



- (51) **International Patent Classification:**  
C07D 487/04 (2006.01) A01N 43/90 (2006.01)
- (21) **International Application Number:**  
PCT/EP2014/056334
- (22) **International Filing Date:**  
28 March 2014 (28.03.2014)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
1305753.4 28 March 2013 (28.03.2013) GB
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(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

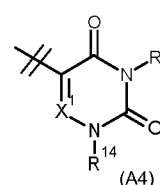
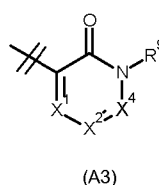
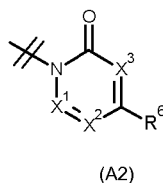
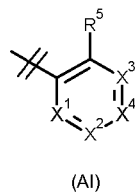
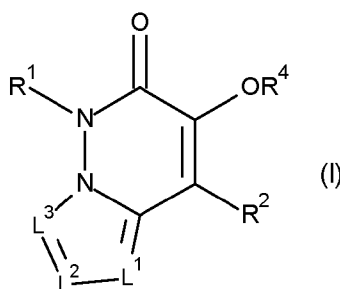
(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

— of inventorship (Rule 4.17(iv))

**Published:**

— with international search report (Art. 21(3))

(54) **Title:** HERBICIDAL COMPOUNDS

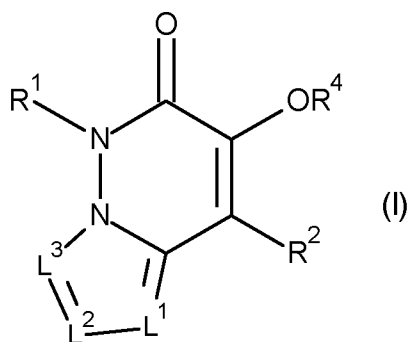
(57) **Abstract:** The present invention provides a compound of Formula (I) or an agronomically acceptable salt thereof, wherein  $R^2$  is selected from the group consisting of A1, A2, A3 and A4 wherein  $X^1$  is N or  $CR^7$ ;  $X^2$  is N or  $CR^8$ ;  $X^3$  is N or  $CR^9$ ;  $X^4$  is N or  $CR^6$ ; and wherein  $L^1$ ,  $L^2$  and  $L^3$ ,  $R^1$ ,  $R^2$ ,  $R^4$ ,  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{14}$  are as defined herein. The invention further relates to herbicidal compositions which comprise a compound of Formula (I), and to their use for controlling weeds, in particular in crops of useful plants.

**HERBICIDAL COMPOUNDS**

The present invention relates to novel herbicidal compounds, to processes for  
 5 their preparation, to herbicidal compositions which comprise the novel compounds,  
 and to their use for controlling weeds, in particular in crops of useful plants.

Thus, according to the present invention there is provided a compound  
 Formula (I):

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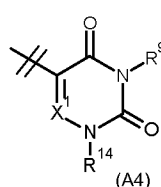
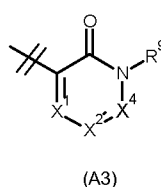
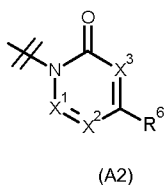
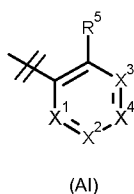
or an agronomically acceptable salt thereof,  
 wherein:-

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$L^1$ ,  $L^2$  and  $L^3$  are independently N or C- $R^3$ ;

$R^1$  is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>3</sub>-  
 C<sub>6</sub>cycloalkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-  
 20 C<sub>3</sub>-alkyl, and C<sub>3</sub>-C<sub>6</sub>cycloalkylC<sub>1</sub>-C<sub>3</sub>-alkyl-;

$R^2$  is selected from the group consisting of A1, A2, A3 and A4



wherein

$X^1$  is N or CR<sup>7</sup>;

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$X^2$  is N or CR<sup>8</sup>;

$X^3$  is N or CR<sup>9</sup>;

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$X^4$  is N or CR<sup>6</sup>;

each R<sup>3</sup> is independently selected from the group consisting of hydrogen, hydroxy, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>6</sub>alkyl, halogen, cyano, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>3</sub>-C<sub>6</sub>cycloalkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, amino, C<sub>1</sub>-C<sub>3</sub>alkylamino, C<sub>1</sub>-C<sub>3</sub>dialkylamino, and nitro;

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R<sup>4</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>6</sub>alkylcarbonyl-, arylcarbonyl-, C<sub>1</sub>-C<sub>6</sub>alkoxycarbonyl-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>carbonyl- and aryl-S(O)<sub>p</sub>-, wherein said aryl groups may be optionally substituted by one or more R<sup>11</sup>;

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R<sup>5</sup> is selected from the group consisting of hydroxyl, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>cycloalkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>alkoxy-, C<sub>2</sub>-C<sub>6</sub>alkenyloxy-, C<sub>3</sub>-C<sub>6</sub>cycloalkylC<sub>1</sub>-C<sub>3</sub>-alkyl-, C<sub>1</sub>-C<sub>6</sub>alkoxyC<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>haloalkoxy-, C<sub>1</sub>-C<sub>6</sub>haloalkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>6</sub>haloalkyl-S(O)<sub>p</sub>-, aryl, aryl-S(O)<sub>p</sub>-, heterocyclyl, heterocyclyl-S(O)<sub>p</sub>-, aryloxy-, aryl-C<sub>2</sub>-C<sub>6</sub>alkyl-, aryl-C<sub>1</sub>-C<sub>6</sub>alkoxy-, heterocycliloxy-, heterocyclyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, hydroxycarbonyl, hydroxycarbonyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub>alkoxycarbonyl-, C<sub>1</sub>-C<sub>3</sub>alkoxycarbonyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub>alkylamino-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-, C<sub>1</sub>-C<sub>3</sub>alkylamino-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>alkylamino-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkylaminocarbonyl-, C<sub>1</sub>-C<sub>3</sub>alkylaminocarbonyl-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-

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C<sub>3</sub>dialkylaminocarbonyl-, C<sub>1</sub>-C<sub>3</sub>dialkylaminocarbonyl-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkylcarbonylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-amino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-aminoC<sub>1</sub>-C<sub>3</sub>alkyl-, cyano and nitro, wherein said heterocyclyls are five or six membered heterocyclyls containing from one to three heteroatoms each independently selected from the group consisting of oxygen, nitrogen and sulphur, and wherein the aryl or heterocyclyl components may be optionally substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl, C<sub>1</sub>-C<sub>3</sub>haloalkyl, C<sub>1</sub>-C<sub>3</sub>alkoxy, C<sub>1</sub>-C<sub>3</sub> haloalkoxy, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, phenyl, cyano and nitro;

R<sup>6</sup> and R<sup>9</sup> are independently selected from the group consisting of hydrogen, hydroxyl, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>cycloalkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub> alkoxy-, C<sub>2</sub>-C<sub>6</sub> alkenyloxy-, C<sub>3</sub>-C<sub>6</sub>cycloalkylC<sub>1</sub>-C<sub>3</sub>-alkyl-, C<sub>1</sub>-C<sub>6</sub> alkoxyC<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub> alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-, C<sub>1</sub>-C<sub>6</sub> alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub> haloalkoxy-, C<sub>1</sub>-C<sub>6</sub> haloalkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>6</sub>haloalkyl-S(O)<sub>p</sub>-, aryl, aryl-S(O)<sub>p</sub>-, heterocyclyl, heterocyclyl-S(O)<sub>p</sub>-, aryloxy-, aryl-C<sub>2</sub>-C<sub>6</sub>alkyl-, aryl-C<sub>1</sub>-C<sub>6</sub>alkoxy-, heterocyclyloxy-, heterocyclyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, hydroxycarbonyl, hydroxycarbonyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub> alkoxycarbonyl-, C<sub>1</sub>-C<sub>3</sub>alkoxycarbonyl-C<sub>1</sub>-C<sub>3</sub> alkoxy-, C<sub>1</sub>-C<sub>3</sub>alkylamino-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-, C<sub>1</sub>-C<sub>3</sub>alkylamino-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>alkylamino-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkylaminocarbonyl-, C<sub>1</sub>-C<sub>3</sub>alkylaminocarbonyl-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>dialkylaminocarbonyl-, C<sub>1</sub>-C<sub>3</sub>dialkylaminocarbonyl-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkylcarbonylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-amino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-aminoC<sub>1</sub>-C<sub>3</sub>alkyl-, cyano and nitro, wherein said heterocyclyls are five or six membered heterocyclyls containing from one to three heteroatoms each independently selected from the group consisting of oxygen, nitrogen and sulphur, and wherein the aryl or heterocyclyl components may be optionally substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl, C<sub>1</sub>-C<sub>3</sub>haloalkyl, C<sub>1</sub>-C<sub>3</sub>alkoxy, C<sub>1</sub>-C<sub>3</sub> haloalkoxy, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, phenyl, cyano and nitro;

$R^7$  and  $R^8$  are independently selected from the group consisting of hydrogen, halogen,  $C_1$ - $C_3$  alkyl-,  $C_1$ - $C_3$  alkoxy-,  $C_2$ - $C_3$ alkenyl-,  $C_2$ - $C_3$ alkynyl-,  $C_1$ - $C_3$  haloalkyl- and  $C_1$ - $C_3$ haloalkoxy-;

5 and wherein  $R^5$  and  $R^9$  can together form a saturated or unsaturated 5- or 6-membered carbocyclic or heterocyclic ring, said heterocyclic ring comprising one or more nitrogen and/or oxygen heteroatoms, the 5- or 6-membered ring being optionally substituted by one or more  $R^{12}$ ; or

10  $R^6$  and  $R^9$  can together form a saturated or unsaturated 5- or 6-membered carbocyclic or heterocyclic ring, said heterocyclic ring comprising one or more heteroatoms selected from the group consisting of nitrogen, oxygen and  $S(O)_2$ , the 5- or 6-membered ring being optionally substituted by one or more  $R^{12}$ ; or

15  $R^6$  and  $R^8$  can together form a saturated or unsaturated 5- or 6-membered carbocyclic or heterocyclic ring, said heterocyclic ring comprising one or more nitrogen heteroatoms, the 5- or 6-membered ring being optionally substituted by one or more  $R^{13}$ ; and

20  $R^{11}$  is selected from the group consisting of halo-,  $C_1$ - $C_3$ alkyl,  $C_1$ - $C_3$  haloalkyl and  $C_1$ - $C_6$ alkoxy;

25  $R^{12}$  is selected from the group of hydrogen, cyano, halo-, oxy-,  $C_1$ - $C_3$ alkylS(O)p-,  $C_1$ - $C_3$  alkyl,  $C_2$ - $C_3$ alkenyl,  $C_2$ - $C_3$ alkynyl,  $C_1$ - $C_3$  alkoxy and  $C_1$ - $C_3$  haloalkyl;

$R^{13}$  is selected from the group of hydrogen, cyano, halo-,  $C_1$ - $C_3$ alkylS(O)p-,  $C_1$ - $C_3$  alkyl,  $C_2$ - $C_3$ alkenyl,  $C_2$ - $C_3$ alkynyl, morpholinyl- and  $C_1$ - $C_3$  haloalkyl;

30  $R^{14}$  is selected from the group consisting of hydrogen,  $C_1$ - $C_6$ alkyl,  $C_1$ - $C_6$ haloalkyl,  $C_1$ - $C_6$ alkoxy- $C_1$ - $C_6$ alkyl,  $C_1$ - $C_6$ haloalkoxy- $C_1$ - $C_6$ alkyl,  $C_1$ - $C_6$ alkoxy- $C_1$ - $C_6$ alkoxy- $C_1$ - $C_6$ alkyl,  $C_1$ - $C_6$ alkyl,  $C_2$ - $C_6$ alkenyl,  $C_2$ - $C_6$ haloalkenyl,  $C_2$ - $C_6$ alkynyl,  $C_2$ - $C_6$ haloalkynyl and  $C_3$ - $C_6$  cycloalkyl;

and

$p = 0, 1$  or  $2$ .

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Alkyl groups having a chain length of from 1 to 6 carbon atoms include, for example, methyl (Me,  $\text{CH}_3$ ), ethyl (Et,  $\text{C}_2\text{H}_5$ ), *n*-propyl, isopropyl (*i*-Pr), *n*-butyl (*n*-bu), iso-butyl (*i*-bu), sec-butyl and tert-butyl (*t*-butyl).

10

Alkenyl groups having a chain length of from 2 to 6 carbon atoms include, for example,  $-\text{CH}=\text{CH}_2$  (vinyl) and  $-\text{CH}_2-\text{CH}=\text{CH}_2$  (allyl).

