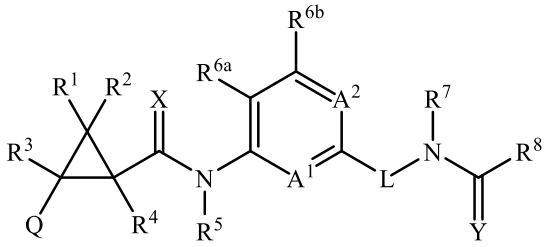
## CLAIMS

What is claimed is:

1. A compound selected from Formula **1**, ~~N~~*N*-oxides and salts thereof,



**1**

wherein

$R^1$ is H, F, Cl, Br, I, $CH_3$, or $CF_3$;

$R^2$ is F, Cl, Br, I, $CH_3$, or $CF_3$;

$R^3$ and $R^4$ are each independently H or $C_1$–$C_3$ alkyl;

Q is phenyl, thiophenyl, furanyl, pyridinyl or naphthalenyl, each unsubstituted or substituted with 1 to 3 $R^{10}$;

X is O or S;

Y is O or S;

$R^5$ is H, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$ or $S(O)_nR^{15}$; or $C_1$–$C_6$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_2$–$C_6$ alkenyl or $C_2$–$C_6$ alkynyl, each unsubstituted or substituted with at least one $R^x$;

$A^1$ is $CR^{9a}$ or N;

$A^2$ is $CR^{9b}$ or N;

$R^{6a}$ is H, halogen, cyano, nitro, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$, $NR^{12}R^{13}$, $OR^{16}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$; or $C_1$–$C_6$ alkyl, $C_2$–$C_6$ alkenyl, $C_2$–$C_6$ alkynyl, $C_3$–$C_7$ cycloalkyl or $C_4$–$C_8$ cycloalkylalkyl, each unsubstituted or substituted with at least one $R^x$;

$R^{6b}$ is H, halogen, cyano, nitro, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$, $NR^{12}R^{13}$, $OR^{16}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$; or $C_1$–$C_6$ alkyl, $C_2$–$C_6$ alkenyl, $C_2$–$C_6$ alkynyl, $C_3$–$C_7$ cycloalkyl or $C_4$–$C_8$ cycloalkylalkyl, each unsubstituted or substituted with at least one $R^x$;

L is $C_1$–$C_2$ alkylenyl, unsubstituted or substituted with 1 or 2 $C_1$–$C_3$ alkyl;

$R^7$ is H, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$ or $S(O)_nR^{15}$; or $C_1$–$C_6$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_2$–$C_6$ alkenyl or $C_2$–$C_6$ alkynyl, each unsubstituted or substituted with at least one $R^x$;

$R^8$ is H, $NR^{12}R^{13}$, $OR^{16}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$; or $C_1$–$C_6$ alkyl, $C_2$–$C_6$ alkenyl, $C_2$–$C_6$ alkynyl, $C_3$–$C_7$ cycloalkyl or $C_4$–$C_8$ cycloalkylalkyl, each unsubstituted or substituted with at least one $R^x$; or a phenyl, a 5- or 6-membered heterocyclic aromatic ring or a 3- to 7-membered heterocyclic non-aromatic ring, each ring containing ring members selected from carbon atoms and up to 2 heteroatoms independently selected from one oxygen atom, one sulfur atom, and up to 2 nitrogen atoms, wherein up to 2 carbon atom ring members are independently selected from C(=O) and C(=S) and the sulfur atom ring member is selected from S, S(O) or $S(O)_2$, each ring unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^x$ is independently halogen, cyano, nitro, hydroxy, $C_1$–$C_6$ alkyl, $C_1$–$C_6$ haloalkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_6$ alkoxy, $C_1$–$C_6$ haloalkoxy, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $NR^{12}R^{13}$, $C(O)R^{14}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$;

$R^{9a}$ is H, halogen, cyano, nitro, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$, $NR^{12}R^{13}$, $OR^{16}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$; or $C_1$–$C_6$ alkyl, $C_2$–$C_6$ alkenyl, $C_2$–$C_6$ alkynyl, $C_3$–$C_7$ cycloalkyl or $C_4$–$C_8$ cycloalkylalkyl, each unsubstituted or substituted with at least one $R^x$;

