivated plants such as cotton, tobacco, potatoes, tomatoes, oil seed rape, rice, sunflowers, soybean, field peas, lentil, sugar cane, dry beans and faba bean to increase harvest efficiency and crop quality. Defoliants, desiccants, and growth regulators are chemicals used in agricultural production to accelerate the preparation of crops for mechanical harvest.

Defoliation resulting in removal of the foliage is mainly required in cotton and is a sensitive process. For a successful harvest, defoliation must be carefully timed and carried out. Defoliation may also to increase harvest efficiency, reduce lodging, reduce trash and lint staining and reduce cotton seed moisture. Poor defoliation can lower harvest quality, while defoliating too early lowers yield. Defoliating too late increases the likelihood of harvest rot and damage or loss due to weathering.

Desiccation is the term used for a pre-harvest practice to rapidly kill vegetative growth or to promote uniform yellowing of the foliage of the respecitive crop plants e.g. in tobacco, potatoes, tomatoes, oil seed rape, rice, sunflowers, soybean, field peas, lentil, sugar cane and faba bean. This allows for rapid or more regular dry down and an earlier harvest. It can further help farmers plan their harvest operations, salvage crops which are ripening irregularly and produce harvest of increased quality, e.g. potato tuber quality.

Ripeners are used for example in sugar cane to increase the sugar content of the harvest. Ripeners hasten plant maturity and prolong the period of maximum stalk sucrose concentration. Ripeners typically inhibit apical meristem growth. Presumably, this allows energy ordinarily used for vegetative growth to be diverted to the manufacturing and storing of sucrose. A ripener can also extend the period of high sucrose in responsive varieties. As a result of leaf desiccation, an improved trash burn at harvest can be expected. Most of the enhanced sucrose content will be concentrated in the top of the treated cane stalk. Ripener application rates can lead to an earlier harvest (e.g., 3 weeks after application) than sugarcane treated without any ripener treatment.

The mixtures and compositions according to the invention are particularly suitable as

defoliants, desiccants and ripeners.

According to one embodiment, the mixtures and compositions according to the invention can be used as defoliants in cotton.

According to another embodiment, the mixtures and compositions according to the invention can be used as desiccants in tobacco, potato, tomato, oil seed rape, rice, sunflowers, soybean, dry bean, faba bean, field peas, lentil and sugar cane, more preferably in potato, soybean and sugar cane.

According to a further embodiment, the mixtures and compositions according to the invention can be used as ripener in sugar cane.

Moreover, growth regulation may bring about a reduction in the water consumption of plants. This is particulary important in the case of cropped areas which require artificial irrigation, which requires great financial input, for example in arid or semi-arid zones. Owing to the growth-regulatory application, the irrigation intensity may be reduced and farm economics improved. The effect of growth regulators may bring about better exploitation of the available water since, for example, the degree of stomatal opening is reduced, a thicker epidermis and cuticula are formed, root penetration into the soil is improved, the transpiring leaf surface area is reduced, or the microplant climate in the crop stand is advantageously affected by more compact growth.

The plant growth regulating use according to the invention is particularly important for ornamentals, especially for fruit trees.

The plant growth regulating use according to the invention is also particularly important for cereals, such as wheat, rye, barley, triticale, oats or rice, and in oilseed rape.

A particular subject matter of the present invention is the use of the mixture according to the invention for improving root growth. The purpose of this use is predominantly the development of an increased number of root branches, longer roots and/or an increased root surface area. This improves the water and nutrient uptake capacity of the plants. This is advantageous in particular in the case of light, for example sandy, soils and/or when there is a lack of precipitation. In autumn, a larger storage root is formed in particular in winter oilseed rape to allow for more intense new growth in spring. In spring, the improved root system provides better anchorage of the shoot in the ground so that the plants' standing ability is markedly improved. In other plants, the storage root constitutes all or the major part of the plant organ to be harvested (for example other Brassicaceae such as radish, but also sugar beet, carrots or chicory).

Improved root growth is particularly advantageous when this is accompanied by a reduction of the vegetative growth, that is to say in particular with inhibited shoot elongation (shortening) and/or reduced foliar biomass or plant biomass. Accordingly, the present use is advantageously directed at a reduction of the quotient of shoot biomass to root biomass.

This use, which is directed at the root development, takes place in particular in cereal production, for example for wheat, barley, oats and rye, also corn and rice, and very particularly in the case of plants which develop storage roots, such as Brassicacea, for example radish, predominantly oilseed rape and in particular winter oilseed rape, and sugarbeet, carrots or chicory. Oilseed rape production must be mentioned in particular in this context; this is where an improved root growth is particularly effective. In practice, this application, which is directed at the development of roots, may gain particular importance under specific conditions, for example in the case of relatively dry soils and/or during the phase in which the plant develops the root system. With a simultaneous reduction of the shoot elongation, the improved root growth is

particularly advantageous.

The mixtures and compositions according to the invention are particularly important in the regulation of growth of various cultivated plants, such as cereals, e. g. wheat, rye, barley, triticale, oats or rice; beet, e. g. sugar beet or fodder beet; fruits, such as pomes, stone fruits or soft fruits, e. g. apples, pears, plums, peaches, almonds, cherries, strawberries, raspberries, blackberries or gooseberries; leguminous plants, such as lentils, peas, alfalfa or soybeans; oil plants, such as rape, mustard, olives, sunflowers, coconut, cocoa beans, castor oil plants, oil palms, ground nuts or soybeans; cucurbits, such as squashes, cucumber or melons; fiber plants, such as cotton, flax, hemp or jute; citrus fruit, such as oranges, lemons, grapefruits or mandarins; vegetables, such as spinach, lettuce, asparagus, cabbages, carrots, onions, tomatoes, potatoes, cucurbits or paprika; lauraceous plants, such as avocados, cinnamon or camphor; energy and raw material plants, such as corn, soybean, rape, sugar cane or oil palm; corn; tobacco; nuts; coffee; tea; bananas; vines (table grapes and grape juice grape vines); hop; turf; natural rubber plants or ornamental and forestry plants, such as flowers, shrubs, broad-leaved trees or evergreens, e. g. conifers.

Preferably the inventive mixtures and compositions are used for regulating the growth of field crops, such as potatoes sugar beets, tobacco, wheat, rye, barley, oats, rice, corn, cotton, soybeans, rape, legumes, sunflowers, coffee or sugar cane; fruits; vines; ornamentals; or vegetables, such as cucumbers, tomatoes, beans or squashes.

The term "plant propagation material" is to be understood to denote all the generative parts of the plant such as seeds and vegetative plant material such as cuttings and tubers (e. g. potatoes), which can be used for the multiplication of the plant. This includes seeds, roots, fruits, tubers, bulbs, rhizomes, shoots, sprouts and other parts of plants, including seedlings and young plants, which are to be transplanted after germination or after emergence from soil. These young plants may also be treated before transplantation by a total or partial treatment by immersion or pouring.

Preferably, treatment of plant propagation materials with the inventive combination of a Quillay extract and compounds II and compositions thereof, respectively, is used for regulating growth of cereals, such as wheat, rye, barley and oats; rice, corn, cotton and soybeans.

The term "cultivated plants" is to be understood as including plants which have been modified by breeding, mutagenesis or genetic engineering including but not limiting to agricultural biotech products on the market or in development (cf. http://www.bio.org/speeches/pubs/er/agri_products.asp). Genetically modified plants are plants, which genetic material has been so modified by the use of recombinant DNA techniques that under natural circumstances cannot readily be obtained by cross breeding, mutations or natural recombination. Typically, one or more genes have been integrated into the genetic material of a genetically modified plant in order to improve certain properties of the plant. Such genetic modifications also include but are not limited to targeted post-transtional modification of protein(s), oligo- or polypeptides e. g. by glycosylation or polymer additions such as prenylated, acetylated or farnesylated moieties or PEG moieties.

Plant propagation materials may be treated with the mixtures and compositions of the invention either at or before planting or transplanting.

The invention also relates to agrochemical compositions comprising an auxiliary and at least a water-based Quillay extract and a compound II according to the invention.

