

PESTICIDAL COMPOSITIONS

This invention relates to compositions comprising pesticidal isoxazoline derivatives. More particularly, this invention relates to compositions of isocycloseram; to dilutions or dispersions of such compositions; and to the use of such compositions to combat and/or control invertebrate animal pests
5 such as arthropods.

Isocycloseram is pesticide that is solid at room temperature (25°C). It is convenient to prepare isocycloseram as a fine suspension of dispersed particles in a liquid medium, typically by milling isocycloseram to produce a millbase which may then be further processed by the addition of other ingredients to prepare aqueous suspension concentrates (SC). Such aqueous SCs can either be used
10 directly or diluted prior to use for controlling arthropods such as insects or arachnids.

A common method for controlling insect or arachnid pests in non-crop areas such as the inside and outside of buildings and houses is by applying an aqueous pesticide composition to surfaces found in or around such structures. However, the efficacy of the pesticide surface spray coating and its residual effect can be reduced on porous surfaces including aggressive (i.e., alkaline) porous surfaces.

15 There remains a need for isocycloseram compositions that are easy to handle and can be used to prepare aqueous compositions that are suitable for application to porous or aggressive surfaces for longer-lasting control of arthropod pests.

Therefore, the present invention provides isocycloseram compositions comprising an absorptive carrier. The isocycloseram compositions have improved efficacy and residual activity against arthropod
20 pests on porous or aggressive surfaces.

In a first aspect, the present invention is directed to a pesticidal composition comprising:

- (a) isocycloseram;
- (b) a solvent;
- (c) an absorptive carrier; and
- 25 (d) a surfactant.

Further according to the invention, there is provided a pesticidal composition comprising the components (a) – (d), and optionally further comprising one or more of (e) a filler or carrier, (f) an antifoam, (g) a thickener and (h) a preservative.

The pesticidal composition according to the invention further relates to suspension concentrates (SC),
30 flowable suspensions (FS), suspoemulsions (SE), suspension concentrate-capsule suspension blends (ZC), water soluble granules (SG), water dispersible granules (WG), and water dispersible tablets (WT); to dilutions or dispersions of such compositions more particularly in a spray tank, back-pack

sprayer or other vessel; and to the use of such a composition to combating and/or control an arthropod pest.

In a preferred embodiment, the pesticidal composition according to the invention relates to a water dispersible solid in the form of a wettable powder (WP) or a wettable granule (WG) such as a water
5 dispersible granule (WDG), usually intended for dilution with water before use as an aqueous spray composition.

In another preferred embodiment, the pesticidal composition according to the present invention is a suspension concentrate (SC), which is a stable suspension of a solid pesticidal active ingredient compound in a liquid, usually intended for dilution with water before use as an aqueous spray
10 composition.

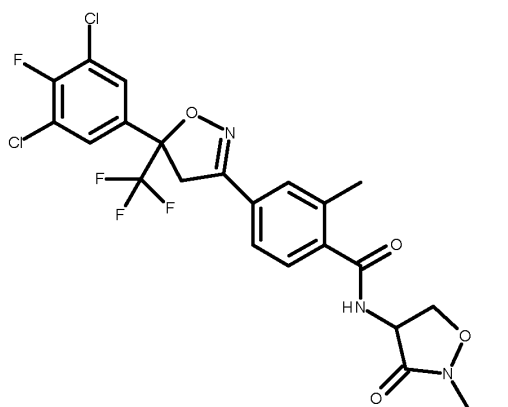
Still further according to the invention, there is provided a (non-therapeutic) method of combating and controlling arthropod pests which comprises applying to a pest, to a locus of a pest (eg soil, mud or a surface such as a porous or aggressive surface), or to a crop of a useful plant susceptible to attack by a pest a composition according to the invention.

15 The pesticidal composition of the invention is particularly suited for controlling insect pests and insect populations including flying, crawling, social or communal insect pests, pests on porous or aggressive surfaces.

In one embodiment, the flying insect pests to be controlled are mosquitoes including nuisance mosquitoes, mosquito vectors of pathogenic disease and mosquitoes having resistance to insecticides
20 such as pyrethroids.

Aqueous spray compositions prepared from the pesticidal compositions of the invention show significant improvements in efficacy and residual activity on porous/aggressive surfaces including, for example, wood, unglazed tile, or concrete.

Isocycloseram is an insecticidal agrochemical with the following CAS number: 2061933-85-3, and has
25 the following chemical formula:



- Isocycloseram can comprise the isomer (5S,4R) which is 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethyl-3-oxo-isoxazolidin-4-yl]-2-methyl-benzamide, and optionally at least one of the isomers selected among isomer (5S,4S), isomer (5R,4R), isomer (5R,4S), and any combinations thereof. In the present invention, the isomer (5S,4S) is 4-[(5S)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4S)-2-ethyl-3-oxo-isoxazolidin-4-yl]-2-methyl-benzamide; the isomer (5R,4R) is 4-[(5R)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4R)-2-ethyl-3-oxo-isoxazolidin-4-yl]-2-methyl-benzamide; and the isomer (5R,4S) is 4-[(5R)-5-(3,5-dichloro-4-fluoro-phenyl)-5-(trifluoromethyl)-4H-isoxazol-3-yl]-N-[(4S)-2-ethyl-3-oxo-isoxazolidin-4-yl]-2-methyl-benzamide. When isocycloseram further comprises at least one of the isomers selected among isomer (5S,4S), isomer (5R,4R), isomer (5R,4S), and any combinations thereof, isocycloseram can comprise a molar proportion of the isomer (5S,4R) greater than 50%, e.g. at least 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99%, over the total amount of the isomers (5S,4R), (5S,4S), (5R,4R) and (5R,4S).
- The molar proportion of the isomer (5S,4S) can be less than 50%, e.g. at most 30%, 25%, 20%, 15%, 10%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.5% or 0.1%, over the total amount of the isomers (5S,4R), (5S,4S), (5R,4R) and (5R,4S).
- The molar proportion of the isomer (5R,4R) can be less than 50%, e.g. at most 30%, 25%, 20%, 15%, 10%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.5% or 0.1%, over the total amount of the isomers (5S,4R), (5S,4S), (5R,4R) and (5R,4S).
- The molar proportion of the isomer (5R,4S) can be less than 50%, e.g. at most 30%, 25%, 20%, 15%, 10%, 9%, 8%, 7%, 6%, 5%, 4%, 3%, 2%, 1%, 0.5% or 0.1%, over the total amount of the isomers (5S,4R), (5S,4S), (5R,4R) and (5R,4S).

- Preferably, the composition according to the present invention comprises as the pesticidal active ingredient component (a) 1% to 40% by weight of isocycloseram; preferably from 3% to 25% by weight of isocycloseram, and more preferably from 4% to 20% by weight of isocycloseram. In one embodiment, the pesticidal composition is an SC comprising from 4% to 10%, for example, about 4.5% by weight of isocycloseram. In another embodiment, the pesticidal composition is a solid composition

(WP or WG) comprising from 10% to 20 %, for example, about 15% by weight of isocycloseram, over the total weight of the composition (w/w).

The composition of the present invention comprises a suitable solvent (or diluent) (b). Examples of a suitable solvent (or diluent) component (b) for the composition of the present invention is selected from
5 N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof. Preferably, the suitable solvent component (b) is N,N-dimethyl lactamide.

10 In another preferred embodiment, the suitable solvent component (b) comprises a lactam solvent. Most preferably, the suitable solvent is lactic acid dimethyl amide.

Preferably, the composition of the present invention comprises from 5% to 50% by weight; preferably from 10 to 40% by weight of a suitable solvent (b), over the total weight of the composition (w/w). In one embodiment, the pesticidal composition is an SC comprising from 10% to 20%, for example, about 11% by weight of a solvent (b). In another embodiment, the pesticidal composition is a solid
15 composition (WP or WG) comprising from 20% to 40 %, for example, about 37% by weight of a solvent (b), over the total weight of the composition (w/w).

The composition of the present invention further comprises a suitable absorptive carrier (c). In one embodiment of the present invention, the absorptive carrier (c) is a solid carrier selected from silica, silica acid, precipitated silica, microcrystalline cellulose, absorbent clays (bentonite/ montmorillonite,
20 diatomaceous earth, sodium smectite, attapulgite), silicon dioxide, sodium aluminosilicate, amorphous calcium silicate, calcium carbonate, mica minerals, and modified versions or mixtures thereof.

In one embodiment, the absorption capacity of the absorptive solid carrier (c) is evaluated by using a DOA measurement, whereby di-(2-ethylhexyl) adipate (DOA, CAS number 103-23-1) is absorbed by the void volume of such carrier. The determination of the DOA absorption number is performed by
25 means of an absorptometer which is equipped with a torque measurement and processing system. The skilled person would appreciate that this parameter (DOA absorption) is measured according to the International Organization for Standardization (ISO) 19246:2016 'Rubber compounding ingredients – Silica-Oil absorption of precipitated silica'.

