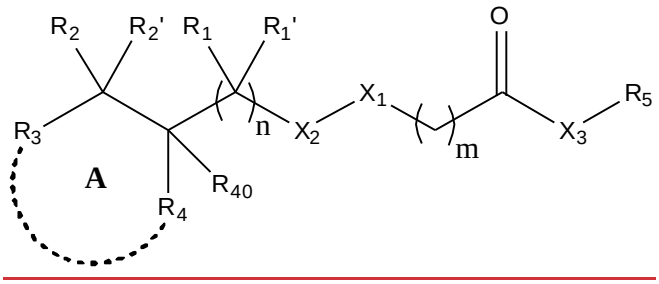
SUMMARY ~~OF THE INVENTION~~

[0010a] In an aspect of the present disclosure, there is provided a compound represented by the structure of formula **I(g):**



I(g)

wherein

R_1, R_1', R_2, R_2' and **R_{40}** are each independently H, C_1-C_5 linear or branched, unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, benzyl, C(O)-R_{10}, or C(O)-CH_3;

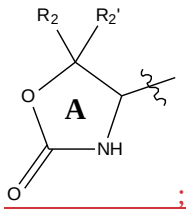
R_3 is OH, or NH_2;

R_4 is NH_2, or OH;

wherein if R_3 is OH then R_4 is NH_2 and if R_3 is NH_2 then R_4 is OH;

wherein if **R_3** is OH and **R_4** is NH_2, then **n** + **m** cannot be equal to 3;

or **R_3** and **R_4** are joined together to form ring **A,** represented by the following structure:



;

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted alkyl sulfone (e.g., SO_2-CH_2-cyclopentyl), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl, C(O)R, or $S(O)_2R$;

R is C_1-C_5 linear or branched alkyl, C_1-C_5 linear or branched alkoxy, phenyl, aryl or heteroaryl;

m is 1 or 2;

n is 0, 1, 2 or 3;

X_1 is S, O, or CH_2;

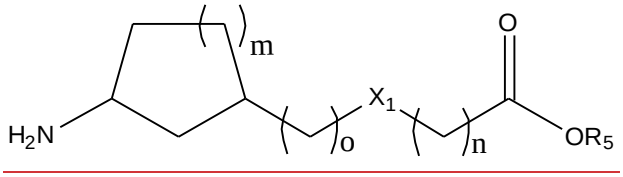
X_2 is S, O, or CH_2;

X_3 is O, NH or N-**R_{50}**;

R_{50} is H or C_1-C_5 linear or branched, substituted or unsubstituted alkyl;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(a)**:



X(a)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

wherein if X_1 is CH_2, then R_5 cannot be H;

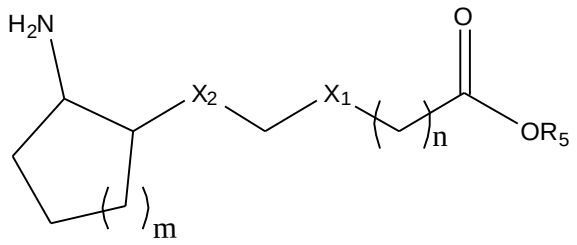
n is 2;

o is 0;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(c)**:



X(c)

wherein

R5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R10 is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X1 is S, O, CH_2, CH(R) or $C(R)_2$;

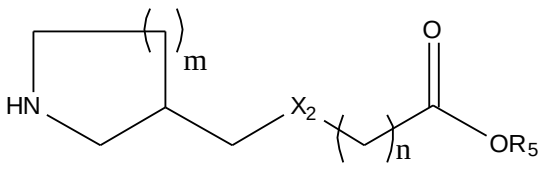
X2 is O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 1 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(d)**:



X(d)

wherein

R5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5

linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-C(O)-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., $C(O)(OCH_3)$), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

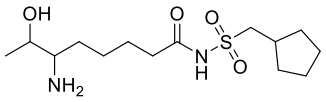
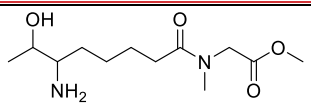
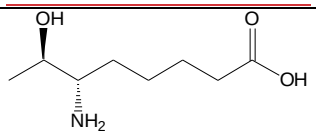
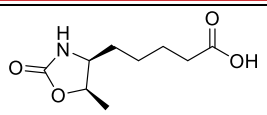
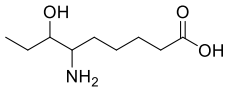
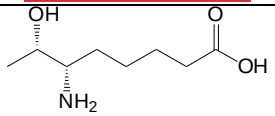
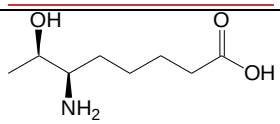
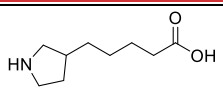
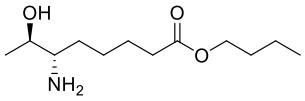
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

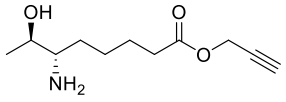
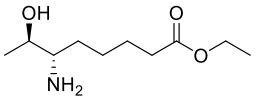
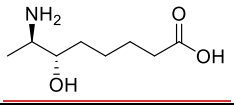
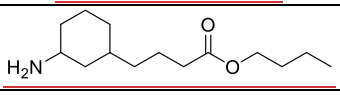
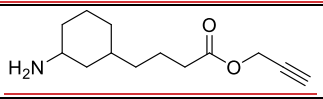
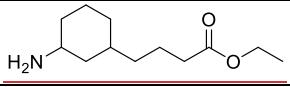
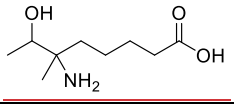
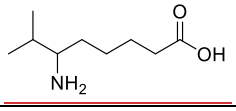
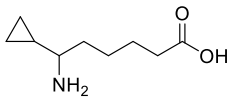
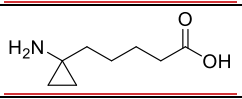
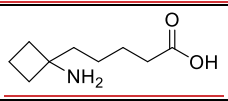
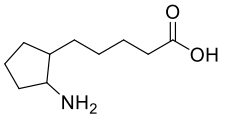
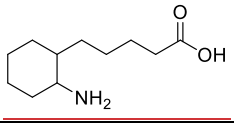
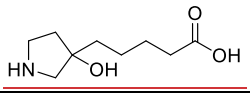
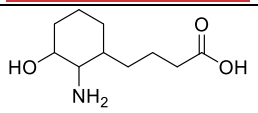
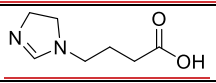
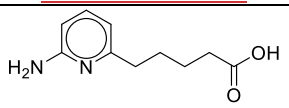
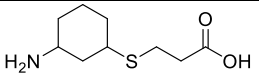
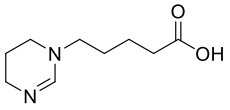
n is an integer number between 1 and 2;

m is 1 or 3;

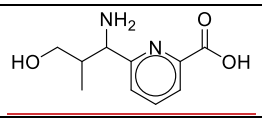
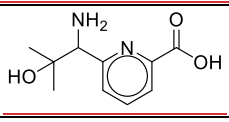
or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound, represented by any one of the following structures:

Compound	Structure
101	
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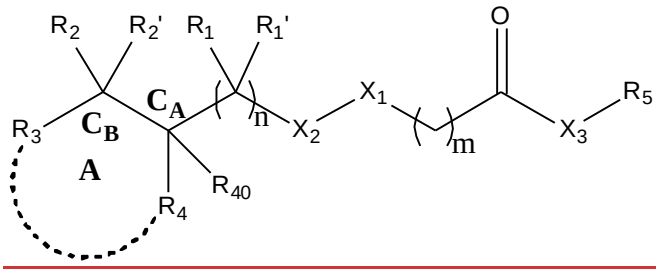
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3D

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or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

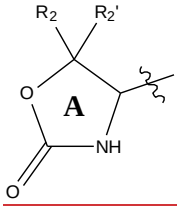
[0010b] In another aspect, there is provided herbicidal compound, represented by the structure of formula **I(ga):**



I(ga)

wherein

C_A and C_B are both chiral carbon centers, or C_A and C_B together with R_3 and R_4 are joined to form ring **A,** represented by the following structure:



R_1, R_1', R_2, R_2' and R_{40} are each independently H, C_1-C_5 linear or branched, unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, benzyl, C(O)-R_{10}, or C(O)-CH_3;

R_3 is OH, SH, NH_2, $NHNH_2$, NHR, $N(R)_2$, NHC(O)OBz, -NHC(O)-R_{10}, $NHC(O)CH_3$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, substituted or unsubstituted C_3-C_8 cycloalkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic alkoxy, substituted or unsubstituted C_3-C_8 heterocyclic ring, or substituted or unsubstituted aryl;