An agrochemical composition comprises a plant growth regulating effective amount of a Quillay extract and a compound II. The term "effective amount" denotes an amount of the composition or of the Quillay extract and of the compound II, which is sufficient for plant growth regulation of cultivated plants as defined above and which does not result in an unwanted damage to the treated plants. Such an amount can vary in a broad range and is dependent on various factors, such as environmental factors, the treated cultivated plant species and variety and climatic conditions.

The Quillay extract and a compound II can be converted into customary types of agrochemical compositions, e. g. solutions, emulsions, suspensions, dusts, powders, pastes, granules, pressings, capsules, and mixtures thereof. Examples for composition types are suspensions (e.g. SC, OD, FS), emulsifiable concentrates (e.g. EC), emulsions (e.g. EW, EO, ES, ME), capsules (e.g. CS, ZC), pastes, pastilles, wettable powders or dusts (e.g. WP, SP, WS, DP, DS), pressings (e.g. BR, TB, DT), granules (e.g. WG, SG, GR, FG, GG, MG), insecticidal articles (e.g. LN), as well as gel formulations for the treatment of plant propagation materials such as seeds (e.g. GF). These and further compositions types are defined in the “Catalogue of pesticide formulation types and international coding system”, Technical Monograph No. 2, 6th Ed. May 2008, CropLife International.

The compositions are prepared in a known manner, such as described by Mollet and Grubemann, Formulation technology, Wiley VCH, Weinheim, 2001; or Knowles, New developments in crop protection product formulation, Agrow Reports DS243, T&F Informa, London, 2005.

Suitable auxiliaries are solvents, liquid carriers, solid carriers or fillers, surfactants, dispersants, emulsifiers, wetters, adjuvants, solubilizers, penetration enhancers, protective colloids, adhesion agents, thickeners, humectants, repellents, attractants, feeding stimulants, compatibilizers, bactericides, anti-freezing agents, anti-foaming agents, colorants, tackifiers and binders.

Suitable solvents and liquid carriers are water and organic solvents, such as mineral oil fractions of medium to high boiling point, e.g. kerosene, diesel oil; oils of vegetable or animal origin; aliphatic, cyclic and aromatic hydrocarbons, e. g. toluene, paraffin, tetrahydronaphthalene, alkylated naphthalenes; alcohols, e.g. ethanol, propanol, butanol, benzylalcohol, cyclohexanol; glycols; DMSO; ketones, e.g. cyclohexanone; esters, e.g. lactates, carbonates, fatty acid esters, gamma-butyrolactone; fatty acids; phosphonates; amines; amides, e.g. N-methylpyrrolidone, fatty acid dimethylamides; and mixtures thereof.

Suitable solid carriers or fillers are mineral earths, e.g. silicates, silica gels, talc, kaolins, limestone, lime, chalk, clays, dolomite, diatomaceous earth, bentonite, calcium sulfate, magnesium sulfate, magnesium oxide; polysaccharides, e.g. cellulose, starch; fertilizers, e.g. ammonium sulfate, ammonium phosphate, ammonium nitrate, ureas; products of vegetable origin, e.g. cereal meal, tree bark meal, wood meal, nutshell meal, and mixtures thereof.

Suitable surfactants are surface-active compounds, such as anionic, cationic, nonionic and amphoteric surfactants, block polymers, polyelectrolytes, and mixtures thereof. Such surfactants can be used as emusifier, dispersant, solubilizer, wetter, penetration enhancer, protective colloid, or adjuvant. Examples of surfactants are listed in McCutcheon’s, Vol.1: Emulsifiers & Detergents, McCutcheon’s Directories, Glen Rock, USA, 2008 (International Ed. or North American Ed.).

Suitable anionic surfactants are alkali, alkaline earth or ammonium salts of sulfonates, sulfates, phosphates, carboxylates, and mixtures thereof. Examples of sulfonates are alkylarylsulfonates, diphenylsulfonates, alpha-olefin sulfonates, lignine sulfonates, sulfonates of fatty acids and oils, sulfonates of ethoxylated alkylphenols, sulfonates of alkoxylated arylphenols, sulfonates of condensed naphthalenes, sulfonates of dodecyl- and tridecylbenzenes, sulfonates of naphthalenes and alkylnaphthalenes, sulfosuccinates or sulfosuccinamates. Examples of sulfates are sulfates of fatty acids and oils, of ethoxylated alkylphenols, of alcohols, of ethoxylated alcohols, or of fatty acid esters. Examples of phosphates are phosphate esters. Examples of carboxylates are alkyl carboxylates, and carboxylated alcohol or alkylphenol ethoxylates.

Suitable nonionic surfactants are alkoxylates, N-subsituted fatty acid amides, amine oxides, esters, sugar-based surfactants, polymeric surfactants, and mixtures thereof. Examples of alkoxylates are compounds such as alcohols, alkylphenols, amines, amides, arylphenols, fatty acids or fatty acid esters which have been alkoxylated with 1 to 50 equivalents. Ethylene oxide and/or propylene oxide may be employed for the alkoxylation, preferably ethylene oxide. Examples of N-subsititued fatty acid amides are fatty acid glucamides or fatty acid alkanolamides. Examples of esters are fatty acid esters, glycerol esters or monoglycerides. Examples of sugar-based surfactants are sorbitans, ethoxylated sorbitans, sucrose and glucose esters or alkylpolyglucosides. Examples of polymeric surfactants are home- or copolymers of vinylpyrrolidone, vinylalcohols, or vinylacetate.

Suitable cationic surfactants are quaternary surfactants, for example quaternary ammonium compounds with one or two hydrophobic groups, or salts of long-chain primary amines. Suitable amphoteric surfactants are alkylbetains and imidazolines. Suitable block polymers are block polymers of the A-B or A-B-A type comprising blocks of polyethylene oxide and polypropylene oxide, or of the A-B-C type comprising alkanol, polyethylene oxide and polypropylene oxide. Suitable polyelectrolytes are polyacids or polybases. Examples of polyacids are alkali salts of polyacrylic acid or polyacid comb polymers. Examples of polybases are polyvinylamines or polyethyleneamines.

Suitable adjuvants are compounds, which have a neglectable or even no pesticidal activity themselves, and which improve the biological performance of the active ingredient on the target. Examples are surfactants, mineral or vegetable oils, and other auxilaries. Further examples are listed by Knowles, Adjuvants and additives, Agrow Reports DS256, T&F Informa UK, 2006, chapter 5.

Suitable thickeners are polysaccharides (e.g. xanthan gum, carboxymethylcellulose), anorganic clays (organically modified or unmodified), polycarboxylates, and silicates. Suitable bactericides are bronopol and isothiazolinone derivatives such as alkylisothiazolinones and benzisothiazolinones. Suitable anti-freezing agents are ethylene glycol, propylene glycol, urea and glycerin. Suitable anti-foaming agents are silicones, long chain alcohols, and salts of fatty acids. Suitable colorants (e.g. in red, blue, or green) are pigments of low water solubility and water-soluble dyes. Examples are inorganic colorants (e.g. iron oxide, titan oxide, iron hexacyanoferrate) and organic colorants (e.g. alizarin-, azo- and phthalocyanine colorants). Suitable tackifiers or binders are polyvinylpyrrolidons, polyvinylacetates, polyvinyl alcohols, polyacrylates, biological or synthetic waxes, and cellulose ethers.

According to the invention, the solid material (total dry matter) of the Quillay extract is considered as active component (e.g. to be obtained after drying or evaporation of the extraction medium).

In accordance with the present invention, the (weight) ratios used herein for the Quillay extract are based on the total weight of the dry content (solid material) of the extract.

The agrochemical compositions generally comprise between 0.01 and 95%, preferably between 0.1 and 90%, and in particular between 0.5 and 75%, by weight of active components.

