

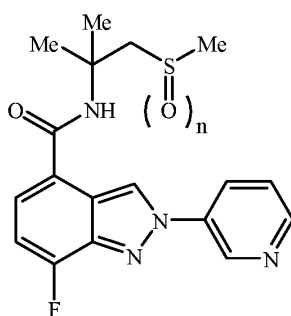
CLAIMS

What is claimed is:

1. A composition comprising:

(a) at least one compound of

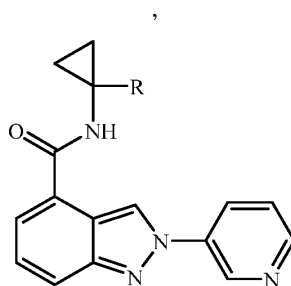
5 Formula **I**:



Formula **I**

wherein n is 0, 1, or 2; or

10 at least one compound of Formula **II** :



Formula **II**

wherein R is CH₃, or CF₂H; or

a combination of the foregoing compounds; and

15 (b) at least one additional invertebrate pest control agent different from the compound of Formula **I**, or the compound of Formula **II**.

2. The composition of claim 1 wherein component (a) is a compound of Formula **I** wherein n is 0.

3. The composition of claim 1 wherein component (a) is a compound of Formula **I**
5 wherein n is 1.

4. The composition of claim 1 wherein component (a) is a compound of Formula **I** wherein n is 2.

5. The composition of claim 1 wherein component (a) is a compound of Formula **II**
10 wherein R is CH₃.

6. The composition of claim 1 wherein component (a) is a compound of Formula **II** wherein R is CF₂H.

7. The composition of claim 1 wherein component (a) is a compound selected from
15 *N*-[1,1-dimethyl-2-(methylthio)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide,
N-[1,1-dimethyl-2-(methylsulfinyl)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-indazole-4-
carboxamide, *N*-[1,1-dimethyl-2-(methylsulfonyl)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-
indazole-4-carboxamide, *N*-(1-methylcyclopropyl)-2-(3-pyridinyl)-2*H*-indazole-4-
20 carboxamide and *N*-[1-(difluoromethyl)cyclopropyl]-2-(3-pyridinyl)-2*H*-indazole-4-
carboxamide.

8. The composition of claim 1 or 7 wherein component (a) is a compound selected
from *N*-[1,1-dimethyl-2-(methylthio)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-indazole-4-
25 carboxamide, *N*-[1,1-dimethyl-2-(methylsulfinyl)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-
indazole-4-carboxamide, and *N*-[1,1-dimethyl-2-(methylsulfonyl)ethyl]-7-fluoro-2-(3-
pyridinyl)-2*H*-indazole-4-carboxamide.

9. The composition of claim 1 or 7 wherein component (a) is a compound selected
30 from *N*-(1-methylcyclopropyl)-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide and *N*-[1-
(difluoromethyl)cyclopropyl]-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide.

10. The composition of any one of claims 1-9 wherein component (b) is selected from an insecticide, fungicide, nematocide, and bactericide.

11. The composition of any one of claims 1-10 wherein component (b) is an insecticide.

12. The composition of any one of claim 1-11 wherein component (b) is selected from
- 5 abamectin, acephate, acequinocyl, acetamiprid, acrinathrin, acynonapyr, afidopyropen ([*(3S,4R,4aR,6S,6aS,12R,12aS,12bS)*-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,
 - 10 benfuracarb, bensultap, benzpyrimoxan, bifenthrin, kappa-bifenthrin, bifenazate, bistrifluron, borate, broflanilide, buprofezin, cadusafos, carbaryl, carbofuran, cartap, carzol, chlorantraniliprole, chlorfenapyr, chlorflazuron, chloroprallethrin, chlorpyrifos, chlorpyrifos-*e*, chlorpyrifos-methyl, chromafenozide, clofentezin, chloroprallethrin, clothianidin, cyantraniliprole (Cyazypyr™) (3-bromo-1-(3-chloro-2-pyridinyl)-*N*-[4-cyano-
 - 15 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), cyclobutrifluram, cycloprothrin, cycloxaprid ((*5S,8R*)-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, cyetpyrafen, cyflumetofen, cyfluthrin,
 - 20 beta-cyfluthrin, cyhalodiamide, cyhalothrin, gamma-cyhalothrin, lambda-cyhalothrin, cypermethrin, alpha-cypermethrin, zeta-cypermethrin, cyromazine, deltamethrin, diafenthiuron, diazinon, dicloromezotiaz, dieldrin, diflubenzuron, dimefluthrin, dimehypo, dimethoate, dimpropyridaz, dinotefuran, diofenolan, DiPel®emamectin, emamectin benzoate, endosulfan, esfenvalerate, ethiprole, etofenprox, epsilon-metofluthrin, etoxazole, fenbutatin
 - 25 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 (*αE*)-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,
 - 30 flupentiofenox, 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(*5H*)-furanone], flupyrimin, fluvalinate, tau-fluvalinate, fluxametamide, fonophos, formetanate,
 - 35 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, hydamethylnon, 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, metronidazole epsilon-momfluorothrin, monocrotophos, monofluorothrin ([2,3,5,6-tetrafluoro-4-(methoxymethyl)phenyl]methyl 3-(2-cyano-1-propen-1-yl)-2,2-dimethylcyclopropanecarboxylate), nicofluprole, 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 (*αE*)-2-[[[2-[(2,4-dichlorophenyl)amino]-6-(trifluoromethyl)-4-pyrimidinyl]oxy]methyl]-*α*-(methoxymethylene)benzeneacetate), pydiflumetofen, pyriprole, pyriproxyfen, rotenone, ryanodine, silafluofen, spinetoram, spinosad, spiroadiclofen, spiromesifen, spiropidion, spirotetramat, sulprofos, sulfoxaflor (*N*-[methyloxido[1-[6-(trifluoromethyl)-3-pyridinyl]ethyl]-*λ*⁴-sulfanylidene]cyanamide), tebufenozide, tebufenpyrad, teflubenzuron, tefluthrin, kappa-tefluthrin, terbufos, tetrachlorantraniliprole, tetrachlorvinphos, tetramethrin, tetramethylfluthrin ([2,3,5,6-tetrafluoro-4-(methoxymethyl)phenyl]methyl 2,2,3,3-tetramethylcyclopropanecarboxylate), traniliprole, thiacloprid, thiamethoxam, thiodicarb, thiosultap-sodium, tioazafen (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.