Preferably, suitable absorptive solid carriers (preferably a silica carrier) are those having a DOA
30 absorption of from 200 to 300 (ml/100g); preferably from 240 to 300 (ml/100g), more preferably from 270 to 300 (ml/100g)

In another embodiment, the particle size of the absorptive solid carrier (c) is evaluated by using laser diffraction. The skilled person would appreciate that this parameter (median particle diameter, d50) is measured according to the International Organization for Standardization (ISO) 13320:2020 'Particle
35 size analysis – Laser diffraction methods'.

Preferably, suitable absorptive solid carriers (preferably a silica carrier) are those having a particle size d50 of from 10 to 50 (μm); preferably, a d50 of from 12 to 20 (μm), more preferably a d50 of from 16 to 20 (μm).

In another embodiment, the surface area of the absorptive solid carrier (c) is evaluated by measuring the amount of physically adsorbed gas according to the method of Brunauer, Emmett and Teller (BET). The skilled person would appreciate that this parameter (surface area) is measured according to the International Organization for Standardization (ISO) 9277:2022 'Determination of the specific surface area of solids by gas adsorption — BET method'.

Preferred are absorptive solid carriers which have a surface area of from 100 to 500 (m²/g); preferably, a surface area of from 130 to 500 (m²/g), more preferably, a surface area of from 130 to 200 (m²/g).

In one embodiment the absorptive solid carrier has a surface area of from 200 to 500 (m²/g).

In another embodiment of the invention, the absorptive solid carrier (c) is a silica carrier (preferably, a precipitated silica) having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016), a particle size d50 of from 10 to 50 (μm) (measured according to ISO 13320:2020) and a surface area of from 100 to 500 (m²/g) (measured according to ISO 9277:2022). Preferably, the absorptive solid carrier (c) is a silica carrier (preferably, a precipitated silica) having a DOA absorption of from 240 to 300 (ml/100g) (measured according to ISO 19246:2016), a particle size d50 of from 12 to 20 (μm) (measured according to ISO 13320:2020) and a surface area of from 130 to 500 (m²/g) (measured according to ISO 9277:2022). More preferably, the absorptive solid carrier (c) is a silica carrier (preferably, a precipitated silica) having a DOA absorption of from 270 to 300 (ml/100g) (measured according to ISO 19246:2016), a particle size d50 of from 16 to 20 (μm) (measured according to ISO 13320:2020) and a surface area of from 200 to 500 (m²/g) (measured according to ISO 9277:2022).

Also preferred are absorptive solid carriers with the following parameters:

	DOA Absorption (ml/100g)	Surface Area (m ² /g)	Particle size, d50 (μm)
Low			≤13
Medium	200	130-200	20
High	≥215	500	≥50
Range	200 – 300	100 – 500	10 - 50

More preferably, the absorptive solid carrier (c) is a silica carrier. For example, the suitable silica carrier is selected from a silica (silicon dioxide, O₂Si), a silica acid, a silicic acid, a precipitated silica, and modified versions thereof, each of which are characterized by a high absorption capacity. Most preferably, the absorptive solid carrier is selected from a silica (silicon dioxide, O₂Si), a silica acid, a precipitated silica, and modified versions thereof, having a DOA absorption of 200 – 300 (ml/100g), preferably 240 – 300 (ml/100g); a particle size d50 of 10 – 50 (μm), preferably d50 13 - 20; and a surface area of 100 – 500 (m²/g), preferably, 130-500 (m²/g).

In a preferred embodiment, the absorptive solid carrier (c) is a precipitated silica carrier.

Examples of suitable absorptive solid carriers include the SIPERNAT® series (Evonik) such as (but not limited to) a silica, silicic acid, or a precipitated silica selected from SIPERNAT®22S, SIPERNAT®50 and SIPERNAT®50S, the TIXOSIL® series (Solvay), for example TIXOSIL®38A, TIXOSIL®38AB and
5 TIXOSIL®38 or the HI-SIL® series (PPG), for example HI-SIL®233. Preferably the absorptive solid carriers used in the compositions of the invention has the chemistry of SIPERNAT®50S.

Preferably, the composition of the present invention comprises from 1% to 40% by weight (w/w) of the absorptive carrier (c), preferably from 5% to 30% by weight of the absorptive carrier, over the total weight of the composition (w/w). In one embodiment, the pesticidal composition is an SC comprising
10 from 5% to 10%, for example, about 7% by weight (w/w) of the absorptive carrier (c). In another embodiment, the pesticidal composition is a solid composition (WP or WG) comprising from 15% to 30 %, for example, about 26% by weight of the absorptive carrier (c), over the total weight of the composition (w/w).

The composition of the present invention further comprises a suitable surfactant (d). Surfactants, or
15 surface-active agents, are chemicals that are added to various products and processes to modify surface properties and enhance their performance. They are composed of molecules that have both hydrophilic and hydrophobic regions. In the context of the present invention, surfactants can function as wetting agents, dispersing agents or emulsifying agents may be of the cationic, anionic, amphoteric or non-ionic type.

A dispersant or a dispersing agent is typically a surfactant substance, which when added to a
20 suspension of solid particles in a liquid better enables the separation of the particles to avoid their settling or clumping together. A wetting agent is typically a surfactant substance that lowers the surface tension of a liquid, facilitating its ability to spread and adhere uniformly on solid surfaces. In addition, a wetting agent is a surfactant that facilitates rapid wetting of a solid composition (eg WP) when the
25 powder is added to water to prepare an aqueous spray composition.

Preferably, a suitable surfactant (d) comprises one or more surfactants selected for their dual functionality as wetting agents and dispersants, or a suitable surfactant (d) comprises a surfactant blend comprising one or more surfactants selected to function as wetting agents and one or more surfactants selected to function as dispersants in the context of a particular embodiment of the present
30 invention.

In one embodiment, examples of suitable wetting agents for use in the present invention are selected from and not limited to polycondensation products of naphthalene sulfonic acid (Supragil WP, Supragil MNS-90), alkyl naphthalene sulphonate sodium salts, polyalkyl naphthalene sulphonates; salts of alkylphenol condensates, salts of sulphonated lignins, salts of poly acid resin copolymers, salts of
35 polyphenol formaldehyde resins, salts of polyarylether sulphates such as tristyrylphenolethoxylate sulphate salts, sodium alkyl sulfates such as mono-C12-18-alkylsulfate, sodium salts (EMPICOL LZ),

alkoxylated alkylphenols and alcohols as well as block copolymers of ethyleneoxide and propylene oxide, ethylene oxide/propylene oxide block copolymers (TERGITOL XD), alkyl alcohol ethoxylate phosphates such as C13-6EO phosphate esters (EMPIPHOS, PHOSPHOLAN), fatty alcohol ethoxylates (LUBROL 17A17), sulphonated alkylnaphthalene formaldehyde condensate, sodium salt (MORWET D425 20),.

In some embodiments, the wetting agent may also be used as a dispersing agent.

In one embodiment, examples of suitable dispersants for use in the present invention are selected from and not limited to salts of alkyl sulfates, such as sodium alkyl(C₁₂-C₁₈) sulfates, diethanolammonium lauryl sulfate, dodecylsulfate sodium salt; salts of alkylarylsulfonates, such as calcium dodecylbenzenesulfonate; alkylphenol/alkylene oxide addition products, such as nonylphenol ethoxylate; alcohol/alkylene oxide addition products, such as tridecylalcohol ethoxylate; soaps, such as sodium stearate; salts of alkylnaphthalenesulfonates, such as sodium dibutylnaphthalenesulfonate; sodium salts of naphthalene sulfonate condensates such as naphthalenesulfonic acid, sodium salt condensed with formaldehyde (Morwet IP, Morwet EFW, Morwet 3028, Morwet D-425), dialkyl esters of sulfosuccinate salts, such as sodium di(2-ethylhexyl)sulfosuccinate; sorbitol esters, such as sorbitol oleate; quaternary amines, such as lauryltrimethylammonium chloride, polyethylene glycol esters of fatty acids, such as polyethylene glycol stearate; block copolymers of ethylene oxide and propylene oxide; and salts of mono- and di-alkylphosphate esters; styrene acrylic acid copolymers, acrylic graft copolymers comprising acrylate and/or methacrylate monomers (Atlox 4913), and side chains comprising polyethylene glycol and/or mono-ether polyethylene glycol including, for example, methyl methacrylate / methacrylic acid / monomethoxypolyethylene glycol (PEG) methacrylate graft copolymers (Atlox 4913, Tersperse 2500), C₄alkylated polyvinylpyrrolidone, alkali metal salts of pyrophosphates such as tetrasodium pyrophosphates, and also further substances described e.g. in McCutcheon's Detergents and Emulsifiers Annual, MC Publishing Corp., Ridgewood New Jersey (1981); or McCutcheon's 2019 Emulsifiers and Detergents: International Edition, MC Publishing Company, 2019 (ISBN 1732145237, 9781732145238).

In some embodiments, the wetting agent may also be used as a dispersing agent.

