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क) आवेदन संख्या/a) Application Number: 201831025713

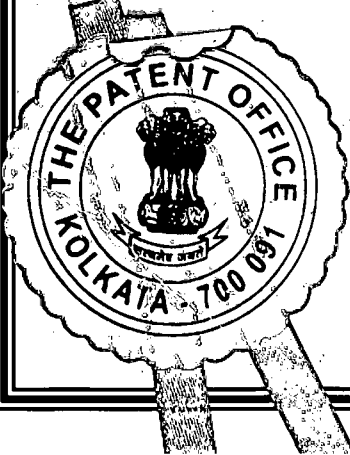
ख) फाइल करने की तारीख/ b) Date of Filing 10th July, 2018

ग) अनुरोधित दस्तावेज(जों) का नाम:

C) Name of the document(s) requested: Provisional Specification with Form 2 and Form 1.

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Shammi Ha Ghosh

F O R M 2

THE PATENTS ACT, 1970

(39 of 1970)

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The Patents Rules, 2003

PROVISIONAL SPECIFICATION

(See section 10; rule 13)

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**1. Title of the invention - NOVEL AGROCHEMICAL
COMBINATIONS**

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2. Applicant(s)

20

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25

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3. PREAMBLE TO THE DESCRIPTION

35

The following specification describes the invention

Technical field:

- 5 The present invention relates to combinations of diamide insecticidal compound and at least one benzoylphenyl urea insecticidal compound and at least another insecticidal compound. The said combinations demonstrate excellent efficacy in the control of unwanted pests.

Background of the invention:

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Insecticides are used to control a wide variety of insect pests. Diamides insecticides are a relatively new group of insecticides and include insecticides such as flubendiamide, a highly potent lepidoptericide and chlorantraniliprole and its analogue cyantraniliprole. Evolution of diamide can be studied in article published **Pest Manag Sci. 2013 Jan;69(1):7-14.**

15

Chlorantraniliprole and cyantraniliprole are anthranilic diamide insecticidal compounds which exhibit larvicidal activity as orally ingested toxicants which target and disrupt the Ca^{2+} balance and Ryanodine receptor.

20

Benzoylphenyl urea insecticides are known in the art to be active against insect larvae and eggs. Benzoylphenyl urea insecticides are known to inhibit chitin biosynthesis in larvae and eggs of insecticides.

25

The combination of diamide and benzoylphenyl urea insecticides are known in the art, for example from **WO2003015519A1** (Lahm) teaches combinations of diamide insecticides in combination with insecticides such as benzoylphenyl urea insecticides such as Novaluron. However, the spectrum of the combination is not broad enough to control the pest pressure seen in present times.

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There is therefore a need in the art for combinations of anthranilamide insecticidal compound with a specific insecticide that helps improve spectrum. With crop tolerances decreasing, lower use rates being imposed and resistance increasingly observed, there is a need for a combination of actives that allows for
5 broader spectrum of disease control that combines curative and preventive actives and has a lower dosage.

Therefore, embodiments of the present invention may ameliorate one or more of the above-mentioned problems:

10

Therefore, embodiments of the present invention may provide combinations that possess an enhanced efficacy over the individual active compound used in isolation.

15 Another object of the present invention is to provide combinations that cause an enhanced greening of the crops to which it is administered.

Another object of the present invention is to provide combinations that causes late senescence to the crop to which it is applied thereby resulting into an
20 increasing yield of the crop.

Yet another object of the present invention is to provide combinations that results into reduced incidence of insect pests in the crops to which it is applied.

25 Another object of the present invention is to provide combinations that achieves increased yield in the crops to which it is applied.

Another object of the present invention is to provide insecticidal combinations that causes an enhanced larvicidal activity.

30

Another object of the present invention is to provide combinations which enhance the protection to plants from attack or infestation by insects, acarids or nematodes.

- 5 Some or all these and other objects of the invention are can be achieved by way of the invention described hereinafter.

Summary of the invention:

- 10 Thus, an aspect of the present invention may provide a combination comprising:
at least one insecticidal diamide compound selected from broflanilide,
chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide,
tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
at least one benzoylphenyl urea compound; and
15 at least another insecticidal compound.

- Thus, an aspect of the present invention may provide a combination comprising:
at least one insecticidal diamide compound selected from broflanilide,
chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide,
20 tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
at least one benzoylphenyl urea insecticide; and
at least another insecticidal compound.

- Another aspect of the present invention can provide a combination comprising:
25 at least one insecticidal diamide compound selected from broflanilide,
chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide,
tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
at least one benzoylphenyl urea insecticide; and
at least two other insecticidal compounds.

30

Another aspect of the present invention can provide synergistic compositions comprising:

at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;

at least one benzoylphenyl urea insecticide; and

at least one other insecticidal compound.

Another aspect of the present invention can provide synergistic compositions comprising:

at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;

at least one benzoylphenyl urea insecticide; and

at least two other insecticidal compounds.

Detailed Description:

The term 'plants' refers to all physical parts of a plant, including seeds, seedlings, saplings, roots, tubers, stems, stalks, foliage and fruits. The term "locus" of a plant as used herein is intended to embrace the place on which the plants are growing, where the plant propagation materials of the plants are sown or where the plant propagation materials of the plants will be placed into the soil. The term "insects" includes all organisms in the class "Insecta." "Insecticidal" refers to the ability of a substance to increase mortality or inhibit, growth rate of insects. The term "plant propagation material" is understood to denote generative parts of a plant, such as seeds, vegetative material such as cuttings or tubers, roots, fruits, tubers, bulbs, rhizomes and parts of plants, germinated plants and young plants which are to be transplanted after germination or after emergence from the soil. These young plants may be protected before transplantation by a total or partial treatment by immersion. The term "agriculturally acceptable amount of active"

refers to an amount of an active that kills or inhibits the plant disease for which control is desired, in an amount not significantly toxic to the plant being treated. To "control" or "controlling" insects means to inhibit, through a toxic effect, the ability of insect pests to survive, grow, feed, and/or reproduce, or to limit insect-related damage or loss in crop plants.

Surprisingly, the insecticidal and/or acaricidal and/or antimicrobial activity and/or the plant-invigorating activity and/or the yield-enhancing activity of the active compound combinations according to the invention are significantly higher than the sum of the activities of the individual active compounds.

It has surprisingly been found that the addition of the diamide insecticide or the benzoylphenyl urea insecticide or the third insecticide to the combinations resulted in surprising and unexpected advantages. It was surprising that the addition of the diamide insecticide or the benzoylphenyl urea insecticide or the third insecticide to the combination resulted in an enhancement of the efficacy, and a surprising enhanced pest control.

It has further been found that the addition of a third insecticide to diamide insecticides and benzoylphenyl urea insecticides resulted in better greening in the crop thereby increasing the level of photosynthesis occurring within the plant, thereby leading to a greater yield from the crop to which they were applied.

These surprising advantages of the combinations of the invention were not observed when the diamide insecticide or the benzoylphenyl urea insecticide or the third insecticidal active was not present in the combination. Therefore, these unexpected advantages of the combination of the present invention could be attributed to the inclusion of the diamide insecticide or the benzoylphenyl urea insecticide or the third insecticidal active to the combination.

Thus, in an aspect, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least benzoylphenyl urea insecticide; and
- (c) at least another insecticidal compound.

Thus, in an embodiment, the benzoylphenyl urea insecticide maybe selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucyclohexuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof.

Thus, in this aspect, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucyclohexuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

Thus, in this embodiment, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- 5 (b) novaluron; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

10 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- 15 (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

In an embodiment, the anthranilamide compound is selected from diamide class.

20 However, the choice of anthranilamide compound may not be limited to these diamide class alone.

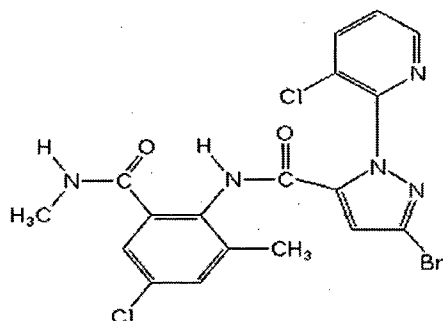
In an embodiment, the diamide class of anthranilamide compound may be selected from at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole and mixtures thereof.

25

In an embodiment, the preferred diamide insecticide is chlorantraniliprole.

30 Chlorantraniliprole has the chemical name 3-bromo-4'-chloro-1-(3-chloro-2-

pyridyl)-2'-methyl-6'-(methylcarbamoyl)pyrazole-5-carboxanilide and has the structure:



5 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) chlorantraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least another insecticidal compound.

15 In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

Thus, in this embodiment, the present invention provides a combination comprising:

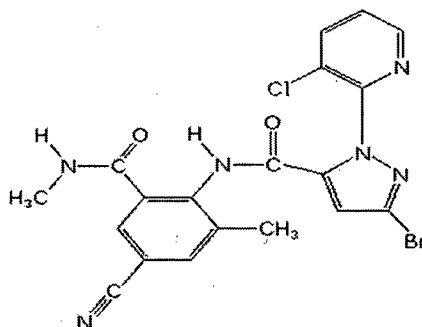
- (a) chlorantraniliprole;
- (b) novaluron; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

25 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) chlorantraniliprole;
- (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

5 In an embodiment, the preferred diamide insecticide is cyantraniliprole. Cyantraniliprole has the chemical name 3-bromo-1-(3-chloro-2-pyridyl)-4'-cyano-2'-methyl-6'-(methylcarbamoyl)pyrazole-5-carboxanilide and the structure:



Thus, in this embodiment, the present invention provides a combination
10 comprising:

- (a) cyantraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

20 Thus, in this embodiment, the present invention provides a combination comprising:

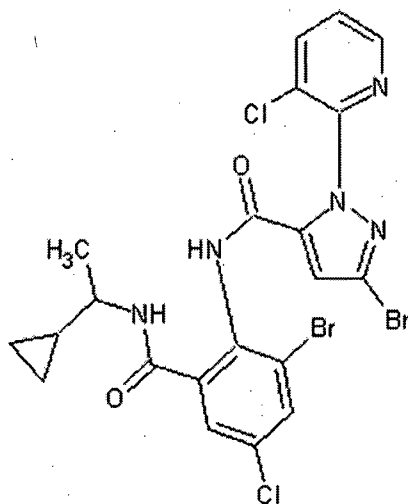
- (a) cyantraniliprole;
- (b) novaluron; and
- 25 (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

Thus, in this embodiment, the present invention provides a combination
5 comprising:

- (a) cyantraniliprole;
- (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

10 In an embodiment, the preferred diamide insecticide is cyclaniliprole. Cyclaniliprole has the chemical name 2',3-dibromo-4'-chloro-1-(3-chloro-2-pyridyl)-6'-{[(1RS)-1-cyclopropylethyl]carbamoyl}pyrazole-5-carboxanilide and has the structure:



15 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and

- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

5 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;
(b) novaluron; and
(c) at least another insecticidal compound.

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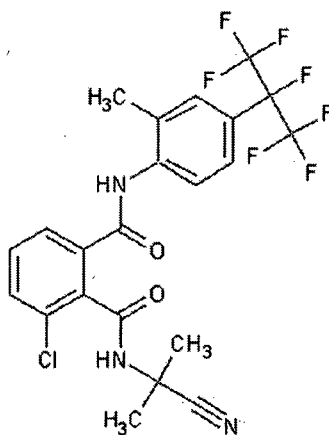
In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

Thus, in this embodiment, the present invention provides a combination comprising:

- 15 (a) cyclaniliprole;
(b) chlorfluazuron; and
(c) at least another insecticidal compound.

In an embodiment, the preferred diamide insecticide is cyhalodiamide.

20 Cyhalodiamide has the chemical name 3-chloro-N'-(1-cyano-1-methylethyl)-N-{4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-o-tolyl}phthalamide and has the structure:



Thus, in this embodiment, the present invention provides a combination comprising:

- (a) cyhalodiamide;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

Thus, in this embodiment, the present invention provides a combination comprising:

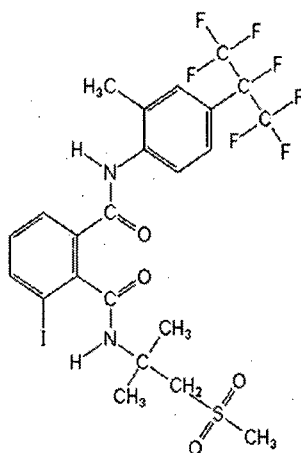
- (a) cyhalodiamide;
- (b) novaluron; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

Thus, in this embodiment, the present invention provides a combination comprising:

- (a) cyhalodiamide;
- (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred diamide insecticide is flubendiamide. Flubendiamide has the chemical 3-iodo-N'-(2-mesyl-1,1-dimethylethyl)-N-{4-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]-o-tolyl}phthalamide and have the structure:



Thus, in this embodiment, the present invention provides a combination comprising:

- (a) flubendiamide;
- 5 (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 10 (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

Thus, in this embodiment, the present invention provides a combination comprising:

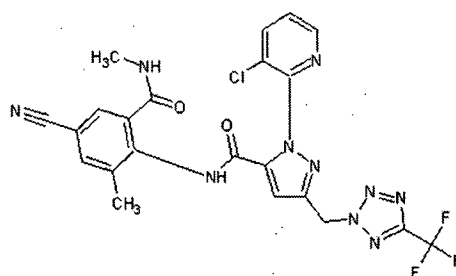
- (a) flubendiamide;
- (b) novaluron; and
- (c) at least another insecticidal compound.

20 In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

Thus, in this embodiment, the present invention provides a combination comprising:

- (a) flubendiamide;
- (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

5 In an embodiment, the preferred diamide insecticide is tetraniliprole. Tetraniliprole has the chemical name 1-(3-chloro-2-pyridyl)-4'-cyano-2'-methyl-6'-methylcarbamoyl-3-[[5-(trifluoromethyl)-2H-tetrazol-2-yl]methyl]pyrazole-5-carboxanilide, and has the following structure:



10 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) tetraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least another insecticidal compound.

20 In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

Thus, in this embodiment, the present invention provides a combination comprising:

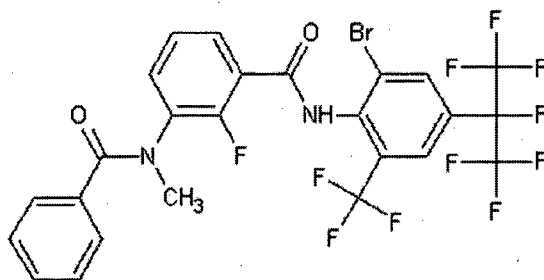
- (a) tetraniliprole;
- (b) novaluron; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

Thus, in this embodiment, the present invention provides a combination
5 comprising:

- (a) tetraniliprole;
- (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

10 In an embodiment, the preferred diamide insecticide is broflanilide. Broflanilide has the chemical name 6'-bromo- $\alpha,\alpha,\alpha,2$ -tetrafluoro-3-(N-methylbenzamido)-4'-[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]benz-o-toluidide, and has the following structure:



15 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) broflanilide;
- (b) at least benzoylphenyl urea insecticide selected from the group
20 consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least another insecticidal compound.