$R^{9b}$ is H, halogen, cyano, nitro, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$, $NR^{12}R^{13}$, $OR^{16}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$; or $C_1$–$C_6$ alkyl, $C_2$–$C_6$ alkenyl, $C_2$–$C_6$ alkynyl, $C_3$–$C_7$ cycloalkyl or $C_4$–$C_8$ cycloalkylalkyl, each unsubstituted or substituted with at least one $R^x$;

each $R^{10}$ is independently halogen, cyano, nitro, $C(O)OR^{11}$, $C(O)NR^{12}R^{13}$, $C(O)R^{14}$, $NR^{12}R^{13}$, $OR^{16}$, $S(O)_nR^{15}$ or $SO_2NR^{12}R^{13}$; or $C_1$–$C_6$ alkyl, $C_2$–$C_6$ alkenyl, $C_2$–$C_6$ alkynyl, $C_3$–$C_7$ cycloalkyl or $C_4$–$C_8$ cycloalkylalkyl, each unsubstituted or substituted with at least one $R^x$; and when two $R^{10}$ are attached to adjacent carbon atoms, said two $R^{10}$ can be taken together with the carbon atoms to which they are attached to form a 3- to 7-membered ring containing ring members selected from carbon atoms and up to 2 heteroatoms independently selected from two oxygen atoms, one sulfur atom, and up to 2 nitrogen atoms, wherein up to 2

carbon atom ring members are independently selected from C(=O) and C(=S) and the sulfur atom ring member is selected from S, S(O) or $S(O)_2$, said ring being unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy and $C_1$–$C_4$ haloalkoxy;

each $R^{11}$ is independently $C_1$–$C_4$ alkyl, $C_1$–$C_4$ haloalkyl, $C_3$–$C_6$ cycloalkyl or $C_3$–$C_6$ halocycloalkyl; or phenyl, unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^{12}$ is independently H, $C_1$–$C_6$ alkyl, $C_1$–$C_4$ haloalkyl, $C(O)R^{17}$ or $S(O)_2R^{17}$; or phenyl or a 5- or 6-membered heterocyclic aromatic ring, each unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^{13}$ is independently H, $C_1$–$C_6$ alkyl or $C_1$–$C_4$ haloalkyl; or

$R^{12}$ and $R^{13}$ are taken together with the nitrogen atom to which they are attached to form a 3- to 7-membered ring containing ring members selected from carbon atoms and up to 2 heteroatoms independently selected from one oxygen atom, one sulfur atom, and up to 2 nitrogen atoms, wherein up to 2 carbon atom ring members are independently selected from C(=O) and C(=S) and the sulfur atom ring member is selected from S, S(O) or $S(O)_2$, said ring being unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^{14}$ is independently $C_1$–$C_4$ alkyl, $C_1$–$C_4$ haloalkyl, $C_3$–$C_6$ cycloalkyl or $C_3$–$C_6$ halocycloalkyl; or phenyl, unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano,

nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^{15}$ is independently $C_1$–$C_4$ alkyl, $C_1$–$C_4$ haloalkyl, $C_3$–$C_6$ cycloalkyl or $C_3$–$C_6$ halocycloalkyl; or phenyl, unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^{16}$ is independently $C_1$–$C_4$ alkyl, $C_1$–$C_4$ haloalkyl, $C_3$–$C_6$ cycloalkyl or $C_3$–$C_6$ halocycloalkyl; or phenyl, unsubstituted or substituted with at least one substituent independently selected from the group consisting of halogen, cyano, nitro, $C_1$–$C_4$ alkyl, $C_3$–$C_6$ cycloalkyl, $C_1$–$C_4$ haloalkyl, $C_1$–$C_4$ alkoxy, $C_1$–$C_4$ haloalkoxy, $C_1$–$C_4$ alkylthio, $C_1$–$C_4$ haloalkylthio, $C_1$–$C_4$ alkylsulfinyl, $C_1$–$C_4$ haloalkylsulfinyl, $C_1$–$C_4$ alkylsulfonyl, $C_1$–$C_4$ haloalkylsulfonyl, $C_1$–$C_4$ alkylcarbonyl or $C_1$–$C_4$ alkoxycarbonyl;

each $R^{17}$ is independently $C_1$–$C_4$ alkyl, $C_1$–$C_4$ haloalkyl, $C_3$–$C_6$ cycloalkyl or $C_3$–$C_6$ halocycloalkyl; and

each n is independently 0, 1 or 2.