R_4 is NH_2, $NHNH_2$, $N(R)_2$, -NHC(O)-R_{10}, NHC(O)H, $NHC(O)CH_3$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic alkoxy, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted C_3-C_8 heterocyclic ring, or substituted or unsubstituted aryl;

or R_3 and R_4 are joined together to form ring **A** as described above;

wherein R_3 and R_4 cannot both be NH_2, and

wherein if R_3 is OH and R_4 is NH_2, then **n** + **m** cannot be equal to 3;

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted

alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-$C(O)$-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted alkyl sulfone (e.g., SO_2-CH_2-cyclopentyl), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} and **R_{11}** are each independently H, CN, C_1-C_5 linear or branched alkyl, C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted C_3-C_8 heterocyclic ring;

R is C_1-C_5 linear or branched alkyl, C_1-C_5 linear or branched alkoxy, phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

m is 1 or 2;

n is 0, 1, 2 or 3;

X_1 is S, O, or CH_2;

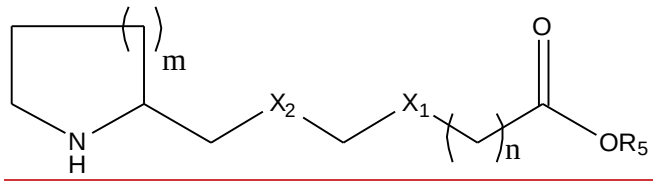
X_2 is S, O, or CH_2;

X_3 is O, NH or N-**R_{50}**;

R_{50} is H or C_1-C_5 linear or branched, substituted or unsubstituted alkyl;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof

or an herbicidal compound represented by the structure of formula **X(b)**:



X(b)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-$C(O)$-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-$C(O)$-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., $C(O)(OCH_3)$), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

$\mathbf{X_1}$ is S, O, CH_2, CH(R) or $C(R)_2$;

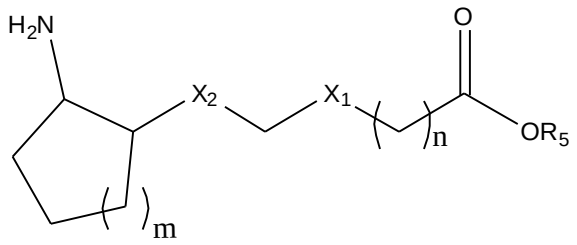
$\mathbf{X_2}$ is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or an herbicidal compound represented by the structure of formula **X(c)**:



X(c)

wherein

$\mathbf{R_5}$ is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

$\mathbf{R_8}$ is $[CH_2]_p$

wherein **p** is between 1 and 10;

$\mathbf{R_{10}}$ is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

$\mathbf{X_1}$ is S, O, CH_2, CH(R) or $C(R)_2$;

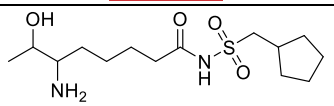
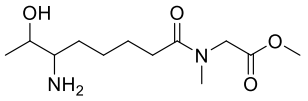
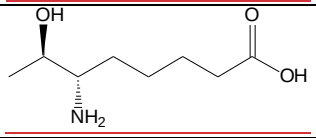
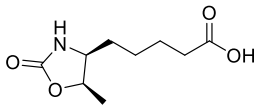
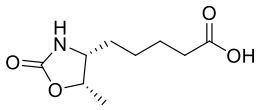
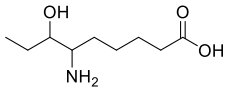
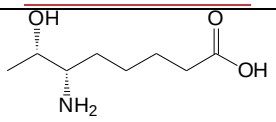
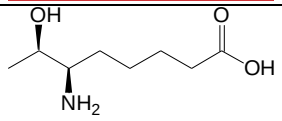
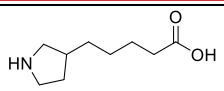
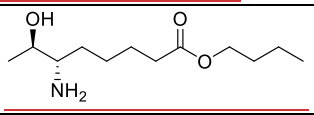
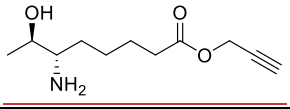
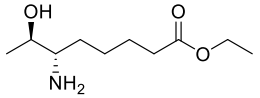
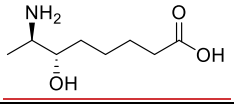
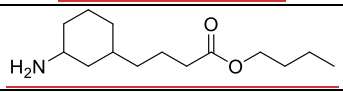
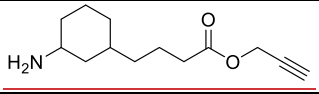
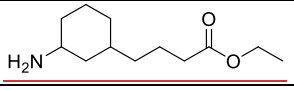
$\mathbf{X_2}$ is S, O, CH_2, CH(R) or $C(R)_2$;

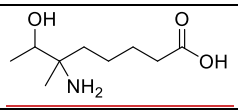
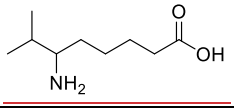
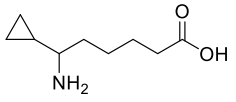
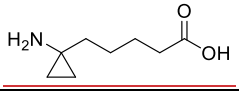
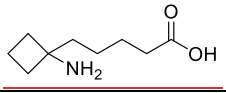
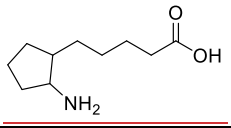
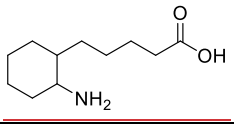
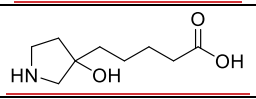
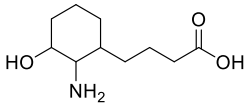
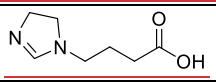
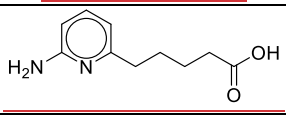
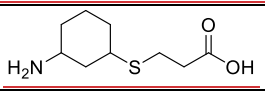
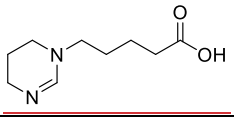
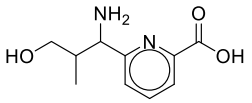
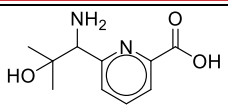
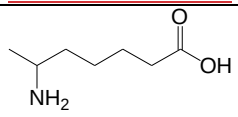
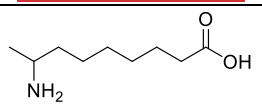
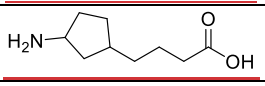
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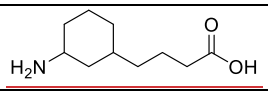
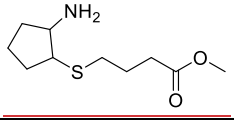
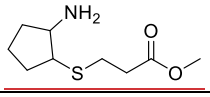
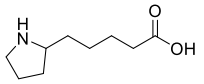
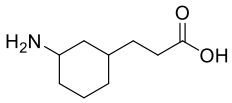
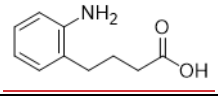
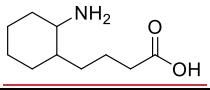
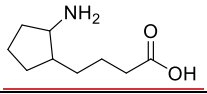
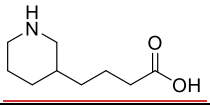
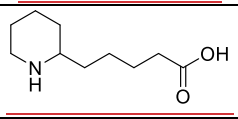
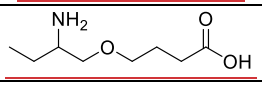
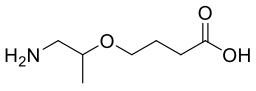
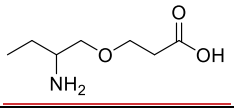
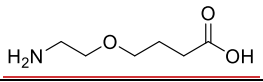
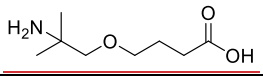
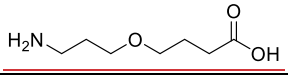
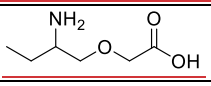
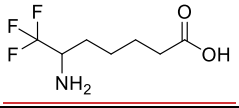
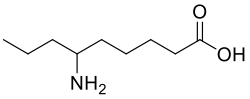
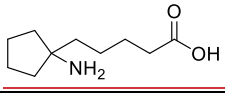
m is an integer number between 1 and 3;