25 In an embodiment, the preferred benzoylphenyl urea insecticide is novaluron.

Thus, in this embodiment, the present invention provides a combination comprising:

- (a) broflanilide;
- 5 (b) novaluron; and
- (c) at least another insecticidal compound.

In an embodiment, the preferred benzoylphenyl urea insecticide is chlorfluazuron.

10 Thus, in this embodiment, the present invention provides a combination comprising:

- (a) broflanilide;
- (b) chlorfluazuron; and
- (c) at least another insecticidal compound.

15

In an embodiment, the third insecticidal compound in the combinations of the present invention may be selected from Acetylcholinesterase (AChE) inhibitors, GABA -gated chloride channel blockers, Sodium channel modulators, Nicotinic acetylcholine receptor (nAChR) competitive modulators, Nicotinic acetylcholine receptor (nAChR) allosteric modulators, Glutamate -gated chloride channel (GluCl) allosteric modulators, Juvenile hormone mimics, Chordotonal organ TRPV channel modulators, Mite growth inhibitors, Microbial disruptors of insect midgut membranes, Inhibitors of mitochondrial ATP synthase, Uncouplers of oxidative phosphorylation via disruption of the proton gradient, Nicotinic acetylcholine receptor (nAChR) channel blockers, Moulting disruptors, Ecdysone receptor agonists, Octopamine receptor agonists, Mitochondrial complex electron transport inhibitors, Voltage-dependent sodium channel blockers, Inhibitors of acetyl CoA carboxylase, Chordotonal organ Modulators, multi-site miscellaneous insecticides, bioinsecticides and mixtures thereof.

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Thus in an embodiment, the Acetylcholinesterase (AChE) inhibitors may be selected from the group consisting of carbamates such as alanycarb, aldicarb, bendiocarb, benfuracarb, carbaryl, carbofuran, carbosulfan, phenothiocarb, methiocarb, methomyl, oxamyl, pirimicarb, propoxur, thiodicarb, ethiofencarb, fenobucarb, MIPC, MPMC, MTMC, furathiocarb, XMC, aldoxycarb, allyxycarb, aminocarb, bufencarb, butacarb, butocarboxim, butoxycarboxim, cloethocarb, dimetilan, formetanate, metam-sodium, metolcarb, promecarb, thiophanox, trimethacarb, and xylylcarb. Organophosphates such as acephate, azamethiphos, azinphos-methyl, azinphos-ethyl, buromophos-ethyl, bromfenvinphos, BRP, chlorpyrifos, chlorpyrifos-methyl, chlorfenvinphos, cadusafos, carbophenothion, chloroethoxyfos, chlormephos, coumaphos, cyanofenphos, cyanophos, dichlorvos, dicrotophos, dimethoate, disulfoton, demeton-S-methyl, dimethylvinphos, demeton-S-methylsulfone, dialifos, diazinon, dichlofenthion, dioxabenzophos, disulfoton, ethion, ethoprophos, etrimfos, EPN, fenamiphos, fenitrothion, fenthion, fensulfothion, fonofos, formothion, phosmethylan, heptenophos, imicyafos, isazophos, iodofenphos, isofenphos, isoxathion, malathion, mevinphos, methamidophos, methidathion, monocrotophos, mecarbam, methacrifos, omethoate, oxydemeton-methyl, parathion, parathion-methyl, phenthoate, phosalone, phosmet, phosphamidon, phorate, phoxim, pirimiphos-methyl, pirimiphos-ethyl, profenofos, prothiofos, fosthiazate, phosphocarb, propaphos, propethamphos, prothoate, pyridaphenthion, pyraclofos, quinalphos, sulprophos, sulfotepp, tetrachlorvinphos, terbufos, triazophos, trichlorfon, tebupirimfos, temephos, thiometon, vamidothion, and mixtures thereof.

In an embodiment, the preferred Acetylcholinesterase (AChE) inhibitors may be selected from thiodicarb, methomyl, acephate, and quinalphos.

In an embodiment, the preferred third insecticide may be acephate.

Thus, in an embodiment, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least benzoylphenyl urea insecticide; and
- (c) acephate.

10 In an embodiment, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- 15 (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 20 (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- 25 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) novaluron; and
- (c) acephate.

30 In an embodiment, the present invention provides a combination comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- 5 (b) chlorfluazuron; and
- (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- 10 (a) chlorantraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 15 (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) chlorantraniliprole;
- 20 (b) novaluron; and
- (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- 25 (a) chlorantraniliprole;
- (b) chlorfluazuron; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- 30 (a) cyantraniliprole;

- 5 (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- 10 (a) cyantraniliprole;
- (b) novaluron; and
- (c) acephate.

15 In another embodiment, the present invention provides a combination comprising:

- (a) cyantraniliprole;
- (b) chlorfluazuron; and
- (c) acephate.

20 In an embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 25 (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- 30 (a) cyclaniliprole;
- (b) novaluron; and

- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;
- 5 (b) chlorfluazuron; and
- (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- 10 (a) cyhalodiamide;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron,
- 15 teflubenzuron, Triflumuron and mixtures thereof; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) cyhalodiamide;
- 20 (b) novaluron; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- 25 (a) cyhalodiamide;
- (b) chlorfluazuron; and
- (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- 30 (a) flubendiamide;

- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) flubendiamide;
- (b) novaluron; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) flubendiamide;
- (b) chlorfluazuron; and
- (c) acephate.

In another embodiment, the present invention provides a combination comprising:

- (a) tetraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) tetraniliprole;
- (b) novaluron; and
- (c) acephate.

In an embodiment, the present invention provides a combination comprising:

- (a) tetraniliprole;
- (b) chlorfluazuron; and
- (c) acephate.

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In another embodiment, the present invention provides a combination comprising:

- (a) broflanilide;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) acephate.

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In an embodiment, the present invention provides a combination comprising:

- (a) broflanilide;
- (b) novaluron; and
- (c) acephate.

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In an embodiment, the present invention provides a combination comprising:

- (a) broflanilide;
- (b) chlorfluazuron; and
- (c) acephate.

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In another embodiment, the GABA -gated chloride channel blockers may be selected from acetoprole, chloradane, endosulfan, ethiprole, fipronil, vaniliprole, pyrafluprole, and pyriprole and mixtures thereof.

30 The preferred GABA gated chloride channel blocker may be fipronil.

Thus, in an embodiment, the present invention provides a combination comprising:

- at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- at least benzoylphenyl urea insecticide; and
- fipronil.

In an embodiment, the present invention provides a combination comprising:

- at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- fipronil.

In another embodiment, the present invention provides a combination comprising:

- at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- novaluron; and
- fipronil.

In an embodiment, the present invention provides a combination comprising:

- at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- chlorfluazuron; and

fipronil.

In another embodiment, the present invention provides a combination comprising:

5 chlorantraniliprole;

at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
10 fipronil.

In an embodiment, the present invention provides a combination comprising:

chlorantraniliprole;
novaluron; and
15 fipronil.

In another embodiment, the present invention provides a combination comprising:

chlorantraniliprole;
20 chlorfluazuron; and
fipronil.

In an embodiment, the present invention provides a combination comprising:

cyantraniliprole;
25 at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
fipronil.

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In another embodiment, the present invention provides a combination comprising:

cyantraniliprole;
novaluron; and
fipronil.

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In another embodiment, the present invention provides a combination comprising:

cyantraniliprole;
chlorfluazuron; and
fipronil.

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In an embodiment, the present invention provides a combination comprising:

cyclaniliprole;

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at least benzoylphenyl urea insecticide selected from the group consisting of: bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxaduron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
fipronil.

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In an embodiment, the present invention provides a combination comprising:

cyclaniliprole;
novaluron; and
fipronil.

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In an embodiment, the present invention provides a combination comprising:

cyclaniliprole;
chlorfluazuron; and
fipronil.

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In another embodiment, the present invention provides a combination comprising:

cyhalodiamide;

5 at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and fipronil.

10 In an embodiment, the present invention provides a combination comprising:

cyhalodiamide;

novaluron; and

fipronil.

15 In an embodiment, the present invention provides a combination comprising:

cyhalodiamide;

chlorfluazuron; and

fipronil.

20 In another embodiment, the present invention provides a combination comprising:

flubendiamide;

25 at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and fipronil.

In an embodiment, the present invention provides a combination comprising:

30 flubendiamide;

novaluron; and

fipronil.

In an embodiment, the present invention provides a combination comprising:

flubendiamide;

5 chlorfluazuron; and

fipronil.

In another embodiment, the present invention provides a combination comprising:

10 tetraniliprole;

at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and

15 fipronil.

In an embodiment, the present invention provides a combination comprising:

tetraniliprole;

novaluron; and

20 fipronil.

In an embodiment, the present invention provides a combination comprising:

tetraniliprole;

chlorfluazuron; and

25 fipronil.

In another embodiment, the present invention provides a combination comprising:

broflanilide;

30 at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron,

flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and fipronil.

5 In an embodiment, the present invention provides a combination comprising:
broflanilide;
novaluron; and
fipronil.

10 In an embodiment, the present invention provides a combination comprising:
broflanilide;
chlorfluazuron; and
fipronil.

15 In an embodiment, the Sodium channel modulators may be selected from Pyrethroids such as allethrin, bifenthrin, cyfluthrin, beta-cyfluthrin, cyhalothrin, lambda-cyhalothrin, cyphenothrin, chloroprallethrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, zeta-cypermethrin, deltamethrin, esfenvalerate, ethofenprox, fenpropathrin, fenvalerate, imiprothrin, permethrin,
20 prallethrin, pyrethrin, pyrethrin I, pyrethrin II, resmethrin, silafluofen, fluvalinate, tefluthrin, tetramethrin, tralomethrin, transluthrin, profluthrin, dimefluthrin, acrinathrin, cycloprothrin, halfenprox, flucythrinate, bioallethrin, bioethanomethrin, biopermethrin, bioresmethrin, transpemethrin, empenthrin, fenfluthrin, fenpirithrin, flubrocycythrinate, flufenprox, flumethrin, metofluthrin,
25 phenothrin, protrifenbute, pyresmethrin, terallethrin, meperfluthrin, tetramethylfluthrin, valerate protrifenbute, silafluofen, sulfoxime ((RS)-[1-(4-chlorophenyl)-2-(methylthio)-1-propanone] (EZ)-O-(3-phenoxybenzyl)oxime), thiofluoximate, Methoxychlor cinerin-I, cinerin-II, jasmolin-I, jasmolin-II or mixtures thereof.

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The preferred Sodium channel modulator may be bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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Thus, in an embodiment, the present invention provides a combination comprising:

- 10 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least benzoylphenyl urea insecticide; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, 15 cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In an embodiment, the present invention provides a combination comprising:

- 20 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- 25 (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucyclohexuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 30 (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-

cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

5 In another embodiment, the present invention provides a combination comprising:

- 10 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) novaluron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In an embodiment, the present invention provides a combination comprising:

- 20 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) chlorfluazuron; and
- 25 (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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In another embodiment, the present invention provides a combination comprising:

- (a) chlorantraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

15 In an embodiment, the present invention provides a combination comprising:

- (a) chlorantraniliprole;
- (b) novaluron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

25 In another embodiment, the present invention provides a combination comprising:

- (a) chlorantraniliprole;
- (b) chlorfluazuron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin,

theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In an embodiment, the present invention provides a combination comprising:

- 5 (a) cyantraniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 10 (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In another embodiment, the present invention provides a combination comprising:

- 20 (a) cyantraniliprole;
- (b) novaluron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In another embodiment, the present invention provides a combination comprising:

- 30 (a) cyantraniliprole;
- (b) chlorfluazuron; and

- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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In an embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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In an embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;
- (b) novaluron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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30 In an embodiment, the present invention provides a combination comprising:

- (a) cyclaniliprole;

- (b) chlorfluazuron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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In another embodiment, the present invention provides a combination comprising:

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- (a) cyhalodiamide;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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In an embodiment, the present invention provides a combination comprising:

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- (a) cyhalodiamide;
- (b) novaluron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

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In an embodiment, the present invention provides a combination comprising:

- (a) cyhalodiamide;
- (b) chlorfluazuron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

10 In another embodiment, the present invention provides a combination comprising:

- (a) flubendiamide;
- (b) at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

25 In an embodiment, the present invention provides a combination comprising:

- (a) flubendiamide;
- (b) novaluron; and
- (c) at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin,

theta-cypermethrin, zeta-cypermethrin, fenpropathrin,
permethrin and mixtures thereof.

In an embodiment, the present invention provides a combination comprising:

- 5 a. flubendiamide;
- b. chlorfluazuron; and
- c. at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin
10 and mixtures thereof.

In another embodiment, the present invention provides a combination comprising:

- 15 a. tetraniliprole;
- b. at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucyclohexuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 20 c. at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

25 In an embodiment, the present invention provides a combination comprising:

- a. tetraniliprole;
- b. novaluron; and
- c. at least one insecticide selected from bifenthrin, kappa-bifenthrin,
30 gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-

cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In an embodiment, the present invention provides a combination comprising:

- 5 a. tetraniliprole;
- b. chlorfluazuron; and
- c. at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In another embodiment, the present invention provides a combination comprising:

- a. broflanilide;
- 15 b. at least benzoylphenyl urea insecticide selected from the group consisting of bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron and mixtures thereof; and
- 20 c. at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

25 In an embodiment, the present invention provides a combination comprising:

- a. broflanilide;
- b. novaluron; and
- c. at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

In an embodiment, the present invention provides a combination comprising:

- a. broflanilide;
- b. chlorfluazuron; and
- 5 c. at least one insecticide selected from bifenthrin, kappa-bifenthrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, beta-cypermethrin, theta-cypermethrin, zeta-cypermethrin, fenpropathrin, permethrin and mixtures thereof.

10 In an embodiment, the nicotinic acetylcholine receptor (nAChR) competitive modulators may be selected from Neonicotinoids such as Acetamiprid, Clothianidin, Dinotefuran, Imidacloprid, Nitenpyram, Thiacloprid, Thiamethoxam; Sulfoximines such as sulfoxaflor; Butenolides such as Flupyradifurone; Mesoionics such as Triflumezopyrim and mixtures thereof.

15 The preferred nicotinic acetylcholine receptor (nAChR) competitive modulators may be Acetamiprid, Clothianidin, Imidacloprid, Thiacloprid, Thiamethoxam, and sulfoxaflor.

20 In an embodiment, the Nicotinic acetylcholine receptor (nAChR) allosteric modulators may be selected from Spinosyns such as Spinetoram, Spinosad and mixtures thereof.

The preferred Nicotinic acetylcholine receptor (nAChR) allosteric modulators may
25 be Spinosad.