Alkynyl groups having a chain length of from 2 to 6 carbon atoms include, for example,  $-\text{C}\equiv\text{CH}$  (ethynyl) and  $-\text{CH}_2-\text{C}\equiv\text{CH}$  (propargyl).

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Cycloalkyl groups include *c*-propyl (*c*-Pr), *c*-butyl (*c*-Bu), *c*-pentyl and *c*-hexyl.

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Halogen (halo) encompasses fluorine, chlorine, bromine or iodine. The same correspondingly applies to halogen in the context of other definitions, such as haloalkyl or halophenyl.

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Haloalkyl groups having a chain length of from 1 to 6 carbon atoms are, for example, fluoromethyl, difluoromethyl, trifluoromethyl, chloromethyl, dichloromethyl, trichloromethyl, 2,2,2-trifluoroethyl, 2-fluoroethyl, 2-chloroethyl, pentafluoroethyl, 1,1-difluoro-2,2,2-trichloroethyl, 2,2,3,3-tetrafluoroethyl and 2,2,2-trichloroethyl, heptafluoro-*n*-propyl and perfluoro-*n*-hexyl.

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Haloalkenyl radicals include alkenyl groups substituted one or more times by halogen, halogen being fluorine, chlorine, bromine or iodine and especially fluorine or chlorine, for example 2,2-difluoro-1-methylvinyl, 3-fluoropropenyl, 3-chloropropenyl, 3-bromopropenyl, 2,3,3-trifluoropropenyl, 2,3,3-trichloropropenyl and 4,4,4-

trifluorobut-2-en-1-yl. Preferred C<sub>2</sub>-C<sub>6</sub>alkenyl radicals substituted once, twice or three times by halogen are those having a chain length of from 2 to 5 carbon atoms.

Alkoxy groups preferably have a chain length of from 1 to 6 carbon atoms.

5 Alkoxy is, for example, methoxy, ethoxy, propoxy, isopropoxy, n-butoxy, isobutoxy, sec-butoxy or tert-butoxy or a pentyloxy or hexyloxy isomer, preferably methoxy and ethoxy. Alkylcarbonyl is preferably acetyl or propionyl. Alkoxycarbonyl is, for example, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, n-butoxycarbonyl, isobutoxycarbonyl, sec-butoxycarbonyl or tert-butoxycarbonyl,  
10 preferably methoxycarbonyl, ethoxycarbonyl or tert -butoxycarbonyl. It should also be appreciated that two alkoxy substituents present on the same carbon atom may be joined to form a spiro group. Thus, the methyl groups present in two methoxy substituents may be joined to form a spiro 1,3 dioxolane substituent, for example. Such a possibility is within the scope of the present invention.

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Haloalkoxy is, for example, fluoromethoxy, difluoromethoxy, trifluoromethoxy, 2,2,2-trifluoroethoxy, 1,1,2,2-tetrafluoroethoxy, 2-fluoroethoxy, 2-chloroethoxy, 2,2-difluoroethoxy or 2,2,2-trichloroethoxy, preferably difluoromethoxy, 2-chloroethoxy or trifluoromethoxy.

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Alkylthio (alkyl-S-) groups preferably have a chain length of from 1 to 6 carbon atoms. Alkylthio is, for example, methylthio, ethylthio, propylthio, isopropylthio, n-butylthio, isobutylthio, sec-butylthio or tert-butylthio, preferably methylthio or ethylthio.

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Alkylsulfinyl (alkyl-SO-) is, for example, methylsulfinyl, ethylsulfinyl, propylsulfinyl, isopropylsulfinyl, n-butylsulfinyl, isobutylsulfinyl, sec-butylsulfinyl or tert-butylsulfinyl, preferably methylsulfinyl or ethylsulfinyl.

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Alkylsulfonyl (alkyl-S(O)<sub>2</sub>-) is, for example, methylsulfonyl, ethylsulfonyl, propylsulfonyl, isopropylsulfonyl, n-butylsulfonyl, isobutylsulfonyl, sec-butylsulfonyl or tert-butylsulfonyl, preferably methylsulfonyl or ethylsulfonyl.

Alkylamino (alkyl-NH-) is, for example, methylamino, ethylamino, n-propylamino, isopropylamino or a butylamino isomer. Dialkylamino ((alkyl)<sub>2</sub>-N-) is, for example, dimethylamino, methylethylamino, diethylamino, n-propylmethylamino, dibutylamino or diisopropylamino. Preference is given to alkylamino groups having a  
5 chain length of from 1 to 4 carbon atoms.

Cycloalkylamino- or dicycloalkylamino- is for example cyclohexylamino or dicyclopropylamino.

10 Alkoxyalkyl groups preferably have from 1 to 6 carbon atoms. Alkoxyalkyl is, for example, methoxymethyl, methoxyethyl, ethoxymethyl, ethoxyethyl, n-propoxymethyl, n-propoxyethyl, isopropoxymethyl or isopropoxyethyl.

Alkylthioalkyl (alkyl-S-alkyl) groups preferably have from 1 to 6 carbon  
15 atoms. Alkylthioalkyl is, for example, methylthiomethyl, methylthioethyl, ethylthiomethyl, ethylthioethyl, n-propylthiomethyl, n-propylthioethyl, isopropylthiomethyl, isopropylthioethyl, butylthiomethyl, butylthioethyl or butylthiobutyl.

20 Cycloalkyl groups preferably have from 3 to 6 ring carbon atoms and may be substituted by one or more methyl groups; they are preferably unsubstituted, for example cyclopropyl (*c*-Pr), cyclobutyl (*c*-Bu), cyclopentyl (*c*-pentyl) or cyclohexyl (*c*-hexyl).

25 Aryl includes benzyl, phenyl, including phenyl as part of a substituent such as phenoxy, benzyl, benzyloxy, benzoyl, phenylthio, phenylalkyl, phenoxyalkyl or tosyl, may be in mono- or poly-substituted form, in which case the substituents may, as desired, be in the ortho-, meta- and/or para-position(s). The term also includes, for example, naphthalenyl.

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Heterocyclyl, includes, for example, isoxazolinyl, morpholinyl, tetrahydrofuryl and heteroaryl.

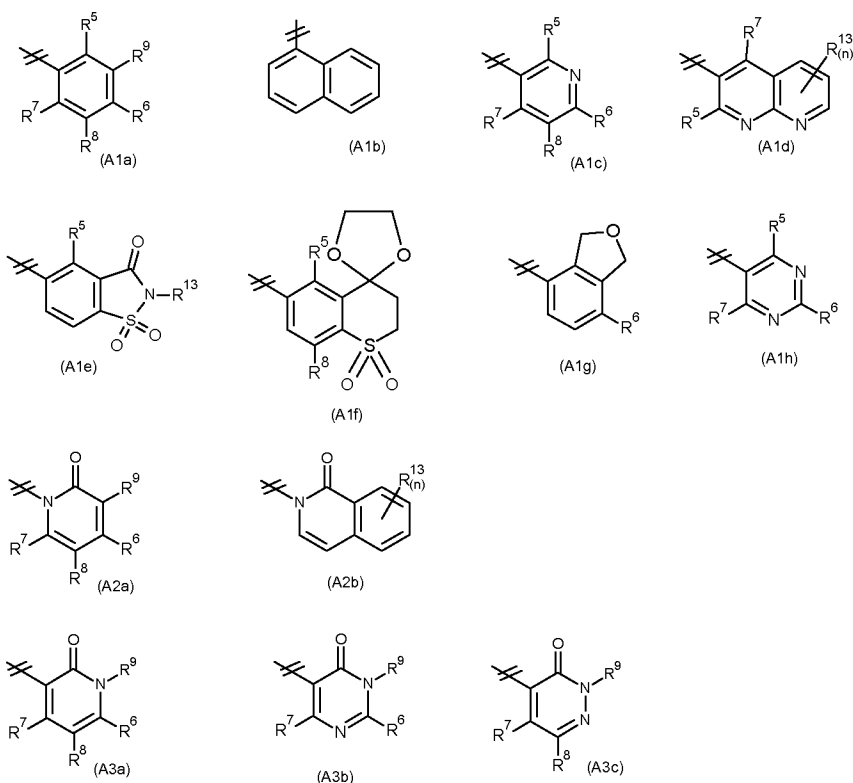
Heteroaryl, including heteroaryl as part of a substituent such as heteroaryloxy, means, for example, a five to ten (preferably five or six) member heteroaryl containing one to three heteroatoms, each independently selected from the group consisting of oxygen, nitrogen and sulphur. The term heteroaryl thus includes, for example, benzofuranyl, benzimidazolyl, indolyl, isobenzofuranyl, furanyl, thiophenyl, thiazolyl, oxazolyl, isoxazolyl, thiazolyl, pyrazolyl, isothiazolyl, pyridyl, pyridazinyl, pyrazinyl, pyrimidinyl, pyridonyl, triazolyl, naphthyridinyl and naphthyridinonyl. The heteroaryl component may be optionally mono or poly substituted as previously defined.

In one particular aspect of the invention,  $L^1$  is N,  $L^2$  is  $C-R^3$  and  $L^3$  is  $C-R^3$ . In another aspect of the invention,  $L^1$  is N,  $L^2$  is N and  $L^3$  is  $C-R^3$ . In another aspect of the invention,  $L^1$  is N,  $L^2$  is  $C-R^3$  and  $L^3$  is N. In another aspect of the invention,  $L^1$  is  $C-R^3$ ,  $L^2$  is N and  $L^3$  is  $C-R^3$ .

Preferably,  $R^1$  is selected from the group consisting of hydrogen,  $C_1$ - $C_6$ alkyl,  $C_2$ - $C_6$ alkenyl,  $C_2$ - $C_6$ alkynyl,  $C_3$ - $C_6$ cycloalkyl,  $C_1$ - $C_6$ haloalkyl,  $C_1$ - $C_6$ alkoxy- $C_1$ - $C_3$ alkyl and  $C_3$ - $C_6$ cycloalkyl- $C_1$ - $C_3$ alkyl. In a more preferred embodiment  $R^1$  is selected from the group consisting of  $C_1$ - $C_4$ alkyl, cyclopropyl, difluoromethyl, cyclopropylmethyl-, vinyl and propargyl with methyl being particularly preferred.

Preferably,  $R^3$  is hydrogen or methyl.

Preferably  $R^2$  is selected from the group consisting of A1a, A1b, A1c, A1d, A1e, A1f, A1g, A1h, A2a, A2b, A3a, A3b and A3c:



wherein  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{13}$  are as defined previously and  $n$  is 0, 1, 2 or

3.

More preferably,  $R^2$  is selected from the group consisting of phenyl (e.g. A1a),  
 5 3-pyridyl (e.g. A1c), N-pyridonyl (e.g. A2a) and 3-linked [1,8]naphthyridinyl (e.g.  
 A1d). Even more preferably  $R^2$  is phenyl (e.g. A1a).

$R^4$  is preferably hydrogen.

10  $R^5$  is preferably selected from the group consisting of hydroxyl, halo,  $C_1$ - $C_6$ alkyl,  $C_1$ - $C_6$ cycloalkyl,  $C_1$ - $C_6$ haloalkyl,  $C_1$ - $C_6$ alkenyl,  $C_1$ - $C_6$ alkynyl,  $C_1$ - $C_6$  alkoxy,  
 $C_1$ - $C_6$  alkoxy- $C_1$ - $C_3$ alkyl,  $C_1$ - $C_6$  alkoxy- $C_2$ - $C_6$ alkoxy,  $C_1$ - $C_6$  alkoxy- $C_2$ - $C_6$ alkoxy- $C_1$ - $C_3$ alkyl,  
 $C_1$ - $C_6$  haloalkoxy,  $C_1$ - $C_6$  haloalkoxy- $C_1$ - $C_3$ alkyl,  $C_1$ - $C_6$ alkyl- $S(O)_p$ -,  $C_1$ - $C_6$ haloalkyl- $S(O)_p$ -, aryl, aryloxy, heterocyclyl, heterocyclyl- $C_1$ - $C_3$ alkoxy- $C_1$ - $C_3$ alkyl,  
 15  $C_1$ - $C_3$ alkylamino-,  $C_1$ - $C_3$ dialkylamino-,  $C_1$ - $C_3$  alkylamino- $S(O)_p$ -,  $C_1$ - $C_3$  alkylamino- $S(O)_p$ - $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_3$  dialkylamino- $S(O)_p$ -,  $C_1$ - $C_3$  dialkylamino- $S(O)_p$ - $C_1$ - $C_3$ alkyl-,  
 $C_1$ - $C_3$ alkylaminocarbonyl-,  $C_1$ - $C_3$ dialkylaminocarbonyl-,  $C_1$ - $C_3$   
 dialkylaminocarbonyl- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_3$ alkylcarbonylamino-,  $C_1$ - $C_3$  alkyl- $S(O)_p$ -  
 amino-, cyano and nitro, wherein said heterocyclyls are five or six membered

heterocyclyls containing from one to three heteroatoms each independently selected from the group consisting of oxygen, nitrogen and sulphur, and wherein the aryl or heterocyclyl components may be optionally substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl, C<sub>1</sub>-C<sub>3</sub>haloalkyl, C<sub>1</sub>-C<sub>3</sub> alkoxy, C<sub>1</sub>-C<sub>3</sub> haloalkoxy, cyano and nitro.