2. The compound of Claim 1 wherein:

$R^3$ and $R^4$ are H;

X and Y are O;

$R^5$ is H; and

$R^7$ is H.

3. The compound of Claim 1 or 2 wherein:

$R^1$ is F, Cl or Br;

$R^2$ is F, Cl or Br;

Q is phenyl, unsubstituted or substituted with 1 to 3 $R^{10}$;

$A^1$ is $CR^{9a}$;

$A^2$ is $CR^{9b}$;

$R^{6a}$ is H;

$R^{6b}$ is H;

$R^{9a}$ is H or halogen; and

$R^{9b}$ is halogen, cyano or $C_1$–$C_6$ alkyl.

4. The compound of any one of claims 1-3 wherein:
$R^1$ is F or Cl;
$R^2$ is F or Cl;
L is -$CH_2$-;
$R^{9a}$ is H or F; and
$R^{9b}$ is F or Cl.

5. The compound of any one of claims 1-4 wherein:
$R^1$ is Cl;
$R^2$ is Cl; and
$R^{9a}$ is H~~;~~.

6. The compound of any one of claims 1-5 wherein:
Q is phenyl, substituted with 1 to 3 $R^{10}$; and
$R^{10}$ is halogen or ~~C~~$^{1}$~~-C~~$^{6}$$C_1$-$C_6$ alkyl substituted with at least one $R^x$~~;~~; and $R^x$ is Cl or F.

7. The compound of any one of claim~~s~~ 1-6 wherein:
$R^8$ is -$CH_2CF_3$, -$CF_3$, or cyclopropyl.

8. The compound of any one of claims 1-7 wherein:
$R^1$ is Cl;
$R^2$ is Cl;
$R^3$ and $R^4$ are H;
X and Y are O;
$R^5$ is H;
$R^7$ is H;
$R^8$ is -$CH_2CF_3$, -$CF_3$, or cyclopropyl~~;~~
Q is phenyl, substituted with 1 to 3 $R^{10}$; and
$R^{10}$ is halogen or ~~C~~$^{1}$~~-C~~$^{6}$$C_1$-$C_6$ alkyl substituted with at least one $R^x$~~;~~; and $R^x$ is Cl or F~~;~~.

9. The compound of Claim 1 wherein said compound is selected from 2,2-dichloro-3-(3,4-dichlorophenyl)-N-[4-fluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]cyclopropanecarboxa-mide (Compound 79), 2,2-dichloro-N-[4-chloro-3-[[(2,2,2-trifluoroacetyl)amino]methyl]phenyl]-3-(3,4-dichlorophenyl)cyclopropanecarboxamide (Compound 175), 2,2-dichloro-3-[4-fluoro-3-(trifuoromethyl)phenyl]-N-[4-fluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]cyclopropanecarboxamide (Compound 78), 2,2-dichloro-N-[3-[[(cyclopropylcarbonyl)amino]methyl]-4-fluorophenyl]-3-[4-fluoro-3-(trifluoromethyl)phenyl]cyclopropanecarboxamide (Compound 77), 2,2-dichloro-3-(3-chloro-4-fluorophenyl)-N-[2,4-difluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]cyclopropanecarboxamide (Compound 170), 2,2-dichloro-3-(4-chloro-3,5-difluorophenyl)-N-[4-fluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]cyclopropanecarboxamide (Compound 169), 2,2-dichloro-3-(3-chloro-4-fluorophenyl)-N-[3-[[(cyclopropylcarbonyl)amino]methyl]-2,4-difluorophenyl]cyclopropanecarboxamide (Compound 164), 2,2-dichloro-3-(3-chloro-4-fluorophenyl)-N-[4-chloro-3-[[(2,2,2-trifluoroacetyl)amino]methyl]phenyl]cyclopropanecarboxamide (Compound 19), 2,2-dichloro-N-[4-chloro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]-3-[4-fluoro-3-(trifluoromethyl)phenyl]cyclopropanecarboxamide (Compound 116), 2,2-dichloro-N-[4-chloro-3-[[(cyclopropylcarbonyl)amino]methyl]phenyl]-3-[4-fluoro-3-(trifluoromethyl)phenyl]cyclopropanecarboxamide (Compound 39), 2,2-dichloro-3-(3-chloro-5-fluorophenyl)-N-[4-fluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl] cyclopropanecarboxamide (Compound 129), 2,2-dichloro-N-[4-chloro-3-[[(2,2,2-trifluoroacetyl)amino]methyl]phenyl]-3-[4-fluoro-3-(trifluoromethyl)phenyl]cyclopropanecarboxamide (Compound 174), 2,2-dichloro-N-[4-chloro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]-3-(3,4,5-trifluorophenyl)cyclopropanecarboxamide (Compound 118), 2,2-dichloro-3-(3-chloro-4-fluorophenyl)-N-[4-fluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]cyclopropanecarboxamide (Compound 219), and 3-[3,5-Bis(trifluoromethyl)phenyl]-2,2-dichloro-N-[4-fluoro-3-[[(3,3,3-trifluoro-1-oxopropyl)amino]methyl]phenyl]cyclopropanecarboxamide (Compound 220).