In an embodiment, the Glutamate gated chloride channel (GluCl) allosteric modulators such as abamectin, emamectin benzoate, milbemectin, milbemycin A3, Milbemycin A4, ivermectin, selamectin, doramectin,
30 eprinomectin, moxidectin, milbemycin oxime, and spinetoram and mixtures thereof.

The preferred Glutamate gated chloride channel (GluCl) allosteric modulators may be abamectin.

- 5 The preferred Glutamate gated chloride channel (GluCl) allosteric modulators may be abamectin.

In an embodiment, the Juvenile hormone mimics may be selected from Diofenolan, fenoxycarb, Kinoprene, Methoprene, Epofenonane, Hydroprene, 10 Pyriproxyfen, triprene, and mixtures thereof.

The preferred juvenile hormone mimic may be Pyriproxyfen.

- 15 In an embodiment, the Miscellaneous nonspecific (multi-site) inhibitor insecticides may be selected from Methyl bromide and the like, Chloropicrin, Cryolite (Sodium aluminum fluoride), Sulfuryl fluoride , Borax , Boric acid , Disodium octaborate , Sodium borate , Sodium metaborate , Tartar emetic , Dazomet , Metam and mixtures thereof.

- 20 In an embodiment, the Chordotonal organ TRPV channel modulators may be selected from Pymetrozine, Pyrifluquinazon, Afidopyropen and mixtures thereof.

In an embodiment, Mite growth inhibitors may be selected from Clofentezine, Diflovidazin, Hexythiazox, Etoxazole and mixtures thereof.

25

- In an embodiment, Microbial disruptors of insect midgut membranes may be selected from Bacillus thuringiensis subsp. Israelensis, Bacillus thuringiensis subsp. Aizawai, Bacillus thuringiensis subsp. Kurstaki, Bacillus thuringiensis subsp. Tenebrionis, B.t. crop proteins such as Cry1Ab , Cry1Ac , Cry1Fa , 30 Cry1A.105 , Cry2Ab , Vip3A , mCry3A , Cry3Ab , Cry3Bb , Cry34Ab1/Cry35Ab1 , Bacillus sphaericus and the like.

In an embodiment, Inhibitors of mitochondrial ATP synthase may be selected from azocyclotin, cyhexatin, diafenthiuron, fenbutatin-oxide, propargite, and tetradifon and mixtures thereof.

5

In an embodiment, Uncouplers of oxidative phosphorylation via disruption of the proton gradient may be selected from Chlorfenapyr, DNOC, Sulfluramid and mixtures thereof.

10 In an embodiment, Nicotinic acetylcholine receptor (nAChR) channel blockers may be selected from Bensultap, Cartap hydrochloride, Thiocyclam, Thiosultap-sodium and mixtures thereof.

15 In an embodiment, moulting disruptors may be selected from cyromazine and the like.

In an embodiment, Ecdysone receptor agonists may be selected from Azadirachtin, Chromafenozide, Halofenozide, methoxyfenozide, tebufenozide, chromafenozide, and mixtures thereof.

20

The preferred Ecdysone receptor agonists may be selected from Methoxyfenozide.

25 In an embodiment, Octopamine receptor agonists may be selected from amitraz and the like.

In an embodiment, Mitochondrial complex electron transport inhibitors may be selected from Hydramethylnon, Acequinocyl, Fluacrypyrim, Bifenazate, Fenazaquin , Fenpyroximate , Pyridaben , Pyrimidifen , Tebufenpyrad ,
30 Tolfenpyrad , Rotenone , Aluminium phosphide , Calcium phosphide , Phosphine

, Zinc phosphide , Calcium cyanide , Potassium cyanide , Sodium cyanide , Cyenopyrafen , Cyflumetofen , Pyflubumide and mixtures thereof.

The preferred mitochondrial complex electron transport inhibitors may be
5 Bifenazate, Fenpyroximate, Pyridaben, Tebufenpyrad, Tolfenpyrad.

In an embodiment, Voltage-dependent sodium channel blockers may be selected from Indoxacarb, Metaflumizone and mixtures thereof.

10 In an embodiment, Inhibitors of acetyl CoA carboxylase may be selected from Tetrone and Tetramic acid derivatives such as Spirodiclofen, Spiromesifen , Spirotetramat and, Spiropidion mixtures thereof.

In an embodiment, Chordotonal organ Modulators – undefined target site may be
15 selected from Flonicamid and the like.

In an embodiment, the insecticides with unknown modes of action may be selected from acynonapryr, benzpyrimoxan, closantel, copper naphthenate, crotamiton, EXD, Fenazaflor, fenoxacrim, flometoquin, fluhexafon, flupyrimin,
20 isoprothiolane, Jiahuangchongzong, malonoben, nifluridide, oxazosulfyl, plifenate, pyridaben, Pyridalyl, rafoxanide, thuringiensin, triarathene, triazamate.

In an embodiment, the biopesticide may be selected from botanical insecticides such as azadirachtin A, eugenol, neem oil, toosendanin, 1-cinnamoyl-3-feruoyl-11-
25 hydroxymeliacarpin, volkensin , d-limonene , menthol, 1,8-cineole, citronellal , eugenol ,p-menthane-3,8-diol , thymol and the like and mixtures thereof.

In an embodiment the preferred amide anthranilamide insecticidal compound is chlorantraniliprole.

30

In an embodiment, the preferred anthranilamide insecticide compound is cyantraniliprole.

Thus, an aspect of the present invention may provide combinations comprising:

- 5 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least one benzoylphenyl urea insecticide; and
- 10 (c) at least one insecticidal active selected from Acetylcholinesterase (AChE) inhibitors, GABA-gated chloride channel blockers, Sodium channel modulators, Nicotinic acetylcholine receptor (nAChR) competitive modulators, Nicotinic acetylcholine receptor (nAChR) allosteric modulators, Glutamate-gated chloride channel (GluCl) allosteric modulators, Juvenile hormone mimics, Chordotonal organ TRPV channel modulators, Mite growth inhibitors, Microbial
- 15 disruptors of insect midgut membranes, Inhibitors of mitochondrial ATP synthase, Uncouplers of oxidative phosphorylation via disruption of the proton gradient, Nicotinic acetylcholine receptor (nAChR) channel blockers, Moulting disruptors, Ecdysone receptor agonists, Octopamine receptor agonists, Mitochondrial complex electron transport inhibitors, Voltage-dependent sodium channel blockers, Inhibitors of acetyl CoA carboxylase, Chordotonal organ
- 20 Modulators, multi-site miscellaneous insecticides, bioinsecticides and mixtures thereof.

The preferred combinations according to an embodiment of the present invention may be selected from the combinations of table 1, which is intended to be exemplary and not limiting the scope of the invention. In these embodiments, the combinations comprise at least one diamide insecticide, at least one benzoylphenyl urea insecticide and at least a third insecticide as exemplified in

each individual row of the accompanying table. In the following table, the combinations listed in each individual row may be intended to be an embodiment of the present invention, which is in addition to the embodiments brought out hereinabove.

5 **Table 1**

S No.	Diamide compound	Benzoylphenyl urea	Third insecticide
1	Chlorantraniliprole	Chlorfluazuron	Acephate
2	Chlorantraniliprole	Chlorfluazuron	Thiodicarb
3	Chlorantraniliprole	Chlorfluazuron	Methomyl
4	Chlorantraniliprole	Chlorfluazuron	Quinalphos
5	Chlorantraniliprole	Chlorfluazuron	Dimethoate
6	Chlorantraniliprole	Chlorfluazuron	Fipronil
7	Chlorantraniliprole	Chlorfluazuron	Bifenthrin
8	Chlorantraniliprole	Chlorfluazuron	Cyhalothrin
9	Chlorantraniliprole	Chlorfluazuron	Lambda-cyhalothrin
10	Chlorantraniliprole	Chlorfluazuron	Cypermethrin
11	Chlorantraniliprole	Chlorfluazuron	Permethrin
12	Chlorantraniliprole	Chlorfluazuron	Kappa-bifenthrin
13	Chlorantraniliprole	Chlorfluazuron	Gamma-cyhalothrin
14	Chlorantraniliprole	Chlorfluazuron	Alpha-cypermethrin
15	Chlorantraniliprole	Chlorfluazuron	Beta-cypermethrin
16	Chlorantraniliprole	Chlorfluazuron	Theta-cypermethrin
17	Chlorantraniliprole	Chlorfluazuron	Zeta-cypermethrin
18	Chlorantraniliprole	Chlorfluazuron	Acetamiprid
19	Chlorantraniliprole	Chlorfluazuron	Clothianidin
20	Chlorantraniliprole	Chlorfluazuron	Dinotefuran
21	Chlorantraniliprole	Chlorfluazuron	Imidacloprid
22	Chlorantraniliprole	Chlorfluazuron	Thiacloprid
23	Chlorantraniliprole	Chlorfluazuron	Thiamethoxam
24	Chlorantraniliprole	Chlorfluazuron	Sulfoxaflor

25	Chlorantraniliprole	Chlorfluazuron	Spinosad
26	Chlorantraniliprole	Chlorfluazuron	Abamectin
27	Chlorantraniliprole	Chlorfluazuron	Emamectin benzoate
28	Chlorantraniliprole	Chlorfluazuron	Pyriproxyfen
29	Chlorantraniliprole	Chlorfluazuron	<i>Bacillus thuringiensis</i>
30	Chlorantraniliprole	Chlorfluazuron	Azadirachtin
31	Chlorantraniliprole	Chlorfluazuron	Methoxyfenozide
32	Chlorantraniliprole	Chlorfluazuron	Bifenazate
33	Chlorantraniliprole	Chlorfluazuron	Fenpyroximate
34	Chlorantraniliprole	Chlorfluazuron	Pyridaben
35	Chlorantraniliprole	Chlorfluazuron	Tebufenpyrad
36	Chlorantraniliprole	Chlorfluazuron	Tolfenpyrad
37	Chlorantraniliprole	Chlorfluazuron	Indoxacarb
38	Chlorantraniliprole	Chlorfluazuron	Metaflumizone
39	Chlorantraniliprole	Chlorfluazuron	Spirodiclofen
40	Chlorantraniliprole	Chlorfluazuron	Spirotetramet
41	Chlorantraniliprole	Chlorfluazuron	Flonicamid
42	Chlorantraniliprole	Chlorfluazuron	Eugenol
43	Chlorantraniliprole	Chlorfluazuron	Neem oil
44	Chlorantraniliprole	Chlorfluazuron	Citronella
45	Cyantraniliprole	Chlorfluazuron	Acephate
46	Cyantraniliprole	Chlorfluazuron	Thiodicarb
47	Cyantraniliprole	Chlorfluazuron	Methomyl
48	Cyantraniliprole	Chlorfluazuron	Quinalphos
49	Cyantraniliprole	Chlorfluazuron	Dimethoate
50	Cyantraniliprole	Chlorfluazuron	Fipronil
51	Cyantraniliprole	Chlorfluazuron	Bifenthrin
52	Cyantraniliprole	Chlorfluazuron	Cyhalothrin
53	Cyantraniliprole	Chlorfluazuron	Lambda-cyhalothrin

54	Cyantraniliprole	Chlorfluazuron	Cypermethrin
55	Cyantraniliprole	Chlorfluazuron	Permethrin
56	Cyantraniliprole	Chlorfluazuron	Kappa-bifenthrin
57	Cyantraniliprole	Chlorfluazuron	Gamma-cyhalothrin
58	Cyantraniliprole	Chlorfluazuron	Alpha-cypermethrin
59	Cyantraniliprole	Chlorfluazuron	Beta-cypermethrin
60	Cyantraniliprole	Chlorfluazuron	Theta-cypermethrin
61	Cyantraniliprole	Chlorfluazuron	Zeta-cypermethrin
62	Cyantraniliprole	Chlorfluazuron	Acetamiprid
63	Cyantraniliprole	Chlorfluazuron	Clothianidin
64	Cyantraniliprole	Chlorfluazuron	Dinotefuran
65	Cyantraniliprole	Chlorfluazuron	Imidacloprid
66	Cyantraniliprole	Chlorfluazuron	Thiacloprid
67	Cyantraniliprole	Chlorfluazuron	Thiamethoxam
68	Cyantraniliprole	Chlorfluazuron	Sulfoxaflor
69	Cyantraniliprole	Chlorfluazuron	Spinosad
70	Cyantraniliprole	Chlorfluazuron	Abamectin
71	Cyantraniliprole	Chlorfluazuron	Emamectin benzoate
72	Cyantraniliprole	Chlorfluazuron	Pyriproxyfen
73	Cyantraniliprole	Chlorfluazuron	<i>Bacillus thuringiensis</i>
74	Cyantraniliprole	Chlorfluazuron	Azadirachtin
75	Cyantraniliprole	Chlorfluazuron	Methoxyfenozide
76	Cyantraniliprole	Chlorfluazuron	Bifenazate
77	Cyantraniliprole	Chlorfluazuron	Fenpyroximate
78	Cyantraniliprole	Chlorfluazuron	Pyridaben
79	Cyantraniliprole	Chlorfluazuron	Tebufenpyrad
80	Cyantraniliprole	Chlorfluazuron	Tolfenpyrad
81	Cyantraniliprole	Chlorfluazuron	Indoxacarb
82	Cyantraniliprole	Chlorfluazuron	Metaflumizone

83	Cyantraniliprole	Chlorfluazuron	Spirodiclofen
84	Cyantraniliprole	Chlorfluazuron	Spirotetramet
85	Cyantraniliprole	Chlorfluazuron	Flonicamid
86	Cyantraniliprole	Chlorfluazuron	Eugenol
87	Cyantraniliprole	Chlorfluazuron	Neem oil
88	Cyantraniliprole	Chlorfluazuron	Citronella
89	Cyclaniliprole	Chlorfluazuron	Acephate
90	Cyclaniliprole	Chlorfluazuron	Thiodicarb
91	Cyclaniliprole	Chlorfluazuron	Methomyl
92	Cyclaniliprole	Chlorfluazuron	Quinalphos
93	Cyclaniliprole	Chlorfluazuron	Dimethoate
94	Cyclaniliprole	Chlorfluazuron	Fipronil
95	Cyclaniliprole	Chlorfluazuron	Bifenthrin
96	Cyclaniliprole	Chlorfluazuron	Cyhalothrin
97	Cyclaniliprole	Chlorfluazuron	Lambda-cyhalothrin
98	Cyclaniliprole	Chlorfluazuron	Cypermethrin
99	Cyclaniliprole	Chlorfluazuron	Permethrin
100	Cyclaniliprole	Chlorfluazuron	Kappa-bifenthrin
101	Cyclaniliprole	Chlorfluazuron	Gamma-cyhalothrin
102	Cyclaniliprole	Chlorfluazuron	Alpha-cypermethrin
103	Cyclaniliprole	Chlorfluazuron	Beta-cypermethrin
104	Cyclaniliprole	Chlorfluazuron	Theta-cypermethrin
105	Cyclaniliprole	Chlorfluazuron	Zeta-cypermethrin
106	Cyclaniliprole	Chlorfluazuron	Acetamiprid
107	Cyclaniliprole	Chlorfluazuron	Clothianidin
108	Cyclaniliprole	Chlorfluazuron	Dinotefuran
109	Cyclaniliprole	Chlorfluazuron	Imidacloprid
110	Cyclaniliprole	Chlorfluazuron	Thiacloprid
111	Cyclaniliprole	Chlorfluazuron	Thiamethoxam
112	Cyclaniliprole	Chlorfluazuron	Sulfoxaflor