In one embodiment, the dispersing agents are used to physically stabilize active ingredients such as in solid (WP/WG/WDG) formulations that contain solid active ingredient particles. They can also act as wetting aids and milling aids. Suitable dispersing agents can be 'surfactant'-based, 'polymer' based, non-ionic, and/or anionic (e.g. sulfate or phosphate).

Preferably, the pesticidal composition of the present invention can comprise from 0.05% to 30% by weight (w/w) of the surfactant (d), preferably from 1% to 10% by weight of the surfactant, over the total weight of the composition (w/w). In one embodiment, the pesticidal composition is an SC comprising from 1% to 5%, for example, about 2% by weight (w/w) of surfactant. In another embodiment, the pesticidal composition is a solid composition (WP or WG) comprising from 5% to 10 %, for example, about 8% by weight of surfactant, over the total weight of the composition (w/w).

In a preferred embodiment, the weight ratio of surfactants which function as wetting agents to those that function as dispersants in the pesticidal composition of the present invention is from about 1:3 to about 1:2.

5 Optionally, the composition of the present invention can comprise from 0.0001% to 30% by weight (w/w) of a filler or carrier (e), preferably from 0.01% to 30% by weight (w/w) of the filler, and more preferably from 1% to 15% by weight (w/w) of the filler, over the total weight of the composition. In one embodiment, solid compositions such as WP formulations may have 10 to 15% by weight (w/w) and liquids such as SC formulations may have 5 to 10% by weight (w/w) of a suitable filler.

10 Among the suitable fillers there may be mentioned maltodextrin, sucrose, lactose, glucose, fructose, pectin, starch, salt, monosodium glutamate, sodium citrate, alpha or beta lactose and combinations thereof. Preferably, the water-soluble filler is selected from maltodextrin, sucrose, lactose, glucose, fructose and combinations thereof. A water soluble sugar (e.g., lactose, sucrose, glucose, and the like. In one embodiment, the filler is lactose or 4-O-beta-D-galactopyranosyl-alpha-D-glucopyranose (CAS number 63-42-3), and the like, and mixtures thereof.

15 Examples of the suitable solid fillers include pulverized natural minerals (for example, kaolin, clay, talc, chalk, quartz, attapulgite, montmorillonite, diatomaceous earth, and the like), pulverized synthetic minerals (for example, highly dispersed silicic acid, alumina, silicates and the like), and the like. Examples of the solid carrier for granules include pulverized and screened rocks (for example, calcite, marble, pumice, sepiolite, dolomite and the like), synthetic granules of inorganic and organic powder, 20 fine particles of organic materials (for example, sawdust, coconut shells, maize cobs, tobacco stalk as well as polymeric fillers such as urea formaldehyde resins, and the like.

Mixtures of solid soluble carriers or fillers and solid insoluble carriers or fillers (including polymer resins such as UF resins) can be used.

25 The composition of the present invention may optionally further comprise one or more formulation additives well-known in the art. In particular, the formulation additives can be selected among (f) an antifoam, (g) a thickener and (h) a preservative. Other common additives such as an anti-freeze agent, an anti-bacterial agent (or biocide), and a pH modifier, and any mixture thereof can be used in the inventive composition.

30 In a preferred embodiment, the composition of the present invention can further comprise at least a silicone compound or a fatty acid sodium salt as anti-foam agent. Examples of silicone compounds can be polydimethylsiloxane.

The anti-foam agent can be added in an appropriate amount in the composition, to obtain the desired property. For example, the composition of the present invention can comprise from 0.0001% to 5% by weight (w/w) of anti-foam agent, preferably from 0.0001% to 1% by weight (w/w) of anti-foam agent,

and more preferably from 0.01% to 1% by weight (w/w) of anti-foam agent, over the total weight of the composition.

Other suitable formulation additives include amongst others known to the person skilled in the art, antioxidant, emulsifying agent, colourant (or pigment), perfume, adjuvant, attractant, binder, buffer,
5 solid support (carrier), coating agent, deodorant, emetic agent, safener, organic solvent, photo-protecting agent, and any mixture thereof.

Depending on formulation type, In the present invention, the composition may further comprise water.

The composition of the present invention may further comprise an additional agrochemical. The additional agrochemical can be an insecticide, a fungicide, an herbicide, a synergist, a plant growth
10 regulator, a nematocide, a plant nutrient, a plant fertilizer, and a mixture thereof.

In a particular embodiment, the composition of the present invention can comprise an additional insecticide selected among abamectin, chlorantraniliprole, chlorfenapyr, cyantraniliprole, emamectin benzoate, ethiprole, gamma-cyhalothrin, lambda-cyhalothrin, lufenuron, methoxyfenozide, pymetrozine, spinetoram, spinosad, sulfoxaflor, thiamethoxam, pirimiphos-methyl and any mixtures
15 thereof; and more preferably can comprise an additional insecticide selected among chlorantraniliprole, chlorfenapyr, cyantraniliprole, emamectin benzoate, ethiprole, pirimiphos-methyl, lambda-cyhalothrin, lufenuron, spinosad, and any mixtures thereof. The weight ratio of isocycloseram to additional insecticide can be from 1:100 to 100:1, preferably from 1:20 to 20:1, preferably from 1:10 to 10:1, preferably from 1:1 to 1:10, and more preferably from 1:1 to 1:6.

20 In a preferred embodiment, the present invention is directed to a WP pesticidal composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a lactam solvent;
- (c) an absorptive solid carrier having a DOA absorption of from 200 to 300 (ml/100g); and
- (d) a surfactant comprising 2 to 4 % by weight (w/w) of a wetting agent and 4 to 6 % by weight (w/w)
25 of a disperant.

Further preferred is a WP composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a lactic acid dimethyl amide solvent;
- (c) an absorptive solid silica carrier having a DOA absorption of from 200 to 300 (ml/100g);
- 30 (d) a surfactant comprising 2 to 4 % by weight (w/w) of a sodium alkyl sulfate wetting agent and 4 to 6 % by weight (w/w) of a naphthalene sulfonate salt condensate disperant; and
- (e) 1 to 15% by weight (w/w) of a filler.

In another preferred embodiment of the invention there is provided a WP pesticidal composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof (preferably, N,N-dimethyl lactamide); and
- (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive silica carrier (For example, the suitable silica carrier is selected from a silica (silicon dioxide, SiO₂), a silica acid, a precipitated silica, and modified versions thereof).

More preferably, there is provided a WP pesticidal composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof (preferably, N,N-dimethyl lactamide);
- (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive silica carrier (preferably a precipitated silica carrier); and
- (d) 1 to 10% by weight (w/w) of a sulfonate (preferably a naphthalene sulfonate, more preferably a naphthalene sulfonate sodium salt condensed with formaldehyde)

Even more preferably, there is provided a WP pesticidal composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof (preferably, N,N-dimethyl lactamide);
- (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive silica carrier (preferably a precipitated silica); and
- (d) 1 to 10% by weight (w/w) of a sulfonate (preferably a naphthalene sulfonate, more preferably a naphthalene sulfonate sodium salt condensed with formaldehyde) and 1 to 10% by weight of a sodium C₁₂-C₁₈alkyl sulfate.

Even more preferably still, there is provided a WP pesticidal composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-

ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide);

- (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive silica carrier (preferably a precipitated silica);
- 5 (d) 1 to 10% by weight (w/w) of a sulfonate (preferably a naphthalene sulfonate, more preferably a naphthalene sulfonate sodium salt condensed with formaldehyde) and 1 to 10% by weight of a sodium C₁₂-C₁₈alkyl sulfate; and
- (e) 1 to 15% by weight (w/w) of a filler (preferably, lactose).

In another preferred embodiment of the invention there is provided a WP pesticidal composition

10 comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-
- 15 dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide); and
- (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive precipitated silica carrier having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016) (preferably having a DOA absorption of from 240 to 300 (ml/100g), more preferably, having a DOA absorption of from 270 to 300 (ml/100g).

20 In another preferred embodiment of the invention there is provided an SC pesticidal composition comprising:

- (a) 4 to 10 % by weight (w/w) of isocycloseram;
- (b) 10 to 20 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-
- 25 ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide); and
- (c) 5 to 10% by weight (w/w) of an absorptive precipitated silica carrier having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016) (preferably having a DOA absorption of from 240 to 300 (ml/100g), more preferably, having a DOA absorption of from 270 to
- 30 300 (ml/100g).

Preferably, there is provided an SC pesticidal composition comprising:

- (a) 4 to 10 % by weight (w/w) of isocycloseram;
- (b) 10 to 20 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-
- 35 ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide);

- (c) 5 to 10% by weight (w/w) of an absorptive precipitated silica carrier having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016) (preferably having a DOA absorption of from 240 to 300 (ml/100g), more preferably, having a DOA absorption of from 270 to 300 (ml/100g); and
- 5 (d) 0.1 to 5% by weight (w/w) of an acrylic graft copolymer.