10. A composition comprising a compound of any one of claims 1-~~6~~9 and at least one additional component selected from the group consisting of surfactants, solid diluents and

liquid diluents, said composition optionally further comprising at least one additional biologically active compound or agent.

11. The composition of ~~Claim 6~~Claim 10 wherein the at least one additional biologically active compound or agent is selected from abamectin, acephate, acequinocyl, acetamiprid, acrinathrin, acynonapyr, afidopyropen ([(3*S*,4*R*,4a*R*,6*S*,6a*S*,12*R*,12a*S*,12b*S*)-3-[(cyclopropylcarbonyl)oxy]-1,3,4,4a,5,6,6a,12,12a,12b-decahydro-6,12-dihydroxy-4,6a,12b-trimethyl-11-oxo-9-(3-pyridinyl)-2*H*,11*H*-naphtho[2,1-*b*]pyrano[3,4-*e*]pyran-4-yl]methyl cyclopropanecarboxylate), amidoflumet, amitraz, avermectin, azadirachtin, azinphos-methyl, benfuracarb, bensultap, benzpyrimoxan, bifenthrin, kappa-bifenthrin, bifenazate, bistrifluron, borate, broflanilide, bromoantraniliprole, buprofezin, cadusafos, carbaryl, carbofuran, cartap, carzol, chlorantraniliprole, chlorfenapyr, chlorfluazuron, chloroprallethrin, chlorpyrifos, chlorpyrifos-e, chlorpyrifos-methyl, chromafenozide, clofentezin, chloroprallethrin, clothianidin, cyantraniliprole, (3-bromo-1-(3-chloro-2-pyridinyl)-*N*-[4-cyano-2-methyl-6-[(methylamino)carbonyl]phenyl]-1*H*-pyrazole-5-carboxamide), cyclaniliprole (3-bromo-*N*-[2-bromo-4-chloro-6-[[(1-cyclopropylethyl)amino]carbonyl]phenyl]-1-(3-chloro-2-pyridinyl)-1*H*-pyrazole-5-carboxamide), cycloprothrin, cycloxaprid ((5*S*,8*R*)-1-[(6-chloro-3-pyridinyl)methyl]-2,3,5,6,7,8-hexahydro-9-nitro-5,8-Epoxy-1*H*-imidazo[1,2-*a*]azepine), cyenopyrafen, cyflumetofen, cyfluthrin, beta-cyfluthrin, cyhalodiamide, cyhalothrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, zeta-cypermethrin, cyromazine, deltamethrin, diafenthiuron, diazinon, dicloromezotiaz, dichlorantraniliporle, dieldrin, diflubenzuron, dimefluthrin, dimehypo, dimethoate, dimpropyridaz, dinotefuran, diofenolan, emamectin, emamectin benzoate, endosulfan, esfenvalerate, ethiprole, etofenprox, epsilon-metofluthrin, etoxazole, fenbutatin oxide, fenitrothion, fenothiocarb, fenoxycarb, fenpropathrin, fenvalerate, fipronil, flometoquin (2-ethyl-3,7-dimethyl-6-[4-(trifluoromethoxy)phenoxy]-4-quinolinyl methyl carbonate), flonicamid, fluazaindolizine, flubendiamide, flucythrinate, flufenerim, flufenoxuron, flufenoxystrobin (methyl (α*E*)-2-[[2-chloro-4-(trifluoromethyl)phenoxy]methyl]-α-(methoxymethylene)benzeneacetate), fluensulfone (5-chloro-2-[(3,4,4-trifluoro-3-buten-1-yl)sulfonyl]thiazole), fluhexafon, fluopyram, flupiprole (1-[2,6-dichloro-4-(trifluoromethyl)phenyl]-5-[(2-methyl-2-propen-1-yl)amino]-4-[(trifluoromethyl)sulfinyl]-1*H*-pyrazole-3-carbonitrile), flupyradifurone (4-[[(6-chloro-3-pyridinyl)methyl](2,2-difluoroethyl)amino]-2(5*H*)-furanone), flupyrimin, fluvalinate, tau-fluvalinate, fluxametamide, fonophos, formetanate, fosthiazate, gamma-cyhalothrin, halofenozide, heptafluthrin ([2,3,5,6-tetrafluoro-4-(methoxymethyl)phenyl]methyl 2,2-dimethyl-3-[(1*Z*)-3,3,3-trifluoro-1-propen-1-yl]cyclopropanecarboxylate), hexaflumuron, hexythiazox, hydramethylnon, imidacloprid,