113	Cyclaniliprole	Chlorfluazuron	Spinosad
114	Cyclaniliprole	Chlorfluazuron	Abamectin
115	Cyclaniliprole	Chlorfluazuron	Emamectin benzoate
116	Cyclaniliprole	Chlorfluazuron	Pyriproxyfen
117	Cyclaniliprole	Chlorfluazuron	<i>Bacillus thuringiensis</i>
118	Cyclaniliprole	Chlorfluazuron	Azadirachtin
119	Cyclaniliprole	Chlorfluazuron	Methoxyfenozide
120	Cyclaniliprole	Chlorfluazuron	Bifenazate
121	Cyclaniliprole	Chlorfluazuron	Fenpyroximate
122	Cyclaniliprole	Chlorfluazuron	Pyridaben
123	Cyclaniliprole	Chlorfluazuron	Tebufenpyrad
124	Cyclaniliprole	Chlorfluazuron	Tolfenpyrad
125	Cyclaniliprole	Chlorfluazuron	Indoxacarb
126	Cyclaniliprole	Chlorfluazuron	Metaflumizone
127	Cyclaniliprole	Chlorfluazuron	Spirodiclofen
128	Cyclaniliprole	Chlorfluazuron	Spirotetramet
129	Cyclaniliprole	Chlorfluazuron	Flonicamid
130	Cyclaniliprole	Chlorfluazuron	Eugenol
131	Cyclaniliprole	Chlorfluazuron	Neem oil
132	Cyclaniliprole	Chlorfluazuron	Citronella
133	Flubendiamide	Chlorfluazuron	Acephate
134	Flubendiamide	Chlorfluazuron	Thiodicarb
135	Flubendiamide	Chlorfluazuron	Methomyl
136	Flubendiamide	Chlorfluazuron	Quinalphos
137	Flubendiamide	Chlorfluazuron	Dimethoate
138	Flubendiamide	Chlorfluazuron	Fipronil
139	Flubendiamide	Chlorfluazuron	Bifenthrin
140	Flubendiamide	Chlorfluazuron	Cyhalothrin
141	Flubendiamide	Chlorfluazuron	Lambda-cyhalothrin

142	Flubendiamide	Chlorfluazuron	Cypermethrin
143	Flubendiamide	Chlorfluazuron	Permethrin
144	Flubendiamide	Chlorfluazuron	Kappa-bifenthrin
145	Flubendiamide	Chlorfluazuron	Gamma-cyhalothrin
146	Flubendiamide	Chlorfluazuron	Alpha-cypermethrin
147	Flubendiamide	Chlorfluazuron	Beta-cypermethrin
148	Flubendiamide	Chlorfluazuron	Theta-cypermethrin
149	Flubendiamide	Chlorfluazuron	Zeta-cypermethrin
150	Flubendiamide	Chlorfluazuron	Acetamiprid
151	Flubendiamide	Chlorfluazuron	Clothianidin
152	Flubendiamide	Chlorfluazuron	Dinotefuran
153	Flubendiamide	Chlorfluazuron	Imidacloprid
154	Flubendiamide	Chlorfluazuron	Thiacloprid
155	Flubendiamide	Chlorfluazuron	Thiamethoxam
156	Flubendiamide	Chlorfluazuron	Sulfoxaflor
157	Flubendiamide	Chlorfluazuron	Spinosad
158	Flubendiamide	Chlorfluazuron	Abamectin
159	Flubendiamide	Chlorfluazuron	Emamectin benzoate
160	Flubendiamide	Chlorfluazuron	Pyriproxyfen
161	Flubendiamide	Chlorfluazuron	<i>Bacillus thuringiensis</i>
162	Flubendiamide	Chlorfluazuron	Azadirachtin
163	Flubendiamide	Chlorfluazuron	Methoxyfenozide
164	Flubendiamide	Chlorfluazuron	Bifenazate
165	Flubendiamide	Chlorfluazuron	Fenpyroximate
166	Flubendiamide	Chlorfluazuron	Pyridaben
167	Flubendiamide	Chlorfluazuron	Tebufenpyrad
168	Flubendiamide	Chlorfluazuron	Tolfenpyrad
169	Flubendiamide	Chlorfluazuron	Indoxacarb
170	Flubendiamide	Chlorfluazuron	Metaflumizone

171	Flubendiamide	Chlorfluazuron	Spirodiclofen
172	Flubendiamide	Chlorfluazuron	Spirotetramet
173	Flubendiamide	Chlorfluazuron	Flonicamid
174	Flubendiamide	Chlorfluazuron	Eugenol
175	Flubendiamide	Chlorfluazuron	Neem oil
176	Flubendiamide	Chlorfluazuron	Citronella
177	Broflanilide	Chlorfluazuron	Acephate
178	Broflanilide	Chlorfluazuron	Thiodicarb
179	Broflanilide	Chlorfluazuron	Methomyl
180	Broflanilide	Chlorfluazuron	Quinalphos
181	Broflanilide	Chlorfluazuron	Dimethoate
182	Broflanilide	Chlorfluazuron	Fipronil
183	Broflanilide	Chlorfluazuron	Bifenthrin
184	Broflanilide	Chlorfluazuron	Cyhalothrin
185	Broflanilide	Chlorfluazuron	Lambda-cyhalothrin
186	Broflanilide	Chlorfluazuron	Cypermethrin
187	Broflanilide	Chlorfluazuron	Permethrin
188	Broflanilide	Chlorfluazuron	Kappa-bifenthrin
189	Broflanilide	Chlorfluazuron	Gamma-cyhalothrin
190	Broflanilide	Chlorfluazuron	Alpha-cypermethrin
191	Broflanilide	Chlorfluazuron	Beta-cypermethrin
192	Broflanilide	Chlorfluazuron	Theta-cypermethrin
193	Broflanilide	Chlorfluazuron	Zeta-cypermethrin
194	Broflanilide	Chlorfluazuron	Acetamiprid
195	Broflanilide	Chlorfluazuron	Clothianidin
196	Broflanilide	Chlorfluazuron	Dinotefuran
197	Broflanilide	Chlorfluazuron	Imidacloprid
198	Broflanilide	Chlorfluazuron	Thiacloprid
199	Broflanilide	Chlorfluazuron	Thiamethoxam
200	Broflanilide	Chlorfluazuron	Sulfoxaflor

201	Broflanilide	Chlorfluazuron	Spinosad
202	Broflanilide	Chlorfluazuron	Abamectin
203	Broflanilide	Chlorfluazuron	Emamectin benzoate
204	Broflanilide	Chlorfluazuron	Pyriproxyfen
205	Broflanilide	Chlorfluazuron	<i>Bacillus thuringiensis</i>
206	Broflanilide	Chlorfluazuron	Azadirachtin
207	Broflanilide	Chlorfluazuron	Methoxyfenozide
208	Broflanilide	Chlorfluazuron	Bifenazate
209	Broflanilide	Chlorfluazuron	Fenpyroximate
210	Broflanilide	Chlorfluazuron	Pyridaben
211	Broflanilide	Chlorfluazuron	Tebufenpyrad
212	Broflanilide	Chlorfluazuron	Tolfenpyrad
213	Broflanilide	Chlorfluazuron	Indoxacarb
214	Broflanilide	Chlorfluazuron	Metaflumizone
215	Broflanilide	Chlorfluazuron	Spirodiclofen
216	Broflanilide	Chlorfluazuron	Spirotetramet
217	Broflanilide	Chlorfluazuron	Flonicamid
218	Broflanilide	Chlorfluazuron	Eugenol
219	Broflanilide	Chlorfluazuron	Neem oil
220	Broflanilide	Chlorfluazuron	Citronella
221	Cyhalodiamide	Chlorfluazuron	Acephate
222	Cyhalodiamide	Chlorfluazuron	Thiodicarb
223	Cyhalodiamide	Chlorfluazuron	Methomyl
224	Cyhalodiamide	Chlorfluazuron	Quinalphos
225	Cyhalodiamide	Chlorfluazuron	Dimethoate
226	Cyhalodiamide	Chlorfluazuron	Fipronil
227	Cyhalodiamide	Chlorfluazuron	Bifenthrin
228	Cyhalodiamide	Chlorfluazuron	Cyhalothrin
229	Cyhalodiamide	Chlorfluazuron	Lambda-cyhalothrin

230	Cyhalodiamide	Chlorfluazuron	Cypermethrin
231	Cyhalodiamide	Chlorfluazuron	Permethrin
232	Cyhalodiamide	Chlorfluazuron	Kappa-bifenthrin
233	Cyhalodiamide	Chlorfluazuron	Gamma-cyhalothrin
234	Cyhalodiamide	Chlorfluazuron	Alpha-cypermethrin
235	Cyhalodiamide	Chlorfluazuron	Beta-cypermethrin
236	Cyhalodiamide	Chlorfluazuron	Theta-cypermethrin
237	Cyhalodiamide	Chlorfluazuron	Zeta-cypermethrin
238	Cyhalodiamide	Chlorfluazuron	Acetamiprid
239	Cyhalodiamide	Chlorfluazuron	Clothianidin
240	Cyhalodiamide	Chlorfluazuron	Dinotefuran
241	Cyhalodiamide	Chlorfluazuron	Imidacloprid
242	Cyhalodiamide	Chlorfluazuron	Thiacloprid
243	Cyhalodiamide	Chlorfluazuron	Thiamethoxam
244	Cyhalodiamide	Chlorfluazuron	Sulfoxaflor
245	Cyhalodiamide	Chlorfluazuron	Spinosad
246	Cyhalodiamide	Chlorfluazuron	Abamectin
247	Cyhalodiamide	Chlorfluazuron	Emamectin benzoate
248	Cyhalodiamide	Chlorfluazuron	Pyriproxyfen
249	Cyhalodiamide	Chlorfluazuron	<i>Bacillus thuringiensis</i>
250	Cyhalodiamide	Chlorfluazuron	Azadirachtin
251	Cyhalodiamide	Chlorfluazuron	Methoxyfenozide
252	Cyhalodiamide	Chlorfluazuron	Bifenazate
253	Cyhalodiamide	Chlorfluazuron	Fenpyroximate
254	Cyhalodiamide	Chlorfluazuron	Pyridaben
255	Cyhalodiamide	Chlorfluazuron	Tebufenpyrad
256	Cyhalodiamide	Chlorfluazuron	Tolfenpyrad
257	Cyhalodiamide	Chlorfluazuron	Indoxacarb
258	Cyhalodiamide	Chlorfluazuron	Metaflumizone

259	Cyhalodiamide	Chlorfluazuron	Spirodiclofen
260	Cyhalodiamide	Chlorfluazuron	Spirotetramet
261	Cyhalodiamide	Chlorfluazuron	Flonicamid
262	Cyhalodiamide	Chlorfluazuron	Eugenol
263	Cyhalodiamide	Chlorfluazuron	Neem oil
264	Cyhalodiamide	Chlorfluazuron	Citronella
265	Tetrachlorantraniliprole	Chlorfluazuron	Acephate
266	Tetrachlorantraniliprole	Chlorfluazuron	Thiodicarb
267	Tetrachlorantraniliprole	Chlorfluazuron	Methomyl
268	Tetrachlorantraniliprole	Chlorfluazuron	Quinalphos
269	Tetrachlorantraniliprole	Chlorfluazuron	Dimethoate
270	Tetrachlorantraniliprole	Chlorfluazuron	Fipronil
271	Tetrachlorantraniliprole	Chlorfluazuron	Bifenthrin
272	Tetrachlorantraniliprole	Chlorfluazuron	Cyhalothrin
273	Tetrachlorantraniliprole	Chlorfluazuron	Lambda-cyhalothrin
274	Tetrachlorantraniliprole	Chlorfluazuron	Cypermethrin
275	Tetrachlorantraniliprole	Chlorfluazuron	Permethrin
276	Tetrachlorantraniliprole	Chlorfluazuron	Kappa-bifenthrin
277	Tetrachlorantraniliprole	Chlorfluazuron	Gamma-cyhalothrin
278	Tetrachlorantraniliprole	Chlorfluazuron	Alpha-cypermethrin
279	Tetrachlorantraniliprole	Chlorfluazuron	Beta-cypermethrin
280	Tetrachlorantraniliprole	Chlorfluazuron	Theta-cypermethrin
281	Tetrachlorantraniliprole	Chlorfluazuron	Zeta-cypermethrin
282	Tetrachlorantraniliprole	Chlorfluazuron	Acetamiprid
283	Tetrachlorantraniliprole	Chlorfluazuron	Clothianidin
284	Tetrachlorantraniliprole	Chlorfluazuron	Dinotefuran
285	Tetrachlorantraniliprole	Chlorfluazuron	Imidacloprid
286	Tetrachlorantraniliprole	Chlorfluazuron	Thiacloprid
287	Tetrachlorantraniliprole	Chlorfluazuron	Thiamethoxam
288	Tetrachlorantraniliprole	Chlorfluazuron	Sulfoxaflor

289	Tetrachlorantraniliprole	Chlorfluazuron	Spinosad
290	Tetrachlorantraniliprole	Chlorfluazuron	Abamectin
291	Tetrachlorantraniliprole	Chlorfluazuron	Emamectin benzoate
292	Tetrachlorantraniliprole	Chlorfluazuron	Pyriproxyfen
293	Tetrachlorantraniliprole	Chlorfluazuron	<i>Bacillus thuringiensis</i>
294	Tetrachlorantraniliprole	Chlorfluazuron	Azadirachtin
295	Tetrachlorantraniliprole	Chlorfluazuron	Methoxyfenozide
296	Tetrachlorantraniliprole	Chlorfluazuron	Bifenazate
297	Tetrachlorantraniliprole	Chlorfluazuron	Fenpyroximate
298	Tetrachlorantraniliprole	Chlorfluazuron	Pyridaben
299	Tetrachlorantraniliprole	Chlorfluazuron	Tebufenpyrad
300	Tetrachlorantraniliprole	Chlorfluazuron	Tolfenpyrad
301	Tetrachlorantraniliprole	Chlorfluazuron	Indoxacarb
302	Tetrachlorantraniliprole	Chlorfluazuron	Metaflumizone
303	Tetrachlorantraniliprole	Chlorfluazuron	Spirodiclofen
304	Tetrachlorantraniliprole	Chlorfluazuron	Spirotetramet
305	Tetrachlorantraniliprole	Chlorfluazuron	Flonicamid
306	Tetrachlorantraniliprole	Chlorfluazuron	Eugenol
307	Tetrachlorantraniliprole	Chlorfluazuron	Neem oil
308	Tetrachlorantraniliprole	Chlorfluazuron	Citronella
309	Tyclopyrazoflor	Chlorfluazuron	Acephate
310	Tyclopyrazoflor	Chlorfluazuron	Thiodicarb
311	Tyclopyrazoflor	Chlorfluazuron	Methomyl
312	Tyclopyrazoflor	Chlorfluazuron	Quinalphos
313	Tyclopyrazoflor	Chlorfluazuron	Dimethoate
314	Tyclopyrazoflor	Chlorfluazuron	Fipronil
315	Tyclopyrazoflor	Chlorfluazuron	Bifenthrin
316	Tyclopyrazoflor	Chlorfluazuron	Cyhalothrin
317	Tyclopyrazoflor	Chlorfluazuron	Lambda-cyhalothrin