The terms “aryl” and “heterocyclyl” are further defined above. However, in the context of R<sup>5</sup> phenyl, benzyl, isoxazoliny, pyrimidinyl, morpholinyl, furyl and thiophenyl are particularly preferred.

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More preferably, R<sup>5</sup> is selected from the group consisting of chloro, fluoro, methyl, trifluoromethyl, 2-fluoroethyl-, methoxyethoxymethyl-, trifluoromethoxymethyl-, methylS(O)<sub>p</sub>-, aryl, isoxazoliny, morpholinyl, methyl-S(O)<sub>p</sub>-dimethylamino-, cyano and nitro, wherein the aryl or heterocyclyl components may be optionally substituted by one or more substituents selected from the group consisting of chloro, methyl and trifluoromethyl. Most preferably, R<sup>5</sup> is selected from the group consisting of methyl, methyl-S(O)<sub>2</sub>- and trifluoromethyl.

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Preferably, R<sup>6</sup> is selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>6</sub>cycloalkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub> alkoxy-, C<sub>1</sub>-C<sub>6</sub>haloalkoxy, C<sub>2</sub>-C<sub>6</sub>alkenyloxy-, C<sub>3</sub>-C<sub>6</sub>cycloalkylC<sub>1</sub>-C<sub>3</sub>-alkyl-, C<sub>1</sub>-C<sub>6</sub> alkoxyC<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub> alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-, nitro and phenyl wherein the phenyl may be optionally substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl, C<sub>1</sub>-C<sub>3</sub>haloalkyl, C<sub>1</sub>-C<sub>3</sub> alkoxy, C<sub>1</sub>-C<sub>3</sub> haloalkoxy, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, phenyl, cyano and nitro. More preferably, R<sup>6</sup> is selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>2</sub>-C<sub>6</sub>alkenyl and C<sub>2</sub>-C<sub>6</sub>alkynyl.

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Preferably, R<sup>7</sup> is selected from the group consisting of hydrogen, halogen and C<sub>1</sub>-C<sub>3</sub> alkyl-.

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Preferably, R<sup>8</sup> is selected from the group consisting of hydrogen, halogen and C<sub>1</sub>-C<sub>3</sub> alkyl-.

Preferably, R<sup>9</sup> is selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>6</sub>cycloalkyl, C<sub>2</sub>-C<sub>6</sub>alkenyl, C<sub>2</sub>-C<sub>6</sub>haloalkenyl, C<sub>2</sub>-C<sub>6</sub>alkynyl, C<sub>1</sub>-C<sub>6</sub>alkoxy-, C<sub>1</sub>-C<sub>6</sub>haloalkoxy, C<sub>2</sub>-C<sub>6</sub>alkenyloxy-, C<sub>3</sub>-C<sub>6</sub>cycloalkylC<sub>1</sub>-C<sub>3</sub>-alkyl-, C<sub>1</sub>-C<sub>6</sub>alkoxyC<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-, nitro and phenyl wherein the phenyl may be optionally substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl, C<sub>1</sub>-C<sub>3</sub>haloalkyl, C<sub>1</sub>-C<sub>3</sub>alkoxy, C<sub>1</sub>-C<sub>3</sub>haloalkoxy, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, phenyl, cyano and nitro. More preferably, R<sup>9</sup> is selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>2</sub>-C<sub>6</sub>alkenyl and C<sub>2</sub>-C<sub>6</sub>alkynyl.

Preferably, R<sup>14</sup> is selected from the group consisting of hydrogen, methyl and halogen.

Compounds of Formula I may contain asymmetric centres and may be present as a single enantiomer, pairs of enantiomers in any proportion or, where more than one asymmetric centre are present, contain diastereoisomers in all possible ratios. Typically one of the enantiomers has enhanced biological activity compared to the other possibilities.

Similarly, where there are disubstituted alkenes, these may be present in E or Z form or as mixtures of both in any proportion.

Furthermore, compounds of Formula I may be in equilibrium with alternative hydroxyl tautomeric forms. It should be appreciated that all tautomeric forms (single tautomer or mixtures thereof), racemic mixtures and single isomers are included within the scope of the present invention.

The present invention also includes agronomically acceptable salts that the compounds of Formula I may form with amines (for example ammonia, dimethylamine and triethylamine), alkali metal and alkaline earth metal bases or quaternary ammonium bases. Among the alkali metal and alkaline earth metal hydroxides, oxides, alkoxides and hydrogen carbonates and carbonates used as salt

formers, emphasis is to be given to the hydroxides, alkoxides, oxides and carbonates of lithium, sodium, potassium, magnesium and calcium, but especially those of sodium, magnesium and calcium. The corresponding trimethylsulfonium salt may also be used.

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The compounds of Formula (I) according to the invention can be used as herbicides by themselves, but they are generally formulated into herbicidal compositions using formulation adjuvants, such as carriers, solvents and surface-active agents (SFAs). Thus, the present invention further provides a herbicidal composition comprising a herbicidal compound according to any one of the previous claims and an agriculturally acceptable formulation adjuvant. The composition can be in the form of concentrates which are diluted prior to use, although ready-to-use compositions can also be made. The final dilution is usually made with water, but can be made instead of, or in addition to, water, with, for example, liquid fertilisers, micronutrients, biological organisms, oil or solvents.

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The herbicidal compositions generally comprise from 0.1 to 99 % by weight, especially from 0.1 to 95 % by weight, compounds of Formula I and from 1 to 99.9 % by weight of a formulation adjuvant which preferably includes from 0 to 25 % by weight of a surface-active substance.

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The compositions can be chosen from a number of formulation types, many of which are known from the Manual on Development and Use of FAO Specifications for Plant Protection Products, 5th Edition, 1999. These include dustable powders (DP), soluble powders (SP), water soluble granules (SG), water dispersible granules (WG), wettable powders (WP), granules (GR) (slow or fast release), soluble concentrates (SL), oil miscible liquids (OL), ultra low volume liquids (UL), emulsifiable concentrates (EC), dispersible concentrates (DC), emulsions (both oil in water (EW) and water in oil (EO)), micro-emulsions (ME), suspension concentrates (SC), aerosols, capsule suspensions (CS) and seed treatment formulations. The formulation type chosen in any instance will depend upon the particular purpose envisaged and the physical, chemical and biological properties of the compound of Formula (I).

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Dustable powders (DP) may be prepared by mixing a compound of Formula (I) with one or more solid diluents (for example natural clays, kaolin, pyrophyllite, bentonite, alumina, montmorillonite, kieselguhr, chalk, diatomaceous earths, calcium phosphates, calcium and magnesium carbonates, sulphur, lime, flours, talc and other organic and inorganic solid carriers) and mechanically grinding the mixture to a fine powder.

Soluble powders (SP) may be prepared by mixing a compound of Formula (I) with one or more water-soluble inorganic salts (such as sodium bicarbonate, sodium carbonate or magnesium sulphate) or one or more water-soluble organic solids (such as a polysaccharide) and, optionally, one or more wetting agents, one or more dispersing agents or a mixture of said agents to improve water dispersibility/solubility. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water soluble granules (SG).

Wettable powders (WP) may be prepared by mixing a compound of Formula (I) with one or more solid diluents or carriers, one or more wetting agents and, preferably, one or more dispersing agents and, optionally, one or more suspending agents to facilitate the dispersion in liquids. The mixture is then ground to a fine powder. Similar compositions may also be granulated to form water dispersible granules (WG).

Granules (GR) may be formed either by granulating a mixture of a compound of Formula (I) and one or more powdered solid diluents or carriers, or from pre-formed blank granules by absorbing a compound of Formula (I) (or a solution thereof, in a suitable agent) in a porous granular material (such as pumice, attapulgitic clays, fuller's earth, kieselguhr, diatomaceous earths or ground corn cobs) or by adsorbing a compound of Formula (I) (or a solution thereof, in a suitable agent) on to a hard core material (such as sands, silicates, mineral carbonates, sulphates or phosphates) and drying if necessary. Agents which are commonly used to aid absorption or adsorption include solvents (such as aliphatic and aromatic petroleum solvents, alcohols, ethers, ketones and esters) and sticking agents (such as polyvinyl acetates, polyvinyl alcohols, dextrans, sugars and vegetable oils). One or more other additives may also be included in granules (for example an emulsifying agent, wetting agent or dispersing agent).

Dispersible Concentrates (DC) may be prepared by dissolving a compound of Formula (I) in water or an organic solvent, such as a ketone, alcohol or glycol ether. These solutions may contain a surface active agent (for example to improve water dilution or prevent crystallisation in a spray tank).

5           Emulsifiable concentrates (EC) or oil-in-water emulsions (EW) may be prepared by dissolving a compound of Formula (I) in an organic solvent (optionally containing one or more wetting agents, one or more emulsifying agents or a mixture of said agents). Suitable organic solvents for use in ECs include aromatic hydrocarbons (such as alkylbenzenes or alkylnaphthalenes, exemplified by  
10       SOLVESSO 100, SOLVESSO 150 and SOLVESSO 200; SOLVESSO is a Registered Trade Mark), ketones (such as cyclohexanone or methylcyclohexanone) and alcohols (such as benzyl alcohol, furfuryl alcohol or butanol), N-alkylpyrrolidones (such as N-methylpyrrolidone or N-octylpyrrolidone), dimethyl amides of fatty acids (such as C<sub>8</sub>-C<sub>10</sub> fatty acid dimethylamide) and chlorinated hydrocarbons. An EC product may  
15       spontaneously emulsify on addition to water, to produce an emulsion with sufficient stability to allow spray application through appropriate equipment.

Preparation of an EW involves obtaining a compound of Formula (I) either as a liquid (if it is not a liquid at room temperature, it may be melted at a reasonable temperature, typically below 70°C) or in solution (by dissolving it in an appropriate  
20       solvent) and then emulsifying the resultant liquid or solution into water containing one or more SFAs, under high shear, to produce an emulsion. Suitable solvents for use in EWs include vegetable oils, chlorinated hydrocarbons (such as chlorobenzenes), aromatic solvents (such as alkylbenzenes or alkylnaphthalenes) and other appropriate organic solvents which have a low solubility in water.

25           Microemulsions (ME) may be prepared by mixing water with a blend of one or more solvents with one or more SFAs, to produce spontaneously a thermodynamically stable isotropic liquid formulation. A compound of Formula (I) is present initially in either the water or the solvent/SFA blend. Suitable solvents for use in MEs include those hereinbefore described for use in in ECs or in EWs. An ME  
30       may be either an oil-in-water or a water-in-oil system (which system is present may be determined by conductivity measurements) and may be suitable for mixing water-soluble and oil-soluble pesticides in the same formulation. An ME is suitable for

dilution into water, either remaining as a microemulsion or forming a conventional oil-in-water emulsion.

Suspension concentrates (SC) may comprise aqueous or non-aqueous suspensions of finely divided insoluble solid particles of a compound of Formula (I).

5 SCs may be prepared by ball or bead milling the solid compound of Formula (I) in a suitable medium, optionally with one or more dispersing agents, to produce a fine particle suspension of the compound. One or more wetting agents may be included in the composition and a suspending agent may be included to reduce the rate at which the particles settle. Alternatively, a compound of Formula (I) may be dry milled and  
10 added to water, containing agents hereinbefore described, to produce the desired end product.

Aerosol formulations comprise a compound of Formula (I) and a suitable propellant (for example *n*-butane). A compound of Formula (I) may also be dissolved or dispersed in a suitable medium (for example water or a water miscible liquid, such  
15 as *n*-propanol) to provide compositions for use in non-pressurised, hand-actuated spray pumps.

Capsule suspensions (CS) may be prepared in a manner similar to the preparation of EW formulations but with an additional polymerisation stage such that an aqueous dispersion of oil droplets is obtained, in which each oil droplet is  
20 encapsulated by a polymeric shell and contains a compound of Formula (I) and, optionally, a carrier or diluent therefor. The polymeric shell may be produced by either an interfacial polycondensation reaction or by a coacervation procedure. The compositions may provide for controlled release of the compound of Formula (I) and they may be used for seed treatment. A compound of Formula (I) may also be  
25 formulated in a biodegradable polymeric matrix to provide a slow, controlled release of the compound.