More Preferably, there is provided an SC pesticidal composition comprising:

- (a) 4 to 10 % by weight (w/w) of isocycloseram;
- (b) 10 to 20 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof (preferably, N,N-dimethyl lactamide);
- 10 (c) 5 to 10% by weight (w/w) of an absorptive precipitated silica carrier having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016) (preferably having a DOA absorption of from 240 to 300 (ml/100g), more preferably, having a DOA absorption of from 270 to 300 (ml/100g); and
- 15 (d) 0.1 to 5% by weight (w/w) of an acrylic graft copolymer and from 0.1 to 5% by weight (w/w) of an ethoxylated phosphate ester (preferably, a tridecyl alcohol (6EO) ethoxylate phosphate ester).

More Preferably, there is provided an SC pesticidal composition comprising:

- (a) 4 to 10 % by weight (w/w) of isocycloseram;
- 20 (b) 10 to 20 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof (preferably, N,N-dimethyl lactamide);
- (c) 5 to 10% by weight (w/w) of an absorptive precipitated silica carrier having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016) (preferably having a DOA absorption of from 240 to 300 (ml/100g), more preferably, having a DOA absorption of from 270 to 300 (ml/100g); and
- 25 (d) 0.1 to 5% by weight (w/w) of an acrylic graft copolymer and from 0.1 to 5% by weight (w/w) of an ethoxylated phosphate ester (preferably, a tridecyl alcohol (6EO) ethoxylate phosphate ester); and
- 30 (e) 1 to 15% by weight (w/w) of a filler (preferably, lactose).

Further provided is a method of combating and controlling insect pests (preferably mosquitoes) which comprises applying to a pest or to a locus of a pest, a WP composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-
- 35

ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide); and
 (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive silica carrier (For example, the
 suitable silica carrier is selected from a silica (silicon dioxide, SiO₂), a silica acid, a precipitated
 silica, and modified versions thereof).

Preferably, there is provided a method of combating and controlling insect pests, which comprises applying to a pest or to a locus of a pest, a WP composition comprising:

- (a) 10 to 20 % by weight (w/w) of isocycloseram;
- (b) 35 to 40 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide); and
- (c) 5 to 30% (preferably, 15 to 30%) by weight (w/w) of an absorptive silica carrier (For example, the suitable silica carrier is selected from a silica (silicon dioxide, SiO₂), a silica acid, a precipitated silica, and modified versions thereof).

wherein the pest to be controlled is a mosquito, the application is an indoor residual spray (preferably at a rate of from 100 to 200 mg isocycloseram/m²), and the locus is an area of potential or known interaction between a human or mammal and the mosquito.

In another embodiment there is provided a method of combating and controlling insect pests (preferably crawling insect pests such as cockroach or ant pests) which comprises applying to a pest or to a locus of a pest, a SC composition comprising:

- (a) 4 to 10 % by weight (w/w) of isocycloseram;
- (b) 10 to 20 % by weight (w/w) of a solvent selected from the group consisting of N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decenamide and mixtures thereof (preferably, N,N-dimethyl lactamide); and
- (c) 5 to 10% by weight (w/w) of an absorptive precipitated silica carrier having a DOA absorption of from 200 to 300 (ml/100g) (measured according to ISO 19246:2016) (preferably having a DOA absorption of from 240 to 300 (ml/100g), more preferably, having a DOA absorption of from 270 to 300 (ml/100g).

Examples of pests which may be controlled in accordance with the compositions of the present invention include those:

from the order *Acarina*, for example, *Acalitus spp*, *Aculus spp*, *Acaricalus spp*, *Aceria spp*, *Acarus siro*,
Amblyomma spp., *Argas spp.*, *Boophilus spp.*, *Brevipalpus spp.*, *Bryobia spp*, *Calipitimerus spp.*,
Chorioptes spp., *Dermanyssus gallinae*, *Dermatophagoides spp*, *Eotetranychus spp*, *Eriophyes spp.*,

Hemitarsonemus spp., *Hyalomma* spp., *Ixodes* spp., *Olygonychus* spp., *Ornithodoros* spp., *Polyphagotarsonus latus*, *Panonychus* spp., *Phyllocoptruta oleivora*, *Phytonemus* spp., *Polyphagotarsonemus* spp., *Psoroptes* spp., *Rhipicephalus* spp., *Rhizoglyphus* spp., *Sarcoptes* spp., *Steneotarsonemus* spp., *Tarsonemus* spp. and *Tetranychus* spp.;

- 5 from the order Anoplura, for example, *Haematopinus* spp., *Linognathus* spp., *Pediculus* spp., *Pemphigus* spp. and *Phylloxera* spp.;

from the order Coleoptera, for example, *Agriotes* spp., *Amphimallon majale*, *Anomala orientalis*, *Anthonomus* spp., *Aphodius* spp., *Astylus atromaculatus*, *Ataenius* spp., *Atomaria linearis*, *Chaetocnema tibialis*, *Cerotoma* spp., *Conoderus* spp., *Cosmopolites* spp., *Cotinis nitida*, *Curculio* spp., *Cyclocephala* spp., *Dermestes* spp., *Diabrotica* spp., *Diloboderus abderus*, *Epilachna* spp., *Eremnus* spp., *Heteronychus arator*, *Hypothenemus hampei*, *Lagria vilosa*, *Leptinotarsa decemlineata*, *Lissorhoptrus* spp., *Liogenys* spp., *Maecolaspis* spp., *Maladera castanea*, *Megascelis* spp., *Melighetes aeneus*, *Melolontha* spp., *Myochrous armatus*, *Orycaephilus* spp., *Otiorhynchus* spp., *Phyllophaga* spp., *Phlyctinus* spp., *Popillia* spp., *Psylliodes* spp., *Rhyssomatus aubtilis*, *Rhizopertha* spp.,

- 10 *Scarabeidae*, *Sitophilus* spp., *Sitotroga* spp., *Somaticus* spp., *Sphenophorus* spp., *Sternechus subsignatus*, *Tenebrio* spp., *Tribolium* spp. and *Trogoderma* spp.;

from the order Diptera, for example, *Aedes* spp., *Anopheles* spp., *Antherigona soccata*, *Bactrocea oleae*, *Bibio hortulanus*, *Bradysia* spp., *Calliphora erythrocephala*, *Ceratitis* spp., *Chrysomyia* spp., *Culex* spp., *Cuterebra* spp., *Dacus* spp., *Delia* spp., *Drosophila melanogaster*, *Fannia* spp., *Gastrophilus* spp., *Geomyza tripunctata*, *Glossina* spp., *Hypoderma* spp., *Hyppobosca* spp., *Liriomyza* spp., *Lucilia* spp., *Melanagromyza* spp., *Musca* spp., *Oestrus* spp., *Orseolia* spp., *Oscinella frit*, *Pegomyia hyoscyami*, *Phorbia* spp., *Rhagoletis* spp., *Rivelia quadrifasciata*, *Scatella* spp., *Sciara* spp., *Stomoxys* spp., *Tabanus* spp., *Tannia* spp. and *Tipula* spp.;

- from the order Hemiptera, for example, *Acanthocoris scabrator*, *Acrosternum* spp., *Adelphocoris lineolatus*, *Amblypelta nitida*, *Bathycoelia thalassina*, *Blissus* spp., *Cimex* spp., *Clavigralla tomentosicollis*, *Creontiades* spp., *Distantiella theobroma*, *Dichelops furcatus*, *Dysdercus* spp., *Edessa* spp., *Euchistus* spp., *Eurydema pulchrum*, *Eurygaster* spp., *Halyomorpha halys*, *Horcias nobilellus*, *Leptocoris* spp., *Lygus* spp., *Margarodes* spp., *Murgantia histrionica*, *Neomegalotomus* spp., *Nesidiocoris tenuis*, *Nezara* spp., *Nysius simulans*, *Oebalus insularis*, *Piesma* spp., *Piezodorus* spp., *Rhodnius* spp., *Sahlbergella singularis*, *Scaptocoris castanea*, *Scotinophara* spp., *Thyanta* spp., *Triatoma* spp., and *Vatiga illudens*;

- from the order Homoptera, for example, *Acyrtosium pisum*, *Adalges* spp., *Agalliana ensigera*, *Agonoscyta targionii*, *Aleurodicus* spp., *Aleurocanthus* spp., *Aleurolobus barodensis*, *Aleurothrix floccosus*, *Aleyrodes brassicae*, *Amarasca biguttula*, *Amritodus atkinsoni*, *Aonidiella* spp., *Aonidiella auranti*, *Aphididae*, *Aphis* spp., *Aspidiotus* spp., *Aulacorthum solani*, *Bactericera cockerelli*, *Bemisia* spp., *Brachycaudus* spp., *Brevicoryne brassicae*, *Cacopsylla* spp., *Cavariella aegopodii* Scop., *Ceroplaster* spp., *Chrysomphalus aonidium*, *Chrysomphalus dictyospermi*, *Cicadella* spp., *Cofana spectra*, *Cryptomyzus* spp., *Cicadulina* spp., *Coccus hesperidum*, *Dalbulus maidis*, *Dialeurodes* spp., *Diaphorina citri*, *Diuraphis noxia*, *Dysaphis* spp., *Empoasca* spp., *Eriosoma larigerum*, *Erythroneura* spp., *Gascardia* spp., *Glycaspis brimblecombei*, *Hyadaphis pseudobrassicae*, *Hyalopterus* spp., *Hyperomyzus pallidus*, *Idioscopus clypealis*, *Jacobiasca lybica*, *Laodelphax* spp., *Lecanium corni*,