Solutions for seed treatment (LS), suspoemulsions (SE), flowable concentrates (FS), powders for dry treatment (DS), water-dispersible powders for slurry treatment (WS), water-soluble powders (SS), emulsions (ES), emulsifiable concentrates (EC) and gels (GF) are usually employed for the purposes of treatment of plant propagation materials, particularly seeds. The compositions in question give, after two-to-tenfold dilution, active components concentrations of from 0.01 to 60% by weight, preferably from 0.1 to 40%, in the ready-to-use preparations. Application can be carried out before or during sowing. Methods for applying or treating with the Quillay extract and compound II and compositions thereof, respectively, on to plant propagation material, especially seeds include dressing, coating, pelleting, dusting, soaking and in-furrow application methods of the propagation material. Preferably, the Quillay extract and compound II or the compositions thereof, respectively, are applied on to the plant propagation material by a method such that germination is not induced, e. g. by seed dressing, pelleting, coating and dusting.

When employed in plant protection, the amounts of active components applied are, depending on the kind of effect desired, from 0.001 to 10 kg per ha, preferably from 0.005 to 2 kg per ha, more preferably from 0.05 to 0.9 kg per ha, in particular from 0.1 to 0.75 kg per ha.

In treatment of plant propagation materials such as seeds, e. g. by dusting, coating or drenching seed, amounts of active components of from 0.1 to 10000 g, preferably from 1 to 2000 g, more preferably from 1 to 500 g and most preferably from 5 to 100 g, per 100 kilogram of plant propagation material (preferably seed) are generally required.

When used in the protection of materials or stored products, the amount of active components applied depends on the kind of application area and on the desired effect. Amounts customarily applied in the protection of materials are 0.001 g to 2 kg, preferably 0.005 g to 1 kg, of active components per cubic meter of treated material.

Various types of oils, wetters, adjuvants, fertilizer, or micronutrients, and further pesticides (e.g. herbicides, insecticides, fungicides, growth regulators, safeners) may be added to the active substances or the compositions comprising them as premix or, if appropriate not until immediately prior to use (tank mix). These agents can be admixed with the compositions according to the invention in a weight ratio of 1:100 to 100:1, preferably 1:10 to 10:1.

According to one embodiment, a polyether polymethylsiloxane copolymer may be added to the composition accoding to the invention, preferably in a weight ratio of 1:100 to 100:1, more preferably in a weight ratio of 1:10 to 10:1, in particular in a weight ratio of 1:5 to 5:1 based on the total weight of the dry content of Quillay extract and the amount of respective compound II together.

According to a further embodiment, a mineral oil or a vegetable oil may be added to the composition according to the invention, preferably in a weight ratio of 1:100 to 100:1, more preferably in a weight ratio of 1:10 to 10:1, in particular in a weight ratio of 1:5 to 5:1 based on

the total weight of the dry content of Quillay extract and the amount of respective compound II together.

According to a further embodiment, an organic acid such as citric acid, lactic acid or ascorbic acid may be added to the composition according to the invention, preferably in a weight ratio of 1:100 to 100:1, more preferably in a weight ratio of 1:10 to 10:1, in particular in a weight ratio of 1:5 to 5:1 based on the total weight of the dry content of Quillay extract and the amount of respective compound II together.

The user applies the composition according to the invention usually from a predosage device, a knapsack sprayer, a spray tank, a spray plane, or an irrigation system. Usually, the agrochemical composition is made up with water, buffer, and/or further auxiliaries to the desired application concentration and the ready-to-use spray liquor or the agrochemical composition according to the invention is thus obtained. Usually, 20 to 2000 liters, preferably 50 to 400 liters, of the ready-to-use spray liquor are applied per hectare of agricultural useful area.

According to one embodiment, individual components of the composition according to the invention such as parts of a kit or parts of a binary or ternary mixture may be mixed by the user himself in a spray tank and further auxiliaries may be added, if appropriate.

In the binary mixtures and compositions according to the invention the weight ratio of the component 1) and the component 2) generally depends from the properties of the active components used, usually it is in the range of from 1:100 to 100:1, regularly in the range of from 1:50 to 50:1, preferably in the range of from 1:20 to 20:1, more preferably in the range of from 1:10 to 10:1, even more preferably in the range of from 1:4 to 4:1 and in particular in the range of from 1:2 to 2:1.

According to further embodiments of the binary mixtures and compositions, the weight ratio of the component 1) and the component 2) usually is in the range of from 100:1 to 1:1, regularly in the range of from 50:1 to 1:1, preferably in the range of from 20:1 to 1:1, more preferably in the range of from 10:1 to 1:1, even more preferably in the range of from 4:1 to 1:1 and in particular in the range of from 2:1 to 1:1.

According to further embodiments of the binary mixtures and compositions, the weight ratio of the component 1) and the component 2) usually is in the range of from 1:1 to 1:100, regularly in the range of from 1:1 to 1:50, preferably in the range of from 1:1 to 1:20, more preferably in the range of from 1:1 to 1:10, even more preferably in the range of from 1:1 to 1:4 and in particular in the range of from 1:1 to 1:2.

Preferably, however, the Quillay extract is used in excess as compared to the compound II, i.e. the weight ratio of the Quillay extract versus compound II usually is in the range of from 100:1 to 1:1, regularly in the range of from 50:1 to 1:1, preferably in the range of from 20:1 to 1:1, more preferably in the range of from 10:1 to 1:1, even more preferably in the range of from 4:1 to 1:1, e.g. of from 3:1 to 1:1, and in particular in the range of from 2:1 to 1:1.

In the above weight ratios, the amount of Quillay extract is based on the amount of the solid material (dry matter). The solid material may contain at most 5% by weight, preferably at most 2% by weight, based on the total weight of the solid material, of residual liquid components, such as extractants (in general water, possibly also alcohol; mostly however residual moisture).

In the ternary mixtures, i.e. compositions according to the invention comprising the component 1) and component 2) and a compound III (component 3), the weight ratio of component 1) and component 2) depends from the properties of the active substances used,

usually it is in the range of from 1:100 to 100:1, regularly in the range of from 1:50 to 50:1, preferably in the range of from 1:20 to 20:1, more preferably in the range of from 1:10 to 10:1 and in particular in the range of from 1:4 to 4:1, and the weight ratio of component 1) and component 3) usually it is in the range of from 1:100 to 100:1, regularly in the range of from 1:50 to 50:1, preferably in the range of from 1:20 to 20:1, more preferably in the range of from 1:10 to 10:1 and in particular in the range of from 1:4 to 4:1.

Any further active components are, if desired, added in a ratio of from 20:1 to 1:20 to the component 1).

In the mixtures and compositions, uses and methods of the present invention, the compound ratios are advantageously chosen so as to produce a synergistic effect.

This means that the relative amount, i.e. the weight ratio of the Quillay extract and the at least one compound II in the mixture or composition provides for an increased plant growth regulating efficacy which exceeds the additive plant growth regulating efficacy of the components of the mixture or composition as calculated from the plant growth regulating efficacy of the individual components at a given application rate.

The term "synergstic effect" is understood to refer in particular to that defined by Colby's formula (Colby, S. R., "Calculating synergistic and antagonistic responses of herbicide combinations", Weeds, 15, pp. 20-22, 1967).

The term "synergistic effect" is also understood to refer to that defined by application of the Tammes method, (Tammes, P. M. L., "Isoboles, a graphic representation of synergism in pesticides", Netherl. J. Plant Pathol. 70, 1964).

The components can be used individually or already partially or completely mixed with one another to prepare the composition according to the invention. It is also possible for them to be packaged and used as combination such as a kit of parts.

We claim:

1. A mixture comprising, as active components:

1) a Quillay extract

and

2) at least one plant growth regulating compound II selected from: gibberellic acid, abscisic acid, amidochlor, ancymidol, 6-benzylaminopurine, brassinolide, butralin, chlormequat (chlormequat chloride), choline chloride, cyclanilide, daminozide, dikegulac, diflufenzopyr, dimethipin, 2,6-dimethylpuridine, ethephon, flumetralin, flurprimidol, fluthiacet, forchlorfenuron, inabenfide, indole-3-acetic acid , maleic hydrazide, mefluidide, mepiquat (mepiquat chloride), methyl jasmonate, naphthaleneacetic acid, N-6-benzyladenine, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, triapenthenol, tributyl phosphorotrithioate, 2,3,5-tri-iodobenzoic acid , trinexapac-ethyl, uniconazole and an extract of Ecklonia maxima.