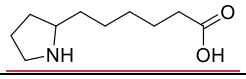
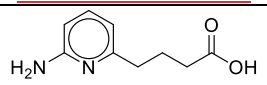
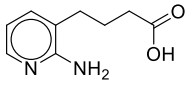
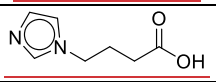
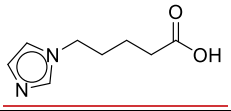
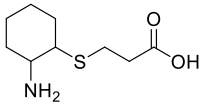
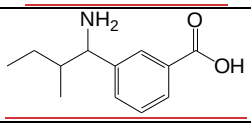
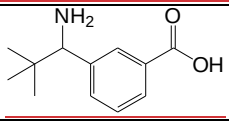
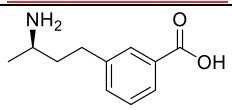
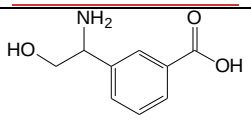
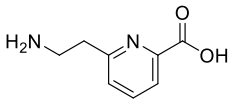
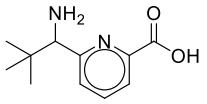
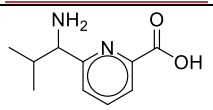
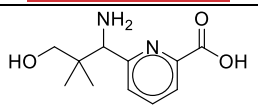
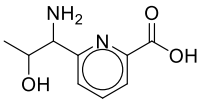
or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or an herbicidal compound, represented by any one of the following structures:

Compound	Structure
101	
102	
104	
105	
106	
113	
114	
115	
123	
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117	
118	
119	
124	
125	
126	

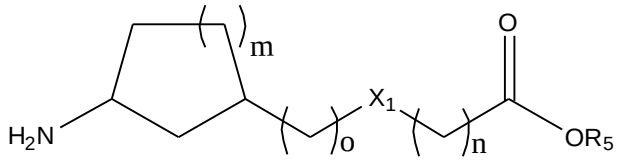
120	
127	
128	
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130	
131	
132	
133	
134	
137	
138	
139	
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142	
107	
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or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

[0010c] In another aspect, there is provided a compound represented by the structure of formula **X(a)**:



X(a)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

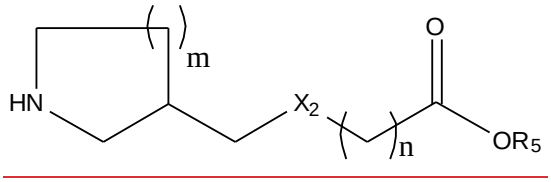
X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

n and **o** are each independently an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(d)**:



X(d)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

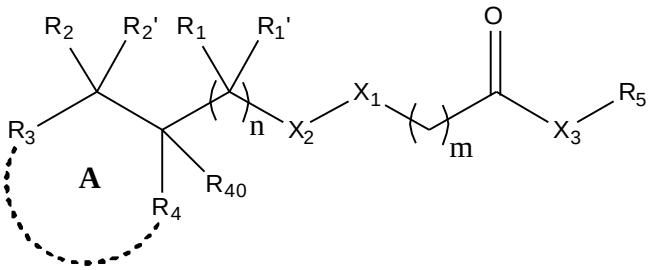
m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

for use in controlling the growth of an undesired plant.

[0011] In various ~~embodiments~~examples, this ~~invention~~ disclosure is directed to a compound represented by the structure of formula **I, I(a)-I(ga), X** and **X(a)-X(d)** as defined herein below or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

[0012] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to a compound represented by the structure of formula **I(g):**



I(g)

wherein

R_1, R_1', R_2, R_2' and **R_{40}** are each independently H, C_1-C_5 linear or branched, unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, benzyl, C(O)-R_{10}, or C(O)-CH_3;

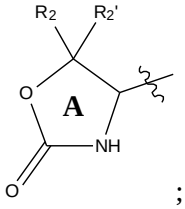
R_3 is OH, or NH_2;

R_4 is NH_2, or OH;

wherein if R_3 is OH then R_4 is NH_2 and if R_3 is NH_2 then R_4 is OH;

wherein if **R_3** is OH and **R_4** is NH_2, then **n** + **m** cannot be equal to 3;

or **R_3** and **R_4** are joined together to form ring **A,** represented by the following structure:



;

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$,

$CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-C(O)-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted alkyl sulfone (e.g., SO_2-CH_2-cyclopentyl), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_{10} is H, CN, C_1-C_5 linear or branched alkyl, C(O)R, or $S(O)_2R$;

R is C_1-C_5 linear or branched alkyl, C_1-C_5 linear or branched alkoxy, phenyl, aryl or heteroaryl;

m is 1 or 2;

n is 0, 1, 2 or 3;

$\mathbf{X_1}$ is S, O, or CH_2;

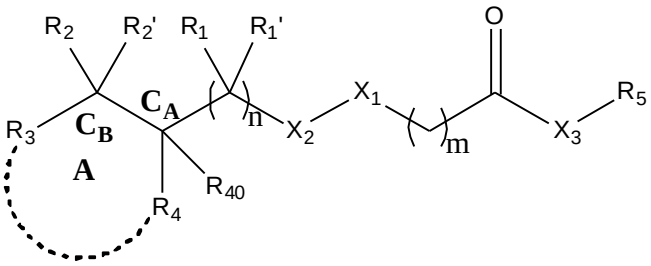
$\mathbf{X_2}$ is S, O, or CH_2;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

[0013] In some examples~~embodiments~~, ring **A** has two chiral centers. In some examples~~embodiments~~, the compound is not (*6R,7S*)-6-amino-7-hydroxyoctanoic acid or 5-((*4R,5S*)-5-methyl-2-oxooxazolidin-4-yl)pentanoic acid. In some examples~~embodiments~~, the compound is a substantially pure single stereoisomer. In some examples~~embodiments~~, the compound is a mixture of stereoisomers. In some examples~~embodiments~~, the compound is the substantially pure *SR* stereoisomer. In some examples~~embodiments~~, the compound is the substantially pure *RS* stereoisomer. In some examples~~embodiments~~, the substantially pure stereoisomer has a purity higher than 90%. In some examples~~embodiments~~, the substantially pure stereoisomer has a purity higher than 95%. In some examples~~embodiments~~, the substantially pure stereoisomer has a purity higher than 98%. In some examples~~embodiments~~, the compound is compound **101**, **102**, **104**, **105**, **113, 114, 115, 116, 117, 118, 119, 120, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 137, 138, 139, 140, 141, 142** or an agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, or isotopic variant thereof; each represents a separate example~~embodiment~~ according to this disclosure~~invention~~. In some examples~~embodiments~~, the compound is compound any one of the compounds listed in **Table 1** herein below or an agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, or isotopic variant thereof; each represents a separate example~~embodiment~~ according to this disclosure~~invention~~.

[0014] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of formula **I, I(a)-I(ga), X** and **X(a)-X(d)** as defined herein below, or an agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, or isotopic variant (e.g., deuterated analog) thereof; each represents a separate example~~embodiment~~ according to this disclosure~~invention~~.

[0015] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of formula **I(ga):**



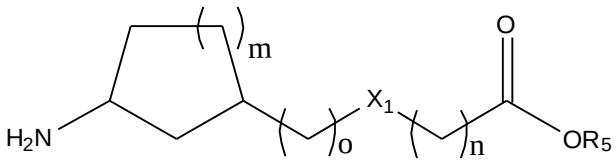
I(ga)

wherein

$\mathbf{C_A}$ and $\mathbf{C_B}$ are both chiral carbon centers, or $\mathbf{C_A}$ and $\mathbf{C_B}$ together with $\mathbf{R_3}$ and $\mathbf{R_4}$ are joined to form ring **A,** represented by the following structure:

[0016] In some examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of any one of compounds **101**, **102**, **104-120, 123-134, 137-178** or an agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, or isotopic variant thereof; each represents a separate example~~embodiment~~ according to this disclosure~~invention~~. In some examples~~embodiments~~, the compound is compound any one of the compounds listed in Table **2** herein below or an agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, or isotopic variant thereof; each represents a separate example~~embodiment~~ according to this disclosure~~invention~~.