The composition may include one or more additives to improve the biological performance of the composition, for example by improving wetting, retention or distribution on surfaces; resistance to rain on treated surfaces; or uptake or mobility of  
30 a compound of Formula (I). Such additives include surface active agents (SFAs), spray additives based on oils, for example certain mineral oils or natural plant oils

(such as soy bean and rape seed oil), and blends of these with other bio-enhancing adjuvants (ingredients which may aid or modify the action of a compound of Formula (I)).

Wetting agents, dispersing agents and emulsifying agents may be SFAs of the cationic, anionic, amphoteric or non-ionic type.

Suitable SFAs of the cationic type include quaternary ammonium compounds (for example cetyltrimethyl ammonium bromide), imidazolines and amine salts.

Suitable anionic SFAs include alkali metals salts of fatty acids, salts of aliphatic monoesters of sulphuric acid (for example sodium lauryl sulphate), salts of sulphonated aromatic compounds (for example sodium dodecylbenzenesulphonate, calcium dodecylbenzenesulphonate, butylnaphthalene sulphonate and mixtures of sodium di-*isopropyl*- and tri-*isopropyl*-naphthalene sulphonates), ether sulphates, alcohol ether sulphates (for example sodium laureth-3-sulphate), ether carboxylates (for example sodium laureth-3-carboxylate), phosphate esters (products from the reaction between one or more fatty alcohols and phosphoric acid (predominately mono-esters) or phosphorus pentoxide (predominately di-esters), for example the reaction between lauryl alcohol and tetraphosphoric acid; additionally these products may be ethoxylated), sulphosuccinamates, paraffin or olefine sulphonates, taurates and lignosulphonates.

Suitable SFAs of the amphoteric type include betaines, propionates and glycines.

Suitable SFAs of the non-ionic type include condensation products of alkylene oxides, such as ethylene oxide, propylene oxide, butylene oxide or mixtures thereof, with fatty alcohols (such as oleyl alcohol or cetyl alcohol) or with alkylphenols (such as octylphenol, nonylphenol or octylcresol); partial esters derived from long chain fatty acids or hexitol anhydrides; condensation products of said partial esters with ethylene oxide; block polymers (comprising ethylene oxide and propylene oxide); alkanolamides; simple esters (for example fatty acid polyethylene glycol esters); amine oxides (for example lauryl dimethyl amine oxide); and lecithins.

Suitable suspending agents include hydrophilic colloids (such as polysaccharides, polyvinylpyrrolidone or sodium carboxymethylcellulose) and swelling clays (such as bentonite or attapulgate).

- 5 The composition of the present may further comprise at least one additional pesticide. For example, the compounds according to the invention can also be used in combination with other herbicides or plant growth regulators. In a preferred embodiment the additional pesticide is a herbicide and/or herbicide safener. Examples of such mixtures are (in which 'I' represents a compound of Formula I). I + acetochlor,
- 10 I + acifluorfen, I + acifluorfen-sodium, I + aclonifen, I + acrolein, I + alachlor, I + alloxymid, I + ametryn, I + amicarbazone, I + amidosulfuron, I + aminopyralid, I + amitrole, I + anilofos, I + asulam, I + atrazine, I + azafenidin, I + azimsulfuron, I + BCPC, I + beflubutamid, I + benazolin, I + bencarbazone, I + benfluralin, I + benfuresate, I + bensulfuron, I + bensulfuron-methyl, I + bensulide, I + bentazone, I +
- 15 benzfendizone, I + benzobicyclon, I + benzofenap, I + bicyclopyrone, I + bifenox, I + bilanafos, I + bispyribac, I + bispyribac-sodium, I + borax, I + bromacil, I + bromobutide, I + bromoxynil, I + butachlor, I + butamifos, I + butralin, I + butroxydim, I + butylate, I + cacodylic acid, I + calcium chlorate, I + cafenstrole, I + carbetamide, I + carfentrazone, I + carfentrazone-ethyl, I + chlorflurenol, I +
- 20 chlorflurenol-methyl, I + chloridazon, I + chlorimuron, I + chlorimuron-ethyl, I + chloroacetic acid, I + chlorotoluron, I + chlorpropham, I + chlorsulfuron, I + chlorthal, I + chlorthal-dimethyl, I + cinidon-ethyl, I + cinmethylin, I + cinosulfuron, I + cisanilide, I + clethodim, I + clodinafop, I + clodinafop-propargyl, I + clomazone, I + clomeprop, I + clopyralid, I + cloransulam, I + cloransulam-methyl, I + cyanazine, I +
- 25 cycloate, I + cyclosulfamuron, I + cycloxydim, I + cyhalofop, I + cyhalofop-butyl, I + 2,4-D, I + daimuron, I + dalapon, I + dazomet, I + 2,4-DB, I + I + desmedipham, I + dicamba, I + dichlobenil, I + dichlorprop, I + dichlorprop-P, I + diclofop, I + diclofop-methyl, I + diclosulam, I + difenzoquat, I + difenzoquat metilsulfate, I + diflufenican, I + diflufenzopyr, I + dimefuron, I + dimepiperate, I + dimethachlor, I +
- 30 dimethametryn, I + dimethenamid, I + dimethenamid-P, I + dimethipin, I + dimethylarsinic acid, I + dinitramine, I + dinoterb, I + diphenamid, I + dipropetryn, I + diquat, I + diquat dibromide, I + dithiopyr, I + diuron, I + endothal, I + EPTC, I +

esprocarb, I + ethalfluralin, I + ethametsulfuron, I + ethametsulfuron-methyl, I +  
 ethephon, I + ethofumesate, I + ethoxyfen, I + ethoxysulfuron, I + etobenzanid, I +  
 fenoxaprop-P, I + fenoxaprop-P-ethyl, I + fentrazamide, I + ferrous sulfate, I +  
 flamprop-M, I + flazasulfuron, I + florasulam, I + fluazifop, I + fluazifop-butyl, I +  
 5 fluazifop-P, I + fluazifop-P-butyl, I + fluazolate, I + flucarbazone, I + flucarbazone-  
 sodium, I + flucetosulfuron, I + fluchloralin, I + flufenacet, I + flufenpyr, I +  
 flufenpyr-ethyl, I + flumetralin, I + flumetsulam, I + flumiclorac, I + flumiclorac-  
 pentyl, I + flumioxazin, I + flumipropin, I + fluometuron, I + fluoroglycofen, I +  
 fluoroglycofen-ethyl, I + fluoxaprop, I + flupoxam, I + flupropacil, I + flupropanate, I  
 10 + flupyrsulfuron, I + flupyrsulfuron-methyl-sodium, I + flurenol, I + fluridone, I +  
 flurochloridone, I + fluroxypyr, I + flurtamone, I + fluthiacet, I + fluthiacet-methyl, I  
 + fomesafen, I + foramsulfuron, I + fosamine, I + glufosinate, I + glufosinate-  
 ammonium, I + glyphosate, I + halauxifen, I + halosulfuron, I + halosulfuron-methyl,  
 I + haloxyfop, I + haloxyfop-P, I + hexazinone, I + imazamethabenz, I +  
 15 imazamethabenz-methyl, I + imazamox, I + imazapic, I + imazapyr, I + imazaquin, I  
 + imazethapyr, I + imazosulfuron, I + indanofan, I + indaziflam, I + iodomethane, I +  
 iodosulfuron, I + iodosulfuron-methyl-sodium, I + ioxynil, I + isoproturon, I +  
 isouron, I + isoxaben, I + isoxachlortole, I + isoxaflutole, I + isoxapyrifop, I +  
 karbutilate, I + lactofen, I + lenacil, I + linuron, I + mecoprop, I + mecoprop-P, I +  
 20 mefenacet, I + mefluidide, I + mesosulfuron, I + mesosulfuron-methyl, I + mesotrione,  
 I + metam, I + metamifop, I + metamidron, I + metazachlor, I + methabenzthiazuron, I  
 + methazole, I + methylarsonic acid, I + methyldymron, I + methyl isothiocyanate, I +  
 metolachlor, I + S-metolachlor, I + metosulam, I + metoxuron, I + metribuzin, I +  
 metsulfuron, I + metsulfuron-methyl, I + molinate, I + monolinuron, I + naproanilide,  
 25 I + napropamide, I + naptalam, I + neburon, I + nicosulfuron, I + n-methyl glyphosate,  
 I + nonanoic acid, I + norflurazon, I + oleic acid (fatty acids), I + orbencarb, I +  
 orthosulfamuron, I + oryzalin, I + oxadiargyl, I + oxadiazon, I + oxasulfuron, I +  
 oxaziclomefone, I + oxyfluorfen, I + paraquat, I + paraquat dichloride, I + pebulate, I  
 + pendimethalin, I + penoxsulam, I + pentachlorophenol, I + pentanochlor, I +  
 30 pentoxazone, I + pethoxamid, I + phenmedipham, I + picloram, I + picolinafen, I +  
 pinoxaden, I + piperophos, I + pretilachlor, I + primisulfuron, I + primisulfuron-  
 methyl, I + prodiamine, I + profoxydim, I + prohexadione-calcium, I + prometon, I +  
 prometryn, I + propachlor, I + propanil, I + propaquizafop, I + propazine, I + propham,

I + propisochlor, I + propoxycarbazone, I + propoxycarbazone-sodium, I + propyzamide, I + prosulfocarb, I + prosulfuron, I + pyraclonil, I + pyraflufen, I + pyraflufen-ethyl, I + pyrasulfotole, I + pyrazolynate, I + pyrazosulfuron, I + pyrazosulfuron-ethyl, I + pyrazoxyfen, I + pyribenzoxim, I + pyributicarb, I + pyridafol, I + pyridate, I + pyriftalid, I + pyriminobac, I + pyriminobac-methyl, I + pyrimisulfan, I + pyrithiobac, I + pyrithiobac-sodium, I + pyroxasulfone, I + pyroxsulam, I + quinclorac, I + quinmerac, I + quinclamine, I + quizalofop, I + quizalofop-P, I + rimsulfuron, I + saflufenacil, I + sethoxydim, I + siduron, I + simazine, I + simetryn, I + sodium chlorate, I + sulcotrione, I + sulfentrazone, I + sulfometuron, I + sulfometuron-methyl, I + sulfosate, I + sulfosulfuron, I + sulfuric acid, I + tebuthiuron, I + tefuryltrione, I + tembotrione, I + tepraloxym, I + terbacil, I + terbutryn, I + terbuthylazine, I + terbutryn, I + thenylchlor, I + thiazopyr, I + thifensulfuron, I + thienecarbazone, I + thifensulfuron-methyl, I + thiobencarb, I + topramezone, I + tralkoxydim, I + tri-allate, I + triasulfuron, I + triaziflam, I + tribenuron, I + tribenuron-methyl, I + triclopyr, I + trietazine, I + trifloxysulfuron, I + trifloxysulfuron-sodium, I + trifluralin, I + triflusulfuron, I + triflusulfuron-methyl, I + trihydroxytriazine, I + trinexapac-ethyl, I + tritosulfuron, I + [3-[2-chloro-4-fluoro-5-(1-methyl-6-trifluoromethyl-2,4-dioxo-1,2,3,4-tetrahydropyrimidin-3-yl)phenoxy]-2-pyridyloxy]acetic acid ethyl ester (CAS RN 353292-31-6). The compounds of the present invention may also be combined with herbicidal compounds disclosed in WO06/024820 and/or WO07/096576.

The mixing partners of the compound of Formula I may also be in the form of esters or salts, as mentioned e.g. in The Pesticide Manual, Fourteenth Edition, British Crop Protection Council, 2006.

The compound of Formula I can also be used in mixtures with other agrochemicals such as fungicides, nematocides or insecticides, examples of which are given in The Pesticide Manual.

The mixing ratio of the compound of Formula I to the mixing partner is preferably from 1: 100 to 1000:1.

The mixtures can advantageously be used in the above-mentioned formulations (in which case "active ingredient" relates to the respective mixture of compound of Formula I with the mixing partner).

The compounds of Formula I according to the invention can also be used in combination with one or more safeners. Likewise, mixtures of a compound of Formula I according to the invention with one or more further herbicides can also be used in combination with one or more safeners. The safeners can be AD 67 (MON 4660), benoxacor, cloquintocet-mexyl, cyprosulfamide (CAS RN 221667-31-8), dichlormid, fenchlorazole-ethyl, fenclorim, fluxofenim, furilazole and the corresponding R isomer, isoxadifen-ethyl, mefenpyr-diethyl, oxabetrinil, N-isopropyl-4-(2-methoxy-benzoylsulfamoyl)-benzamide (CAS RN 221668-34-4). Other possibilities include safener compounds disclosed in, for example, EP0365484 e.g. N-(2-methoxybenzoyl)-4-[(methylaminocarbonyl)amino]benzenesulfonamide.