2. The mixture according to claim 1, wherein component 1) and component 2) are present in a synergistically effective amount.

3. The mixture according to any of the claims 1 to 2, wherein component 1) and component 2) are present in a total weight ratio of from 100:1 to 1:100 wherein the total weight of component 1) is based on the amount of the solid material (dry matter) of component 1).

4. The mixture according to any of the claims 1 to 3, wherein component 1) is a water-based Quillay extract.

5. The mixture according to any of the claims 1 to 4, wherein the Quillay extract is obtainable by subjecting chipped or milled wood, branches and/or the bark or flakes from branches and/or the bark of *Quillaja saponaria* to a solid/liquid extraction process using water as extractant at an extraction temperature of from 20 to 95°C, preferably of from 40 to 90°C, specifically ca. 60°C, for an extraction time of from 0.5 to 5 h, preferably of from 2 to 3 h, and optionally removing undesired products.

6. The mixture according to any of the claims 1 to 5, wherein component 2) is selected from abscisic acid, brassinolide, chlormequat (chlormequat chloride), cyclanilide, diflufenzopyr, ethephon, forchlorfenuron, gibberellic acid, indole-3-acetic acid, mepiquat (mepiquat chloride), methyl jasmonate, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, tributyl phosphorotrithioate, trinexapac-ethyl, uniconazole and an extract of Ecklonia maxima.

7. The mixture according to claim 6, wherein component 2) is selected from chlormequat (chlormequat chloride), mepiquat (mepiquat chloride), prohexadione (prohexadione-calcium) and trinexapac-ethyl.

8. The mixture according to claim 6, wherein component 2) is selected from cyclanilide, diflufenzopyr, ethephone, thidiazuron and tributyl phosphorotrithioate.

9. The mixture according to claim 6, wherein component 2) is an extract of Ecklonia maxima.

10. The mixture according to claim 6, wherein component 2) is selected from gibberellic acid and indole-3-acetic acid.

11. An agrochemical composition, comprising an auxiliary and a mixture as defined in any one of claims 1 to 10.

12. The agrochemical composition according to claim 11, wherein the auxiliary is an organic acid.

13. The agrochemical composition according to any of the claims 11 to 12, further comprising as active component 3) a further active compound.

14. The agrochemical composition according to claim 13, wherein the further active compound is a compound III selected from groups A) to O):

A) Respiration inhibitors
- Inhibitors of complex III at Q_o site (e.g. strobilurins): azoxystrobin, coumethoxystrobin, coumoxystrobin, dimoxystrobin, enestroburin, fenaminstrobin, fenoxy-strobin/flufenoxystrobin, fluoxastrobin, kresoxim-methyl, mandestrobin, metomino-strobin, orysastrobin, picoxystrobin, pyraclostrobin, pyrametostrobin, pyraoxystrobin, trifloxystrobin, 2-(2-(3-(2,6-dichlorophenyl)-1-methyl-allylideneaminooxymethyl)-phenyl)-2-methoxyimino-N-methyl-acetamide, pyribencarb, triclopyricarb/chlorodin-carb, famoxadone, fenamidone;
- inhibitors of complex III at Q_i site: cyazofamid, amisulbrom, [(3S,6S,7R,8R)-8-benzyl-3-[(3-acetoxy-4-methoxy-pyridine-2-carbonyl)amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate, [(3S,6S,7R,8R)-8-benzyl-3-[[3-(acetoxymethoxy)-4-methoxy-pyridine-2-carbonyl]amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate, [(3S,6S,7R,8R)-8-benzyl-3-[(3-isobutoxycarbonyloxy-4-methoxy-pyridine-2-carbonyl)amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate, [(3S,6S,7R,8R)-8-benzyl-3-[[3-(1,3-benzodioxol-5-ylmethoxy)-4-methoxy-pyridine-2-carbonyl]amino]-6-methyl-4,9-dioxo-1,5-dioxonan-7-yl] 2-methylpropanoate; (3S,6S,7R,8R)-3-[[(3-hydroxy-4-methoxy-2-pyridinyl)carbonyl]amino]-6-methyl-4,9-dioxo-8-(phenylmethyl)-1,5-dioxonan-7-yl 2-methylpropanoate
- inhibitors of complex II (e. g. carboxamides): benodanil, benzovindiflupyr, bixafen, boscalid, carboxin, fenfuram, fluopyram, flutolanil, fluxapyroxad, furametpyr,

isofetamid, isopyrazam, mepronil, oxycarboxin, penflufen, penthiopyrad, sedaxane, tecloftalam, thifluzamide, N-(4'-trifluoromethylthiobiphenyl-2-yl)-3-difluoromethyl-1-methyl-1H-pyrazole-4-carboxamide, N-(2-(1,3,3-trimethyl-butyl)-phenyl)-1,3-dimethyl-5-fluoro-1H-pyrazole-4-carboxamide, 3-(difluoromethyl)-1-methyl-N-(1,1,3-trimethyl-indan-4-yl)pyrazole-4-carboxamide, 3-(trifluoromethyl)-1-methyl-N-(1,1,3-trimethyl-indan-4-yl)pyrazole-4-carboxamide, 1,3-dimethyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, 3-(trifluoromethyl)-1,5-dimethyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, 1,3,5-trimethyl-N-(1,1,3-trimethylindan-4-yl)pyrazole-4-carboxamide, N-(7-fluoro-1,1,3-trimethyl-indan-4-yl)-1,3-dimethyl-pyrazole-4-carboxamide, N-[2-(2,4-dichlorophenyl)-2-methoxy-1-methyl-ethyl]-3-(difluoromethyl)-1-methyl-pyrazole-4-carboxamide;

- other respiration inhibitors (e.g. complex I, uncouplers): diflumetorim, (5,8-difluoro-quinazolin-4-yl)-{2-[2-fluoro-4-(4-trifluoromethylpyridin-2-yloxy)-phenyl]-ethyl}-amine; nitrophenyl derivates: binapacryl, dinobuton, dinocap, fluazinam; ferimzone; organometal compounds: fentin salts, such as fentin-acetate, fentin chloride or fentin hydroxide; ametoctradin; and silthiofam;

B) Sterol biosynthesis inhibitors (SBI fungicides)

- C14 demethylase inhibitors (DMI fungicides): triazoles: azaconazole, bitertanol, bromuconazole, cyproconazole, difenoconazole, diniconazole, diniconazole-M, epoxiconazole, fenbuconazole, fluquinconazole, flusilazole, flutriafol, hexaconazole, imibenconazole, ipconazole, metconazole, myclobutanil, oxpoconazole, paclobutrazole, penconazole, propiconazole, prothioconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triticonazole, uniconazole, 1-[*rel*-(2*S*;3*R*)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)-oxiranylmethyl]-5-thiocyanato-1H-[1,2,4]triazole, 2-[*rel*-(2*S*;3*R*)-3-(2-chlorophenyl)-2-(2,4-difluorophenyl)-oxiranylmethyl]-2H-[1,2,4]triazole-3-thiol; 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-1 (1,2,4-triazol-1-yl)pentan-2-ol, 1-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-1 cyclopropyl-2-(1,2,4-triazol-1-yl)ethanol, 2-[4-(4-chlorophenoxy)-2-(trifluorometh¬yl)phenyl]-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)phenyl]-3-methyl-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)¬phenyl]-1-(1,2,4-triazol-1-yl)propan-2-ol, 2-[2-chloro-4-(4-chlorophenoxy)phenyl]-3-methyl-1-(1,2,4-triazol-1-yl)butan-2-ol, 2-[4-(4-chlorophenoxy)-2-(trifluoromethyl)¬phenyl]-1-(1,2,4-triazol-1-yl)pentan-2-ol, 2-[4-(4-fluorophenoxy)-2-(trifluoromethyl)-phenyl]-1-(1,2,4-triazol-1-yl)propan-2-ol; imidazoles: imazalil, pefurazoate, prochloraz, triflumizol; pyrimidines, pyridines and piperazines: fenarimol, nuarimol, pyrifenox, triforine, [3-(4-chloro-2-fluoro-phenyl)-5-(2,4-difluorophenyl)isoxazol-4-yl]-(3-pyridyl)methanol;
- Delta14-reductase inhibitors: aldimorph, dodemorph, dodemorph-acetate, fenpropimorph, tridemorph, fenpropidin, piperalin, spiroxamine;
- Inhibitors of 3-keto reductase: fenhexamid;