318	Tyclopyrazoflor	Chlorfluazuron	Cypermethrin
319	Tyclopyrazoflor	Chlorfluazuron	Permethrin
320	Tyclopyrazoflor	Chlorfluazuron	Kappa-bifenthrin
321	Tyclopyrazoflor	Chlorfluazuron	Gamma-cyhalothrin
322	Tyclopyrazoflor	Chlorfluazuron	Alpha-cypermethrin
323	Tyclopyrazoflor	Chlorfluazuron	Beta-cypermethrin
324	Tyclopyrazoflor	Chlorfluazuron	Theta-cypermethrin
325	Tyclopyrazoflor	Chlorfluazuron	Zeta-cypermethrin
326	Tyclopyrazoflor	Chlorfluazuron	Acetamiprid
327	Tyclopyrazoflor	Chlorfluazuron	Clothianidin
328	Tyclopyrazoflor	Chlorfluazuron	Dinotefuran
329	Tyclopyrazoflor	Chlorfluazuron	Imidacloprid
330	Tyclopyrazoflor	Chlorfluazuron	Thiacloprid
331	Tyclopyrazoflor	Chlorfluazuron	Thiamethoxam
332	Tyclopyrazoflor	Chlorfluazuron	Sulfoxaflor
333	Tyclopyrazoflor	Chlorfluazuron	Spinosad
334	Tyclopyrazoflor	Chlorfluazuron	Abamectin
335	Tyclopyrazoflor	Chlorfluazuron	Emamectin benzoate
336	Tyclopyrazoflor	Chlorfluazuron	Pyriproxyfen
337	Tyclopyrazoflor	Chlorfluazuron	<i>Bacillus thuringiensis</i>
338	Tyclopyrazoflor	Chlorfluazuron	Azadirachtin
339	Tyclopyrazoflor	Chlorfluazuron	Methoxyfenozide
340	Tyclopyrazoflor	Chlorfluazuron	Bifenazate
341	Tyclopyrazoflor	Chlorfluazuron	Fenpyroximate
342	Tyclopyrazoflor	Chlorfluazuron	Pyridaben
343	Tyclopyrazoflor	Chlorfluazuron	Tebufenpyrad
344	Tyclopyrazoflor	Chlorfluazuron	Tolfenpyrad
345	Tyclopyrazoflor	Chlorfluazuron	Indoxacarb
346	Tyclopyrazoflor	Chlorfluazuron	Metaflumizone

347	Tyclopyrazoflor	Chlorfluazuron	Spirodiclofen
348	Tyclopyrazoflor	Chlorfluazuron	Spirotetramet
349	Tyclopyrazoflor	Chlorfluazuron	Flonicamid
350	Tyclopyrazoflor	Chlorfluazuron	Eugenol
351	Tyclopyrazoflor	Chlorfluazuron	Neem oil
352	Tyclopyrazoflor	Chlorfluazuron	Citronella
353	Tetraniliprole	Chlorfluazuron	Acephate
354	Tetraniliprole	Chlorfluazuron	Thiodicarb
355	Tetraniliprole	Chlorfluazuron	Methomyl
356	Tetraniliprole	Chlorfluazuron	Quinalphos
357	Tetraniliprole	Chlorfluazuron	Dimethoate
358	Tetraniliprole	Chlorfluazuron	Fipronil
359	Tetraniliprole	Chlorfluazuron	Bifenthrin
360	Tetraniliprole	Chlorfluazuron	Cyhalothrin
361	Tetraniliprole	Chlorfluazuron	Lambda-cyhalothrin
362	Tetraniliprole	Chlorfluazuron	Cypermethrin
363	Tetraniliprole	Chlorfluazuron	Permethrin
364	Tetraniliprole	Chlorfluazuron	Kappa-bifenthrin
365	Tetraniliprole	Chlorfluazuron	Gamma-cyhalothrin
366	Tetraniliprole	Chlorfluazuron	Alpha-cypermethrin
367	Tetraniliprole	Chlorfluazuron	Beta-cypermethrin
368	Tetraniliprole	Chlorfluazuron	Theta-cypermethrin
369	Tetraniliprole	Chlorfluazuron	Zeta-cypermethrin
370	Tetraniliprole	Chlorfluazuron	Acetamiprid
371	Tetraniliprole	Chlorfluazuron	Clothianidin
372	Tetraniliprole	Chlorfluazuron	Dinotefuran
373	Tetraniliprole	Chlorfluazuron	Imidacloprid
374	Tetraniliprole	Chlorfluazuron	Thiacloprid
375	Tetraniliprole	Chlorfluazuron	Thiamethoxam
376	Tetraniliprole	Chlorfluazuron	Sulfoxaflor

377	Tetraniliprole	Chlorfluazuron	Spinosad
378	Tetraniliprole	Chlorfluazuron	Abamectin
379	Tetraniliprole	Chlorfluazuron	Emamectin benzoate
380	Tetraniliprole	Chlorfluazuron	Pyriproxyfen
381	Tetraniliprole	Chlorfluazuron	<i>Bacillus thuringiensis</i>
382	Tetraniliprole	Chlorfluazuron	Azadirachtin
383	Tetraniliprole	Chlorfluazuron	Methoxyfenozide
384	Tetraniliprole	Chlorfluazuron	Bifenazate
385	Tetraniliprole	Chlorfluazuron	Fenpyroximate
386	Tetraniliprole	Chlorfluazuron	Pyridaben
387	Tetraniliprole	Chlorfluazuron	Tebufenpyrad
388	Tetraniliprole	Chlorfluazuron	Tolfenpyrad
389	Tetraniliprole	Chlorfluazuron	Indoxacarb
390	Tetraniliprole	Chlorfluazuron	Metaflumizone
391	Tetraniliprole	Chlorfluazuron	Spirodiclofen
392	Tetraniliprole	Chlorfluazuron	Spirotetramet
393	Tetraniliprole	Chlorfluazuron	Flonicamid
394	Tetraniliprole	Chlorfluazuron	Eugenol
395	Tetraniliprole	Chlorfluazuron	Neem oil
396	Tetraniliprole	Chlorfluazuron	Citronella
397	Chlorantraniliprole	Novaluron	Acephate
398	Chlorantraniliprole	Novaluron	Thiodicarb
399	Chlorantraniliprole	Novaluron	Methomyl
400	Chlorantraniliprole	Novaluron	Quinalphos
401	Chlorantraniliprole	Novaluron	Dimethoate
402	Chlorantraniliprole	Novaluron	Fipronil
403	Chlorantraniliprole	Novaluron	Bifenthrin
404	Chlorantraniliprole	Novaluron	Cyhalothrin
405	Chlorantraniliprole	Novaluron	Lambda-cyhalothrin

406	Chlorantraniliprole	Novaluron	Cypermethrin
407	Chlorantraniliprole	Novaluron	Permethrin
408	Chlorantraniliprole	Novaluron	Kappa-bifenthrin
409	Chlorantraniliprole	Novaluron	Gamma-cyhalothrin
410	Chlorantraniliprole	Novaluron	Alpha-cypermethrin
411	Chlorantraniliprole	Novaluron	Beta-cypermethrin
412	Chlorantraniliprole	Novaluron	Theta-cypermethrin
413	Chlorantraniliprole	Novaluron	Zeta-cypermethrin
414	Chlorantraniliprole	Novaluron	Acetamiprid
415	Chlorantraniliprole	Novaluron	Clothianidin
416	Chlorantraniliprole	Novaluron	Dinotefuran
417	Chlorantraniliprole	Novaluron	Imidacloprid
418	Chlorantraniliprole	Novaluron	Thiacloprid
419	Chlorantraniliprole	Novaluron	Thiamethoxam
420	Chlorantraniliprole	Novaluron	Sulfoxaflor
421	Chlorantraniliprole	Novaluron	Spinosad
422	Chlorantraniliprole	Novaluron	Abamectin
423	Chlorantraniliprole	Novaluron	Emamectin benzoate
424	Chlorantraniliprole	Novaluron	Pyriproxyfen
425	Chlorantraniliprole	Novaluron	<i>Bacillus thuringiensis</i>
416	Chlorantraniliprole	Novaluron	Azadirachtin
427	Chlorantraniliprole	Novaluron	Methoxyfenozide
428	Chlorantraniliprole	Novaluron	Bifenazate
429	Chlorantraniliprole	Novaluron	Fenpyroximate
430	Chlorantraniliprole	Novaluron	Pyridaben
431	Chlorantraniliprole	Novaluron	Tebufenpyrad
432	Chlorantraniliprole	Novaluron	Tolfenpyrad
433	Chlorantraniliprole	Novaluron	Indoxacarb
434	Chlorantraniliprole	Novaluron	Metaflumizone

435	Chlorantraniliprole	Novaluron	Spirodiclofen
436	Chlorantraniliprole	Novaluron	Spirotetramet
437	Chlorantraniliprole	Novaluron	Flonicamid
438	Chlorantraniliprole	Novaluron	Eugenol
439	Chlorantraniliprole	Novaluron	Neem oil
440	Chlorantraniliprole	Novaluron	Citronella
441	Cyantraniliprole	Novaluron	Acephate
442	Cyantraniliprole	Novaluron	Thiodicarb
443	Cyantraniliprole	Novaluron	Methomyl
444	Cyantraniliprole	Novaluron	Quinalphos
445	Cyantraniliprole	Novaluron	Dimethoate
446	Cyantraniliprole	Novaluron	Fipronil
447	Cyantraniliprole	Novaluron	Bifenthrin
448	Cyantraniliprole	Novaluron	Cyhalothrin
449	Cyantraniliprole	Novaluron	Lambda-cyhalothrin
450	Cyantraniliprole	Novaluron	Cypermethrin
451	Cyantraniliprole	Novaluron	Permethrin
452	Cyantraniliprole	Novaluron	Kappa-bifenthrin
453	Cyantraniliprole	Novaluron	Gamma-cyhalothrin
454	Cyantraniliprole	Novaluron	Alpha-cypermethrin
455	Cyantraniliprole	Novaluron	Beta-cypermethrin
456	Cyantraniliprole	Novaluron	Theta-cypermethrin
457	Cyantraniliprole	Novaluron	Zeta-cypermethrin
458	Cyantraniliprole	Novaluron	Acetamiprid
459	Cyantraniliprole	Novaluron	Clothianidin
460	Cyantraniliprole	Novaluron	Dinotefuran
461	Cyantraniliprole	Novaluron	Imidacloprid
462	Cyantraniliprole	Novaluron	Thiacloprid
463	Cyantraniliprole	Novaluron	Thiamethoxam
464	Cyantraniliprole	Novaluron	Sulfoxaflor

465	Cyantraniliprole	Novaluron	Spinosad
466	Cyantraniliprole	Novaluron	Abamectin
467	Cyantraniliprole	Novaluron	Emamectin benzoate
468	Cyantraniliprole	Novaluron	Pyriproxyfen
469	Cyantraniliprole	Novaluron	<i>Bacillus thuringiensis</i>
470	Cyantraniliprole	Novaluron	Azadirachtin
471	Cyantraniliprole	Novaluron	Methoxyfenozide
472	Cyantraniliprole	Novaluron	Bifenazate
473	Cyantraniliprole	Novaluron	Fenpyroximate
474	Cyantraniliprole	Novaluron	Pyridaben
475	Cyantraniliprole	Novaluron	Tebufenpyrad
476	Cyantraniliprole	Novaluron	Tolfenpyrad
477	Cyantraniliprole	Novaluron	Indoxacarb
478	Cyantraniliprole	Novaluron	Metaflumizone
479	Cyantraniliprole	Novaluron	Spirodiclofen
480	Cyantraniliprole	Novaluron	Spirotetramet
481	Cyantraniliprole	Novaluron	Flonicamid
482	Cyantraniliprole	Novaluron	Eugenol
483	Cyantraniliprole	Novaluron	Neem oil
484	Cyantraniliprole	Novaluron	Citronella
485	Cyclaniliprole	Novaluron	Acephate
486	Cyclaniliprole	Novaluron	Thiodicarb
487	Cyclaniliprole	Novaluron	Methomyl
488	Cyclaniliprole	Novaluron	Quinalphos
489	Cyclaniliprole	Novaluron	Dimethoate
490	Cyclaniliprole	Novaluron	Fipronil
491	Cyclaniliprole	Novaluron	Bifenthrin
492	Cyclaniliprole	Novaluron	Cyhalothrin
493	Cyclaniliprole	Novaluron	Lambda-cyhalothrin

494	Cyclaniliprole	Novaluron	Cypermethrin
495	Cyclaniliprole	Novaluron	Permethrin
496	Cyclaniliprole	Novaluron	Kappa-bifenthrin
497	Cyclaniliprole	Novaluron	Gamma-cyhalothrin
498	Cyclaniliprole	Novaluron	Alpha-cypermethrin
499	Cyclaniliprole	Novaluron	Beta-cypermethrin
500	Cyclaniliprole	Novaluron	Theta-cypermethrin
501	Cyclaniliprole	Novaluron	Zeta-cypermethrin
502	Cyclaniliprole	Novaluron	Acetamiprid
503	Cyclaniliprole	Novaluron	Clothianidin
504	Cyclaniliprole	Novaluron	Dinotefuran
505	Cyclaniliprole	Novaluron	Imidacloprid
506	Cyclaniliprole	Novaluron	Thiacloprid
507	Cyclaniliprole	Novaluron	Thiamethoxam
508	Cyclaniliprole	Novaluron	Sulfoxaflor
509	Cyclaniliprole	Novaluron	Spinosad
510	Cyclaniliprole	Novaluron	Abamectin
511	Cyclaniliprole	Novaluron	Emamectin benzoate
512	Cyclaniliprole	Novaluron	Pyriproxyfen
513	Cyclaniliprole	Novaluron	<i>Bacillus thuringiensis</i>
514	Cyclaniliprole	Novaluron	Azadirachtin
515	Cyclaniliprole	Novaluron	Methoxyfenozide
516	Cyclaniliprole	Novaluron	Bifenazate
517	Cyclaniliprole	Novaluron	Fenpyroximate
518	Cyclaniliprole	Novaluron	Pyridaben
519	Cyclaniliprole	Novaluron	Tebufenpyrad
520	Cyclaniliprole	Novaluron	Tolfenpyrad
521	Cyclaniliprole	Novaluron	Indoxacarb
522	Cyclaniliprole	Novaluron	Metaflumizone