- Lepidosaphes* spp., *Lopaphis erysimi*, *Lyogenys maidis*, *Macrosiphum* spp., *Mahanarva* spp, *Metcalfa pruinosa*, *Metopolophium dirhodum*, *Myndus crudus*, *Myzus* spp., *Neotoxoptera* sp, *Nephotettix* spp., *Nilaparvata* spp., *Nippolachnus piri* Mats, *Odonaspis ruthae*, *Oregma lanigera* Zehnter, *Parabemisia myricae*, *Paratrioza cockerelli*, *Parlatoria* spp., *Pemphigus* spp., *Peregrinus maidis*, *Perkinsiella* spp,
- 5 *Phorodon humuli*, *Phylloxera* spp, *Planococcus* spp., *Pseudaulacaspis* spp., *Pseudococcus* spp., *Pseudatomoscelis seriatus*, *Psylla* spp., *Pulvinaria aethiopica*, *Quadraspidiotus* spp., *Quesada gigas*, *Recilia dorsalis*, *Rhopalosiphum* spp., *Saissetia* spp., *Scaphoideus* spp., *Schizaphis* spp., *Sitobion* spp., *Sogatella furcifera*, *Spissistilus festinus*, *Tarophagus Proserpina*, *Toxoptera* spp, *Trialetrodes* spp, *Tridiscus sporoboli*, *Trionymus* spp, *Trioza erytrae* , *Unaspis citri*, *Zygina flammigera*, and
- 10 *Zyginidia scutellaris*;
- from the order *Hymenoptera*, for example, *Acromyrmex*, *Arge* spp, *Atta* spp., *Cephus* spp., *Diprion* spp., *Diprionidae*, *Gilpinia polytoma*, *Hoplocampa* spp., *Lasius* spp., *Monomorium pharaonis*, *Neodiprion* spp., *Pogonomyrmex* spp, *Slenopsis invicta*, *Solenopsis* spp. and *Vespa* spp.;
- from the order *Isoptera*, for example, *Coptotermes* spp, *Cornitermes cumulans*, *Incisitermes* spp,
- 15 *Macrotermes* spp, *Mastotermes* spp, *Microtermes* spp, *Reticulitermes* spp.; *Solenopsis geminate*;
- from the order *Lepidoptera*, for example, *Acleris* spp., *Adoxophyes* spp., *Aegeria* spp., *Agrotis* spp., *Alabama argillaceae*, *Amylois* spp., *Anticarsia gemmatilis*, *Archips* spp., *Argyresthia* spp, *Argyrotaenia* spp., *Autographa* spp., *Bucculatrix thurberiella*, *Busseola fusca*, *Cadra cautella*, *Carposina nipponensis*, *Chilo* spp., *Choristoneura* spp., *Chrysoteuchia topiaria*, *Clysia ambiguella*,
- 20 *Cnaphalocrocis* spp., *Cnephasia* spp., *Cochylis* spp., *Coleophora* spp., *Colias lesbia*, *Cosmophila flava*, *Crambus* spp, *Crocidolomia binotalis*, *Cryptophlebia leucotreta*, *Cydalima perspectalis*, *Cydia* spp., *Diaphania perspectalis*, *Diatraea* spp., *Diparopsis castanea*, *Earias* spp., *Eldana saccharina*, *Ephestia* spp., *Epinotia* spp, *Estigmene acrea*, *Etiella zinckinella*, *Eucosma* spp., *Eupoecilia ambiguella*, *Euproctis* spp., *Euxoa* spp., *Feltia jaculiferia*, *Grapholita* spp., *Hedya nubiferana*, *Heliolithis*
- 25 spp., *Hellula undalis*, *Herpetogramma* spp, *Hyphantria cunea*, *Keiferia lycopersicella*, *Lasmopalpus lignosellus*, *Leucoptera scitella*, *Lithocollethis* spp., *Lobesia botrana*, *Loxostege bifidalis*, *Lymantria* spp., *Lyonetia* spp., *Malacosoma* spp., *Mamestra brassicae*, *Manduca sexta*, *Mythimna* spp, *Noctua* spp, *Operophtera* spp., *Omiodes indica*, *Ostrinia nubilalis*, *Pammene* spp., *Pandemis* spp., *Panolis flammea*, *Papaipema nebris*, *Pectinophora gossypiella*, *Perileucoptera coffeella*, *Pseudaletia*
- 30 *unipuncta*, *Phthorimaea operculella*, *Pieris rapae*, *Pieris* spp., *Plutella xylostella*, *Prays* spp., *Pseudoplusia* spp, *Rachiplusia nu*, *Richia albicosta*, *Scirpophaga* spp., *Sesamia* spp., *Sparganothis* spp., *Spodoptera* spp., *Sylepta derogate*, *Synanthedon* spp., *Thaumatopoea* spp., *Tortrix* spp., *Trichoplusia ni*, *Tuta absoluta*, and *Yponomeuta* spp.;
- from the order *Mallophaga*, for example, *Damalinea* spp. and *Trichodectes* spp.;
- 35 from the order *Orthoptera*, for example, *Blatta* spp., *Blattella* spp., *Gryllotalpa* spp., *Leucophaea maderae*, *Locusta* spp., *Neocurtilla hexadactyla*, *Periplaneta* spp. , *Scapteriscus* spp, and *Schistocerca* spp.;
- from the order *Psocoptera*, for example, *Liposcelis* spp.;
- from the order *Siphonaptera*, for example, *Ceratophyllus* spp., *Ctenocephalides* spp. and *Xenopsylla*
- 40 *cheopis*;

from the order *Thysanoptera*, for example, *Calliothrips phaseoli*, *Frankliniella* spp., *Heliothrips* spp., *Hercinothrips* spp., *Parthenothrips* spp., *Scirtothrips aurantii*, *Sericothrips variabilis*, *Taeniothrips* spp., *Thrips* spp; and/or

from the order *Thysanura*, for example, *Lepisma saccharina*.

- 5 Examples of soil-inhabiting pests, which can damage a crop in the early stages of plant development, are:

from the order *Lepidoptera*, for example, *Acleris* spp., *Aegeria* spp., *Agrotis* spp., *Alabama argillaceae*, *Amylois* spp., *Autographa* spp., *Busseola fusca*, *Cadra cautella*, *Chilo* spp., *Crocidolomia binotalis*, *Diatraea* spp., *Diparopsis castanea*, *Elasmopalpus* spp., *Heliothis* spp., *Mamestra brassicae*,
10 *Phthorimaea operculella*, *Plutella xylostella*, *Scirpophaga* spp., *Sesamia* spp., *Spodoptera* spp. and *Tortrix* spp.;

from the order *Coleoptera*, for example, *Agriotes* spp., *Anthonomus* spp., *Atomaria linearis*, *Chaetocnema tibialis*, *Conotrachelus* spp., *Cosmopolites* spp., *Curculio* spp., *Dermestes* spp., *Diabrotica* spp., *Dilopoderus* spp., *Epilachna* spp., *Eremnus* spp., *Heteronychus* spp., *Lissorhoptrus*
15 spp., *Melolontha* spp., *Orycaephilus* spp., *Otiorhynchus* spp., *Phlyctinus* spp., *Popillia* spp., *Psylliodes* spp., *Rhizopertha* spp., *Scarabeidae*, *Sitotroga* spp., *Somaticus* spp., *Tanymecus* spp., *Tenebrio* spp., *Tribolium* spp., *Trogoderma* spp. and *Zabrus* spp.;

from the order *Orthoptera*, for example, *Gryllotalpa* spp.;

from the order *Isoptera*, for example, *Reticulitermes* spp.;

- 20 from the order *Psocoptera*, for example, *Liposcelis* spp.;

from the order *Anoplura*, for example, *Haematopinus* spp., *Linognathus* spp., *Pediculus* spp., *Pemphigus* spp. and *Phylloxera* spp.;

from the order *Homoptera*, for example, *Eriosoma larigerum*;

from the order *Hymenoptera*, for example, *Acromyrmex*, *Atta* spp., *Cephus* spp., *Lasius* spp.,
25 *Monomorium pharaonis*, *Neodiprion* spp., *Solenopsis* spp. and *Vespa* spp.;

from the order *Diptera*, for example, *Tipula* spp.;

crucifer flea beetles (*Phyllotreta* spp.), root maggots (*Delia* spp.), cabbage seedpod weevil (*Ceutorhynchus* spp.) and aphids.