13. The composition of any one of claims 1-12 wherein the additional pest control agent (b) is selected from cyantraniliprole, acetamiprid, imidacloprid, spirotetramat, spirodiclofen, chlorantraniliprole, bifenthrin, indoxacarb, avermectin, *Bacillus* spp. and any active crystal proteins, buprofezin, carbofuran, chlorfenapyr, chlorpyrifos, clothianidin, cyromazine, diafenthiuron, dinotefuran, DiPel® emamectin benzoate, fipronil, flonicamid, fluhexafon, flupyradifurone, methomyl (Lannate®), methoxyfenozide, metronidazole, novaluron, permethrin, pyriproxifen, sulfoxaflor, thiamethoxam, permethrin, γ -cyhalothrin,

or ζ -cypermethrin, broflanilide, dimpropyridaz, isocycloseram, tetrachlorantraniliprole, tolfenpyrad, oxazosulfyl, tyclopyrazoflor, flupyrimin, spiropidion, acynonapyr, benzpyrimoxan, chloroprallethrin, epsilon-metofluthrin, kappa-bifenthrin, dicloromezotiaz, and kappa-tefluthrin.

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14. The composition of any one of claims 1-13 wherein the additional pest control agent (b) is selected from cyantraniliprole, chlorpyrifos, DiPel®, acetamiprid, *Bacillus* spp, bifenthrin, buprofezin, chlorfenapyr, emamectin benzoate, fipronil, flonicamid, flupyradifurone, imidacloprid, methomyl, methoxyfenozide, novaluron, permethrin, spinetoram, spirotetramat, spiroticlofen, sulfoxaflor, tolfenpyrad, chlorantraniliprole, or indoxacarb.

15 15. The composition of claim 1 wherein component (a) is *N*-[1,1-dimethyl-2-(methylthio)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide and component (b) is cyantraniliprole, chlorpyrifos, DiPel®, acetamiprid, *Bacillus* spp, bifenthrin, buprofezin, chlorfenapyr, emamectin benzoate, fipronil, flonicamid, flupyradifurone, imidacloprid, methomyl, methoxyfenozide, novaluron, permethrin, spinetoram, spirotetramat, spiroticlofen, sulfoxaflor, tolfenpyrad, chlorantraniliprole, or indoxacarb.

20 16. The composition of claim 1 wherein component (a) is *N*-[1,1-dimethyl-2-(methylsulfinyl)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide and component (b) is cyantraniliprole, chlorpyrifos, DiPel®, acetamiprid, *Bacillus* spp, bifenthrin, buprofezin, chlorfenapyr, emamectin benzoate, fipronil, flonicamid, flupyradifurone, imidacloprid, methomyl, methoxyfenozide, novaluron, permethrin, spinetoram, spirotetramat, spiroticlofen, sulfoxaflor, tolfenpyrad, chlorantraniliprole, or indoxacarb.

25 17. The composition of any one of claim 1 wherein component (a) is *N*-[1,1-dimethyl-2-(methylsulfonyl)ethyl]-7-fluoro-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide and component (b) cyantraniliprole, chlorpyrifos, DiPel®, acetamiprid, *Bacillus* spp, bifenthrin, buprofezin, chlorfenapyr, emamectin benzoate, fipronil, flonicamid, flupyradifurone, imidacloprid, methomyl, methoxyfenozide, novaluron, permethrin, spinetoram, spirotetramat, spiroticlofen, sulfoxaflor, tolfenpyrad, chlorantraniliprole, or indoxacarb.