523	Cyclaniliprole	Novaluron	Spirodiclofen
524	Cyclaniliprole	Novaluron	Spirotetramet
525	Cyclaniliprole	Novaluron	Flonicamid
526	Cyclaniliprole	Novaluron	Eugenol
527	Cyclaniliprole	Novaluron	Neem oil
528	Cyclaniliprole	Novaluron	Citronella
529	Flubendiamide	Novaluron	Acephate
530	Flubendiamide	Novaluron	Thiodicarb
531	Flubendiamide	Novaluron	Methomyl
532	Flubendiamide	Novaluron	Quinalphos
533	Flubendiamide	Novaluron	Dimethoate
534	Flubendiamide	Novaluron	Fipronil
535	Flubendiamide	Novaluron	Bifenthrin
536	Flubendiamide	Novaluron	Cyhalothrin
537	Flubendiamide	Novaluron	Lambda-cyhalothrin
538	Flubendiamide	Novaluron	Cypermethrin
539	Flubendiamide	Novaluron	Permethrin
540	Flubendiamide	Novaluron	Kappa-bifenthrin
541	Flubendiamide	Novaluron	Gamma-cyhalothrin
542	Flubendiamide	Novaluron	Alpha-cypermethrin
543	Flubendiamide	Novaluron	Beta-cypermethrin
544	Flubendiamide	Novaluron	Theta-cypermethrin
545	Flubendiamide	Novaluron	Zeta-cypermethrin
546	Flubendiamide	Novaluron	Acetamiprid
547	Flubendiamide	Novaluron	Clothianidin
548	Flubendiamide	Novaluron	Dinotefuran
549	Flubendiamide	Novaluron	Imidacloprid
550	Flubendiamide	Novaluron	Thiacloprid
551	Flubendiamide	Novaluron	Thiamethoxam
552	Flubendiamide	Novaluron	Sulfoxaflor

553	Flubendiamide	Novaluron	Spinosad
554	Flubendiamide	Novaluron	Abamectin
555	Flubendiamide	Novaluron	Emamectin benzoate
556	Flubendiamide	Novaluron	Pyriproxyfen
557	Flubendiamide	Novaluron	<i>Bacillus thuringiensis</i>
558	Flubendiamide	Novaluron	Azadirachtin
559	Flubendiamide	Novaluron	Methoxyfenozide
560	Flubendiamide	Novaluron	Bifenazate
561	Flubendiamide	Novaluron	Fenpyroximate
562	Flubendiamide	Novaluron	Pyridaben
563	Flubendiamide	Novaluron	Tebufenpyrad
564	Flubendiamide	Novaluron	Tolfenpyrad
565	Flubendiamide	Novaluron	Indoxacarb
566	Flubendiamide	Novaluron	Metaflumizone
567	Flubendiamide	Novaluron	Spirodiclofen
568	Flubendiamide	Novaluron	Spirotetramet
569	Flubendiamide	Novaluron	Flonicamid
570	Flubendiamide	Novaluron	Eugenol
571	Flubendiamide	Novaluron	Neem oil
572	Flubendiamide	Novaluron	Citronella
573	Broflanilide	Novaluron	Acephate
574	Broflanilide	Novaluron	Thiodicarb
575	Broflanilide	Novaluron	Methomyl
576	Broflanilide	Novaluron	Quinalphos
577	Broflanilide	Novaluron	Dimethoate
578	Broflanilide	Novaluron	Fipronil
579	Broflanilide	Novaluron	Bifenthrin
580	Broflanilide	Novaluron	Cyhalothrin
581	Broflanilide	Novaluron	Lambda-cyhalothrin

582	Broflanilide	Novaluron	Cypermethrin
583	Broflanilide	Novaluron	Permethrin
584	Broflanilide	Novaluron	Kappa-bifenthrin
585	Broflanilide	Novaluron	Gamma-cyhalothrin
586	Broflanilide	Novaluron	Alpha-cypermethrin
587	Broflanilide	Novaluron	Beta-cypermethrin
588	Broflanilide	Novaluron	Theta-cypermethrin
589	Broflanilide	Novaluron	Zeta-cypermethrin
590	Broflanilide	Novaluron	Acetamiprid
591	Broflanilide	Novaluron	Clothianidin
592	Broflanilide	Novaluron	Dinotefuran
593	Broflanilide	Novaluron	Imidacloprid
594	Broflanilide	Novaluron	Thiacloprid
595	Broflanilide	Novaluron	Thiamethoxam
596	Broflanilide	Novaluron	Sulfoxaflor
597	Broflanilide	Novaluron	Spinosad
598	Broflanilide	Novaluron	Abamectin
599	Broflanilide	Novaluron	Emamectin benzoate
600	Broflanilide	Novaluron	Pyriproxyfen
601	Broflanilide	Novaluron	<i>Bacillus thuringiensis</i>
602	Broflanilide	Novaluron	Azadirachtin
603	Broflanilide	Novaluron	Methoxyfenozide
604	Broflanilide	Novaluron	Bifenazate
605	Broflanilide	Novaluron	Fenpyroximate
606	Broflanilide	Novaluron	Pyridaben
607	Broflanilide	Novaluron	Tebufenpyrad
608	Broflanilide	Novaluron	Tolfenpyrad
609	Broflanilide	Novaluron	Indoxacarb
610	Broflanilide	Novaluron	Metaflumizone

611	Broflanilide	Novaluron	Spirodiclofen
612	Broflanilide	Novaluron	Spirotetramet
613	Broflanilide	Novaluron	Flonicamid
614	Broflanilide	Novaluron	Eugenol
615	Broflanilide	Novaluron	Neem oil
616	Broflanilide	Novaluron	Citronella
617	Cyhalodiamide	Novaluron	Acephate
618	Cyhalodiamide	Novaluron	Thiodicarb
619	Cyhalodiamide	Novaluron	Methomyl
620	Cyhalodiamide	Novaluron	Quinalphos
621	Cyhalodiamide	Novaluron	Dimethoate
622	Cyhalodiamide	Novaluron	Fipronil
623	Cyhalodiamide	Novaluron	Bifenthrin
624	Cyhalodiamide	Novaluron	Cyhalothrin
625	Cyhalodiamide	Novaluron	Lambda-cyhalothrin
626	Cyhalodiamide	Novaluron	Cypermethrin
627	Cyhalodiamide	Novaluron	Permethrin
628	Cyhalodiamide	Novaluron	Kappa-bifenthrin
629	Cyhalodiamide	Novaluron	Gamma-cyhalothrin
630	Cyhalodiamide	Novaluron	Alpha-cypermethrin
631	Cyhalodiamide	Novaluron	Beta-cypermethrin
632	Cyhalodiamide	Novaluron	Theta-cypermethrin
633	Cyhalodiamide	Novaluron	Zeta-cypermethrin
634	Cyhalodiamide	Novaluron	Acetamiprid
635	Cyhalodiamide	Novaluron	Clothianidin
636	Cyhalodiamide	Novaluron	Dinotefuran
637	Cyhalodiamide	Novaluron	Imidacloprid
638	Cyhalodiamide	Novaluron	Thiacloprid
639	Cyhalodiamide	Novaluron	Thiamethoxam
640	Cyhalodiamide	Novaluron	Sulfoxaflor

641	Cyhalodiamide	Novaluron	Spinosad
642	Cyhalodiamide	Novaluron	Abamectin
643	Cyhalodiamide	Novaluron	Emamectin benzoate
644	Cyhalodiamide	Novaluron	Pyriproxyfen
645	Cyhalodiamide	Novaluron	<i>Bacillus thuringiensis</i>
646	Cyhalodiamide	Novaluron	Azadirachtin
647	Cyhalodiamide	Novaluron	Methoxyfenozide
648	Cyhalodiamide	Novaluron	Bifenazate
649	Cyhalodiamide	Novaluron	Fenpyroximate
650	Cyhalodiamide	Novaluron	Pyridaben
651	Cyhalodiamide	Novaluron	Tebufenpyrad
652	Cyhalodiamide	Novaluron	Tolfenpyrad
653	Cyhalodiamide	Novaluron	Indoxacarb
654	Cyhalodiamide	Novaluron	Metaflumizone
655	Cyhalodiamide	Novaluron	Spirodiclofen
656	Cyhalodiamide	Novaluron	Spirotetramet
657	Cyhalodiamide	Novaluron	Flonicamid
658	Cyhalodiamide	Novaluron	Eugenol
659	Cyhalodiamide	Novaluron	Neem oil
660	Cyhalodiamide	Novaluron	Citronella
661	Tetrachlorantraniliprole	Novaluron	Acephate
662	Tetrachlorantraniliprole	Novaluron	Thiodicarb
663	Tetrachlorantraniliprole	Novaluron	Methomyl
664	Tetrachlorantraniliprole	Novaluron	Quinalphos
665	Tetrachlorantraniliprole	Novaluron	Dimethoate
666	Tetrachlorantraniliprole	Novaluron	Fipronil
667	Tetrachlorantraniliprole	Novaluron	Bifenthrin
668	Tetrachlorantraniliprole	Novaluron	Cyhalothrin
669	Tetrachlorantraniliprole	Novaluron	Lambda-cyhalothrin

670	Tetrachlorantraniliprole	Novaluron	Cypermethrin
671	Tetrachlorantraniliprole	Novaluron	Permethrin
672	Tetrachlorantraniliprole	Novaluron	Kappa-bifenthrin
673	Tetrachlorantraniliprole	Novaluron	Gamma-cyhalothrin
674	Tetrachlorantraniliprole	Novaluron	Alpha-cypermethrin
675	Tetrachlorantraniliprole	Novaluron	Beta-cypermethrin
676	Tetrachlorantraniliprole	Novaluron	Theta-cypermethrin
677	Tetrachlorantraniliprole	Novaluron	Zeta-cypermethrin
678	Tetrachlorantraniliprole	Novaluron	Acetamiprid
679	Tetrachlorantraniliprole	Novaluron	Clothianidin
680	Tetrachlorantraniliprole	Novaluron	Dinotefuran
681	Tetrachlorantraniliprole	Novaluron	Imidacloprid
682	Tetrachlorantraniliprole	Novaluron	Thiacloprid
683	Tetrachlorantraniliprole	Novaluron	Thiamethoxam
684	Tetrachlorantraniliprole	Novaluron	Sulfoxaflor
685	Tetrachlorantraniliprole	Novaluron	Spinosad
686	Tetrachlorantraniliprole	Novaluron	Abamectin
687	Tetrachlorantraniliprole	Novaluron	Emamectin benzoate
688	Tetrachlorantraniliprole	Novaluron	Pyriproxyfen
689	Tetrachlorantraniliprole	Novaluron	<i>Bacillus thuringiensis</i>
690	Tetrachlorantraniliprole	Novaluron	Azadirachtin
691	Tetrachlorantraniliprole	Novaluron	Methoxyfenozide
692	Tetrachlorantraniliprole	Novaluron	Bifenazate
693	Tetrachlorantraniliprole	Novaluron	Fenpyroximate
694	Tetrachlorantraniliprole	Novaluron	Pyridaben
695	Tetrachlorantraniliprole	Novaluron	Tebufenpyrad
696	Tetrachlorantraniliprole	Novaluron	Tolfenpyrad
697	Tetrachlorantraniliprole	Novaluron	Indoxacarb
698	Tetrachlorantraniliprole	Novaluron	Metaflumizone

699	Tetrachlorantraniliprole	Novaluron	Spirodiclofen
700	Tetrachlorantraniliprole	Novaluron	Spirotetramet
701	Tetrachlorantraniliprole	Novaluron	Flonicamid
702	Tetrachlorantraniliprole	Novaluron	Eugenol
703	Tetrachlorantraniliprole	Novaluron	Neem oil
704	Tetrachlorantraniliprole	Novaluron	Citronella
705	Tyclopyrazoflor	Novaluron	Acephate
706	Tyclopyrazoflor	Novaluron	Thiodicarb
707	Tyclopyrazoflor	Novaluron	Methomyl
708	Tyclopyrazoflor	Novaluron	Quinalphos
709	Tyclopyrazoflor	Novaluron	Dimethoate
710	Tyclopyrazoflor	Novaluron	Fipronil
711	Tyclopyrazoflor	Novaluron	Bifenthrin
712	Tyclopyrazoflor	Novaluron	Cyhalothrin
713	Tyclopyrazoflor	Novaluron	Lambda-cyhalothrin
714	Tyclopyrazoflor	Novaluron	Cypermethrin
715	Tyclopyrazoflor	Novaluron	Permethrin
716	Tyclopyrazoflor	Novaluron	Kappa-bifenthrin
717	Tyclopyrazoflor	Novaluron	Gamma-cyhalothrin
718	Tyclopyrazoflor	Novaluron	Alpha-cypermethrin
719	Tyclopyrazoflor	Novaluron	Beta-cypermethrin
720	Tyclopyrazoflor	Novaluron	Theta-cypermethrin
721	Tyclopyrazoflor	Novaluron	Zeta-cypermethrin
722	Tyclopyrazoflor	Novaluron	Acetamiprid
723	Tyclopyrazoflor	Novaluron	Clothianidin
724	Tyclopyrazoflor	Novaluron	Dinotefuran
725	Tyclopyrazoflor	Novaluron	Imidacloprid
726	Tyclopyrazoflor	Novaluron	Thiacloprid
727	Tyclopyrazoflor	Novaluron	Thiamethoxam
728	Tyclopyrazoflor	Novaluron	Sulfoxaflor

729	Tyclopyrazoflor	Novaluron	Spinosad
730	Tyclopyrazoflor	Novaluron	Abamectin
731	Tyclopyrazoflor	Novaluron	Emamectin benzoate
732	Tyclopyrazoflor	Novaluron	Pyriproxyfen
733	Tyclopyrazoflor	Novaluron	<i>Bacillus thuringiensis</i>
734	Tyclopyrazoflor	Novaluron	Azadirachtin
735	Tyclopyrazoflor	Novaluron	Methoxyfenozide
736	Tyclopyrazoflor	Novaluron	Bifenazate
737	Tyclopyrazoflor	Novaluron	Fenpyroximate
738	Tyclopyrazoflor	Novaluron	Pyridaben
739	Tyclopyrazoflor	Novaluron	Tebufenpyrad
740	Tyclopyrazoflor	Novaluron	Tolfenpyrad
741	Tyclopyrazoflor	Novaluron	Indoxacarb
742	Tyclopyrazoflor	Novaluron	Metaflumizone
743	Tyclopyrazoflor	Novaluron	Spirodiclofen
744	Tyclopyrazoflor	Novaluron	Spirotetramet
745	Tyclopyrazoflor	Novaluron	Flonicamid
746	Tyclopyrazoflor	Novaluron	Eugenol
747	Tyclopyrazoflor	Novaluron	Neem oil
748	Tyclopyrazoflor	Novaluron	Citronella
749	Tetraniliprole	Novaluron	Acephate
750	Tetraniliprole	Novaluron	Thiodicarb
751	Tetraniliprole	Novaluron	Methomyl
752	Tetraniliprole	Novaluron	Quinalphos
753	Tetraniliprole	Novaluron	Dimethoate
754	Tetraniliprole	Novaluron	Fipronil
755	Tetraniliprole	Novaluron	Bifenthrin
756	Tetraniliprole	Novaluron	Cyhalothrin
757	Tetraniliprole	Novaluron	Lambda-cyhalothrin