C) Nucleic acid synthesis inhibitors

- phenylamides or acyl amino acid fungicides: benalaxyl, benalaxyl-M, kiralaxyl, metalaxyl, metalaxyl-M (mefenoxam), ofurace, oxadixyl;
- others: hymexazole, octhilinone, oxolinic acid, bupirimate, 5-fluorocytosine, 5-fluoro-2-

(p-tolylmethoxy)pyrimidin-4-amine, 5-fluoro-2-(4-fluorophenylmethoxy)pyrimidin-4-amine;

D) Inhibitors of cell division and cytoskeleton

- tubulin inhibitors, such as benzimidazoles, thiophanates: benomyl, carbendazim, fuberidazole, thiabendazole, thiophanate-methyl; triazolopyrimidines: 5-chloro-7-(4-methylpiperidin-1-yl)-6-(2,4,6-trifluorophenyl)-[1,2,4]triazolo[1,5-a]pyrimidine
- other cell division inhibitors: diethofencarb, ethaboxam, pencycuron, fluopicolide, zoxamide, metrafenone, pyriofenone;

E) Inhibitors of amino acid and protein synthesis

- methionine synthesis inhibitors (anilino-pyrimidines): cyprodinil, mepanipyrim, pyrimethanil;
- protein synthesis inhibitors: blasticidin-S, kasugamycin, kasugamycin hydrochloride-hydrate, mildiomycin, streptomycin, oxytetracyclin, polyoxine, validamycin A;

F) Signal transduction inhibitors

- MAP / histidine kinase inhibitors: fluoroimid, iprodione, procymidone, vinclozolin, fenpiclonil, fludioxonil;
- G protein inhibitors: quinoxyfen;

G) Lipid and membrane synthesis inhibitors

- Phospholipid biosynthesis inhibitors: edifenphos, iprobenfos, pyrazophos, isoprothiolane;
- lipid peroxidation: dicloran, quintozene, tecnazene, tolclofos-methyl, biphenyl, chloroneb, etridiazole;
- phospholipid biosynthesis and cell wall deposition: dimethomorph, flumorph, mandipropamid, pyrimorph, benthiavalicarb, iprovalicarb, valifenalate and N-(1-(1-(4-cyano-phenyl)ethanesulfonyl)-but-2-yl) carbamic acid-(4-fluorophenyl) ester;
- compounds affecting cell membrane permeability and fatty acides: propamocarb, propamocarb-hydrochlorid
- fatty acid amide hydrolase inhibitors: oxathiapiprolin, 2-{3-[2-(1-{[3,5-bis(di¬flu¬oromethyl-1H-pyrazol-1-yl]acetyl}piperidin-4-yl)-1,3-thiazol-4-yl]-4,5-dihydro-1,2 oxazol-5-yl}phenyl methanesulfonate, 2-{3-[2-(1-{[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]acetyl}piperidin-4-yl) 1,3-thiazol-4-yl]-4,5-dihydro-1,2-oxazol-5 yl}-3-chlorophenyl methanesulfonate

H) Inhibitors with Multi Site Action

- inorganic active substances: Bordeaux mixture, copper acetate, copper hydroxide, copper oxychloride, basic copper sulfate, sulfur;
- thio- and dithiocarbamates: ferbam, mancozeb, maneb, metam, metiram, propineb, thiram, zineb, ziram;
- organochlorine compounds (e.g. phthalimides, sulfamides, chloronitriles): anilazine, chlorothalonil, captafol, captan, folpet, dichlofluanid, dichlorophen, hexachlorobenzene, pentachlorphenole and its salts, phthalide, tolylfluanid, N-(4-chloro-2-nitro-phenyl)-N-ethyl-4-methyl-benzenesulfonamide;
- guanidines and others: guanidine, dodine, dodine free base, guazatine, guazatine-acetate, iminoctadine, iminoctadine-triacetate, iminoctadine-tris(albesilate), dithianon, 2,6-dimethyl-1H,5H-[1,4]dithiino[2,3-c:5,6-c']dipyrrole-1,3,5,7(2H,6H)-tetraone;

I) Cell wall synthesis inhibitors

- inhibitors of glucan synthesis: validamycin, polyoxin B; melanin synthesis inhibitors: pyroquilon, tricyclazole, carpropamid, dicyclomet, fenoxanil;

J) Plant defence inducers

- acibenzolar-S-methyl, probenazole, isotianil, tiadinil, prohexadione-calcium; phosphonates: fosetyl, fosetyl-aluminum, phosphorous acid and its salts;

K) Unknown mode of action

- bronopol, chinomethionat, cyflufenamid, cymoxanil, dazomet, debacarb, diclomezine, difenzoquat, difenzoquat-methylsulfate, diphenylamin, fenpyrazamine, flumetover, flusulfamide, flutianil, methasulfocarb, nitrapyrin, nitrothal-isopropyl, oxathiapiprolin, picarbutrazox, tolprocarb, 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-(prop-2-yn-1-yloxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2-yl)piperidin-1-yl]ethanone, 2-[3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-fluoro-6-(prop-2-yn-1-yl¬oxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thi¬azol-2-yl)piperidin-1-yl]ethanone, 2 [3,5-bis(difluoromethyl)-1H-pyrazol-1-yl]-1-[4-(4-{5-[2-chloro-6-(prop-2-yn-1-yl¬oxy)phenyl]-4,5-dihydro-1,2-oxazol-3-yl}-1,3-thiazol-2 yl)piperidin-1-yl]ethanone, oxin-copper, proquinazid, tebufloquin, tecloftalam, triazoxide, 2-butoxy-6-iodo-3-propylchromen-4-one, N-(cyclopropylmethoxyimino-(6-difluoro-methoxy-2,3-difluoro-phenyl)-methyl)-2-phenyl acetamide, N'-(4-(4-chloro-3-trifluoromethyl-phenoxy)-2,5-dimethyl-phenyl)-N-ethyl-N-methyl formamidine, N'-(4-(4-fluoro-3-trifluoromethyl-phenoxy)-2,5-dimethyl-phenyl)-N-ethyl-N-methyl formamidine, N'-(2-methyl-5-trifluoromethyl-4-(3-trimethylsilanyl-propoxy)-phenyl)-N-ethyl-N-methyl formamidine, N'-(5-difluoromethyl-2-methyl-4-(3-trimethylsilanyl-propoxy)-phenyl)-N-ethyl-N-methyl formamidine, 2methoxy-acetic acid 6-tert-butyl-8-fluoro-2,3-dimethyl-quinolin-4-yl ester, 3-[5-(4-methylphenyl)-2,3-dimethyl-isoxazolidin-3-yl]-pyridine, 3-[5-(4-chloro-phenyl)-2,3-dimethyl-isoxazolidin-3-yl]-pyridine (pyrisoxazole), N-(6-methoxy-pyridin-3-yl) cyclopropanecarboxylic acid amide, 5-chloro-1-(4,6-dimethoxy-pyrimidin-2-yl)-2-methyl-1H-benzoimidazole, 2-(4-chloro-phenyl)-N-[4-(3,4-dimethoxy-phenyl)-isoxazol-5-yl]-2-prop-2-ynyloxy-acetamide, ethyl (Z) 3 amino-2-cyano-3-phenyl-prop-2-enoate, pentyl N-[6-[[(Z)-[(1-methyltetra¬zol-5-yl)-phenyl-methylene]amino]oxymethyl]-2-pyridyl]carbamate, 2-[2-[(7,8-di¬fluoro-2-methyl-3-quinolyl)oxy]-6-fluoro-phenyl]propan-2-ol, 2-[2-fluoro-6-[(8-flu¬oro-2-methyl-3-quinolyl)oxy]phenyl]propan-2-ol, 3-(5-fluoro-3,3,4,4-tetramethyl-3,4-dihydroiso¬quinolin-1-yl)quinoline, 3-(4,4-difluoro-3,3-dimethyl-3,4-dihydro¬isoquinolin-1-yl)¬quinoline, 3-(4,4,5-trifluoro-3,3-dimethyl-3,4-dihydroisoquinolin-1-yl)quinoline;