35 18. The composition of claim 1 wherein component (a) is *N*-(1-methylcyclopropyl)-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide and component (b) is cyantraniliprole, chlorpyrifos, DiPel®, acetamiprid, *Bacillus* spp, bifenthrin, buprofezin, chlorfenapyr,

emamectin benzoate, fipronil, flonicamid, flupyradifurone, imidacloprid, methomyl, methoxyfenozide, novaluron, permethrin, spinetoram, spirotetramat, spiroticlofen, sulfoxaflor, tolfenpyrad, chlorantraniliprole, or indoxacarb.

- 5 19. The composition of claim 1 wherein component (a) is *N*-[1-(difluoromethyl)cyclopropyl]-2-(3-pyridinyl)-2*H*-indazole-4-carboxamide and component (b) is cyantraniliprole, chlorpyrifos, DiPel®, acetamiprid, *Bacillus* spp, bifenthrin, buprofezin, chlorfenapyr, emamectin benzoate, fipronil, flonicamid, flupyradifurone, imidacloprid, methomyl, methoxyfenozide, novaluron, permethrin, spinetoram, spirotetramat, spiroticlofen, sulfoxaflor, tolfenpyrad, chlorantraniliprole, or indoxacarb.

20. The composition of any one of claims 1-19 wherein the weight ratio of the compound of Formula **I** or the compound of Formula **II** of component (b), is from 1:10 to 50:1.

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21. The composition of any one of claims 1-19 wherein the weight ratio of the compound of Formula **I** or the compound of Formula **II** to component (b), is from 3000:1 to 1:5.

- 20 22. The composition of any one of claims 1-19 wherein the weight ratio of the compound of Formula **I** or the compound of Formula **II** to component (b), is from 100:1 to 5:1.

- 25 23. The composition of any one of claims 1-22 further comprising at least one additional component selected from the group consisting of surfactants, solid diluents, and liquid diluents, said composition further comprising at least one additional biologically active compound or agent.

24. The composition of any one of claims 1-23 further comprising a liquid fertilizer.

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25. The composition of claim 24, wherein said liquid fertilizer is aqueous-based.

26. A soil drench formulation comprising the composition of any one claims 1-25.

27. A spray composition comprising the composition of any one claims 1-25 and a propellant.

28. A bait composition, comprising: the composition of Claim any one claims 1-23,
5 one or more food materials, optionally an attractant, and optionally a humectant.

29. A trap device for controlling an invertebrate pest, comprising: the bait composition of claim 28 and a housing adapted to receive said bait composition, wherein the housing has at least one opening sized to permit the invertebrate pest to pass through the
10 opening so the invertebrate pest can gain access to said bait composition from a location outside the housing, and wherein the housing is further adapted to be placed in or near a locus of potential or known activity for the invertebrate pest.

30. A composition comprising the composition of any of claims 1-23 wherein the
15 composition is a solid composition selected from dusts, powders, granules, pellets, prills, pastilles, tablets, and filled films.

31. The composition of claim 30 wherein the composition is water-dispersible or water-soluble.
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32. A liquid or dry formulation comprising the composition of any one of claims 1-28, and 30-31 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.
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33. The liquid or dry formulation of claim 32 wherein said formulation is sprayed at an ultra-low volume.

34. A method for controlling an invertebrate pest comprising contacting the
30 invertebrate pest or its environment with a biologically effective amount of a composition or formulation of any one of claims 1-33.

35. The method of claim 34 wherein the environment is soil or plant foliage.

36. The method of claim 34 or 35 wherein the invertebrate pest is selected from the
35 order Lepidoptera, Blattodea, Coleoptera, Dermaptera, Hemiptera, Homoptera, Acari,

Orthoptera, Diptera, Thysanoptera, Hymenoptera, Isoptera, Thysanura, Mallophaga, Siphonoptera, Araneae, and Scutigermorpha.

37. The method of any one of claims 34- 36 wherein the invertebrate pest is selected from the order Lepidoptera, Thrips, and Hemiptera.

38. The method of any one of claims 34- 37 wherein the invertebrate pest is selected from silverleaf whitefly, corn plant hopper, western flower thrips, potato leafhopper, cotton melon sphid, root knot nematode, fall army worm and diamondback moth.

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39. The method of any one claims 34-38 wherein the composition or formulation is dispensed by a drip irrigation system, furrow during planting, handheld sprayer, backpack sprayer, boom sprayer, ground sprayer, aerial application, or an unmanned aerial vehicle.

40. The method of claim 39 comprising spraying said composition or formulation at an ultra-low volume.

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41. A treated seed comprising the composition or formulation of any one of claims 1- 34 in an amount of from about 0.0001 to 1 % by weight of the seed before treatment.

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