Particularly preferred are mixtures of a compound of Formula I with cyprosulfamide, isoxadifen-ethyl, cloquintocet-mexyl and/or N-(2-methoxybenzoyl)-4-[(methylaminocarbonyl)amino]benzenesulfonamide.

The safeners of the compound of Formula I may also be in the form of esters or salts, as mentioned e.g. in The Pesticide Manual, 14<sup>th</sup> Edition (BCPC), 2006. The reference to cloquintocet-mexyl also applies to a lithium, sodium, potassium, calcium, magnesium, aluminium, iron, ammonium, quaternary ammonium, sulfonium or phosphonium salt thereof as disclosed in WO 02/34048, and the reference to fenchlorazole-ethyl also applies to fenchlorazole, etc.

Preferably the mixing ratio of compound of Formula I to safener is from 100:1 to 1:10, especially from 20:1 to 1:1.

The mixtures can advantageously be used in the above-mentioned formulations (in which case "active ingredient" relates to the respective mixture of compound of Formula I with the safener).

The present invention still further provides a method of selectively controlling weeds at a locus comprising crop plants and weeds, wherein the method comprises application to the locus of a weed controlling amount of a composition according to the present invention. 'Controlling' means killing, reducing or retarding growth or preventing or reducing germination. Generally the plants to be controlled are unwanted plants (weeds). 'Locus' means the area in which the plants are growing or will grow.

The rates of application of compounds of Formula I may vary within wide limits and depend on the nature of the soil, the method of application (pre- or post-emergence; seed dressing; application to the seed furrow; no tillage application etc.), the crop plant, the weed(s) to be controlled, the prevailing climatic conditions, and other factors governed by the method of application, the time of application and the target crop. The compounds of Formula I according to the invention are generally applied at a rate of from 10 to 2000 g/ha, especially from 50 to 1000 g/ha.

The application is generally made by spraying the composition, typically by tractor mounted sprayer for large areas, but other methods such as dusting (for powders), drip or drench can also be used.

Useful plants in which the composition according to the invention can be used include crops such as cereals, for example barley and wheat, cotton, oilseed rape, sunflower, maize, rice, soybeans, sugar beet, sugar cane and turf. Maize, wheat and barley are particularly preferred.

Crop plants can also include trees, such as fruit trees, palm trees, coconut trees or other nuts. Also included are vines such as grapes, fruit bushes, fruit plants and vegetables.

Crops are to be understood as also including those crops which have been rendered tolerant to herbicides or classes of herbicides (e.g. ALS-, GS-, EPSPS-, PPO-, ACCase- and HPPD-inhibitors) by conventional methods of breeding or by genetic engineering. An example of a crop that has been rendered tolerant to imidazolinones, e.g. imazamox, by conventional methods of breeding is Clearfield® summer rape (canola). Examples of crops that have been rendered tolerant to herbicides by genetic engineering methods include e.g. glyphosate- and glufosinate-resistant maize varieties commercially available under the trade names RoundupReady® and LibertyLink®.

In a preferred embodiment the crop plant is rendered tolerant to HPPD-inhibitors via genetic engineering. Methods of rendering crop plants tolerant to HPPD-inhibitors are known, for example from WO0246387. Thus in an even more preferred embodiment the crop plant is transgenic in respect of a polynucleotide comprising a DNA sequence which encodes an HPPD-inhibitor resistant HPPD enzyme derived from a bacterium, more particularly from *Pseudomonas fluorescens* or *Shewanella colwelliana*, or from a plant, more particularly, derived from a monocot plant or, yet

more particularly, from a barley, maize, wheat, rice, *Brachiaria*, *Chenchrus*, *Lolium*, *Festuca*, *Setaria*, *Eleusine*, *Sorghum* or *Avena* species.

Crops are also to be understood as being those which have been rendered resistant to harmful insects by genetic engineering methods, for example Bt maize (resistant to European corn borer), Bt cotton (resistant to cotton boll weevil) and also Bt potatoes (resistant to Colorado beetle). Examples of Bt maize are the Bt 176 maize hybrids of NK® (Syngenta Seeds). The Bt toxin is a protein that is formed naturally by *Bacillus thuringiensis* soil bacteria. Examples of toxins, or transgenic plants able to synthesise such toxins, are described in EP-A-451 878, EP-A-374 753, WO 93/07278, WO 95/34656, WO 03/052073 and EP-A-427 529. Examples of transgenic plants comprising one or more genes that code for an insecticidal resistance and express one or more toxins are KnockOut® (maize), Yield Gard® (maize), NuCOTIN33B® (cotton), Bollgard® (cotton), NewLeaf® (potatoes), NatureGard® and Protexcta®. Plant crops or seed material thereof can be both resistant to herbicides and, at the same time, resistant to insect feeding ("stacked" transgenic events). For example, seed can have the ability to express an insecticidal Cry3 protein while at the same time being tolerant to glyphosate.

Crops are also to be understood to include those which are obtained by conventional methods of breeding or genetic engineering and contain so-called output traits (e.g. improved storage stability, higher nutritional value and improved flavour).

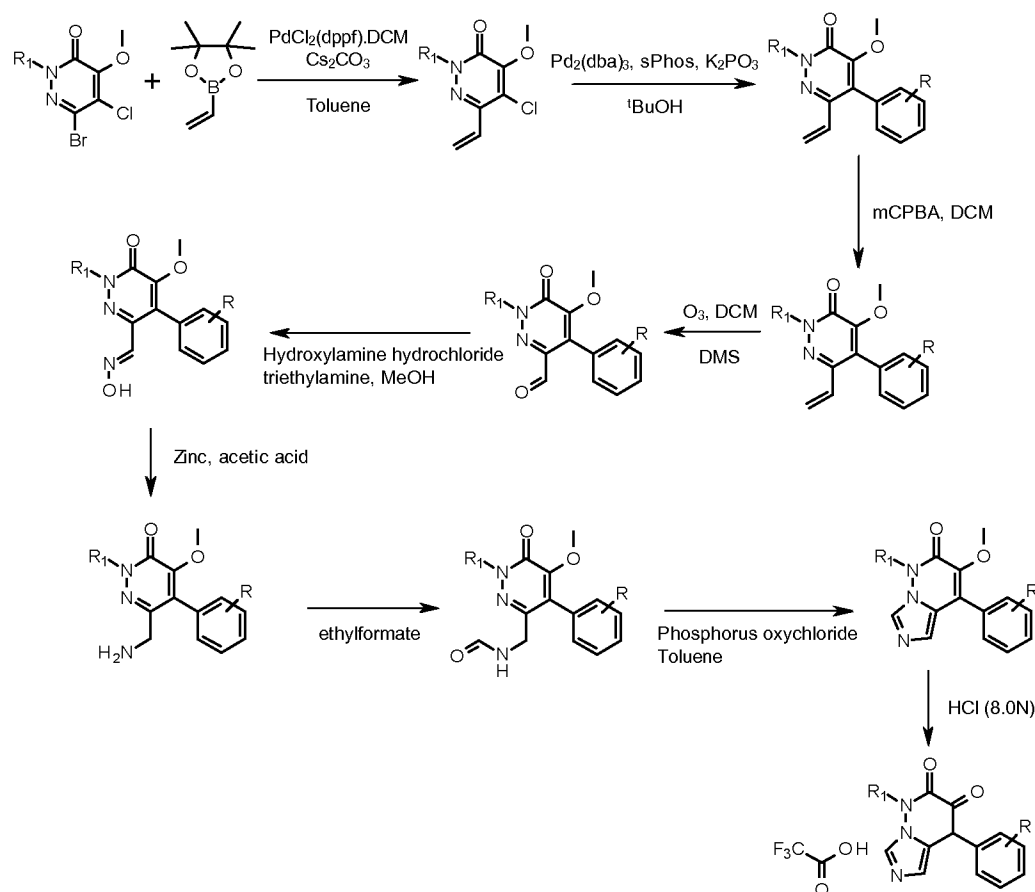
Other useful plants include turf grass for example in golf-courses, lawns, parks and roadsides, or grown commercially for sod, and ornamental plants such as flowers or bushes.

The compositions can be used to control unwanted plants (collectively, 'weeds'). The weeds to be controlled may be both monocotyledonous species, for example *Agrostis*, *Alopecurus*, *Avena*, *Brachiaria*, *Bromus*, *Cenchrus*, *Cyperus*, *Digitaria*, *Echinochloa*, *Eleusine*, *Lolium*, *Monochoria*, *Rottboellia*, *Sagittaria*, *Scirpus*, *Setaria* and *Sorghum*, and dicotyledonous species, for example *Abutilon*, *Amaranthus*, *Ambrosia*, *Chenopodium*, *Chrysanthemum*, *Conyza*, *Galium*, *Ipomoea*, *Nasturtium*, *Sida*, *Sinapis*, *Solanum*, *Stellaria*, *Veronica*, *Viola* and *Xanthium*. Weeds can also include plants which may be considered crop plants but which are growing outside a crop area ('escapes'), or which grow from seed left over from a previous planting of a

different crop ('volunteers'). Such volunteers or escapes may be tolerant to certain other herbicides.

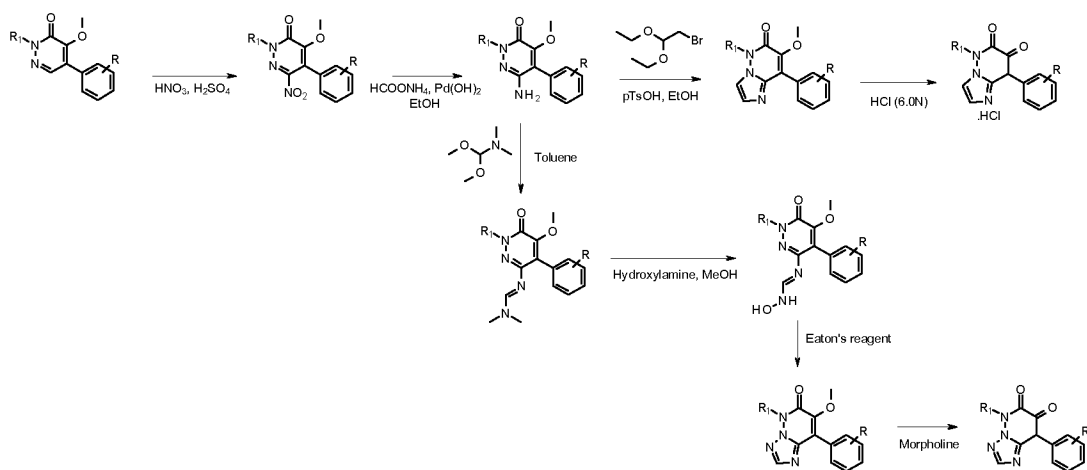
The compounds of the present invention can be prepared according to the following schemes.