[0017] In some examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of formula **X(a)**:



X(a)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$; or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted C_3-C_8 heterocyclic ring (e.g., piperazine, piperidine),

wherein substitutions include: F, Cl, Br, I, OH, SH, C_1-C_5 linear or branched alkyl (e.g. methyl, ethyl), C_2-C_5 linear or branched alkenyl, C_2-C_5 linear or branched alkynyl (e.g. CCH), C_3-C_8 cycloalkyl, linear, branched or cyclic alkoxy, COOH, COO(R), NH_2, $N(R)_2$, CF_3, aryl, phenyl, heteroaryl (e.g., imidazole), C_3-C_8 cycloalkyl (e.g., cyclohexyl), CN, NO_2 or any combination thereof;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

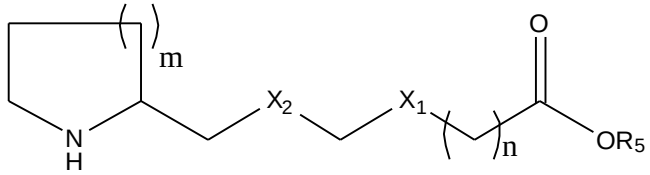
n and **o** are each independently an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof

[0018] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to a compound represented by the structure of formula **X(a)** as defined herein above, wherein **n** is 2; o is 0; and if X_1 is CH_2, then R_5 cannot be H.

[0019] In some examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of formula **X(b)**:



X(b)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

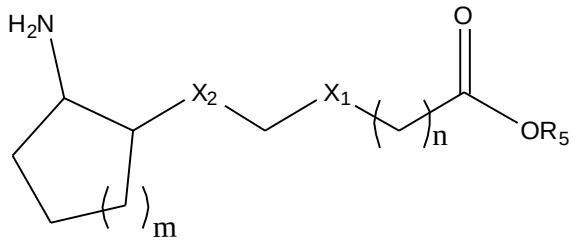
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof

[0020] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of formula **X(c)**:



X(c)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$; or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted C_3-C_8 heterocyclic ring (e.g., piperazine, piperidine),

wherein substitutions include: F, Cl, Br, I, OH, SH, C_1-C_5 linear or branched alkyl (e.g. methyl, ethyl), C_2-C_5 linear or branched alkenyl, C_2-C_5 linear or branched alkynyl (e.g. CCH), C_3-C_8 cycloalkyl, linear, branched or cyclic alkoxy, COOH, COO(R), NH_2, $N(R)_2$, CF_3, aryl, phenyl, heteroaryl (e.g., imidazole), C_3-C_8 cycloalkyl (e.g., cyclohexyl), CN, NO_2 or any combination thereof;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

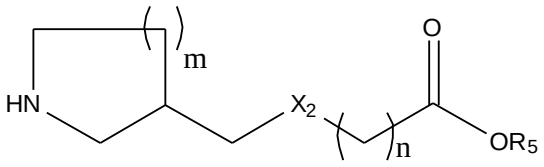
m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

[0021] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to a compound represented by the structure of formula **X(c)** as described hereinabove, wherein n is an integer number between 1 and 2; or its

agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

[0022] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to an herbicidal compound represented by the structure of formula **X(d)**:



X(d)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_9 is $[CH]_q$, $[C]_q$

wherein **q** is between 2 and 10;

R_{10} and **R_{11}** are each independently H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$; or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted C_3-C_8 heterocyclic ring (e.g., piperazine, piperidine),

wherein substitutions include: F, Cl, Br, I, OH, SH, C_1-C_5 linear or branched alkyl (e.g. methyl, ethyl), C_2-C_5 linear or branched alkenyl, C_2-C_5 linear or branched alkynyl (e.g. CCH), C_3-C_8 cycloalkyl, linear, branched or cyclic alkoxy, COOH, COO(R), NH_2, $N(R)_2$, CF_3, aryl, phenyl, heteroaryl (e.g., imidazole), C_3-C_8 cycloalkyl (e.g., cyclohexyl), CN, NO_2 or any combination thereof;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

[0023] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to a compound represented by the structure of formula **X(d)** as described hereinabove, wherein **m** is 1 or 3; or an agrochemically acceptable salt,

stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

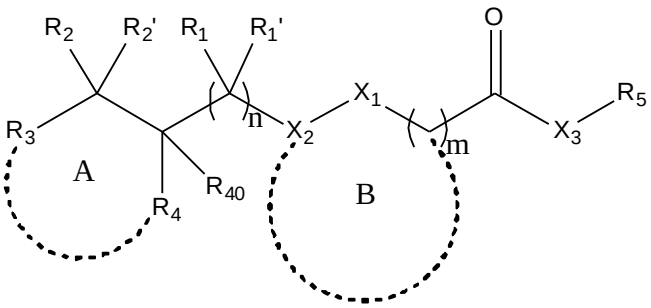
[0024] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to an agrochemical composition comprising an herbicidally effective amount of a compound according to this disclosure~~invention~~.

[0025] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to a method of controlling the growth of undesired plants, comprising applying a compound according to this disclosure~~invention~~ or an agrochemical composition according to this disclosure~~invention~~, to crop fields.

[0026] In various examples~~embodiments~~, this disclosure~~invention~~ is directed to a compound according to this disclosure~~invention~~, or an agrochemical composition according to this disclosure~~invention~~, for use in controlling the growth of undesired plants. In some examples~~embodiments~~, the plant is a eudicot (dicot) or a monocotyledon (monocot). In some examples~~embodiments~~, the plant is a weed. In some examples~~embodiments~~, the weed comprises: *Abutilon theophrasti* , *Amaranthus palmeri*, *Ambrosia artemisiifolia* , *Alopecurus myosuroides* , *Avena sterilis* , *Chenopodium album* , *Conyza Canadensis* , *Digitaria sanguinalis* , *Echinochloa colona*, *Euphorbia heterophylla* , *Lolium perenne* , *Lolium rigidum* , *Matricaria chamomilla* , *Phalaris paradoxa* , *Poa annua* , *Portulaca oleracea* , *Setaria viridis*, *Solanum nigrum* or any combination thereof. In some examples~~embodiments~~, the dicot plant is *Arabidopsis thaliana*, and/or the monocot plant is *Dactyloctenium aegyptium* or *Eragrostis teff*. In some examples~~embodiments~~, the compound is for use in pre-plant treatments, pre-emergence treatments, post-emergence treatments, or any combination thereof; each represents a separate examples~~embodiment~~ according to this ~~invention~~disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0027] In various embodiments, this invention is directed to a compound represented by the structure of formula (**I**):



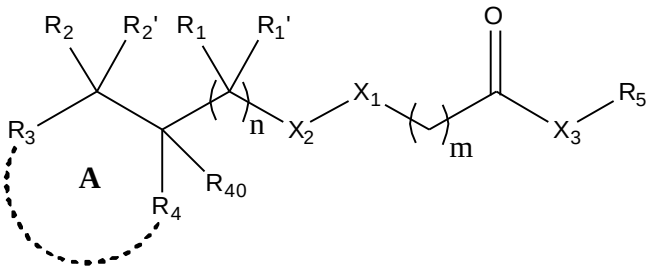
(**I**)

wherein

A and **B** rings are absent, or are each independently a substituted or unsubstituted single or fused aromatic or heteroaromatic ring system (e.g., B: aryl, pyridine), or a substituted or unsubstituted single or fused C_3-C_{10} cycloalkyl (e.g., cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl), or a substituted or unsubstituted single or fused C_3-C_{10} heterocyclic ring (e.g., **A**: 5-methyloxazolidin-2-one, 1, 2, or 3-pyrrolidine, tetrahydropyridine, 5,6-dihydro-4H-1,3-thiazine, 4,5-dihydro-1H-imidazole, pyridine, tetrahydropyrimidine; piperidine, imidazole);

WHAT IS CLAIMED:

1. A compound represented by the structure of formula **I(g):**



I(g)

wherein

R_1, R_1', R_2, R_2' and **R_{40}** are each independently H, C_1-C_5 linear or branched, unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, benzyl, C(O)-R_{10}, or C(O)-CH_3;

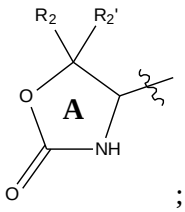
R_3 is OH, or NH_2;

R_4 is NH_2, or OH;

wherein if R_3 is OH then R_4 is NH_2 and if R_3 is NH_2 then R_4 is OH;

wherein if **R_3** is OH and **R_4** is NH_2, then **n** + **m** cannot be equal to 3;

or **R_3** and **R_4** are joined together to form ring **A,** represented by the following structure:



;

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted alkyl sulfone (e.g., SO_2-CH_2-cyclopentyl), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl, C(O)R, or $S(O)_2R$;

R is C_1-C_5 linear or branched alkyl, C_1-C_5 linear or branched alkoxy, phenyl, aryl or heteroaryl;

m is 1 or 2;

n is 0, 1, 2 or 3;

X_1 is S, O, or CH_2;

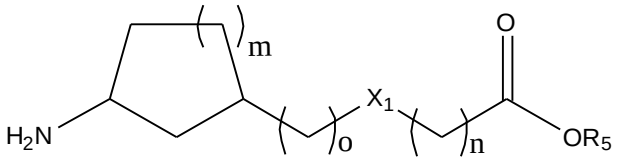
X_2 is S, O, or CH_2;