indoxacarb, insecticidal soaps, isofenphos, isocycloseram, kappa-tefluthrin, lambda-cyhalothrin, lufenuron, malathion, meperfluthrin ([2,3,5,6-tetrafluoro-4-(methoxymethyl)phenyl]methyl (1*R*,3*S*)-3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate), metaflumizone, metaldehyde, methamidophos, methidathion, methiocarb, methomyl, methoprene, methoxychlor, metofluthrin, methoxyfenozide, epsilon-metofluthrin, epsilon-momfluorothrin, monocrotophos, monofluorothrin ([2,3,5,6-tetrafluoro-4-(methoxymethyl)phenyl]methyl 3-(2-cyano-1-propen-1-yl)-2,2-dimethylcyclopropanecarboxylate), nicotine, nitenpyram, nithiazine, novaluron, noviflumuron, oxamyl, oxazosulfyl, parathion, parathion-methyl, permethrin, phorate, phosalone, phosmet, phosphamidon, pirimicarb, profenofos, profluthrin, propargite, protrifenbute, pyflubumide (1,3,5-trimethyl-*N*-(2-methyl-1-oxopropyl)-*N*-[3-(2-methylpropyl)-4-[2,2,2-trifluoro-1-methoxy-1-(trifluoromethyl)ethyl]phenyl]-1*H*-pyrazole-4-carboxamide), pymetrozine, pyrafluprole, pyrethrin, pyridaben, pyridalyl, pyrifluquinazon, pyriminostrobin (methyl (α*E*)-2-[[[2-[(2,4-dichlorophenyl)amino]-6-(trifluoromethyl)-4-pyrimidinyl]oxy]methyl]-α-(methoxymethylene)benzeneacetate), pydiflumetofen, pyriprole, pyriproxyfen, rotenone, ryanodine, silafluofen, spinetoram, spinosad, spirodiclofen, spiromesifen, spiropidion, spirotetramat, sulprofos, sulfoxaflor (*N*-[methyloxido[1-[6-(trifluoromethyl)-3-pyridinyl]ethyl]-$\lambda^4$-sulfanylidene]cyanamide), tebufenozide, tebufenpyrad, teflubenzuron, tefluthrin, kappa-tefluthrin, terbufos, tetrachlorantraniliprole, tetraniliprole, tetrachlorvinphos, tetramethrin, tetramethylfluthrin ([2,3,5,6-tetrafluoro-4-(methoxymethyl)phenyl]methyl 2,2,3,3-tetramethylcyclopropanecarboxylate), tetraniliprole, thiacloprid, thiamethoxam, thiodicarb, thiosultap-sodium, tioxazafen (3-phenyl-5-(2-thienyl)-1,2,4-oxadiazole), tolfenpyrad, tralomethrin, triazamate, trichlorfon, triflumezopyrim (2,4-dioxo-1-(5-pyrimidinylmethyl)-3-[3-(trifluoromethyl)phenyl]-2*H*-pyrido[1,2-*a*]pyrimidinium inner salt), triflumuron, tyclopyrazoflor, zeta-cypermethrin, *Bacillus thuringiensis* delta-endotoxins, entomopathogenic bacteria, entomopathogenic viruses, and entomopathogenic fungi.