### Scheme 1.



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### Scheme 2



## Scheme 3

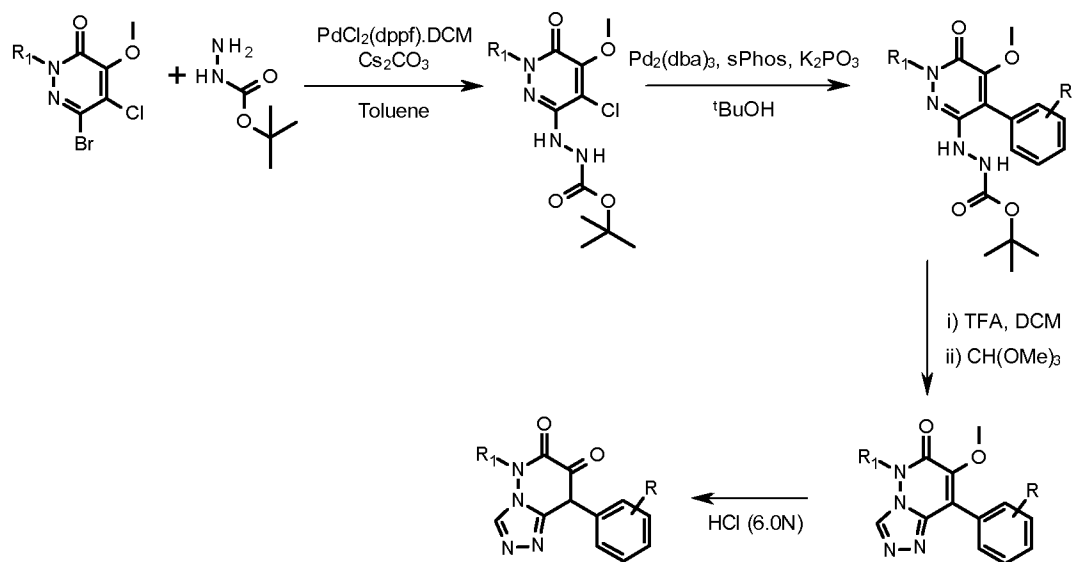
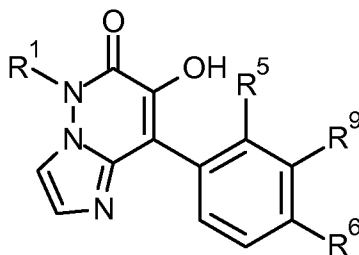
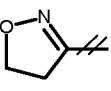
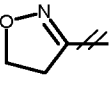
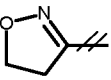
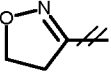
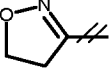
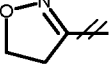
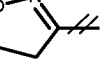
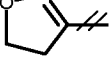
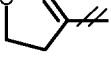
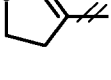


**TABLE C1** – Examples of herbicidal compounds of the present invention.

| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                      | NMR                                                                                                                                                                                                         |
|-------|----------------|---------------------|---------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.001 | Me             | Cl                  | Cl                  | H                                                                                   |                                                                                                                                                                                                             |
| 1.002 | Me             | Cl                  | -CF <sub>3</sub>    | H                                                                                   |                                                                                                                                                                                                             |
| 1.003 | Me             | Cl                  | -SO <sub>2</sub> Me | H                                                                                   |                                                                                                                                                                                                             |
| 1.004 | Me             | -SO <sub>2</sub> Me | Cl                  | H                                                                                   |                                                                                                                                                                                                             |
| 1.005 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H                                                                                   | CDCl <sub>3</sub> : δ ppm = 3.16 (3 H, s) 3.96 (3 H, s) 7.33 (1 H, d, <i>J</i> =1.1 Hz) 7.39 (1 H, d, <i>J</i> =1.1 Hz) 7.63 (1 H, d, <i>J</i> =8.1 Hz) 8.01 (1 H, dd, <i>J</i> =7.8, 1.3 Hz) 8.47 (1 H, s) |
| 1.006 | Me             | -SO <sub>2</sub> Me | -SO <sub>2</sub> Me | H                                                                                   |                                                                                                                                                                                                             |
| 1.007 | Me             | Me                  | Cl                  | H                                                                                   |                                                                                                                                                                                                             |
| 1.008 | Me             | Me                  | -CF <sub>3</sub>    | H                                                                                   |                                                                                                                                                                                                             |
| 1.009 | Me             | Me                  | -SO <sub>2</sub> Me | H                                                                                   |                                                                                                                                                                                                             |
| 1.010 | Me             | -CF <sub>3</sub>    | Cl                  | H                                                                                   |                                                                                                                                                                                                             |
| 1.011 | Me             | -CF <sub>3</sub>    | -CF <sub>3</sub>    | H                                                                                   |                                                                                                                                                                                                             |
| 1.012 | Me             | -CF <sub>3</sub>    | -SO <sub>2</sub> Me | H                                                                                   |                                                                                                                                                                                                             |
| 1.013 | Me             | Cl                  | Cl                  |  |                                                                                                                                                                                                             |
| 1.014 | Me             | Cl                  | -CF <sub>3</sub>    |  |                                                                                                                                                                                                             |

| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                      | NMR |
|-------|----------------|---------------------|---------------------|-------------------------------------------------------------------------------------|-----|
| 1.015 | Me             | Cl                  | -SO <sub>2</sub> Me |    |     |
| 1.016 | Me             | -SO <sub>2</sub> Me | Cl                  |    |     |
| 1.017 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    |    |     |
| 1.018 | Me             | -SO <sub>2</sub> Me | -SO <sub>2</sub> Me |   |     |
| 1.019 | Me             | Me                  | Cl                  |  |     |
| 1.020 | Me             | Me                  | -CF <sub>3</sub>    |  |     |
| 1.021 | Me             | Me                  | -SO <sub>2</sub> Me |  |     |
| 1.022 | Me             | -CF <sub>3</sub>    | Cl                  |  |     |

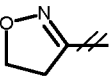
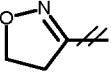
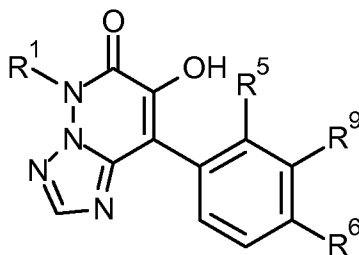
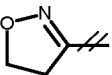
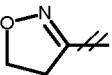
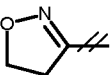
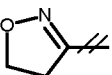
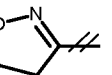
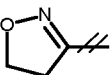
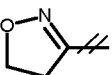
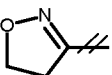
| CMP                 | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                    | NMR                                                                                                                                                                                          |
|---------------------|----------------|---------------------|---------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.023               | Me             | -CF <sub>3</sub>    | -CF <sub>3</sub>    |  |                                                                                                                                                                                              |
| 1.024               | Me             | -CF <sub>3</sub>    | -SO <sub>2</sub> Me |  |                                                                                                                                                                                              |
| 1.025               | Me             | -NO <sub>2</sub>    | -SO <sub>2</sub> Me | H                                                                                 |                                                                                                                                                                                              |
| 1.026               | Me             | -Cl                 | -SO <sub>2</sub> Me | H                                                                                 |                                                                                                                                                                                              |
| 1.027               | Me             | -Cl                 | -SO <sub>2</sub> Me | CF <sub>3</sub> CH <sub>2</sub> OCH <sub>2</sub> -                                |                                                                                                                                                                                              |
| 1.028               | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H                                                                                 |                                                                                                                                                                                              |
| 1.029<br>(HCl salt) | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H                                                                                 | CDCl <sub>3</sub> : δ ppm = 3.12 (3 H, s)<br>4.05 (3 H, s) 7.59 (1 H, d, <i>J</i> =2.1 Hz)<br>7.86 (1 H, d, <i>J</i> =2.1 Hz) 7.89 (1 H, d, <i>J</i> =8.1 Hz) 8.12 (1 H, s)<br>8.46 (1 H, s) |

**TABLE C2** – Examples of herbicidal compounds of the present invention.

| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup> | NMR                                                                                                                                                       |
|-------|----------------|---------------------|---------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.001 | Me             | Cl                  | Cl                  | H              |                                                                                                                                                           |
| 2.002 | Me             | Cl                  | -CF <sub>3</sub>    | H              |                                                                                                                                                           |
| 2.003 | Me             | Cl                  | -SO <sub>2</sub> Me | H              |                                                                                                                                                           |
| 2.004 | Me             | -SO <sub>2</sub> Me | Cl                  | H              |                                                                                                                                                           |
| 2.005 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H              | CDCl <sub>3</sub> : δ ppm = 3.19 (3 H, s)<br>4.13 (3 H, s) 7.63 (1 H, d, <i>J</i> =7.9 Hz)<br>7.97 (1 H, s) 8.03 (1 H, d, <i>J</i> =7.0 Hz) 8.48 (1 H, s) |
| 2.006 | Me             | -SO <sub>2</sub> Me | -SO <sub>2</sub> Me | H              |                                                                                                                                                           |
| 2.007 | Me             | Me                  | Cl                  | H              |                                                                                                                                                           |
| 2.008 | Me             | Me                  | -CF <sub>3</sub>    | H              |                                                                                                                                                           |
| 2.009 | Me             | Me                  | -SO <sub>2</sub> Me | H              |                                                                                                                                                           |
| 2.010 | Me             | -CF <sub>3</sub>    | Cl                  | H              |                                                                                                                                                           |
| 2.011 | Me             | -CF <sub>3</sub>    | -CF <sub>3</sub>    | H              |                                                                                                                                                           |
| 2.012 | Me             | -CF <sub>3</sub>    | -SO <sub>2</sub> Me | H              |                                                                                                                                                           |
| 2.013 | Me             | Cl                  | Cl                  |                |                                                                                                                                                           |
| 2.014 | Me             | Cl                  | -CF <sub>3</sub>    |                |                                                                                                                                                           |

| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                      | NMR |
|-------|----------------|---------------------|---------------------|-------------------------------------------------------------------------------------|-----|
| 2.015 | Me             | Cl                  | -SO <sub>2</sub> Me |    |     |
| 2.016 | Me             | -SO <sub>2</sub> Me | Cl                  |    |     |
| 2.017 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    |    |     |
| 2.018 | Me             | -SO <sub>2</sub> Me | -SO <sub>2</sub> Me |   |     |
| 2.019 | Me             | Me                  | Cl                  |  |     |
| 2.020 | Me             | Me                  | -CF <sub>3</sub>    |  |     |
| 2.021 | Me             | Me                  | -SO <sub>2</sub> Me |  |     |
| 2.022 | Me             | -CF <sub>3</sub>    | Cl                  |  |     |

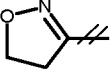
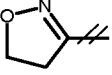
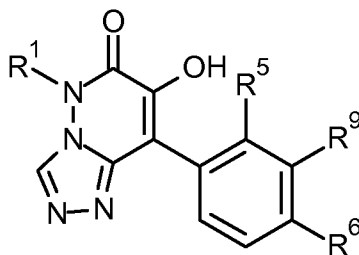
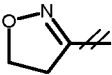
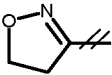
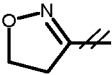
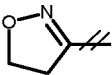
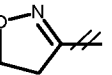
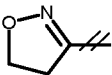
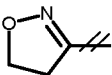
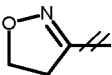
| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                    | NMR |
|-------|----------------|---------------------|---------------------|-----------------------------------------------------------------------------------|-----|
| 2.023 | Me             | -CF <sub>3</sub>    | -CF <sub>3</sub>    |  |     |
| 2.024 | Me             | -CF <sub>3</sub>    | -SO <sub>2</sub> Me |  |     |
| 2.025 | Me             | -NO <sub>2</sub>    | -SO <sub>2</sub> Me | H                                                                                 |     |
| 2.026 | Me             | -Cl                 | -SO <sub>2</sub> Me | H                                                                                 |     |
| 2.027 | Me             | -Cl                 | -SO <sub>2</sub> Me | CF <sub>3</sub> CH <sub>2</sub> OCH <sub>2</sub> -                                |     |
| 2.028 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H                                                                                 |     |

**TABLE C3** – Examples of herbicidal compounds of the present invention.

| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup> | NMR                                                                                                                                                                             |
|-------|----------------|---------------------|---------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.001 | Me             | Cl                  | Cl                  | H              |                                                                                                                                                                                 |
| 3.002 | Me             | Cl                  | -CF <sub>3</sub>    | H              |                                                                                                                                                                                 |
| 3.003 | Me             | Cl                  | -SO <sub>2</sub> Me | H              |                                                                                                                                                                                 |
| 3.004 | Me             | -SO <sub>2</sub> Me | Cl                  | H              |                                                                                                                                                                                 |
| 3.005 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H              | DMSO-d <sub>6</sub> : ppm = 3.28 (4 H, s) 3.88 (3 H, s)<br>7.71 - 7.81 (1 H, m) 8.22 - 8.29 (1 H, m)<br>8.36 - 8.44 (1 H, m) 9.20 - 9.27 (1 H, m)<br>10.96 - 11.20 (1 H, br. s) |
| 3.006 | Me             | -SO <sub>2</sub> Me | -SO <sub>2</sub> Me | H              |                                                                                                                                                                                 |
| 3.007 | Me             | Me                  | Cl                  | H              |                                                                                                                                                                                 |
| 3.008 | Me             | Me                  | -CF <sub>3</sub>    | H              |                                                                                                                                                                                 |
| 3.009 | Me             | Me                  | -SO <sub>2</sub> Me | H              |                                                                                                                                                                                 |
| 3.010 | Me             | -CF <sub>3</sub>    | Cl                  | H              |                                                                                                                                                                                 |
| 3.011 | Me             | -CF <sub>3</sub>    | -CF <sub>3</sub>    | H              |                                                                                                                                                                                 |
| 3.012 | Me             | -CF <sub>3</sub>    | -SO <sub>2</sub> Me | H              |                                                                                                                                                                                 |
| 3.013 | Me             | Cl                  | Cl                  |                |                                                                                                                                                                                 |
| 3.014 | Me             | Cl                  | -CF <sub>3</sub>    |                |                                                                                                                                                                                 |

| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                      | NMR |
|-------|----------------|---------------------|---------------------|-------------------------------------------------------------------------------------|-----|
| 3.015 | Me             | Cl                  | -SO <sub>2</sub> Me |    |     |
| 3.016 | Me             | -SO <sub>2</sub> Me | Cl                  |    |     |
| 3.017 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    |    |     |
| 3.018 | Me             | -SO <sub>2</sub> Me | -SO <sub>2</sub> Me |   |     |
| 3.019 | Me             | Me                  | Cl                  |  |     |
| 3.020 | Me             | Me                  | -CF <sub>3</sub>    |  |     |
| 3.021 | Me             | Me                  | -SO <sub>2</sub> Me |  |     |
| 3.022 | Me             | -CF <sub>3</sub>    | Cl                  |  |     |