L) Biopesticides

L1) Microbial pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: Ampelomyces quisqualis, Aspergillus flavus, Aureobasidium pullulans, Bacillus amyloliquefaciens, B. mojavensis, B. pumilus, B. simplex, B. solisalsi, B. subtilis, B. subtilis var. amyloliquefaciens, Candida oleophila, C. saitoana, Clavibacter michiganensis (bacteriophages), Coniothyrium minitans, Cryphonectria parasitica, Cryptococcus albidus, Dilophosphora alopecuri, Fusarium oxysporum, Clonostachys rosea f. catenulate (also named Gliocladium catenulatum), Gliocladium roseum, Lysobacter antibioticus, L. enzymogenes,

Metschnikowia fructicola, Microdochium dimerum, Microsphaeropsis ochracea, Muscodor albus, Paenibacillus polymyxa, Pantoea vagans, Phlebiopsis gigantea, Pseudomonas sp., Pseudomonas chloraphis, Pseudozyma flocculosa, Pichia anomala, Pythium oligandrum, Sphaerodes mycoparasitica, Streptomyces griseoviridis, S. lydicus, S. violaceusniger, Talaromyces flavus, Trichoderma asperellum, T. atroviride, T. fertile, T. gamsii, T. harmatum, T. harzianum; mixture of T. harzia¬num and T. viride; mixture of T. polysporum and T. harzianum; T. stromaticum, T. virens (also named Gliocladium virens), T. viride, Typhula phacorrhiza, Ulocladium oudemansii, Verticillium dahlia, zucchini yellow mosaic virus (avirulent strain);

L2) Biochemical pesticides with fungicidal, bactericidal, viricidal and/or plant defense activator activity: chitosan (hydrolysate), harpin protein, laminarin, Menhaden fish oil, natamycin, Plum pox virus coat protein, potassium or sodium bicarbonate, Reynoutria sachlinensis extract, salicylic acid, tea tree oil;

L3) Microbial pesticides with insecticidal, acaricidal, molluscidal and/or nematicidal activity: Agrobacterium radiobacter, Bacillus cereus, B. firmus, B. thuringiensis, B. thuringiensis ssp. aizawai, B. t. ssp. israelensis, B. t. ssp. galleriae, B. t. ssp. kurstaki, B. t. ssp. tenebrionis, Beauveria bassiana, B. brongniartii , Burkholderia sp., Chromobacterium subtsugae, Cydia pomonella granulosis virus, Cryptophlebia leucotreta granulovirus (CrleGV), Isaria fumosorosea, Heterorhabditis bacteriophora, Lecanicillium longisporum, L. muscarium (formerly Verticillium lecanii), Metarhizium anisopliae, M. anisopliae var. acridum, Nomuraea rileyi, Paecilomyces fumosoroseus, P. lilacinus, Paenibacillus popilliae, Pasteuria spp., P. nishizawae, P. penetrans, P. ramose, P. reneformis, P. thornea, P. usgae, Pseudomonas fluorescens, Steinernema carpocapsae, S. feltiae, S. kraussei;

L4) Biochemical pesticides with insecticidal, acaricidal, molluscidal, pheromone and/or nematicidal activity: L-carvone, citral, (E,Z)-7,9-dodecadien-1-yl acetate, ethyl formate, (E,Z)-2,4-ethyl decadienoate (pear ester), (Z,Z,E)-7,11,13-hexadecatrienal, heptyl butyrate, isopropyl myristate, lavanulyl senecioate, cis-jasmone, 2-methyl 1-butanol, methyl eugenol, methyl jasmonate, (E,Z)-2,13-octadecadien-1-ol, (E,Z)-2,13-octadecadien-1-ol acetate, (E,Z)-3,13-octadecadien-1-ol, R-1-octen-3-ol, pentatermanone, potassium silicate, sorbitol actanoate, (E,Z,Z)-3,8,11-tetradecatrienyl acetate, (Z,E)-9,12-tetradecadien-1-yl acetate, Z-7-tetradecen-2-one, Z-9-tetradecen-1-yl acetate, Z-11-tetradecenal, Z-11-tetradecen-1-ol, Acacia negra extract, extract of grapefruit seeds and pulp, extract of Chenopodium ambrosiodae, Catnip oil, Neem oil, Quillay extract, Tagetes oil;

L5) Microbial pesticides with plant stress reducing, plant growth regulator, plant growth promoting and/or yield enhancing activity: Azospirillum amazonense A. brasilense, A. lipoferum, A. irakense, A. halopraeferens, Bradyrhizobium sp., B. elkanii, B. japonicum, B. liaoningense, B. lupini, Delftia acidovorans, Glomus intraradices, Mesorhizobium sp., Paenibacillus alvei, Penicillium bilaiae, Rhizobium

leguminosarum bv. phaseoli, R. l. trifolii, R. l. bv. viciae, R. tropici, Sinorhizobium meliloti;

L6) Biochemical pesticides with plant stress reducing, plant growth regulator and/or plant yield enhancing activity: abscisic acid, aluminium silicate (kaolin), 3-decen-2-one, formononetin, genistein, hesperetin, homobrassinlide, humates, jasmonic acid or salts or derivatives thereof, lysophosphatidyl ethanolamine, naringenin, polymeric polyhydroxy acid, Ascophyllum nodosum (Norwegian kelp, Brown kelp) extract and Ecklonia maxima (kelp) extract;

M) Growth regulators

abscisic acid, amidochlor, ancymidol, 6-benzylaminopurine, brassinolide, butralin, chlormequat (chlormequat chloride), choline chloride, cyclanilide, daminozide, dike-gulac, dimethipin, 2,6-dimethylpuridine, ethephon, flumetralin, flurprimidol, fluthiacet, forchlorfenuron, gibberellic acid, inabenfide, indole-3-acetic acid , maleic hydrazide, mefluidide, mepiquat (mepiquat chloride), naphthaleneacetic acid, N-6-benzyladenine, paclobutrazol, prohexadione (prohexadione-calcium), prohydrojasmon, thidiazuron, triapenthenol, tributyl phosphorotrithioate, 2,3,5-tri-iodobenzoic acid , trinexapac-ethyl and uniconazole;

N) Herbicides

- acetamides: acetochlor, alachlor, butachlor, dimethachlor, dimethenamid, flufenacet, mefenacet, metolachlor, metazachlor, napropamide, naproanilide, pethoxamid, pretilachlor, propachlor, thenylchlor;
- amino acid derivatives: bilanafos, glyphosate, glufosinate, sulfosate;
- aryloxyphenoxypropionates: clodinafop, cyhalofop-butyl, fenoxaprop, fluazifop, haloxyfop, metamifop, propaquizafop, quizalofop, quizalofop-P-tefuryl;
- Bipyridyls: diquat, paraquat;
- (thio)carbamates: asulam, butylate, carbetamide, desmedipham, dimepiperate, eptam (EPTC), esprocarb, molinate, orbencarb, phenmedipham, prosulfocarb, pyributicarb, thiobencarb, triallate;
- cyclohexanediones: butroxydim, clethodim, cycloxydim, profoxydim, sethoxydim, tepraloxydim, tralkoxydim;
- dinitroanilines: benfluralin, ethalfluralin, oryzalin, pendimethalin, prodiamine, trifluralin;
- diphenyl ethers: acifluorfen, aclonifen, bifenox, diclofop, ethoxyfen, fomesafen, lactofen, oxyfluorfen;
- hydroxybenzonitriles: bomoxynil, dichlobenil, ioxynil;
- imidazolinones: imazamethabenz, imazamox, imazapic, imazapyr, imazaquin, imazethapyr;
- phenoxy acetic acids: clomeprop, 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4-DB, dichlorprop, MCPA, MCPA-thioethyl, MCPB, Mecoprop;
- pyrazines: chloridazon, flufenpyr-ethyl, fluthiacet, norflurazon, pyridate;
- pyridines: aminopyralid, clopyralid, diflufenican, dithiopyr, fluridone, fluroxypyr, picloram, picolinafen, thiazopyr;
- sulfonyl ureas: amidosulfuron, azimsulfuron, bensulfuron, chlorimuron-ethyl, chlorsulfuron, cinosulfuron, cyclosulfamuron, ethoxysulfuron, flazasulfuron, flucetosulfuron, flupyrsulfuron, foramsulfuron, halosulfuron, imazosulfuron,

iodosulfuron, mesosulfuron, metazosulfuron, metsulfuron-methyl, nicosulfuron, oxasulfuron, primisulfuron, prosulfuron, pyrazosulfuron, rimsulfuron, sulfometuron, sulfosulfuron, thifensulfuron, triasulfuron, tribenuron, trifloxysulfuron, triflusulfuron, tritosulfuron, 1-((2-chloro-6-propyl-imidazo[1,2-b]pyridazin-3-yl)sulfonyl)-3-(4,6-dimethoxy-pyrimidin-2-yl)urea;