758	Tetraniliprole	Novaluron	Cypermethrin
759	Tetraniliprole	Novaluron	Permethrin
760	Tetraniliprole	Novaluron	Kappa-bifenthrin
761	Tetraniliprole	Novaluron	Gamma-cyhalothrin
762	Tetraniliprole	Novaluron	Alpha-cypermethrin
763	Tetraniliprole	Novaluron	Beta-cypermethrin
764	Tetraniliprole	Novaluron	Theta-cypermethrin
765	Tetraniliprole	Novaluron	Zeta-cypermethrin
766	Tetraniliprole	Novaluron	Acetamiprid
767	Tetraniliprole	Novaluron	Clothianidin
768	Tetraniliprole	Novaluron	Dinotefuran
769	Tetraniliprole	Novaluron	Imidacloprid
770	Tetraniliprole	Novaluron	Thiacloprid
771	Tetraniliprole	Novaluron	Thiamethoxam
772	Tetraniliprole	Novaluron	Sulfoxaflor
773	Tetraniliprole	Novaluron	Spinosad
774	Tetraniliprole	Novaluron	Abamectin
775	Tetraniliprole	Novaluron	Emamectin benzoate
776	Tetraniliprole	Novaluron	Pyriproxyfen
777	Tetraniliprole	Novaluron	<i>Bacillus thuringiensis</i>
778	Tetraniliprole	Novaluron	Azadirachtin
779	Tetraniliprole	Novaluron	Methoxyfenozide
780	Tetraniliprole	Novaluron	Bifenazate
781	Tetraniliprole	Novaluron	Fenpyroximate
782	Tetraniliprole	Novaluron	Pyridaben
783	Tetraniliprole	Novaluron	Tebufenpyrad
784	Tetraniliprole	Novaluron	Tolfenpyrad
785	Tetraniliprole	Novaluron	Indoxacarb
786	Tetraniliprole	Novaluron	Metaflumizone

787	Tetraniliprole	Novaluron	Spirodiclofen
788	Tetraniliprole	Novaluron	Spirotetramet
789	Tetraniliprole	Novaluron	Flonicamid
790	Tetraniliprole	Novaluron	Eugenol
791	Tetraniliprole	Novaluron	Neem oil
792	Tetraniliprole	Novaluron	Citronella

In an embodiment, the present invention provides combinations comprising at least three insecticides listed in each isolated individual row selected from row 1 to row 792 of Table 1.

5

The combinations of the present invention may be formulated in the form of a composition.

Therefore, in an embodiment, the present invention may provide a composition comprising a combination as disclosed in any aspect or embodiment hereinabove.

In an embodiment, the present invention may provide a composition comprising a combination comprising at least three insecticides listed in each isolated individual row selected from row 1 to row 792 of Table 1.

15

In an embodiment, the present invention may provide a composition comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least one benzoylphenyl urea insecticide;
- (c) at least another insecticide; and
- (d) at least one agrochemically acceptable excipient.

20

25

In an embodiment, the present invention may provide a composition comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least benzoylphenyl urea insecticide;
- (c) at least another insecticidal active;
- (d) at least one other agrochemical active; and
- (e) at least one agrochemically acceptable excipient.

The amount of a composition according to the invention to be applied, will depend on various factors, such as the subject of the treatment, such as, for example plants, soil or seeds; the type of treatment, such as, for example spraying, dusting or seed dressing; the purpose of the treatment, such as, for example prophylactic or therapeutic disease control; in case of disease control the type of fungi to be controlled or the application time. This amount of the combinations of the present invention to be applied can be readily deduced by a skilled agronomist.

The compositions of the present invention maybe mixed with other agrochemically active including but not limited to herbicide, fungicides, fertilizers, plant growth regulators and the like.

Thus in an embodiment, the present invention may provide compositions comprising:

- (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least benzoylphenyl urea insecticide; and
- (c) at least one other insecticidal actives.

In another embodiment, the present invention may provide compositions comprising:

- 5 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole
- (b) at least benzoylphenyl urea insecticide selected from bistrifluron, chlorbenzuron, chlorfluazuron, dichlorbenzuron, diflubenzuron, flucycloxuron, flufenoxuron, hexaflumuron, lufenuron, novaluron, noviflumuron, penfluron, teflubenzuron, Triflumuron; and
- 10 (c) at least two other insecticidal actives

In a specific embodiment, the present invention may provide compositions comprising:

- 15 (a) at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole
- (b) novaluron; and
- 20 (c) at least one other insecticidal active.

In a specific embodiment, the present invention may provide compositions comprising:

- 25 (a) at least one diamide insecticide selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) chlorfluazuron; and
- (c) at least one other insecticidal active.

30

In a specific embodiment, the present invention may provide compositions comprising:

- (a) at least one diamide insecticide selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor, and tetraniliprole;
- (b) lufenuron; and
- (c) at least one other insecticidal active.

10 In an embodiment, the total amount of diamide insecticidal compound in the composition may typically be in the range of 0.1 to 99% by weight, preferably 0.2 to 90% by weight. The total amount of benzoylphenyl urea insecticide in the composition may be in the range of 0.1 to 99% by weight. The total amount of the other insecticidal active in the composition may be in the range of 0.1 to 99% by weight.

20 In an embodiment, the constituent insecticides of the combination of the present invention may be admixed in ratio of (1-80): (1-80): (1-80) of the benzoylphenyl urea insecticide, amide insecticidal compound and one other insecticide respectively.

In an embodiment, the constituents of the composition of the present invention may be tank mixed and sprayed at the locus of the infection, or may be alternatively be mixed with surfactants and then sprayed.

25 In an embodiment, the constituents of the composition of the present invention may be used for foliar application, ground or applications to plant propagation materials.

30 In an embodiment, the compositions of the present invention may typically be produced by mixing the actives in the composition with an inert carrier, and

adding surfactants and other adjuvants and carriers as needed and formulated into solid, or liquid formulations, including but not limited to wettable powders, granules, dusts, soluble (liquid) concentrates, suspension concentrates, oil in water emulsion, water in oil emulsion, emulsifiable concentrates, capsule
5 suspensions, ZC formulations, oil dispersions or other known formulation types. The composition may also be used for treatment of a plant propagation material such as seeds etc.

10 Examples of the solid carrier used in formulation include fine powders or granules such as minerals such as kaolin clay, attapulgite clay, bentonite, montmorillonite, acid white clay, pyrophyllite, talc, diatomaceous earth and calcite; natural organic materials such as corn rachis powder and walnut husk powder; synthetic organic materials such as urea; salts such as calcium carbonate and ammonium sulfate; synthetic inorganic materials such as synthetic hydrated silicon oxide; and as a
15 liquid carrier, aromatic hydrocarbons such as xylene, alkylbenzene and methylnaphthalene; alcohols such as 2-propanol, ethyleneglycol, propylene glycol, and ethylene glycol monoethyl ether; ketones such as acetone, cyclohexanone and isophorone; vegetable oil such as soybean oil and cotton seed oil; petroleum aliphatic hydrocarbons, esters, dimethylsulfoxide, acetonitrile
20 and water.

25 Examples of the surfactant include anionic surfactants such as alkyl sulfate ester salts, alkylaryl sulfonate salts, dialkyl sulfosuccinate salts, polyoxyethylene alkylaryl ether phosphate ester salts, lignosulfonate salts and naphthalene sulfonate formaldehyde polycondensates; and nonionic surfactants such as polyoxyethylene alkyl aryl ethers, polyoxyethylene alkylpolyoxypropylene block copolymers and sorbitan fatty acid esters and cationic surfactants such as alkyltrimethylammonium salts.

30 Examples of the other formulation auxiliary agents include water-soluble polymers such as polyvinyl alcohol and polyvinylpyrrolidone, polysaccharides

such as Arabic gum, alginic acid and the salt thereof, CMC (carboxymethyl-cellulose) , Xanthan gum, inorganic materials such as aluminium magnesium silicate and alumina sol, preservatives, colouring agents and stabilization agents such as PAP (acid phosphate isopropyl) and BHT.

5

In an embodiment the insect pests controlled by the combinations of the present invention may belong to the class Insecta, Arachnida and Nematoda. Exemplary pests may include: from the order Lepidoptera, pests such as *Acleris* spp., *Adoxophyes* spp., *Aegeria* spp., *Agrotis* spp., *Alabama argillaceae*, *Amylois* spp., *Anticarsia gemmatilis*, *Archips* spp., *Argyrotaenia* spp., *Autographa* spp., *Busseola fusca*, *Cadra cautella*, *Carposina nipponensis*, *Chilo* spp., *Choristoneura* spp., *Clysia ambiguella*, *Cnaphalocrocis* spp., *Cnephasia* spp., *Cochylis* spp., *Coleophora* spp., *Crocidolomia* spp., *Cryptophlebia leucotreta*, *Crysodeixis includens*, *Cydia* spp., *Diatraea* spp., *Diparopsis castanea*, *Earias* spp., *Elasmopalpus* spp., *Ephestia* spp., *Eucosma* spp., *Eupoecilia ambiguella*, *Euproctis* spp., *Euxoa* spp., *Grapholita* spp., *Hedya nubiferana*, *Heliothis* spp., *Hellula undalis*, *Hyphantria cunea*, *Keiferia lycopersicella*, *Leucoptera scitella*, *Lithocollethis* spp., *Lobesia botrana*, *Lymantria* spp., *Lyonetia* spp., *Malacosoma* spp., *Mamestra brassicae*, *Manduca sexta*, *Operophtera* spp., *Ostrinia nubilalis*, *Pammene* spp., *Pandemis* spp., *Panolis flammea*, *Pectinophora gossypiella*, *Phthorimaea operculella*, *Pieris rapae*, *Pieris* spp., *Plutella xylostella*, *Prays* spp., *Scirpophaga* spp., *Sesamia* spp., *Sparganothis* spp., *Spodoptera* spp., *Synanthedon* spp., *Thaumetopoea* spp., *Tortrix* spp., *Trichoplusia ni* and *Yponomeuta* spp.; from the order Coleoptera, pest such as *Agriotes* spp., *Anthonomus* spp., *Atomaria linearis*, *Ceutorhynchus* spp., *Chaetocnema tibialis*, *Cosmopolites* spp., *Curculio* spp., *Dermestes* spp., *Diabrotica* spp., *Epilachna* spp., *Eremnus* spp., *Gonocephalum* spp., *Heteronychus* spp., *Leptinotarsa decemlineata*, *Lissorhoptrus* spp., *Melolontha* spp., *Orycaephilus* spp., *Otiorhynchus* spp., *Phlyctinus* spp., *Phyllotreta* spp., *Popillia* spp., *Protostrophus* spp., *Psylliodes* spp., *Rhizopertha* spp., *Scarabeidae*, *Sitophilus* spp., *Sitotroga* spp., *Tenebrio* spp., *Tribolium* spp. and *Trogoderma* spp.; from the order

Orthoptera, pests such as *Blatta* spp., *Blattella* spp., *Gryllotalpa* spp., *Leucophaea maderae*, *Locusta* spp., *Periplaneta* spp. and *Schistocerca* spp.; from the order Isoptera, pests such as *Reticulitermes* spp.; from the order Psocoptera pest such as, *Liposcelis* spp.; from the order Anoplura, pests such as

5 *Haematopinus* spp., *Linognathus* spp., *Pediculus* spp., *Pemphigus* spp. and *Phylloxera* spp.; from the order Mallophaga pests such as *Damalinea* spp. and *Trichodectes* spp.; from the order Thysanoptera, pests such as *Frankliniella* spp., *Hercinothrips* spp., *Taeniothrips* spp., *Thrips palmi*, *Thrips tabaci* and *Scirtothrips aurantii*; from the order Heteroptera, pests such as *Dichelops melacanthus*,

10 *Distantiella theobroma*, *Dysdercus* spp., *Euchistus* spp., *Eurygaster* spp., *Leptocorisa* spp., *Nezara* spp., *Piesma* spp., *Rhodnius* spp., *Sahlbergella singularis*, *Scotinophara* spp. and *Triatoma* spp.; from the order Homoptera, insect pests such as *Aleurothrixus floccosus*, *Aleyrodes brassicae*, *Aonidiella* spp., *Aphididae*, *Aphis* spp., *Aspidiotus* spp., *Bemisia tabaci*, *Ceroplaster* spp.,

15 *Chrysomphalus aonidium*, *Chrysomphalus dictyospermi*, *Coccus hesperidum*, *Empoasca* spp., *Eriosoma larigerum*, *Erythroneura* spp., *Gascardia* spp., *Laodelphax* spp., *Lecanium corni*, *Lepidosaphes* spp., *Macrosiphus* spp., *Myzus* spp., *Nephotettix* spp., *Nilaparvata* spp., *Paratoria* spp., *Pemphigus* spp., *Planococcus* spp., *Pseudaulacaspis* spp., *Pseudococcus* spp., *Psylla* spp.,

20 *Pulvinaria aethiopica*, *Quadraspidotus* spp., *Rhopalosiphum* spp., *Saissetia* spp., *Scaphoideus* spp., *Schizaphis* spp., *Sitobion* spp., *Trialeurodes vaporariorum*, *Trioza erytrae* and *Unaspis citri*; from the order Hymenoptera, insect pests such as *Acromyrmex*, *Athalia rosae*, *Atta* spp., *Cephus* spp., *Diprion* spp., *Diprionidae*, *Gilpinia polytoma*, *Hoplocampa* spp., *Lasius* spp.,

25 *Monomorium pharaonis*, *Neodiprion* spp., *Solenopsis* spp. and *Vespa* spp.; from the order Diptera, insect pests such as *Antherigona soccata*, *Bibio hortulanus*, *Ceratitis* spp., *Chrysomyia* spp., *Culex* spp., *Cuterebra* spp., *Dacus* spp., *Delia* spp., *Drosophila melanogaster*, *Liriomyza* spp., *Melanagromyza* spp., *Orseolia* spp., *Oscinella frit*, *Pegomyia hyoscyami*, *Phorbia* spp., *Rhagoletis pomonella*,

30 *Sciara* spp.; from the order Acarina, pests such as *Acarus siro*, *Aceria sheldoni*, *Aculus schlechtendali*, *Amblyomma* spp., *Argas* spp., *Brevipalpus* spp., *Bryobia*

praetiosa, Calipitimerus spp., Chorioptes spp., Dermanyssus gallinae,
 Eotetranychus carpini, Eriophyes spp., Hyalomma spp., Olygonychus pratensis,
 Ornithodoros spp., Panonychus spp., Phyllocoptruta spp. (such as Phyllocoptruta
 oleivora), Polyphagotarsonemus latus, Psoroptes spp., Rhipicephalus spp.,
 5 Rhizoglyphus spp., Sarcoptes spp., Tarsonemus spp. and Tetranychus spp.; and
 from the class Nematoda, the species of Meloidogyne spp. (for example,
 Meloidogyne incognita and Meloidogyne javanica), Heterodera spp. (for
 example, Heterodera glycines, Heterodera schachtii, Heterodora avenae and
 Heterodora trifolii), Globodera spp. (for example, Globodera rostochiensis),
 10 Radopholus spp. (for example, Radopholus similis), Rotylenchulus spp.,
 Pratylenchus spp. (for example, Pratylenchus neglectans and Pratylenchus
 penetrans), Aphelenchoides spp., Helicotylenchus spp., Hoplolaimus spp.,
 Paratrichodorus spp., Longidorus spp., Nacobbus spp., Subanguina spp.
 Belonlaimus spp., Criconemella spp., Criconemoides spp. Ditylenchus spp.,
 15 Dolichodorus spp., Hemicriconemoides spp., Hemicycliophora spp.,
 Hirschmaniella spp., Hypsoperine spp., Macroposthonia spp., Melinius spp.,
 Punctodera spp., Quinisulcius spp., Scutellonema spp., Xiphinema spp., and
 Tylenchorhynchus spp.