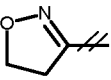
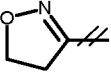
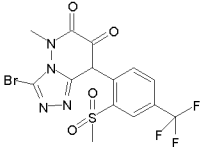
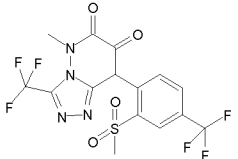
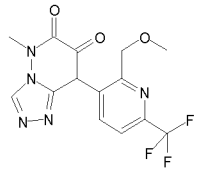
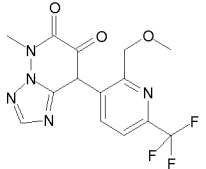
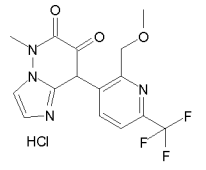
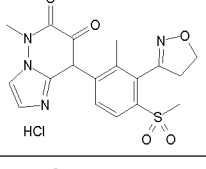
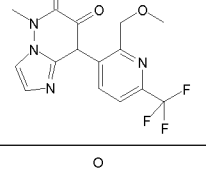
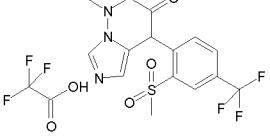
| CMP   | R <sup>1</sup> | R <sup>5</sup>      | R <sup>6</sup>      | R <sup>9</sup>                                                                    | NMR |
|-------|----------------|---------------------|---------------------|-----------------------------------------------------------------------------------|-----|
| 3.023 | Me             | -CF <sub>3</sub>    | -CF <sub>3</sub>    |  |     |
| 3.024 | Me             | -CF <sub>3</sub>    | -SO <sub>2</sub> Me |  |     |
| 3.025 | Me             | -NO <sub>2</sub>    | -SO <sub>2</sub> Me | H                                                                                 |     |
| 3.026 | Me             | -Cl                 | -SO <sub>2</sub> Me | H                                                                                 |     |
| 3.027 | Me             | -Cl                 | -SO <sub>2</sub> Me | CF <sub>3</sub> CH <sub>2</sub> OCH <sub>2</sub> -                                |     |
| 3.028 | Me             | -SO <sub>2</sub> Me | -CF <sub>3</sub>    | H                                                                                 |     |

TABLE C4 – Examples of herbicidal compounds of the present invention.

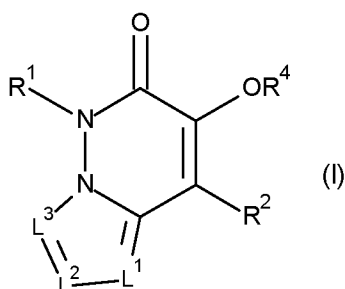
| CMP   | Structure | NMR                                                                                                                                                                                        |
|-------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.001 |           | CDCl <sub>3</sub> : 3.20 (3 H, s) 4.09 (3 H, s) 7.59 - 7.64 (1 H, m) 7.98 - 8.04 (1 H, m) 8.43 - 8.47 (1 H, m)                                                                             |
| 4.002 |           | CDCl <sub>3</sub> : 3.18 (3 H, s) 4.02 (3 H, s) 4.22 (2 H, s) 7.61 (1 H, s) 7.99 - 8.04 (1 H, m) 8.46 (1 H, s)                                                                             |
| 4.003 |           | CDCl <sub>3</sub> : 3.20 (3 H, s) 4.09 (3 H, s) 7.59 - 7.64 (1 H, m) 7.98 - 8.04 (1 H, m) 8.43 - 8.47 (1 H, m)                                                                             |
| 4.004 |           | CDCl <sub>3</sub> : 3.22 (3 H, s) 4.13 (3 H, s) 7.62 - 7.68 (1 H, m) 8.00 - 8.06 (1 H, m) 8.45 (1 H, s)                                                                                    |
| 4.005 |           | CDCl <sub>3</sub> : 3.23 (3 H, s) 4.10 (3 H, s) 5.53 (1 H, dd, J=11.0, 1.3 Hz) 6.19 (1 H, d, J=1.3 Hz) 6.64 (1 H, d, J=11.0 Hz) 7.64 (1 H, d, J=7.9 Hz) 7.99 - 8.04 (1 H, m) 8.47 (1 H, s) |
| 4.006 |           | DMSO-d <sub>6</sub> : 2.85 (3 H, s) 3.27 (3 H, s) 4.05 (3 H, s) 7.74 (1 H, d, J=8.2 Hz) 8.22 - 8.27 (1 H, m) 8.38 (1 H, s)                                                                 |
| 4.007 |           | 2.77 (3 H, s) 3.14 (3 H, s) 4.20 (3 H, s) 7.27 (1 H, s) 7.89 (1 H, d, J=7.9 Hz) 8.09 - 8.14 (1 H, m) 8.44 (1 H, s)                                                                         |
| 4.008 |           | 3.15 (3 H, s) 4.14 (3 H, d, J=1.2 Hz) 7.60 - 7.64 (1 H, m) 7.67 (1 H, s) 8.01 - 8.05 (1 H, m) 8.45 - 8.49 (1 H, m)                                                                         |

| CMP   | Structure                                                                           | NMR                                                                                                                          |
|-------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| 4.009 |    | 3.21 (3 H, s) 4.33 (3 H, s) 7.62 - 7.67 (1 H, m) 8.00 - 8.05 (1 H, m) 8.43 - 8.46 (1 H, m)                                   |
| 4.010 |    | 3.22 (3 H, s) 4.13 (3 H, d, J=1.3 Hz) 7.66 (1 H, d, J=8.1 Hz) 8.04 (1 H, d, J=8.1 Hz) 8.46 (1 H, s)                          |
| 4.011 |    |                                                                                                                              |
| 4.012 |   |                                                                                                                              |
| 4.013 |  |                                                                                                                              |
| 4.014 |  |                                                                                                                              |
| 4.015 |  |                                                                                                                              |
| 4.016 |  | CDCl <sub>3</sub> : 3.16 (3 H, s) 3.93 (3 H, s) 6.72 (1 H, s) 7.62 (1 H, s) 7.97 (1 H, s) 8.01 - 8.07 (1 H, m) 8.49 (1 H, s) |



# Claims

1. A compound Formula (I):

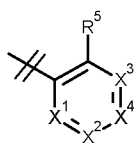


or an agronomically acceptable salt thereof,  
wherein:-

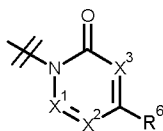
$L^1$ ,  $L^2$  and  $L^3$  are independently N or  $C-R^3$ ;

$R^1$  is selected from the group consisting of hydrogen,  $C_1$ - $C_6$ alkyl-,  $C_3$ - $C_6$ cycloalkyl-,  $C_2$ - $C_6$ alkenyl-,  $C_2$ - $C_6$ alkynyl-,  $C_1$ - $C_6$ haloalkyl-,  $C_1$ - $C_6$ alkoxy-,  $C_1$ - $C_3$ -alkyl- and  $C_3$ - $C_6$ cycloalkyl $C_1$ - $C_3$ -alkyl-;

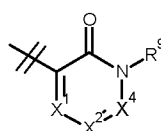
$R^2$  is selected from the group consisting of A1, A2 A3 and A4



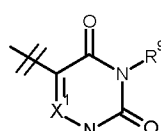
(A1)



(A2)



(A3)



(A4)

wherein

$X^1$  is N or  $CR^7$ ;

$X^2$  is N or  $CR^8$ ;

$X^3$  is N or  $CR^9$ ;

$X^4$  is N or  $CR^6$ ;

- 5 each  $R^3$  is independently selected from the group consisting of hydrogen, hydroxy, hydroxy- $C_1$ - $C_6$ alkyl-, halogen, cyano,  $C_1$ - $C_6$ alkyl-,  $C_1$ - $C_6$ haloalkyl-,  $C_3$ - $C_6$ cycloalkyl-,  $C_2$ - $C_6$ alkenyl-,  $C_2$ - $C_6$ alkynyl-, amino,  $C_1$ - $C_3$ alkylamino-,  $C_1$ - $C_3$ dialkylamino-, pyridyl and phenyl;
- 10  $R^4$  is selected from the group consisting of hydrogen,  $C_1$ - $C_6$ alkylcarbonyl-, arylcarbonyl-,  $C_1$ - $C_6$ alkoxycarbonyl-,  $C_1$ - $C_6$ alkyl- $S(O)_p$ -,  $C_1$ - $C_6$ alkyl- $S(O)_p$ carbonyl- and aryl- $S(O)_p$ -, wherein said aryl groups may be optionally substituted by one or more  $R^{11}$ ;
- 15  $R^5$  is selected from the group consisting of hydroxyl, halogen,  $C_1$ - $C_6$ alkyl-,  $C_1$ - $C_6$ cycloalkyl-,  $C_1$ - $C_6$ haloalkyl-,  $C_2$ - $C_6$ alkenyl-,  $C_2$ - $C_6$ haloalkenyl-,  $C_2$ - $C_6$ alkynyl-,  $C_1$ - $C_6$ alkoxy-,  $C_2$ - $C_6$ alkenyloxy-,  $C_3$ - $C_6$ cycloalkyl- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$ alkoxy- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$ alkoxy- $C_2$ - $C_6$ alkoxy-,  $C_1$ - $C_6$ alkoxy- $C_2$ - $C_6$ alkoxy- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$ haloalkoxy-,  $C_1$ - $C_6$ haloalkoxy- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$ alkyl- $S(O)_p$ -,  $C_1$ - $C_6$ haloalkyl- $S(O)_p$ -, aryl-, aryl- $S(O)_p$ -, heterocyclyl-, heterocyclyl- $S(O)_p$ -, aryloxy-, aryl- $C_2$ - $C_6$ alkyl-, aryl- $C_1$ - $C_6$ alkoxy-, heterocycliloxy-, heterocyclyl- $C_1$ - $C_3$ alkoxy- $C_1$ - $C_3$ alkyl-, hydroxycarbonyl-, hydroxycarbonyl- $C_1$ - $C_3$ alkoxy-,  $C_1$ - $C_3$ alkoxycarbonyl-,  $C_1$ - $C_3$ alkoxycarbonyl- $C_1$ - $C_3$ alkoxy-,  $C_1$ - $C_3$ alkylamino-,  $C_1$ - $C_3$ dialkylamino-,  $C_1$ - $C_3$ alkylamino- $S(O)_p$ -,  $C_1$ - $C_3$ alkylamino- $S(O)_p$ - $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_3$ dialkylamino- $S(O)_p$ -,  $C_1$ - $C_3$ dialkylamino- $S(O)_p$ - $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_3$ alkylaminocarbonyl-,  $C_1$ - $C_3$ alkylaminocarbonyl- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_3$ dialkylaminocarbonyl-,  $C_1$ - $C_3$ dialkylaminocarbonyl- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_3$ alkylcarbonylamino-,  $C_1$ - $C_3$ alkyl- $S(O)_p$ -amino-,  $C_1$ - $C_3$ alkyl- $S(O)_p$ - $C_1$ - $C_3$ alkylamino-,  $C_1$ - $C_3$ alkyl- $S(O)_p$ -amino- $C_1$ - $C_3$ alkyl-, cyano and nitro, wherein said heterocyclyls are five or six membered heterocyclyls containing from one to three heteroatoms each independently selected from the group consisting of oxygen, nitrogen and sulphur, and wherein the aryl or heterocyclyl components may be optionally
- 20
- 25
- 30

substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>haloalkyl-, C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub> haloalkoxy-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, phenyl, cyano and nitro;