X_3 is O, NH or N-**R_{50}**;

R_{50} is H or C_1-C_5 linear or branched, substituted or unsubstituted alkyl;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(a)**:



X(a)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

wherein if X_1 is CH_2, then R_5 cannot be H;

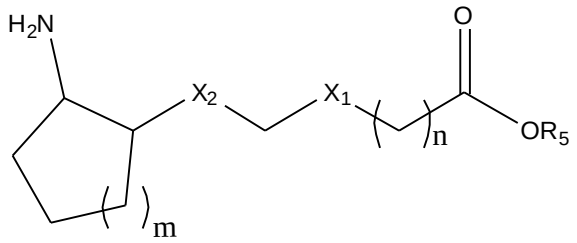
n is 2;

o is 0;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(c)**:



X(c)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

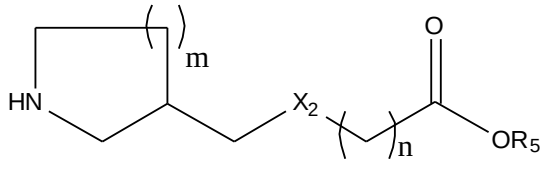
X_2 is O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 1 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(d)**:



X(d)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$,

$CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-C(O)-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., $C(O)(OCH_3)$), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

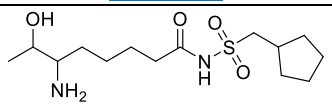
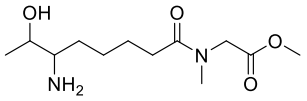
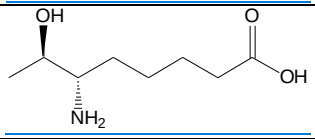
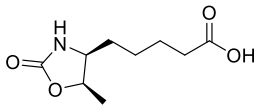
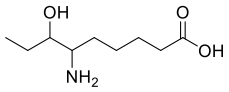
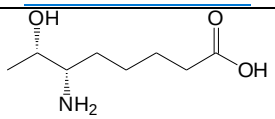
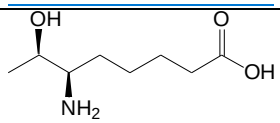
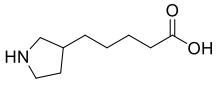
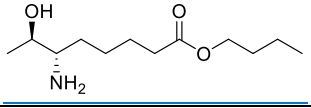
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

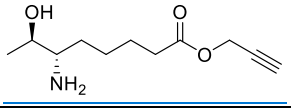
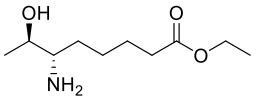
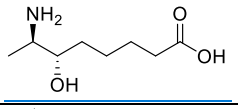
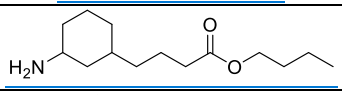
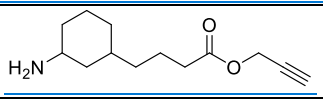
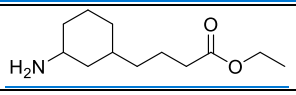
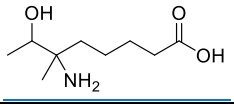
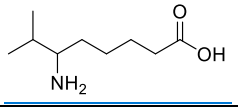
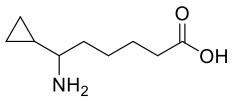
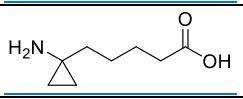
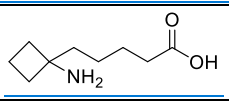
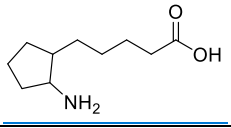
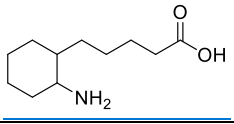
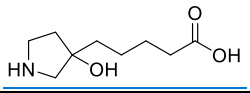
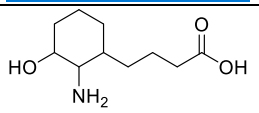
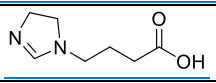
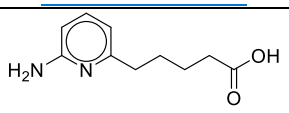
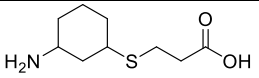
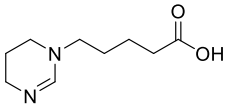
n is an integer number between 1 and 2;

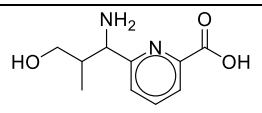
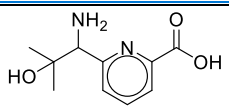
m is 1 or 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound, represented by any one of the following structures:

Compound	Structure
101	
102	
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123	
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142	

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

2. The compound of claim 1, wherein ring **A** as defined by formula I(g), has two chiral centers;

wherein as defined in formula I(g), R_1 and R_1' are both H, R_2 is CH_3, R_2' is H or CH_3, R_{40} is H or CH_3, X_1 is CH_2, X_2 is CH_2, X_3 is O, NH or N-CH_3, R_5 is H, ethyl, butyl, CH_2-CCH, CH_2-C(O)-OCH_3 or SO_2-CH_2-cyclopentyl, R_3 is OH, R_4 is NH_2 or R_3 and R_4 are joined to form ring A, n is 1, m is 1, or any combination thereof;

wherein the compound is not (*6R*,*7S*)-6-amino-7-hydroxyoctanoic acid or 5-((*4R*,*5S*)-5-methyl-2-oxooxazolidin-4-yl)pentanoic acid;

wherein the compound is a mixture of stereoisomers;

or any combination thereof.

~~3. The compound of claim 1, wherein the compound is not (*6R*,*7S*)-6-amino-7-hydroxyoctanoic acid or 5-((*4R*,*5S*)-5-methyl-2-oxooxazolidin-4-yl)pentanoic acid.~~

~~4. The compound of claim 1 or 2, wherein the compound is a substantially pure single stereoisomer.~~

~~5. The compound of claim 1 or 2, wherein the compound is a mixture of stereoisomers.~~

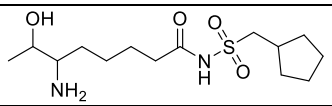
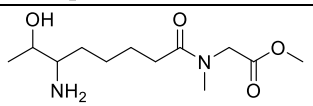
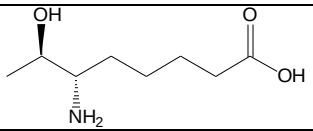
~~6. The compounds of any one of claims 1-3, wherein the compound is the substantially pure *SR* stereoisomer, *RS* stereoisomer, *RR* stereoisomer, or *SS* diastereomer.~~

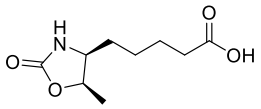
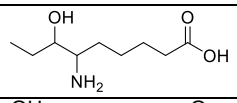
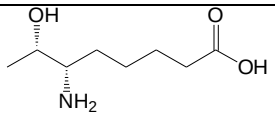
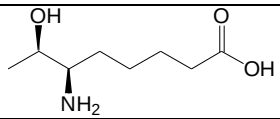
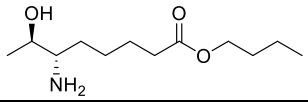
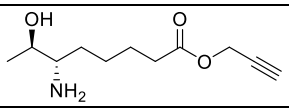
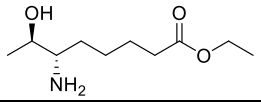
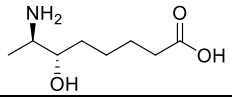
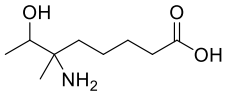
~~7. The compound of claim 4 or 6, wherein the substantially pure stereoisomer has a purity higher than 90%, preferably higher than 95%, most preferably higher than 98%.~~

~~8. The compound of claim 1,~~

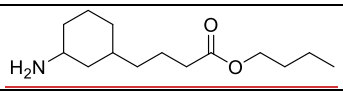
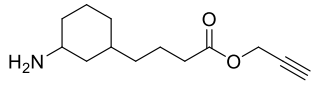
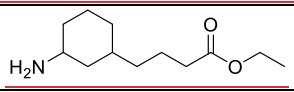
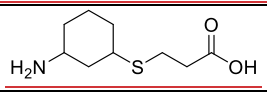
~~wherein R_1 and R_1' are both H, R_2 is CH_3, R_2' is H or CH_3, R_{40} is H or CH_3, X_1 is CH_2, X_2 is CH_2, X_3 is O, NH or N-CH_3, R_5 is H, ethyl, butyl, CH_2-CCH, CH_2-C(O)-OCH_3 or SO_2-CH_2-cyclopentyl, R_3 is OH, R_4 is NH_2 or R_3 and R_4 are joined to form ring A, n is 1, m is 1, or any combination thereof.~~