20 The compositions of the present invention can be used on agricultural lands such
 as fields, paddy fields, lawns and orchards or on non-agricultural lands.

The present invention may be used to control diseases in agricultural lands for
 cultivating the plants without any phytotoxicity to the plant.

25

Examples of the crops on which the present compositions may be used include
 but are not limited to corn, rice, wheat, barley, rye, oat, sorghum, cotton, soybean,
 peanut, buckwheat, beet, rapeseed, sunflower, sugar cane, tobacco, etc.;
 vegetables: solanaceous vegetables such as eggplant, tomato, pimento, pepper,
 30 potato, etc., cucurbit vegetables such as cucumber, pumpkin, zucchini, water
 melon, melon, squash, etc., cruciferous vegetables such as radish, white turnip,

horseradish, kohlrabi, Chinese cabbage, cabbage, leaf mustard, broccoli, cauliflower, etc., asteraceous vegetables such as burdock, crown daisy, artichoke, lettuce, etc, liliaceous vegetables such as green onion, onion, garlic, and asparagus, ammiaceous vegetables such as carrot, parsley, celery, parsnip, etc., chenopodiaceous vegetables such as spinach, Swiss chard, etc., lamiaceous vegetables such as *Perilla frutescens*, mint, basil, etc, strawberry, sweet potato, *Dioscorea japonica*, colocasia, etc., flowers, foliage plants, turf grasses, fruits: pome fruits such apple, pear, quince, etc, stone fleshy fruits such as peach, plum, nectarine, *Prunus mume*, cherry fruit, apricot, prune, etc., citrus fruits such as orange, lemon, lime, grapefruit, etc., nuts such as chestnuts, walnuts, hazelnuts, almond, pistachio, cashew nuts, macadamia nuts, etc. berries such as blueberry, cranberry, blackberry, raspberry, etc., grape, kaki fruit, olive, plum, banana, coffee, date palm, coconuts, etc. , trees other than fruit trees; tea, mulberry, flowering plant, trees such as ash, birch, dogwood, *Eucalyptus*, *Ginkgo biloba*, lilac, maple, *Quercus*, poplar, Judas tree, *Liquidambar formosana*, plane tree, zelkova, Japanese arborvitae, fir wood, hemlock, juniper, *Pinus*, *Picea*, and *Taxus cuspidate*, etc.

In an embodiment, the constituent insecticides of the combination of the present invention may be admixed in ratio of (1-80): (1-80): (1-80): (1:80)

In an aspect, the present invention may provide methods of controlling fungal diseases and insect pests comprising applying a combination comprising:

(a) at least one diamide insecticide selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;

(b) at least one benzoylphenyl urea insecticide; and

(c) at least one other insecticide.

In an embodiment, the diamide insecticide, the benzoylphenyl urea insecticide, and at least one other insecticide may be selected according to any of the preferred embodiments of the combinations described hereinabove.

- 5 The combinations of the present invention may be sold as a pre-mix composition or a kit of parts such that individual actives may be mixed before spraying. Alternatively, the kit of parts may contain at least one diamide insecticide and the benzoylphenyl urea insecticide pre-mixed and the third insecticidal active may be admixed with an adjuvant such that the two components may be tank mixed
10 before spraying.

Therefore, in an embodiment, the present invention may provide a kit comprising at least three components, each of said component comprising one active ingredient out of the combinations as disclosed in any aspect or embodiment
15 hereinabove.

In an embodiment, the present invention may provide a kit comprising at least three components, each said component comprising individually at least one of said insecticides listed in each isolated individual row selected from row 1 to row
20 792 of Table 1.

In an embodiment, the present invention may provide a kit comprising:

- 25 (a) at least one component comprising at least one insecticidal diamide compound selected from broflanilide, chlorantraniliprole, cyantraniliprole, cyclaniliprole, cyhalodiamide, flubendiamide, tetrachlorantraniliprole, tyclopyrazoflor and tetraniliprole;
- (b) at least a second component comprising at least one benzoylphenyl urea insecticide;
- (c) at least a third component comprising at least another insecticide.
- 30

The composition of the present invention maybe applied simultaneously as a tank mix or a formulation or may be applied sequentially. The application may be made to the soil before emergence of the plants, either pre-planting or post-planting, or to a plant propagation material. The application may be made as a foliar spray at
5 different timings during crop development, with either one or two applications early or late post-emergence.

The compositions according to the invention can be applied before or after infection of the useful plants or the propagation material thereof for prevention or
10 curing of infestations of insect pest.

As demonstrated, the addition of a third insecticidal active to a combination of amide insecticidal compound and benzoylphenyl urea insecticides greatly improved the control of pests at a locus as well as improved yield and
15 demonstrated a synergistic effect.

While the foregoing written description of the invention enables one of ordinary skill to make and use what is considered presently to be the best mode thereof, those of ordinary skill will understand and appreciate the existence of variations,
20 combinations, and equivalents of the specific embodiment, method, and examples herein. The invention should therefore not be limited by the above described embodiment, method, and examples, but by all embodiments and methods within the scope and spirit of the invention.

25 Dated this the 10th day of July 2018



Dr. Sanchita Ganguli
Of S. MAJUMDAR & CO.
Applicant's Agent

30

FORM 1 THE PATENTS ACT, 1970 (39 of 1970) and The Patents Rules, 2003 APPLICATION FOR GRANT OF PATENT [See section 7, 54 & 135 and sub-rule (1) of rule 20]	(FOR OFFICE USE ONLY)
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	Application No :	
	Filing Date :	
	Amount of Fee Paid :	
	CBR No :	
	Signature :	
1. APPLICANT'S REFERENCE / IDENTIFICATION NO. (AS ALLOTTED BY OFFICE)		
2. TYPE OF APPLICATION [Please tick (✓) at the appropriate category]		
Ordinary (✓)		Convention ()
PCT-NP ()		
Divisional ()	Patent of Addition ()	Divisional ()
		Patent of Addition ()

3A. APPLICANT(S)

Name in Full	Nationality	Country of Residence	Address of the Applicant	
UPL LTD	An Indian Company	India	House No.	Agrochemical Plant,
			Street	Durgachak Haldia,
			City	Midnapore,
			State	West Bengal,
			Country	India
			Pin code	721602

3B. CATEGORY OF APPLICANT [Please tick (✓) at the appropriate category]

Natural Person ()	Other than Natural Person		
	Small Entity ()	Startup ()	Others (✓)

4. INVENTOR(S) [Please tick (✓) at the appropriate category]

Are all the inventor(s) same as the applicant(s) named above ?	YES ()	NO (✓)
--	----------------	---------------

If "No", furnish the details of the inventor(s)					
Name in Full	Nationality	Country of Residence	Address of the Inventor		
SHROFF, Jaidev Rajnikant	A British Citizen	Dubai - U.A.E.	House No.	206, Swiss Tower, Cluster Y	
			Street	Jumeirah Lake Towers, P.O. Box: 33421	
			City		
			State		
			Country	Dubai - U.A.E.	
			Pin code		
SHROFF, Vikram Rajnikant	A British Citizen	Dubai - U.A.E.	House No.	206, Swiss Tower, Cluster Y	
			Street	Jumeirah Lake Towers, P.O. Box: 33421	
			City		
			State		
			Country	Dubai - U.A.E.	
			Pin code		
5. TITLE OF THE INVENTION: NOVEL AGROCHEMICAL COMBINATIONS					
6. AUTHORISED REGISTERED PATENT AGENT(S)	IN/PA No.	625			
	Name	Dr. Sanchita Ganguli			
	Mobile No.	9331827882			
7. ADDRESS FOR SERVICE OF APPLICANT IN INDIA	Name	S. MAJUMDAR & CO.			
	Postal Address	5 Harish Mukherjee Road, Kolkata – 700 025, West Bengal, India			
	Telephone No.	(033) 2455 7484 / 85 / 86			
	Mobile No.	9331827882			
	Fax No.	(033) 2455 7487 / 88			
	E-mail ID	cal@patentindia.com			
8. IN CASE OF APPLICATION CLAIMING PRIORITY OF APPLICATION FILED IN CONVENTION COUNTRY, PARTICULARS OF CONVENTION APPLICATION					
COUNTRY	APPLICATION NUMBER	FILING DATE	NAME OF THE APPLICANT	TITLE OF THE INVENTION	IPR (as classified in the convention country)
9. IN CASE OF PCT NATIONAL PHASE APPLICATION, PARTICULARS OF INTERNATIONAL APPLICATION FILED UNDER PATENT COOPERATION TREATY (PCT)					
International application number			International filing date as allotted by the receiving office		
10. IN CASE OF DIVISIONAL APPLICATION FILED UNDER SECTION 16, PARTICULARS OF					

ORIGINAL (FIRST) APPLICATION

Original (first) application number	Date of filing of Original (first) application

11. IN CASE OF PATENT OF ADDITION FILED UNDER SECTION 54, PARTICULARS OF MAIN APPLICATION OR PATENT

Main application / patent Number	Date of filing of main application

12. DECLARATIONS**(i) Declaration by the inventor(s)**

(In case the applicant is an assignee : the inventor(s) may sign herein below or the applicant may upload the assignment or enclose the assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period).

We, the above named inventor(s) are the true & first inventor(s) for this invention and declare that the applicant(s) herein are our assignee or legal representative.

- (a) Date _____
(b) Signature(s) of the inventor(s):
(c) Name of the inventor: **SHROFF, Jaidev Rajnikant**

- (a) Date _____
(b) Signature(s) of the inventor(s):
(c) Name of the inventor: **SHROFF, Vikram Rajnikant**

(ii) Declaration by the applicant(s) in the convention country

(In case the applicant in India is different than the applicant in the convention country: the applicant in the convention country may sign herein below or applicant in India may upload the assignment from the applicant in the convention country or enclose the said assignment with this application for patent or send the assignment by post/electronic transmission duly authenticated within the prescribed period)

I/We, the applicant(s) in the convention country declare that the applicant(s) herein is/are my/our assignee or legal representative

- (a) Date _____
(b) Signature(s)
(c) Name(s) of the Signatory:-

(iii) Declaration by the applicant(s):

I/We, the applicant(s) hereby declare(s) that :

- ☐ We are in possession of the above-mentioned invention
- ☐ The provisional specification relating to the invention is filed with this application.
- ☒ The invention as disclosed in the specification uses the biological material from India and the necessary permission from the competent authority shall be submitted by us before the grant of patent to us.
- ☐ There is no lawful ground of objection(s) to the grant of the Patent to us.
- ☒ We are the true & first inventor(s).

- ☐ We are the assignee or legal representative of true & first inventor(s).
- ☒ The application or each of the applications, particulars of which are given in Paragraph-8, was the first application in convention country/countries in respect of my/our invention.
- ☒ I/We claim the priority from the above mentioned application(s) filed in convention country/ countries and state that no application for protection in respect of the invention had been made in a convention country before that date by me/us or by any person from which I/we derive the title.
- ☒ My/Our application in India is based on international application under Patent Cooperation Treaty (PCT) as mentioned in Paragraph-9.
- ☒ The application is divided out of my/our application particulars of which is given in Para-10 and pray that this application may be treated as deemed to have been filed on (DD/MM/YYYY) under Section 16 of the Act.
- ☒ The said invention is an improvement in or modification of the invention particulars of which are given in Paragraph-11.

13. FOLLOWING ARE THE ATTACHMENTS WITH THE APPLICATION

(a) Form 2

Item	Details	Fee	Remarks
Provisional specification)#	No. of pages (82)	Rs. 41600.00	52-30 = 01 x Rs. 800.00 = Rs. 41600.00
No. of claims	No. of claims and no. of pages		
Abstract	No. of pages		
No. of Drawing(s)	No. of drawings () and No. of pages ()		

In case of a complete specification, if the applicant desires to adopt the drawings filed with his provisional specification as the drawings or part of the drawings for the complete specification under rule 13(4), the number of such pages filed with the provisional specification are required to be mentioned here.

(b)

- (a) Form -2 with provisional specification (2 copies). No. of pages 82
- (b) Statement and undertaking on Form 3
- (c) General Power of Attorney in our favour.
- (d) Fee for excess pages exceeding 30 = 52-30 = 01 x Rs. 800.00 = Rs. 41600.00
- (e) Fee for application = Rs. 8,000.00

Fee Rs. 49600/-

We hereby declare that to the best of our knowledge, information and belief the fact and matters stated herein are correct and we request that a patent may be granted to us for the said invention.

Dated this 10th day of July 2018

Sanchita Ganguli

Dr. Sanchita Ganguli
of S. MAJUMDAR & CO.
Applicants' Agent

To
The Controller of Patents

The Patent Office,
At Kolkata

Note:-

- * Repeat boxes in case of more than one entry.
- * To be signed by the applicant(s) or by authorized registered patent agent otherwise where mentioned.
- * Tick (✓)/cross (x) whichever is applicable/not applicable in declaration in paragraph – 12.
- * Name of the inventor and applicant should be given in full, family name in the beginning.
- * Strike out the portion which is/are not applicable.
- * For fee: See First Schedule