- 30 More specifically, the pesticide compositions are suitable for controlling insect pests including:

from the order *Lepidoptera*, for example, cutworm caterpillars such as *Agrotis* spp., *Euxoa* spp.,

from the order *Diptera*, for example,

Aedes spp., *Anopheles* spp., *Anastrepha* spp., *Antherigona soccata*, *Bactrocera* spp.,

- 35 *Bactrocera oleae*, *Bibio hortulanus*, *Bradysia* spp., *Calliphora erythrocephala*, *Ceratitis* spp., *Ceratitis capitata*, *Chrysomyia* spp., *Culex* spp., *Cuterebra* spp., *Dacus* spp., *Delia* spp., *Drosophila melanogaster*, *Fannia* spp., *Gastrophilus* spp., *Geomyza tripunctata*, *Glossina* spp., *Hypoderma* spp., *Hyppobosca* spp., *Liriomyza* spp., *Lucilia* spp., *Melanagromyza* spp., *Musca* spp., *Oestrus* spp., *Orseolia* spp., *Oscinella frit*, *Pegomyia hyoscyami*, *Phorbia* spp., *Rhagoletis* spp., *Rivelia quadrifasciata*,
40 *Scatella* spp., *Sciara* spp., *Stomoxys* spp., *Tabanus* spp., *Tannia* spp. and *Tipula* spp.;

from the order *Hymenoptera*, for example, (including family: Formicidae)

- Acromyrmex spp, Acromyrmex heyeri, Lundii Acromyrmex, Acromyrmex niger, Arge spp., Atta spp., Atta bisphaerica, Atta capiguara, Atta laevigata, Atta sexdens, Atta sexdens rubropilosa, Atta Mexicana, Atta texana, Cephus spp., Diprion spp., Diprionidae, Gilpinia polytoma, Hoplocampa spp., Lasius spp., Monomorium pharaonis, Neodiprion spp., Pogonomymex spp, Solenopsis spp. and
- 5 Vespa spp.; Camponotus spp. (carpenter ant), Tapinoma sessile (odourous house ant), Monomorium minimum, Tetramorium caespitum (pavement ant), Linepithema humile (argentine ant), Monomorium pharaonic (pharaoh ant), Crematogaster spp., Paratrechina longicornis (Latreille), Formica spp., Tapinoma melanocephalum (Fabricus), Dorymyrmex spp., Technomyrmex spp., and Solenopsis geminate.
- 10 from the order Isoptera, for example,
Coptotermes spp, Cornitermes cumulans, Incisitermes spp, Macrotermes spp, Mastotermes spp, Microtermes spp, Reticulitermes spp.; drywood termites from the family Kalotermitidae
from the order Orthoptera, for example,
Blatta spp. (incl. Oriental and Turkistan), Blattella spp., Gryllotalpa spp., Leucophaea maderae,
- 15 Locusta spp., Neocurtilla hexadactyla, Periplaneta spp., Scapteriscus spp, and Schistocerca spp.;
Periplaneta sp (incl. American and Australian) and *Supella sp.* (brown banded)
from the order Blattodea, for example,
Blattella germanica, Periplaneta americana, Periplaneta australasiae, Blatta orientalis,
Periplaneta fuliginosa
- 20 from the order *Coleoptera*, for example,
Agriotes spp., Amphimallon majale, Anomala orientalis, Anthonomus spp., Aphodius spp, Astylus atromaculatus, Ataenius spp, Atomaria linearis, Chaetocnema tibialis, Cerotoma spp, Conoderus spp, Cosmopolites spp., Cotinis nitida, Curculio spp., Cyclocephala spp, Dermestes spp., Diabrotica spp., Diloboderus abderus, Epilachna spp., Eremnus spp., Heteronychus arator,
- 25 Hypothenemus hampei, Lagria vilosa, Leptinotarsa decemLineata, Lissorhoptrus spp., Liogenys spp, Maecolaspis spp, Maladera castanea, Megascelis spp, Melighetes aeneus, Melolontha spp., Myochrous armatus, Orycaephilus spp., Otiorhynchus spp., Phyllophaga spp, Phlyctinus spp., Popillia spp., Psylliodes spp., Rhyssomatus aubtilis, Rhizopertha spp., Scarabeidae, Sitophilus spp., Sitotroga spp., Somaticus spp, Sphenophorus spp, Sternechus subsignatus, Tenebrio spp., Tribolium spp., Trogoderma spp.; Alphitobius spp. (darkling beetle), and Elateridae spp. (wireworm – click beetle).
- 30

In a preferred embodiment, the isocycloseram compositions in accordance with present invention, more preferably the WP, are useful in controlling mosquitoes, in particular mosquitoes that are vectors of or transmit disease pathogens. More particularly mosquitoes that are insecticide resistant including

35 pyrethroid insecticide resistant, selected from the genus *Anopheles*, *Culex* and *Aedes*. Examples include *Aedes aegypti*, *Aedes albopictus*, *Aedes japonicas*, *Aedes vexans*, *Coquilleltidia perturbans*, *Culex molestus*, *Culex pallens*, *Culex pipiens*, *Culex quinquefasciatus*, *Culex restuans*, *Culex tarsalis*, *Anopheles albimanus*, *Anopheles albitarsis*, *Anopheles annularis*, *Anopheles aquasalis*, *Anopheles arabiensis*, *Anopheles aconitus*, *Anopheles atroparvus*, *Anopheles balabacensis*, *Anopheles coluzzii*,

40 *Anopheles culicifacies*, *Anopheles darlingi*, *Anopheles dirus*, *Anopheles farauti*, *Anopheles flavirostris*, *Anopheles fluviatilis*, *Anopheles freeborni*, *Anopheles funestus*, *Anopheles gambiae s.l.*, *Anopheles*

koliensis, *Anopheles labranchiae*, *Anopheles lesteri*, *Anopheles leucosphyrus*, *Anopheles maculatus*, *Anopheles marajoara*, *Anopheles melas*, *Anopheles merus*, *Anopheles messeae*, *Anopheles minimus*, *Anopheles moucheti*, *Anopheles nili*, *Anopheles nuneztovari*, *Anopheles plumbeus*, *Anopheles pseudopunctipennis*, *Anopheles punctipennis*, *Anopheles punctulatus*, *Anopheles quadrimaculatus*,
 5 *Anopheles sacharovi*, *Anopheles sergentii*, *Anopheles sinensis*, *Anopheles stephensi*, *Anopheles subpictus*, *Anopheles sundaicus*, *Anopheles superpictus*, and *Mansonia titillans*, *Ochlerotatus stimulans*, *Ochlerotatus japonicas* (each of which is an example of a mosquito capable of carrying or vectoring a pathogenic disease).

10 By control is meant that the isocycloseram composition of the invention (preferably the WP) is employed in a manner that kills or repels the mosquito such that biting does not occur or in a manner that decreases mosquito populations such that biting does not occur as frequently or in a manner that inhibits the target mosquito from taking a blood meal.

15 In another embodiment, the isocycloseram compositions of the invention (preferably the WP) are useful in controlling one or more mosquitos selected from the genus *Anopheles*, *Culex* and *Aedes*, in particular one or more of *Aedes aegypti*, *Aedes albopictus*, *Aedes japonicas*, *Aedes vexans*, *Culex molestus*, *Culex pallens*, *Culex pipiens*, *Culex quinquefasciatus*, *Culex restuans*, *Culex tarsalis*, *Anopheles albimanus*, *Anopheles arabiensis*, *Anopheles coluzzii*, *Anopheles darlingi*, *Anopheles dirus*,
 20 *Anopheles funestus*, *Anopheles gambiae* s.l., *Anopheles gambiae* s.s. (Ifakara Strain), *An. gambiae* Tiassale; *An. gambiae* Kisumu, *An. gambiae* KisKDR, *An. gambiae* M'Bé, *Anopheles melas*, *Anopheles minimus*, *Anopheles sinensis*, *Anopheles stephensi*, *Mansonia titillans*.

In another embodiment, the isocycloseram compositions of the invention (preferably the WP) are useful
 25 in the methods and other aspects of the invention to control adult mosquitoes.

Insecticide resistant mosquito species have also been detected and accordingly in another embodiment, the isocycloseram compositions of the invention are suitable for controlling insecticide-resistant mosquitoes, such as pyrethroid and/or carbamate-resistant mosquitoes.

30 Pyrethroids are the only insecticides that have obtained WHO recommendation against Malaria vectors on both Indoor Residuals Sprays (IRS) and Long Lasting Insecticidal Mosquito Nets (LLINs), in the form of Alpha-Cypermethrin, Bifenthrin, Cyfluthrin, Permethrin, Deltamethrin, Lambda-Cyhalothrin and Etofenprox. It has been the chemical class of choice in agriculture and public health applications over
 35 the last several decades because of its relatively low toxicity to humans, rapid knock-down effect, relative longevity (duration of 3-6 months when used as IRS), and low cost. However, massive use of pyrethroids in agricultural applications and for vector control led to the development of resistance in major malaria and dengue vectors. Strong resistance has e.g. been reported for the pyrethroid Deltamethrin (and Permethrin) for the *Anopheles gambiae* Tiassalé (from southern Cote d'Ivoire) strain
 40 (Constant V.A. Edi et al., Emerging Infectious Diseases; Vol. 18, No. 9, September 2012). Pyrethroid resistance was also reported for Permethrin, Deltamethrin and Lambda-Cyhalothrin for the *Aedes*

aegypti Cayman Island strain (Angela F. Harris et al., Am. J. Trop. Med. Hyg., 83(2), 2010) and Alpha-Cypermethrin, Permethrin and Lambda-Cyhalothrin for certain *Anopheles* strains (Win Van Bortel, Malaria Journal, 2008, 7:102).