12. The composition of ~~Claim 7~~Claim 11 wherein the at least one additional biologically active compound or agent is selected from the group consisting of abamectin, acetamiprid, acrinathrin, afidopyropen, amitraz, avermectin, azadirachtin, benfuracarb, bensultap, bifenthrin, buprofezin, carbaryl, cartap, chlorantraniliprole, chlorfenapyr, chlorpyrifos, clothianidin, cyantraniliprole, cyclaniliprole, cycloprothrin, cyfluthrin, beta-cyfluthrin, cyhalothrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, zeta-cypermethrin, cyromazine, deltamethrin, dieldrin, dinotefuran, diofenolan,

emamectin, endosulfan, esfenvalerate, ethiprole, etofenprox, etoxazole, fenitrothion, fenothiocarb,

fenoxycarb, fenvalerate, fipronil, flometoquin, flonicamid, flubendiamide, flufenoxuron, flufenoxystrobin, fluensulfone, flupiprole, flupyradifurone, fluvalinate, formetanate, fosthiazate, heptafluthrin, hexaflumuron, hydramethylnon, imidacloprid, indoxacarb, lufenuron, meperfluthrin, metaflumizone, methiocarb, methomyl, methoprene, methoxyfenozide, metofluthrin, monofluorothrin, nitenpyram, nithiazine, novaluron, oxamyl, pyflubumide, pymetrozine, pyrethrin, pyridaben, pyridalyl, pyriminostrobin, pyriproxyfen, ryanodine, spinetoram, spinosad, spirodiclofen, spiromesifen, spirotetramat, sulfoxaflor, tebufenozide, tetramethrin, tetramethylfluthrin, thiacloprid, thiamethoxam, thiodicarb, thiosultap-sodium, tralomethrin, triazamate, triflumezopyrim, triflumuron, *Bacillus thuringiensis* delta-endotoxins, all strains of *Bacillus thuringiensis* and all strains of nuclear polyhedrosis viruses.

13. The composition of any one of claims 10-12 further comprising a liquid fertilizer.

14. The composition of claim 13 wherein the liquid fertilizer is aqueous-based.

15. The composition of any one claims 10-14 for use in a drip irrigation system, furrow during planting, handheld sprayer, backpack sprayer, boom sprayer, ground sprayer, aerial application, unmanned aerial vehicle, or a seed treatment.

16. The composition of claim 15 wherein said composition is sprayed at an ultra-low volume.

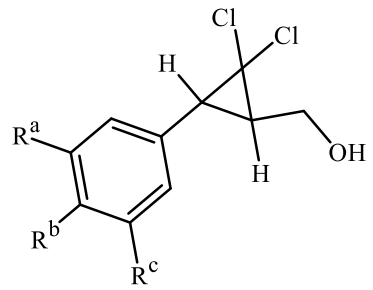
17. A composition for protecting an animal from an invertebrate parasitic pest comprising a parasiticidally effective amount of a compound of Claim 1 and at least one carrier.

18. A method for controlling an invertebrate pest comprising contacting the invertebrate pest or its environment with a biologically effective amount of a compound of Claim 1, provided that the method is not method of medical treatment of a human or animal body by therapy.

19. The method of claim 18 wherein the environment is soil or plant foliage.

20. A treated seed comprising a compound of Claim 1 in an amount of from about 0.0001 to 1 % by weight of the seed before treatment.

21. An intermediate compound selected from Formula **I-1**, *N*-oxides and salts thereof, used for preparing the compound of Formula **1** according to Claim 1,




**I-1**

wherein

$R^a$ is H, F, Cl, Br or $CF_3$;

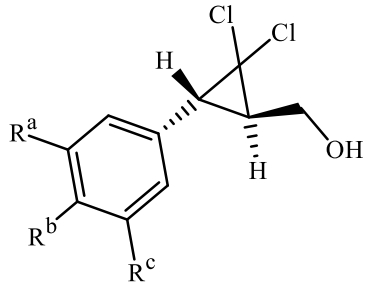
$R^b$ is H, F, Cl or $CF_3$; and

$R^c$ is H, Cl or $CF_3$.