- triazines: ametryn, atrazine, cyanazine, dimethametryn, ethiozin, hexazinone, metamitron, metribuzin, prometryn, simazine, terbuthylazine, terbutryn, triaziflam;
- ureas: chlorotoluron, daimuron, diuron, fluometuron, isoproturon, linuron, metha-benzthiazuron,tebuthiuron;
- other acetolactate synthase inhibitors: bispyribac-sodium, cloransulam-methyl, diclosulam, florasulam, flucarbazone, flumetsulam, metosulam, ortho-sulfamuron, penoxsulam, propoxycarbazone, pyribambenz-propyl, pyribenzoxim, pyriftalid, pyriminobac-methyl, pyrimisulfan, pyrithiobac, pyroxasulfone, pyroxsulam;
- others: amicarbazone, aminotriazole, anilofos, beflubutamid, benazolin, bencarbazone,benfluresate, benzofenap, bentazone, benzobicyclon, bicyclopyrone, bromacil, bromobutide, butafenacil, butamifos, cafenstrole, carfentrazone, cinidon-ethyl, chlorthal, cinmethylin, clomazone, cumyluron, cyprosulfamide, dicamba, difenzoquat, diflufenzopyr, *Drechslera monoceras*, endothal, ethofumesate, etobenzanid, fenoxasulfone, fentrazamide, flumiclorac-pentyl, flumioxazin, flupoxam, flurochloridone, flurtamone, indanofan, isoxaben, isoxaflutole, lenacil, propanil, propyzamide, quinclorac, quinmerac, mesotrione, methyl arsonic acid, naptalam, oxadiargyl, oxadiazon, oxaziclomefone, pentoxazone, pinoxaden, pyraclonil, pyraflufen-ethyl, pyrasulfotole, pyrazoxyfen, pyrazolynate, quinoclamine, saflufenacil, sulcotrione, sulfentrazone, terbacil, tefuryltrione, tembotrione, thiencarbazone, topramezone, (3-[2-chloro-4-fluoro-5-(3-methyl-2,6-dioxo-4-trifluoromethyl-3,6-dihydro-2H-pyrimidin-1-yl)-phenoxy]-pyridin-2-yloxy)-acetic acid ethyl ester, 6-amino-5-chloro-2-cyclopropyl-pyrimidine-4-carboxylic acid methyl ester, 6-chloro-3-(2-cyclopropyl-6-methyl-phenoxy)-pyridazin-4-ol, 4-amino-3-chloro-6-(4-chloro-phenyl)-5-fluoro-pyridine-2-carboxylic acid, 4-amino-3-chloro-6-(4-chloro-2-fluoro-3-methoxy-phenyl)-pyridine-2-carboxylic acid methyl ester, and 4-amino-3-chloro-6-(4-chloro-3-dimethylamino-2-fluoro-phenyl)-pyridine-2-carboxylic acid methyl ester.

O) Insecticides

- organo(thio)phosphates: acephate, azamethiphos, azinphos-methyl, chlorpyrifos, chlorpyrifos-methyl, chlorfenvinphos, diazinon, dichlorvos, dicrotophos, dimethoate, disulfoton, ethion, fenitrothion, fenthion, isoxathion, malathion, methamidophos, methidathion, methyl-parathion, mevinphos, monocrotophos, oxydemeton-methyl, paraoxon, parathion, phenthoate, phosalone, phosmet, phosphamidon, phorate, phoxim, pirimiphos-methyl, profenofos, prothiofos, sulprophos, tetrachlorvinphos, terbufos, triazophos, trichlorfon;
- carbamates: alanycarb, aldicarb, bendiocarb, benfuracarb, carbaryl, carbofuran, carbosulfan, fenoxycarb, furathiocarb, methiocarb, methomyl, oxamyl, pirimicarb, propoxur, thiodicarb, triazamate;
- pyrethroids: allethrin, bifenthrin, cyfluthrin, cyhalothrin, cyphenothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, zeta-cypermethrin, deltamethrin, esfen-

valerate, etofenprox, fenpropathrin, fenvalerate, imiprothrin, lambda-cyhalothrin, permethrin, prallethrin, pyrethrin I and II, resmethrin, silafluofen, tau-fluvalinate, tefluthrin, tetramethrin, tralomethrin, transfluthrin, profluthrin, dimefluthrin;

- insect growth regulators: a) chitin synthesis inhibitors: benzoylureas: chlorfluazuron, cyramazin, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, teflubenzuron, triflumuron; buprofezin, diofenolan, hexythiazox, etoxazole, clofentazine; b) ecdysone antagonists: halofenozide, methoxyfenozide, tebufenozide, azadirachtin; c) juvenoids: pyriproxyfen, methoprene, fenoxycarb; d) lipid biosynthesis inhibitors: spirodiclofen, spiromesifen, spirotetramat;
- nicotinic receptor agonists/antagonists compounds: clothianidin, dinotefuran, flupyradifurone, imidacloprid, thiamethoxam, nitenpyram, acetamiprid, thiacloprid, 1-2-chloro-thiazol-5-ylmethyl)-2-nitrimino-3,5-dimethyl-[1,3,5]triazinane;
- GABA antagonist compounds: endosulfan, ethiprole, fipronil, vaniliprole, pyrafluprole, pyriprole, 5-amino-1-(2,6-dichloro-4-methyl-phenyl)-4-sulfinamoyl-1H-pyrazole-3-carbothioic acid amide;
- macrocyclic lactone insecticides: abamectin, emamectin, milbemectin, lepimectin, spinosad, spinetoram;
- mitochondrial electron transport inhibitor (METI) I acaricides: fenazaquin, pyridaben, tebufenpyrad, tolfenpyrad, flufenerim;
- METI II and III compounds: acequinocyl, fluacyprim, hydramethylnon;
- Uncouplers: chlorfenapyr;
- oxidative phosphorylation inhibitors: cyhexatin, diafenthiuron, fenbutatin oxide, propargite;
- moulting disruptor compounds: cryomazine;
- mixed function oxidase inhibitors: piperonyl butoxide;
- sodium channel blockers: indoxacarb, metaflumizone;
- ryanodine receptor inhibitors: chlorantraniliprole, cyantraniliprole, flubendiamide, N [4,6-dichloro-2-[(diethyl-lambda-4-sulfanylidene)carbamoyl]-phenyl]-2-(3-chloro-2 pyridyl)-5-(trifluoromethyl)pyr¬azole-3-carboxamide; N-[4-chloro-2-[(diethyl-lambda-4-sulfanylidene)carbamoyl]-6 methyl-phenyl]-2-(3-chloro-2-pyridyl)-5-(triflu¬oromethyl)pyrazole-3-carboxamide; N-[4-chloro-2-[(di-2-propyl-lambda-4-sulfanyli¬dene)carbamoyl]-6-methyl-phenyl]-2 (3-chloro-2-pyridyl)-5-(trifluoromethyl)pyrazole-3-carboxamide; N-[4,6-dichloro-2 [(di-2-propyl-lambda-4-sulfanylidene)carbamoyl]-phenyl]-2-(3-chloro-2-pyridyl)-5 (trifluoromethyl)pyrazole-3-carboxamide; N-[4,6-di¬chloro-2-[(diethyl-lambda-4 sulfanylidene)carbamoyl]-phenyl]-2-(3-chloro-2-pyridyl)-5-(difluoromethyl)pyr-azole-3-carboxamide; N-[4,6-dibromo-2-[(di-2-propyl-lambda-4 sulfanylidene)carba¬moyl]-phenyl]-2-(3-chloro-2-pyridyl)-5-(trifluoromethyl)pyr-azole-3-carboxamide; N [4-chloro-2-[(di-2-propyl-lambda-4-sulfanylidene)carba-moyl]-6-cyano-phenyl]-2 (3-chloro-2-pyridyl)-5-(trifluoromethyl)pyrazole-3-carbox¬amide; N-[4,6-dibromo-2 [(diethyl-lambda-4-sulfanylidene)carbamoyl]-phenyl]-2 (3 chloro-2-pyridyl)-5 (tri¬fluoromethyl)pyrazole-3-carboxamide;
- others: benclothiaz, bifenazate, cartap, flonicamid, pyridalyl, pymetrozine, sulfur, thiocyclam, cyenopyrafen, flupyrazofos, cyflumetofen, amidoflumet, imicyafos,