- 5 In another embodiment of the invention, the isocycloseram compositions of the invention (preferably the WP) are suitable for use against insecticide-resistant mosquitoes that are selected from *Anopheles gambiae* RSPH, *Anopheles gambiae* Tiassalé, *Anopheles gambiae* Akron, *Anopheles gambiae* Kisumi Rdl, *Anopheles arabiensis* NDjamina, *Anopheles coluzzii* VK7, *Anopheles funestus* FUMAZ, *Aedes aegypti* Grand Cayman, *Culex quinquefasciatus* strain POO and highly pyrethroid resistant *Anopheles*
10 *arabiensis* (Kingani Strain).

In another embodiment, the isocycloseram compositions of the invention (preferably the WP) are useful against the resistant mosquitoes such as those listed below:

- 15 *Anopheles gambiae*, strain RSPH is a multi-resistant mosquito (target-site and metabolic-resistance) that is described in the reagent catalog of the Malaria Research and Reference Reagent Resource Center (www.MR4.org; MR4-number: MRA-334).

- Anopheles gambiae*, strain Tiassalé is a multi-resistant mosquito (target and metabolic-resistant strain)
20 which shows cross-resistance between carbamates, organophosphates and pyrethroids and is described in Constant V.A. Edi et al., Emerging Infectious Diseases; Vol. 18, No. 9, September 2012 and Ludovic P Ahoua Alou et al., Malaria Journal 9: 167, 2010).

- Anopheles gambiae*, strain Akron is a multi-resistant mosquito (target and metabolic-resistant strain)
25 and is described in Djouaka F Rousseau et al., BMC Genomics, 9:538; 2008.

Anopheles coluzzii, strain VK7 is a target-resistant mosquito and is described in Dabire Roch Kounbobo et al., Malaria Journal, 7: 188, 2008.

- 30 *Anopheles funestus*, strain FUMAZ is a metabolic -resistant strain and is described in Hunt et al., Med Vet Entomol. 2005 Sep; 19(3):271-5). In this article it has been reported that *Anopheles funestus* - as one of the major malaria vector mosquitoes in Africa - showed resistance to pyrethroids and carbamate insecticides in South Africa.

- 35 *Anopheles arabiensis* (Kingani Strain) originating from Ifakara and in colony at Bagamoyo (a highly pyrethroid resistant strain).

Anopheles gambiae, strain Kisumi Rdl, a dieldrin resistant strain from Kenya.

- 40 *Anopheles arabiensis*, strain NDjamina, a pyrethroid resistant from Chad.

Aedes aegypti, strain Grand Cayman is a target-resistant mosquito and is described in Angela F. Harris, Am. J. Tro. Med. Hyg. 83(2), 2010.

5 *Culex quinquefasciatus* (metabolic -resistant to DDT strain P00); received from Texchem, Penang, Malaysia.

Anopheles gambiae s.s population from M'Bé: Koffi, A.A., Ahoua Alou, L.P., Adja, M.A. *et al.* Insecticide resistance status of *Anopheles gambiae* s.s population from M'Bé: a WHOPES-labelled experimental hut station, 10 years after the political crisis in Côte d'Ivoire. *Malar J* 12, 151 (2013).

10 For mosquito control, the compositions of the present invention also can be applied to soil, mud or a to surface such as a porous or aggressive surface by indoor residual spray or the like, for example, after dilution with water before use as an aqueous spray composition. In one embodiment, an aqueous spray composition prepared from a composition of the present invention is applied to the target pests, to their locus or to a surface or substrate by brushing, rolling, spraying, spreading or dipping. By way of example, an IRS (indoor residual spraying) application of a surface of a dwelling such as an indoor surface including a wall, ceiling or floor surface is a contemplated (non-therapeutic) use of the compositions of the present invention. Such IRS applications are particularly suited for mosquito control when applied to a locus which is an area of potential or known interaction between a human or mammal and the mosquito, which includes a to locus where a mosquito will rest or can be expected to contact after taking a blood meal (IRS locus). Although the compositions can be applied directly, as noted above, these are typically applied after dilution with water before use as an aqueous spray composition.

25 In one embodiment, a method for controlling such pests (including mosquito pests) comprises applying a pesticidally effective amount of the compositions of the invention to the target pests, to their locus, or to a surface or substrate so as to provide effective residual pesticidal activity on the surface or substrate. Such application may be made by brushing, rolling, spraying, spreading or dipping the pesticidal composition of the invention. By way of example, an IRS application of a surface such as a wall, ceiling or floor surface is contemplated by the method of the invention so as to provide effective residual pesticidal activity on the surface.

30 In another aspect, the compositions of the present invention can be used to controlling crawling insect pests such as cockroach or ant pests. The compositions can be applied to soil, mud or a to surface such as a porous or aggressive surface or the like, for example, after the composition is diluted with water before use as an aqueous spray composition. In one embodiment, the compositions of the invention can be used to control crawling insect pests or populations by application to an indoor or outdoor environment or locus of known or suspected crawling insect foraging, infestation, or harborage sites. Direct applications including as a spot or crack-and-crevice can be made to areas including, but not limited to, pest entry sites, attics, wall voids, behind cabinets or equipment, under counters or under/behind appliances, and along baseboards and reticulation systems. In another embodiment, a method of controlling crawling insect pests or populations comprises application to an indoor or outdoor

environment or locus of known or suspected foraging, infestation or harborage, including application as a spot or crack-and-crevice to exterior structural elements and also outdoor breeding sites, such as refuse collection areas, loading docks, adjacent tree holes, crawl spaces, or other sources of crawling insect infestations.

5 In another embodiment, crops of useful plants in which the compositions according to the invention can be used include perennial and annual crops, such as berry plants for example blackberries, blueberries, cranberries, raspberries and strawberries; cereals for example barley, maize (corn), millet, oats, rice, rye, sorghum triticale and wheat; fibre plants for example cotton, flax, hemp, jute and sisal; field crops for example sugar and fodder beet, coffee, hops, mustard, oilseed rape (canola), poppy, sugar cane, 10 sunflower, tea and tobacco; fruit trees for example apple, apricot, avocado, banana, cherry, citrus, nectarine, peach, pear and plum; grasses for example Bermuda grass, bluegrass, bentgrass, centipede grass, fescue, ryegrass, St. Augustine grass and Zoysia grass; herbs such as basil, borage, chives, coriander, lavender, lovage, mint, oregano, parsley, rosemary, sage and thyme; legumes for example beans, lentils, peas and soya beans; nuts for example almond, cashew, ground nut, hazelnut, peanut, 15 pecan, pistachio and walnut; palms for example oil palm; ornamentals for example flowers, shrubs and trees; other trees, for example cacao, coconut, olive and rubber; vegetables for example asparagus, aubergine, broccoli, cabbage, carrot, cucumber, garlic, lettuce, marrow, melon, watermelon, okra, onion, leek, pepper, potato, pumpkin, squash, rhubarb, spinach and tomato; and vines for example grapes. The compositions of the invention can also be applied on turf, lawn and pastures.

20 As noted above, in one embodiment, the compositions of the invention are applied by spraying the composition after dilution with water, for example dispensed from a spray container.

Said use or method of use can involve an effective amount of the isocycloseram in the spray composition which is applied at a rate of from 0.01 to 5 Litre per Hectare (L/ha), and more preferably from 0.02 to 3.0 L/ha.

25 In one embodiment, the compositions of the invention are used to control crawling insects or mosquitoes by application to a locus (such as an indoor, outdoor, soil, mud or other porous or aggressive surface) after the composition is diluted with water before use as an aqueous spray composition. For mosquito control or flying insects, in one embodiment, the spray composition can be applied, for example, at a rate of 50 to 200 mg a.i./m² (preferably 100 to 175 mg a.i./m²; or 120) and for 30 crawling insects the spray composition can be applied, for example, at a rate of from 10 to 100 AI/m².

The pesticidal compositions of the present invention may be prepared according to standard procedures known in the art and as further described herein.

Example 1

This example provides a composition, which is a wettable powder (i.e. isocycloseram wettable powder) and which may be used to prepare further compositions or formulations. The wettable powder of Example 1 can include well-known formulation additives such as a suitable solvent, dispersant, wetting agent, and anti-foam agent.

N,N-dimethyl lactamide is heated in a jacketed formulation vessel to 38°C. Isocycloseram is added to the vessel, stirring with a sawtooth mixer and/or bulk agitator. The mixture was sheared continuously until the isocycloseram completely dissolved.