22. The intermediate compound of Claim 21 which is selected from the group:

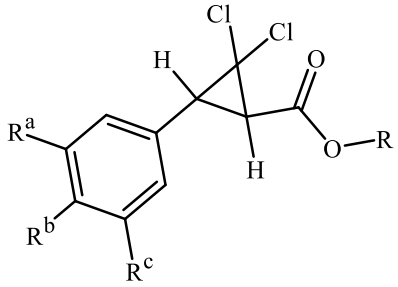
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is H, and $R^c$ is Cl;
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is F, and $R^c$ is Cl;
the intermediate compound of Formula I-1 wherein $R^a$ is F, $R^b$ is F, and $R^c$ is F;
the intermediate compound of Formula I-1 wherein $R^a$ is F, $R^b$ is F, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is Cl, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is F, $R^b$ is Cl, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is F, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is $CF_3$, $R^b$ is F, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is F, $R^b$ is $CF_3$, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is $CF_3$, $R^b$ is Cl, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is $CF_3$, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is H, $R^b$ is F, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is H, $R^b$ is Cl, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is H, $R^b$ is $CF_3$, and $R^c$ is H;
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is Cl, and $R^c$ is Cl;
the intermediate compound of Formula I-1 wherein $R^a$ is Cl, $R^b$ is H, and $R^c$ is $CF_3$; and
the intermediate compound of Formula I-1 wherein $R^a$ is Br, $R^b$ is F, and $R^c$ is H.

23. The intermediate compound of Claim 21 or Claim 22 wherein the intermediate compound of Formula **I-1** is an intermediate compound of Formula **I-1a**,



**I-1a**.

24. An intermediate compound selected from Formula **I-2**, N-oxides and salts thereof, used for preparing the compound of Formula **1** according to Claim 1,



**I-2**

wherein

R is methyl or ethyl;

$R^a$ is H, F, Cl, Br or $CF_3$;

$R^b$ is H, F, Cl or $CF_3$; and

$R^c$ is H, Cl or $CF_3$.

25. The intermediate compound of Claim 24 which is selected from the group:

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is H, and $R^c$ is Cl;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is F, and $R^c$ is Cl;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is F, $R^b$ is F, and $R^c$ is F;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is F, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is F, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is $CF_3$, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is F, $R^b$ is $CF_3$, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is $CF_3$, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is $CF_3$, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is H, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is H, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is H, $R^b$ is $CF_3$, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is Cl, and $R^c$ is Cl;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Cl, $R^b$ is H, and $R^c$ is $CF_3$;

the intermediate compound of Formula I-2 wherein R is methyl; $R^a$ is Br, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is H, and $R^c$ is Cl;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is F, and $R^c$ is Cl;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is F, $R^b$ is F, and $R^c$ is F;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is F, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is F, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is $CF_3$, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is F, $R^b$ is $CF_3$, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is $CF_3$, $R^b$ is Cl, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is $CF_3$, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is H, $R^b$ is F, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is H, $R^b$ is Cl, and $R^c$ is H;

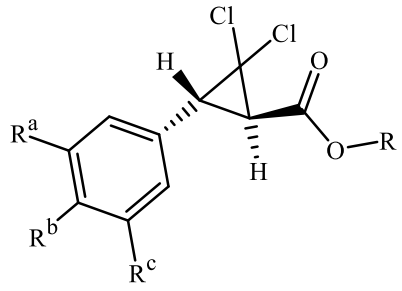
the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is H, $R^b$ is $CF_3$, and $R^c$ is H;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is Cl, and $R^c$ is Cl;

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Cl, $R^b$ is H, and $R^c$ is $CF_3$; and

the intermediate compound of Formula I-2 wherein R is ethyl; $R^a$ is Br, $R^b$ is F, and $R^c$ is H.

26. The intermediate compound of Claim 24 or Claim 25 wherein the intermediate compound of Formula **I-2** is an intermediate compound of Formula **I-2a**,




**I-2a**.