~~9~~3. The compound of ~~any one of~~ claims 1~~-8~~ or 2, as defined by formula I(g), represented by any one of the following structures:

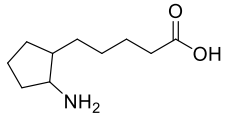
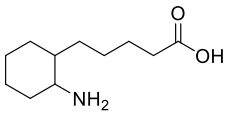
Compound	Structure
101	
102	
104	

105	
113	
114	
115	
116	
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119	
120	

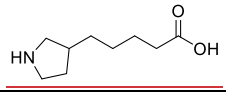
or as defined by formula X(a), represented by any one of the following structures:

Compound	Structure
124	
125	
126	
139	

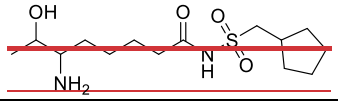
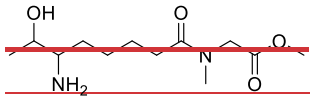
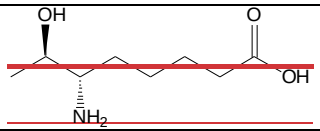
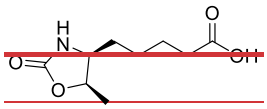
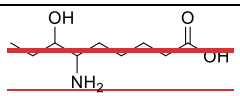
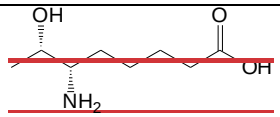
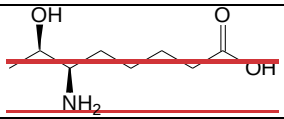
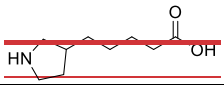
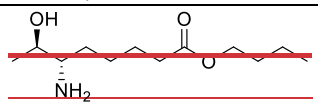
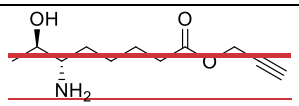
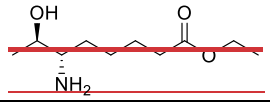
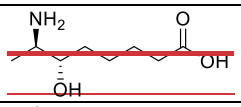
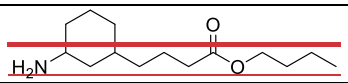
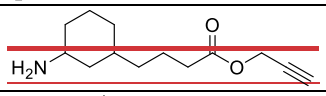
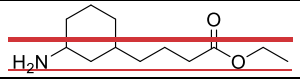
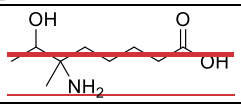
or as defined by formula X(c), represented by any one of the following structures:

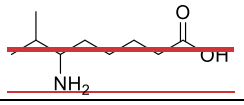
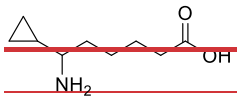
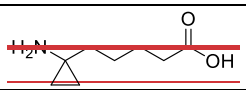
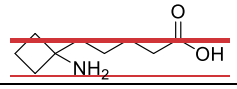
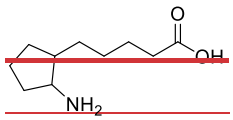
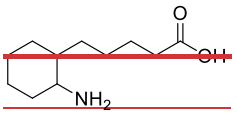
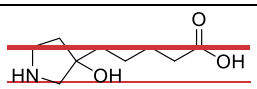
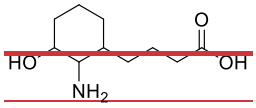
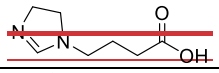
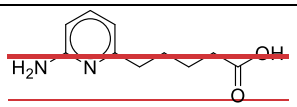
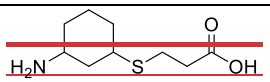
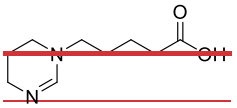
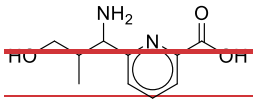
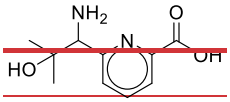
Compound	Structure
131	
132	

or as defined by formula X(d), represented by the following structure:

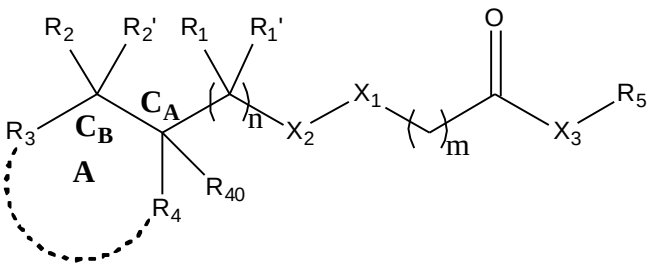
Compound	Structure
123	

~~10. A compound, represented by any one of the following structures:~~

~~Compound~~	~~Structure~~
~~101~~	
~~102~~	
~~104~~	
~~105~~	
~~113~~	
~~114~~	
~~115~~	
~~123~~	
~~116~~	
~~117~~	
~~118~~	
~~119~~	
~~124~~	
~~125~~	
~~126~~	
~~120~~	

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~~141~~	
~~142~~	

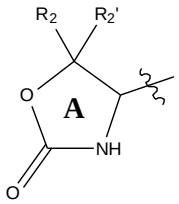
~~11~~4. An herbicidal compound, represented by the structure of formula **I(ga):**



I(ga)

wherein

C_A and **C_B** are both chiral carbon centers, or **C_A** and **C_B** together with **R_3** and **R_4** are joined to form ring **A,** represented by the following structure:



R_1, R_1', R_2, R_2' and **R_{40}** are each independently H, C_1-C_5 linear or branched, unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, benzyl, C(O)-R_{10}, or C(O)-CH_3;

R_3 is OH, SH, NH_2, $NHNH_2$, NHR, $N(R)_2$, NHC(O)OBz, -NHC(O)-R_{10}, $NHC(O)CH_3$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, methyl, ethyl, propyl, iso-propyl, t-Bu, iso-butyl, pentyl, substituted or unsubstituted C_3-C_8 cycloalkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic alkoxy, substituted or unsubstituted C_3-C_8 heterocyclic ring, or substituted or unsubstituted aryl;

R_4 is NH_2, $NHNH_2$, $N(R)_2$, -NHC(O)-R_{10}, NHC(O)H, $NHC(O)CH_3$, C_1-C_5 linear or branched, substituted or unsubstituted alkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic haloalkyl, C_1-C_5 linear or branched or C_3-C_8 cyclic alkoxy, substituted or unsubstituted C_3-C_8 cycloalkyl, substituted or unsubstituted C_3-C_8 heterocyclic ring, or substituted or unsubstituted aryl;

or **R_3** and **R_4** are joined together to form ring **A** as described above;

wherein **R_3** and **R_4** cannot both be NH_2, and

wherein if **R_3** is OH and **R_4** is NH_2, then **n** + **m** cannot be equal to 3;

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted alkyl sulfone (e.g., SO_2-CH_2-cyclopentyl), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} and **R_{11}** are each independently H, CN, C_1-C_5 linear or branched alkyl, C(O)R, or $S(O)_2R$;

or **R_{10}** and **R_{11}** are joined to form a substituted or unsubstituted C_3-C_8 heterocyclic ring;

R is C_1-C_5 linear or branched alkyl, C_1-C_5 linear or branched alkoxy, phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

m is 1 or 2;

n is 0, 1, 2 or 3;

X_1 is S, O, or CH_2;

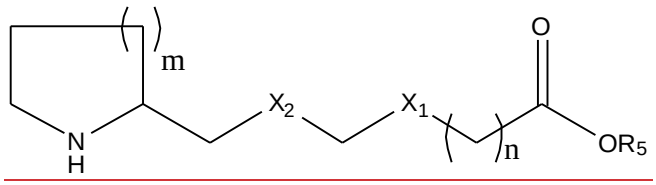
X_2 is S, O, or CH_2;

X_3 is O, NH or N-**R_{50}**;

R_{50} is H or C_1-C_5 linear or branched, substituted or unsubstituted alkyl;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof

or an herbicidal compound represented by the structure of formula **X(b)**:



X(b)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

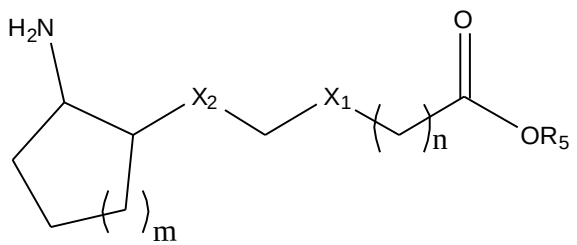
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or an herbicidal compound represented by the structure of formula **X(c)**:



X(c)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl,

butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

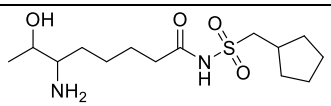
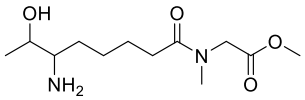
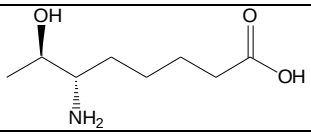
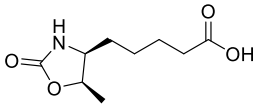
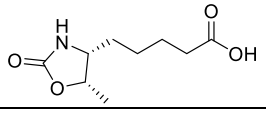
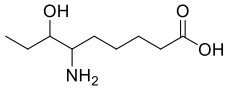
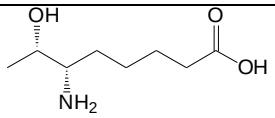
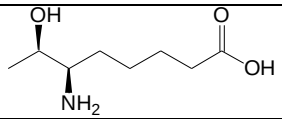
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

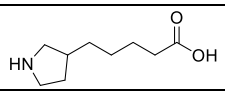
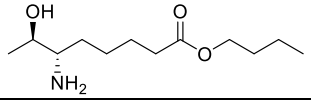
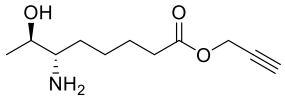
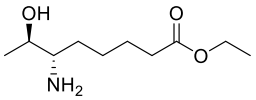
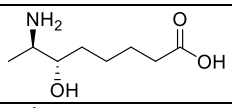
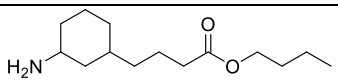
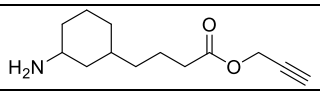
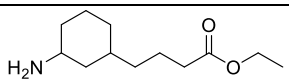
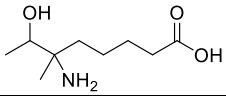
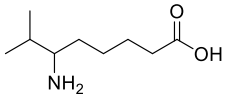
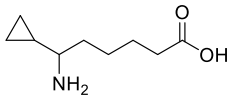
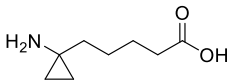
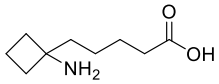
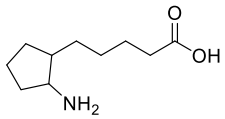
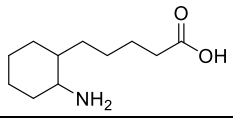
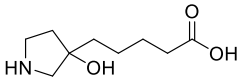
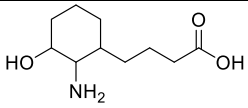
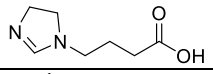
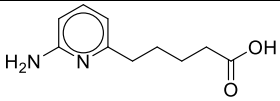
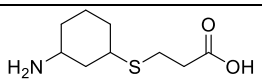
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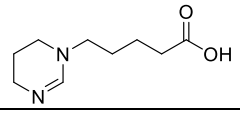
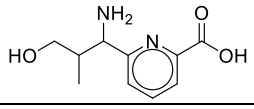
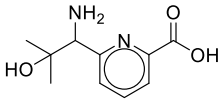
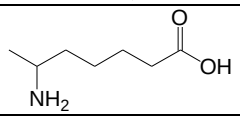
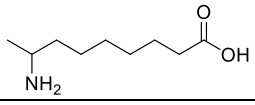
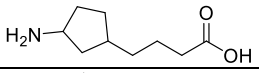
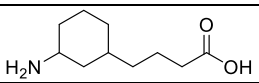
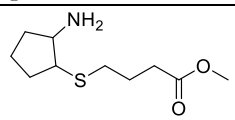
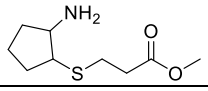
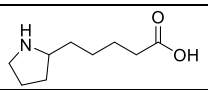
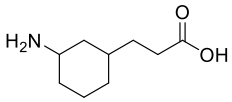
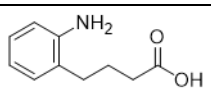
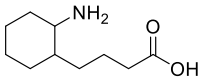
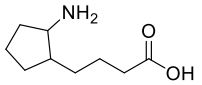
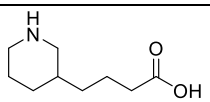
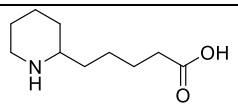
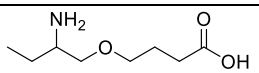
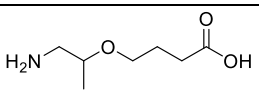
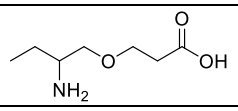
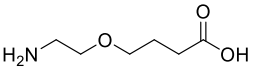
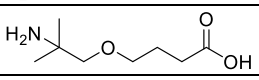
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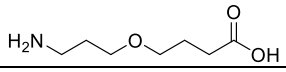
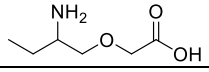
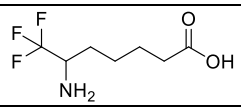
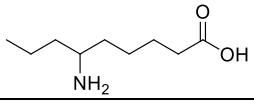
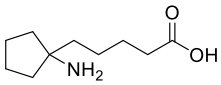
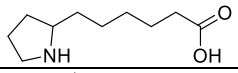
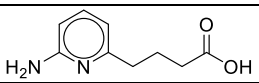
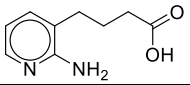
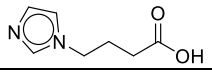
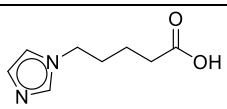
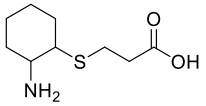
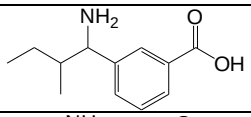
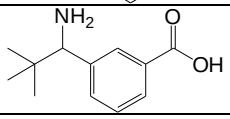
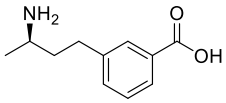
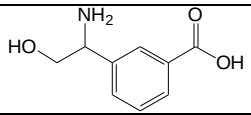
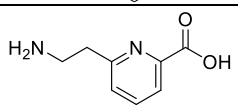
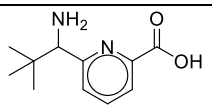
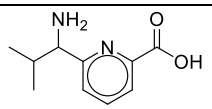
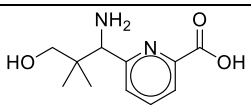
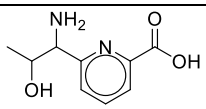
or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

~~12. An~~ or an herbicidal compound, represented by any one of the following structures:

Compound	Structure
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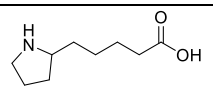
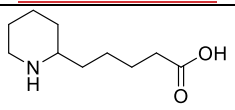
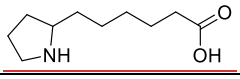
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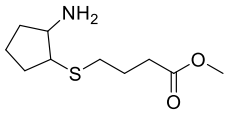
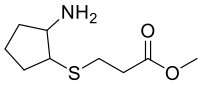
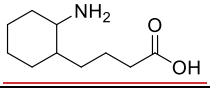
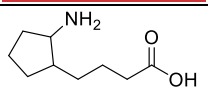
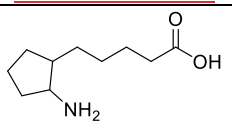
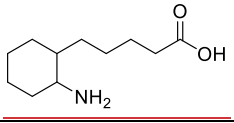
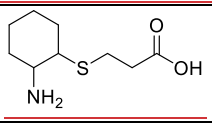
or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide

analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

5. The herbicidal compound of claim 4, as defined by formula X(b), represented by the following structures:

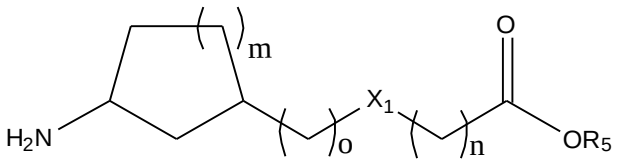
Compound	Structure
148	
155	
166	

or as defined by formula X(c), represented by the following structures:

Compound	Structure
146	
147	
152	
153	
131	
132	
171	

6. The compound of any one of claims 1-5, for use in controlling the growth of an undesired plant.

7. A compound represented by the structure of formula **X(a)**:



X(a)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5

linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-C(O)-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., $C(O)(OCH_3)$), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

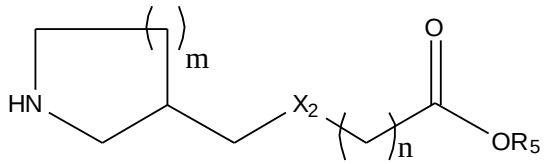
X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

n and **o** are each independently an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

or a compound represented by the structure of formula **X(d)**:



X(d)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), $C(=CH_2)$-R_{10} (e.g., $C(=CH_2)$-C(O)-OCH_3, $C(=CH_2)$-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., $C(O)(OCH_3)$), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

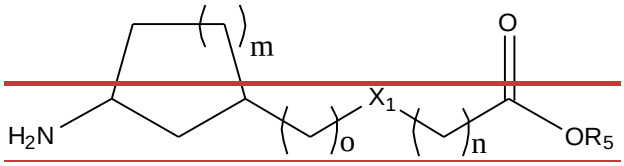
n is an integer number between 0 and 2;

m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof;

for use in controlling the growth of an undesired plant.