Precipitated silica (with a high absorption capacity) is added to a ribbon blender equipped with spray capabilities. The solution of N,N-dimethyl lactamide with solubilized isocycloseram is slowly sprayed onto the silica in the ribbon blender until applied at the given rate. The material is mixed until homogenous with no lumps. The remaining co-formulants such as wetting agents, dispersants, antifoaming agent, and other dry carriers such as lactose monohydrate, were added, to the ribbon blender while continuing mixing. The entire blend is then passed through a hammer mill (screen size 0.035”) to ensure proper homogeneity and particle size (Dv95 <40 µm, Malvern Mastersizer 3000, laser diffraction particle size analyser).

The concentrations of the components added to form the isocycloseram wettable powder of Example 1 are listed in the below Table 1 and are expressed in percentage by weight over the total weight of the isocycloseram wettable powder (% w/w).

Component	Chemical type	Concentration (% w/w)
Pesticide Active ingredient	Isocycloseram (a)	15
Lactam Solvent	N,N-dimethyl lactamide (b)	37.2
Absorptive Carrier	precipitated silica (CAS number 112926-00-8) (c)	25.5
Dispersant	naphthalenesulfonic acid, sodium salt condensed with formaldehyde	5
Wetting agent	sodium alkyl (C12-C18) sulfate	3
Anti-foam agent	polydimethylsiloxane	0.5
Carrier	Such as lactose monohydrate	ad 100 (rest)

Table 1

Absorbent carrier parameters:

	DOA Absorption (ml/100g)	Surface Area (m ² /g)	Particle size, d50 (µm)
Low			≤13

	DOA Absorption (ml/100g)	Surface Area (m ² /g)	Particle size, d50 (µm)
Medium	200	130-200	20
High	≥215	500	≥50
Range	200 – 300	100 – 500	10 - 50

Examples of absorbent carriers that could be used: microcrystalline cellulose, absorbent clays (bentonite/ montmorillonite, diatomaceous earth, sodium smectite, attapulgite), silicon dioxide, sodium aluminosilicate, amorphous calcium silicate, calcium carbonate, mica minerals, and modified version of such (not highlighted based on literature review, blue = tested in lab, red = expected poor absorbency).

Example 2

The wettable powder can also be used to make a wettable granule or water dispersible granule. Added ingredients to make the wettable powder may include other inorganic and organic solids such as clays, starches, diatomaceous earth, and lactose. The powder is wetted and granulated via extrusion, pan granulation or spray drying.

Example WG composition

Component	Concentration (% w/w)
Isocycloseram	20
Dispersant	5 - 10
Wetting agent	1 - 3
Anti-foam agent	0.1 - 1
Inorganic and organic carriers	rest
Granulation water (%)	10 - 20

Example 3

Comparative Test

Treatment list:

	Formulation	% a.i.	Application rate mg/m ²
1	Composition of Example 1 WP Isocycloseram	15	120
2	VIRANTRA™ (Syngenta) SC (no absorptive carrier) Isocycloseram	40	120
3	Actellic 300CS Pyrimiphos-methyl	30	1000
4	Control		-

Material & methods

- 5
- Samples were applied to 10 x 10 cm glazed ceramic tiles and 9cm diameter cement plaques using a laboratory tracksprayer calibrated to give an even deposit of 40 ml/m2, using an 8003 flat fan nozzle. Formulations were diluted/suspended to the correct concentration using de-ionised water. Diluted samples were vigorously shaken prior to application to ensure the formulation was fully suspended. After application, treated surfaces were stored in a ventilated room at 26oC and ambient
- 10
- humidity under low light conditions.
- Insecticidal activity was bioassayed using ten adult female mosquitoes, 3 – 5 day old, Anopheles stephensi, exposed to the treated surface for one hour. After one hour an assessment of knockdown was made, the mosquitoes were then transferred to holding cups and provided with a small cotton wool bung soaked in 10% sucrose solution. Assessments of mortality were made at 24, 48 and
- 15
- 72 hours after exposure. Six replicates of each treatment were employed. Assessments were made at 1, 2, 4, 8 and 12 weeks after treatment.

Result summary
Percentage *An. stephensi* adult female knockdown and mortality at weeks after treatment

Cement			Percentage 1 hour knockdown at weeks after treatment				Percentage 24 hour mortality at weeks after treatment				Percentage 48 hour mortality at weeks after treatment				Percentage 72 hour mortality at weeks after treatment							
Formulation	% a.i.	Rate mg/m2	1	2	4	8	12	1	2	4	8	12	1	2	4	8	12	1	2	4	8	12
1	Composition of Ex 1	15	120	0	0	0	0	0	53	28	47	83	37	90	78	98	100	93	97	93	100	100
2	VIRANTRA™	40	120	0	2	0	0	0	0	3	0	8	5	5	3	7	23	8	12	12	18	50
3	Actellic 300CS	30	1000	0	0	0	0	0	100	95	100	100	90	100	100	100	100	93	100	100	100	93
4	Control	-	-	0	0	0	0	0	2	3	0	2	2	5	3	2	3	5	5	5	2	3
Glazed tile			Percentage 1 hour knockdown at weeks after treatment				Percentage 24 hour mortality at weeks after treatment				Percentage 48 hour mortality at weeks after treatment				Percentage 72 hour mortality at weeks after treatment							
Formulation	% a.i.	Applic ation rate mg/m2	1	2	4	8	12	1	2	4	8	12	1	2	4	8	12	1	2	4	8	12
1	Composition of Ex 1	15	120	0	2	0	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100
2	VIRANTRA™	40	120	0	0	0	0	0	10	8	8	15	8	55	35	27	58	43	70	63	50	83
3	Actellic 300CS	30	1000	100	100	67	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100
4	Control	-	-	0	0	0	0	0	0	3	0	2	2	0	3	3	2	2	3	3	3	2

CLAIMS

1. A pesticidal composition comprising:
 - (a) isocycloseram;
 - (b) a solvent;
 - 5 (c) an absorptive carrier; and
 - (d) a surfactant.
2. The pesticidal composition according to claim 1, wherein the solvent is selected from N, N-dimethyloctanamide, N, N-dimethyl-decanamide, N,N-dimethyl lactamide, (refined)soybean oil, 2-ethylhexyl lactate, Methyl 5-(dimethylamino)-2-methyl-5-oxopentanoate, Triethyl Phosphate, N, N-dimethyl 9-decanamide and mixtures thereof.
3. The pesticidal composition according to claim 1 or claim 2, wherein the absorptive carrier is selected from silica, silica acid, precipitated silica, microcrystalline cellulose, absorbent clays (bentonite/ montmorillonite, diatomaceous earth, sodium smectite, attapulgite), silicon dioxide, sodium aluminosilicate, amorphous calcium silicate, calcium carbonate, mica minerals, and modified versions or mixtures thereof.
4. The pesticidal composition according to any one of the previous claims, wherein the surfactant comprises a dispersant and a wetting agent.
5. The pesticidal composition according to any one of the previous claims, wherein the absorptive solid carriers are those having a DOA absorption of from 200 to 300 (ml/100g).
6. The pesticidal composition according to any one of the previous claims, wherein the solvent component (b) comprises a lactam solvent; preferably lactic acid dimethyl amide.
7. The pesticidal composition according to any one of the previous claims, wherein the pesticide composition is a wettable powder composition.
8. The pesticidal composition according to any one of the previous claims, which comprises from 3% to 25% by weight of isocycloseram.

9. The pesticidal composition according to any one of the previous claims, which comprises from 10 to 40% by weight of the solvent.
- 5 10. The pesticidal composition according to any one of the previous claims, which comprises from 5% to 30% by weight of the absorptive carrier.
11. The pesticidal composition according to any one of the previous claims, which comprises from 1% to 10% by weight of the surfactant.
- 10
12. The pesticidal composition according to claim 1, which comprises a WP pesticidal composition comprising:
- (a) 10 to 20 % by weight of isocycloseram;
- (b) 35 to 40 % by weight of a lactam solvent;
- 15 (c) an absorptive solid carrier having a DOA absorption of from 200 to 300 (ml/100g); and
- (d) a surfactant comprising 2 to 4 % by weight of a wetting agent and 4 to 6 % by weight of a disperant.
13. The pesticidal composition according to claim 12, which comprises a WP pesticidal composition comprising:
- 20 (a) 10 to 20 % by weight of isocycloseram;
- (b) 35 to 40 % by weight of a lactic acid dimethyl amide solvent;
- (c) an absorptive solid silica carrier having a DOA absorption of from 200 to 300 (ml/100g);
- (d) a surfactant comprising 2 to 4 % by weight of a sodium alkyl sulfate wetting agent and 4 to 6 % by weight of a naphthalene sulfonate salt condensate disperant; and
- 25 (e) 1 to 15% by weight of a filler.
14. A method of combating and controlling insect pests which comprises applying to a pest or to a locus of a pest, a composition according to any of claims 1 to 13.

15. The method of claim 14, wherein the pest to be controlled is a mosquito, the application is an indoor residual spray, and the locus is an area of potential or known interaction between a human or mammal and the mosquito.