- 5 R<sup>6</sup> and R<sup>9</sup> are independently selected from the group consisting of hydrogen, hydroxyl, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>cycloalkyl-, C<sub>1</sub>-C<sub>6</sub>haloalkyl-, C<sub>2</sub>-C<sub>6</sub>alkenyl-, C<sub>2</sub>-C<sub>6</sub>haloalkenyl-, C<sub>2</sub>-C<sub>6</sub>alkynyl-, C<sub>1</sub>-C<sub>6</sub>alkoxy-, C<sub>2</sub>-C<sub>6</sub>alkenyloxy-, C<sub>3</sub>-C<sub>6</sub>cycloalkylC<sub>1</sub>-C<sub>3</sub>-alkyl-, C<sub>1</sub>-C<sub>6</sub>alkoxyC<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>2</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>haloalkoxy-, C<sub>1</sub>-C<sub>6</sub>haloalkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>6</sub>haloalkyl-S(O)<sub>p</sub>-, aryl, aryl-S(O)<sub>p</sub>-, heterocyclyl, heterocyclyl-S(O)<sub>p</sub>-, aryloxy-, aryl-C<sub>2</sub>-C<sub>6</sub>alkyl-, aryl-C<sub>1</sub>-C<sub>6</sub>alkoxy-, heterocyclyloxy-, heterocyclyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, hydroxycarbonyl, hydroxycarbonyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub>alkoxycarbonyl-, C<sub>1</sub>-C<sub>3</sub>alkoxycarbonyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub>alkylamino-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-, C<sub>1</sub>-C<sub>3</sub>alkylamino-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>alkylamino-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-S(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkylaminocarbonyl-, C<sub>1</sub>-C<sub>3</sub>alkylaminocarbonyl-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>dialkylaminocarbonyl-, C<sub>1</sub>-C<sub>3</sub>dialkylaminocarbonyl-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkylcarbonylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-amino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-C<sub>1</sub>-C<sub>3</sub>alkylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-aminoC<sub>1</sub>-C<sub>3</sub>alkyl-, cyano and nitro, wherein said heterocyclyls are five or six membered heterocyclyls containing from one to three heteroatoms each independently selected from the group consisting of oxygen, nitrogen and sulphur, and wherein the aryl or heterocyclyl components may be optionally substituted by one or more substituents selected from the group consisting of halo, C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>haloalkyl-, C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>1</sub>-C<sub>3</sub>haloalkoxy-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, phenyl, cyano and nitro;
- 15
- 20
- 25
- 30 R<sup>7</sup> and R<sup>8</sup> are independently selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>alkoxy-, C<sub>2</sub>-C<sub>3</sub>alkenyl-, C<sub>2</sub>-C<sub>3</sub>alkynyl-, C<sub>1</sub>-C<sub>3</sub>haloalkyl- and C<sub>1</sub>-C<sub>3</sub>haloalkoxy-;

and wherein R<sup>5</sup> and R<sup>9</sup> can together form a saturated or unsaturated 5- or 6-membered carbocyclic or heterocyclic ring, said heterocyclic ring comprising one or more nitrogen and/or oxygen heteroatoms, the 5- or 6-membered ring being optionally substituted by one or more R<sup>12</sup>; or

5

R<sup>6</sup> and R<sup>9</sup> can together form a saturated or unsaturated 5- or 6-membered carbocyclic or heterocyclic ring, said heterocyclic ring comprising one or more heteroatoms selected from the group consisting of nitrogen, oxygen and S(O)<sub>2</sub>, the 5- or 6-membered ring being optionally substituted by one or more R<sup>12</sup>; or

10

R<sup>6</sup> and R<sup>8</sup> can together form a saturated or unsaturated 5- or 6-membered carbocyclic or heterocyclic ring, said heterocyclic ring comprising one or more nitrogen heteroatoms, the 5- or 6-membered ring being optionally substituted by one or more R<sup>13</sup>; and

15

R<sup>11</sup> is selected from the group consisting of halo-, C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>haloalkyl- and C<sub>1</sub>-C<sub>6</sub>alkoxy-;

20

R<sup>12</sup> is selected from the group of hydrogen, cyano, halo-, oxy-, C<sub>1</sub>-C<sub>3</sub>alkylS(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>2</sub>-C<sub>3</sub>alkenyl-, C<sub>2</sub>-C<sub>3</sub>alkynyl-, C<sub>1</sub>-C<sub>3</sub>alkoxy- and C<sub>1</sub>-C<sub>3</sub> haloalkyl-;

25

R<sup>13</sup> is selected from the group of hydrogen, cyano, halo-, C<sub>1</sub>-C<sub>3</sub>alkylS(O)<sub>p</sub>-, C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>2</sub>-C<sub>3</sub>alkenyl-, C<sub>2</sub>-C<sub>3</sub>alkynyl-, morpholinyl- and C<sub>1</sub>-C<sub>3</sub> haloalkyl-;

30

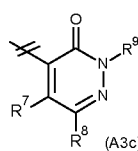
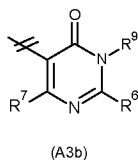
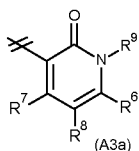
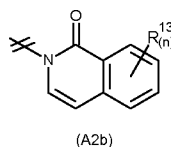
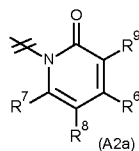
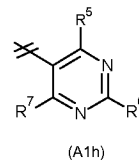
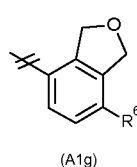
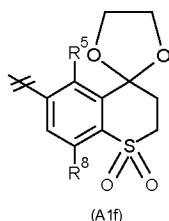
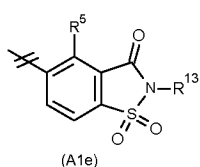
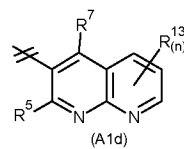
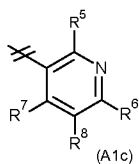
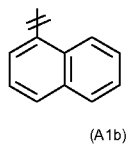
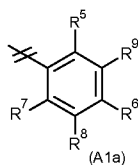
R<sup>14</sup> is selected from the group consisting of hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkyl, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>haloalkoxy-C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>6</sub>alkoxy-C<sub>1</sub>-C<sub>6</sub>alkyl, C<sub>1</sub>-C<sub>6</sub>alkyl-, C<sub>2</sub>-C<sub>6</sub>alkenyl-, C<sub>2</sub>-C<sub>6</sub>haloalkenyl-, C<sub>2</sub>-C<sub>6</sub>alkynyl-, C<sub>2</sub>-C<sub>6</sub>haloalkynyl- and C<sub>3</sub>-C<sub>6</sub> cycloalkyl;

and

$p = 0, 1$  or  $2$ .

2. A compound according to claim 1, wherein  $R^4$  is hydrogen.

5 3. A compound according to claim 1 or claim 2, wherein  $R^2$  is selected from the group consisting of A1a, A1b, A1c, A1d, A1e, A1f, A1g, A1h, A2a, A2b, A3a, A3b and A3c:



10 wherein  $R^5$ ,  $R^6$ ,  $R^7$ ,  $R^8$ ,  $R^9$  and  $R^{13}$  are as defined previously and  $n$  is 0, 1, 2 or 3.

4. A compound according to claim 3, wherein  $R^2$  is A1a.

15 5. A compound according to any one of the previous claims, wherein  $R^5$  is selected from the group consisting of hydroxyl, halo,  $C_1$ - $C_6$ alkyl-,  $C_1$ - $C_6$ cycloalkyl-,  $C_1$ - $C_6$ haloalkyl-,  $C_1$ - $C_6$ alkoxy-,  $C_1$ - $C_6$ alkoxy $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$ alkoxy- $C_2$ - $C_6$ alkoxy- $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$  haloalkoxy $C_1$ - $C_3$ alkyl-,  $C_1$ - $C_6$ alkyl-

S(O)<sub>p</sub>-, aryl, aryloxy-, heterocyclyl-C<sub>1</sub>-C<sub>3</sub>alkoxy-C<sub>1</sub>-C<sub>3</sub>alkyl-, C<sub>1</sub>-C<sub>3</sub>dialkylamino-, C<sub>1</sub>-C<sub>3</sub>alkyl-S(O)<sub>p</sub>-amino-C<sub>1</sub>-C<sub>3</sub>dialkyl, cyano and nitro.

- 5 6. A compound according to claim 5, wherein R<sup>5</sup> is selected from the group consisting of chloro, fluoro, methyl, trifluoromethyl, 2-fluoroethyl-, methoxyethoxymethyl-, trifluoromethoxymethyl-, methylS(O)<sub>p</sub>-, aryl, isoxazoliny, morpholiny, methyl-S(O)<sub>p</sub>-dimethylamino-, cyano and nitro, wherein the aryl or heterocyclyl components may be optionally substituted by one or more substituents selected from the group consisting of chloro, methyl  
10 or trifluoromethyl.
7. A compound according to any one of the previous claims, wherein R<sup>6</sup> is selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>haloalkyl-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>2</sub>-C<sub>6</sub>alkenyl- and C<sub>2</sub>-C<sub>6</sub>alkynyl-.  
15
8. A compound according to any one of the previous claims, wherein R<sup>7</sup> and R<sup>8</sup> are independently selected from the group consisting of hydrogen, halogen and C<sub>1</sub>-C<sub>3</sub> alkyl-.
- 20 9. A compound according to any one of the previous claims, wherein R<sup>9</sup> is selected from the group consisting of hydrogen, halogen, C<sub>1</sub>-C<sub>6</sub>alkyl-, C<sub>1</sub>-C<sub>6</sub>haloalkyl-, C<sub>1</sub>-C<sub>6</sub>alkyl-S(O)<sub>p</sub>-, C<sub>2</sub>-C<sub>6</sub>alkenyl- and C<sub>2</sub>-C<sub>6</sub>alkynyl-.
10. A herbicidal composition comprising a herbicidal compound according to any  
25 one of the previous claims and an agriculturally acceptable formulation adjuvant.
11. A herbicidal composition according to claim 10, further comprising at least one additional pesticide.  
30
12. A herbicidal composition according to claim 11, wherein the additional pesticide is a herbicide or herbicide safener.

13. A method of controlling weeds at a locus comprising application to the locus of a weed controlling amount of a composition according to any one of claims 10 to 12.
- 5 14. Use of a compound of Formula (I) as defined in claim 1 as a herbicide.

## INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2014/056334

## A. CLASSIFICATION OF SUBJECT MATTER

INV. C07D487/04 A01N43/90  
ADD.

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

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C07D A01N

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

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

EPO-Internal, CHEM ABS Data, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                                                                                                                                                                                                                   | Relevant to claim No. |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| A,P       | BRUCE A. ELLSWORTH ET AL: "Reductions in log P Improved Protein Binding and Clearance Predictions Enabling the Prospective Design of Cannabinoid Receptor (CB1) Antagonists with Desired Pharmacokinetic Properties", JOURNAL OF MEDICINAL CHEMISTRY, vol. 56, no. 23, 12 December 2013 (2013-12-12), pages 9586-9600, XP055116287, ISSN: 0022-2623, DOI: 10.1021/jm4010835 compounds 43-45<br>----- | 1-14                  |
| A         | EP 0 483 027 A2 (RHONE POULENC AGROCHIMIE [FR]) 29 April 1992 (1992-04-29) page 2, line 1 - page 2, line 3; claims; compounds<br>-----                                                                                                                                                                                                                                                               | 1-14                  |



Further documents are listed in the continuation of Box C.



See patent family annex.

## \* Special categories of cited documents :

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

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

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

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search

5 May 2014

Date of mailing of the international search report

13/05/2014

Name and mailing address of the ISA/

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Authorized officer

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2014/056334

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---------------------|----------------------------|---------------------|
| EP 0483027                                | A2                  | 29-04-1992                 |                     |
|                                           |                     | AU 8584691 A               | 30-04-1992          |
|                                           |                     | BR 9104543 A               | 09-06-1992          |
|                                           |                     | CA 2053977 A1              | 24-04-1992          |
|                                           |                     | CN 1060843 A               | 06-05-1992          |
|                                           |                     | CS 9103191 A3              | 13-05-1992          |
|                                           |                     | EP 0483027 A2              | 29-04-1992          |
|                                           |                     | FI 914981 A                | 24-04-1992          |
|                                           |                     | FR 2668151 A1              | 24-04-1992          |
|                                           |                     | IE 913706 A1               | 22-05-1992          |
|                                           |                     | JP H04288079 A             | 13-10-1992          |
|                                           |                     | MA 22325 A1                | 01-07-1992          |
|                                           |                     | OA 9398 A                  | 15-09-1992          |
|                                           |                     | PT 99304 A                 | 30-09-1992          |
|                                           |                     | YU 169491 A                | 20-01-1994          |
|                                           |                     | ZA 9108452 A               | 29-07-1992          |
|                                           |                     | ZW 14591 A1                | 06-05-1992          |
| -----                                     |                     |                            |                     |