bistrifluron, pyrifluquinazon, and 1,1'-[(3S,4R,4aR,6S,6aS,12R,12aS,12bS)-4-[[(2-cyclopropylacetyl)oxy]methyl]-1,3,4,4a,5,6,6a,12,12a,12b-decahydro-12-hydroxy-4,6a,12b-trimethyl-11-oxo-9-(3-pyridinyl)-2H,11H-naphtho[2,1-b]pyrano[3,4-e]pyran-3,6-diyl] cyclopropaneacetic acid ester.

15. A method for regulating plant growth, comprising treating the plants, the plant seed or the soil with an effective amount of the mixture as defined in any one of claims 1 to 10 or of the composition as defined in any of the claims 11 to 14 or with a Quillay extract in combination with at least one compound II as defined in any of claims 1 to 10 and optionally also with at least one active component 3) as defined in any of claims 13 or 14.

16. The use of a mixture as defined in any one of claims 1 to 10 or of a composition as defined in any of the claims 11 to 14 or of a Quillay extract in combination with at least one compound II as defined in any of claims 1 to 10 and optionally also in combination with at least one active component 3) as defined in any of claims 13 or 14 for regulating plant growth.

17. A plant propagation material, comprising the mixture as defined in any one of claims 1 to 10 or the composition as defined in any of the claims 11 to 14 in an amount of from 0.01 g to 10000 g per 100 kg of plant propagation material.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/075528

A. CLASSIFICATION OF SUBJECT MATTER
INV. A01N65/08 A01P21/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A01N A01P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	"Hoja de datos de seguridad: Producto: QL-Agri 35", , 1 March 2010 (2010-03-01), pages 1-4, XP055057151, Retrieved from the Internet: URL:http://www.afipa.cl/afipa/basf/QL_Agri_35.pdf [retrieved on 2013-03-20] the whole document	1-6, 10-17

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 January 2014	15/04/2014

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Hateley, Martin

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	TASHIRO E: "Plant activator for improving growth of plant in field land, forest and golf course and quality of agricultural products, contains Quillaja-saponaria saponin as active ingredient", WPI/THOMSON, 22 April 2004 (2004-04-22), XP002469403, abstract	1-6, 10-17
X	WO 2006/137069 A2 (UNIV BEN GURION [IL]; WIESMAN ZEEV [IL]) 28 December 2006 (2006-12-28) page 5, line 21 - page 6, line 20 page 8, lines 13-29 page 12, lines 20-22 page 13, lines 3-6 page 46, line 10 - page 47, line 10; example 9; table 17 claims 17-18	1-6, 10-17
X	EP 2 016 826 A1 (ROHM & HAAS [US]) 21 January 2009 (2009-01-21) paragraph [0037]; example 2	1-6, 10-17
A	DATABASE WPI Week 201316 Thomson Scientific, London, GB; AN 2012-F03180 XP002696105, & CN 102 415 374 A (MAX RUDONG CHEM CO LTD) 18 April 2012 (2012-04-18) abstract	1-6, 10-17
A	DATABASE WPI Week 201154 Thomson Scientific, London, GB; AN 2011-F86608 XP002696106, & CN 102 027 990 A (UNIV HEBEI SCI&TECHNOLOGY) 27 April 2011 (2011-04-27) abstract	1-6, 10-17
A	DATABASE WPI Week 199715 Thomson Scientific, London, GB; AN 1997-155228 XP002696107, & CN 1 091 592 A (SCI & TECH COMMITTEE TAOJIANG COUNTY) 7 September 1994 (1994-09-07) abstract	1-6, 10-17

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	P. W. BRIAN ET AL: "The plant-growth-promoting properties of gibberellic acid, a metabolic product of the fungus gibberella fujikuroi", JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE, vol. 5, no. 12, 1 December 1954 (1954-12-01), pages 602-612, XP055098190, ISSN: 0022-5142, DOI: 10.1002/jsfa.2740051210 abstract page 610, lines 34-37 -----	1-6, 10-17

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2013/075528

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-6, 10-17(all partially)

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 10-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound gibberellic acid; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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2. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound abscisic acid; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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3. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound amidochlor; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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4. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound ancymidol; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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5. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound 6-benzylaminopurine (N-6-benzyladenine); an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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6. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound brassinolide; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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7. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound butralin; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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8. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound choline chloride; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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9. claims: 1-7, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth

regulating compound chosen from chlormequat and chlormequat chloride; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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10. claims: 1-6, 8, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound cyclanilide; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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11. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound daminozide; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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12. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound dikegulac; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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13. claims: 1-6, 8, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound diflufenzopyr; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating

plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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14. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound dimethipin; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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15. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound 2,6-dimethylpuridine; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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16. claims: 1-6, 8, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound ethephon; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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17. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound flumetralin; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating

material comprising the mixture or the agrochemical composition

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18. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound flurprimidol; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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19. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound fluthiacet; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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20. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound forchlorfenuron; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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21. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound inabenfide; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

22. claims: 1-6, 10-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound indole-3-acetic acid; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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23. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound maleic hydrazide; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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24. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound mefluidide; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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25. claims: 1-7, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound chosen from mepiquat and mepiquat chloride; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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26. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound methyl jasmonate; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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27. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound naphthaleneacetic acid; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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28. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound paclobutrazol; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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29. claims: 1-7, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound chosen from prohexadione and prohexadione-calcium; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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30. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound prohydrojasmon; an agrochemical composition comprising this mixture and an auxiliary; a

method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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31. claims: 1-6, 8, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound thidiazuron; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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32. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound triapenthenol; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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33. claims: 1-6, 8, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound tributyl phosphorotrithioate; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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34. claims: 1-5, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound 2, 3,5-tri-iodobenzoic acid; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or

the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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35. claims: 1-7, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound trinexapac-ethyl; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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36. claims: 1-6, 11-17(all partially)

A mixture comprising a Quillay extract and the plant growth regulating compound uniconazole; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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37. claims: 9(completely); 1-6, 11-17(partially)

A mixture comprising a Quillay extract and the plant growth regulating compound an extract of Ecklonia maxima; an agrochemical composition comprising this mixture and an auxiliary; a method of regulating plant growth comprising treating plants, the plant seed or the soil with the mixture or the agrochemical composition; the use of the mixture or the agrochemical composition for regulating plant growth, a plant propagating material comprising the mixture or the agrochemical composition

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2013/075528

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006137069 A2	28-12-2006	EP 1893022 A2	05-03-2008
		US 2008287662 A1	20-11-2008
		WO 2006137069 A2	28-12-2006
EP 2016826 A1	21-01-2009	AR 066749 A1	09-09-2009
		AU 2008202435 A1	15-01-2009
		BR PI0802143 A2	14-07-2009
		CA 2631186 A1	19-12-2008
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