~~13. An herbicidal compound represented by the structure of formula **X(a)**:~~



~~**X(a)**~~

~~wherein~~

~~**R**$_5$ is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$ $CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);~~

~~**R**$_8$ is $[CH_2]_p$~~

~~wherein **p** is between 1 and 10;~~

~~**R**$_{10}$ is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or S(O)$_2$R;~~

~~**R** is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;~~

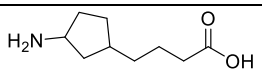
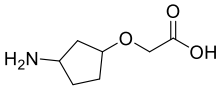
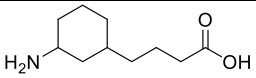
~~**X**$_1$ is S, O, CH_2, CH(R) or C(R)$_2$;~~

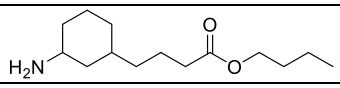
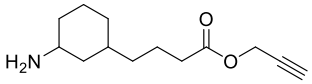
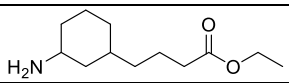
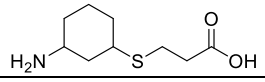
~~**n** and **o** are each independently an integer number between 0 and 2;~~

~~**m** is an integer number between 1 and 3;~~

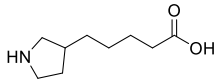
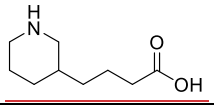
~~or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.~~

~~14~~8. The compound of claim 7, as defined by formula X(a)~~The compound of claim 13~~, represented by any one of the following structures:

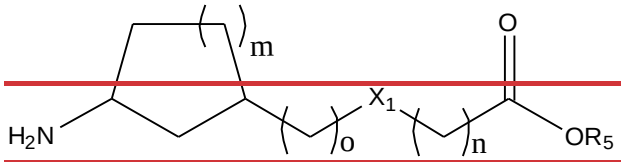
Compound	Structure
143	
144	
145	

124	
125	
126	
139	

or as defined by formula X(d), represented by any one of the following structures:

Compound	**Structure**
123	
154	

~~15. A compound represented by the structure of formula **X(a):**~~



~~**X(a)**~~

~~wherein~~

~~**R_5** is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);~~

~~**R_8** is $[CH_2]_p$~~

~~wherein **p** is between 1 and 10;~~

~~**R_{10}** is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or S(O)$_2$R;~~

~~**R** is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;~~

~~**X_1** is S, O, CH_2, CH(R) or C(R)$_2$;~~

~~wherein if X_1 is CH_2, then R_5 cannot be H;~~

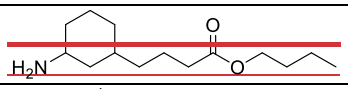
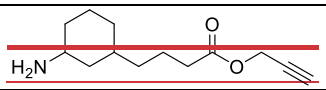
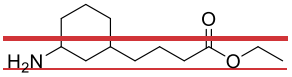
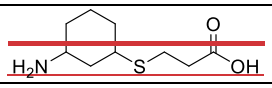
~~**n** is 2;~~

~~o is 0;~~

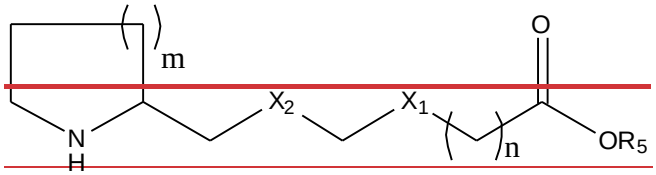
~~**m** is an integer number between 1 and 3;~~

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

16. The compound of claim 15, represented by any one of the following structures:

Compound	**Structure**
124	
125	
126	
139	

17. An herbicidal compound represented by the structure of formula **X(b)**:



X(b)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$, $CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem-R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

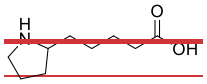
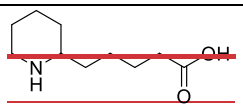
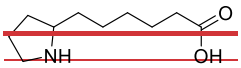
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

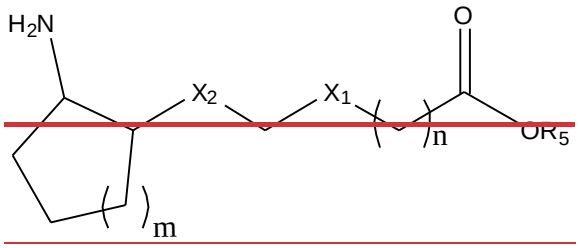
m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

18. The compound of claim 17, represented by the following structures:

Compound	Structure
148	
155	
166	

19. An herbicidal compound represented by the structure of formula **X(c)**:



X(c)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or S(O)$_2$R;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or C(R)$_2$;

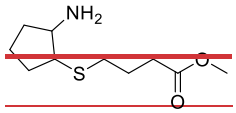
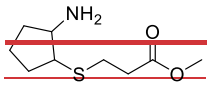
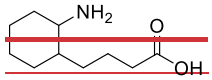
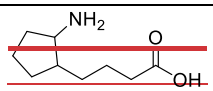
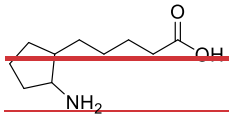
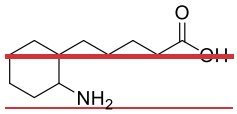
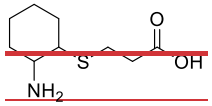
X_2 is S, O, CH_2, CH(R) or C(R)$_2$;

n is an integer number between 0 and 2;

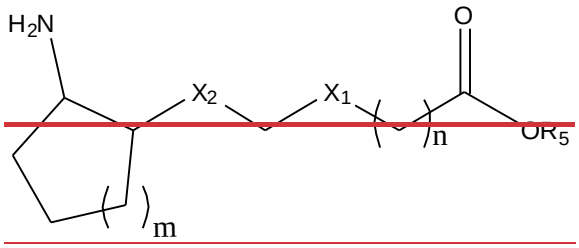
m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N*-oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

20. The compound of claim 19, represented by the following structures:

Compound	Structure
146	
147	
152	
153	
131	
132	
171	

21. A compound represented by the structure of formula **X(c)**:



X(c)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$, $CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or $S(O)_2R$;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered

heterocyclic ring;

X_1 is S, O, CH_2, CH(R) or $C(R)_2$;

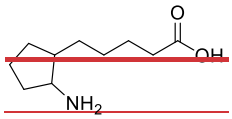
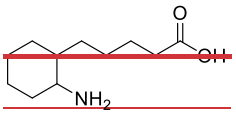
X_2 is O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 1 and 2;

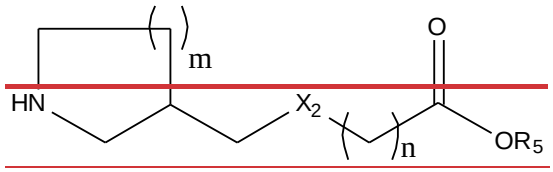
m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N* oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

22. The compound of claim 21, represented by any one of the following structures:

Compound	**Structure**
131	
132	

23. An herbicidal compound represented by the structure of formula **X(d)**:



X(d)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or S(O)$_2$R;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

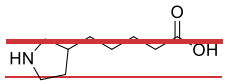
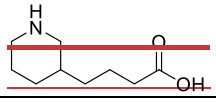
X_2 is S, O, CH_2, CH(R) or $C(R)_2$;

n is an integer number between 0 and 2;

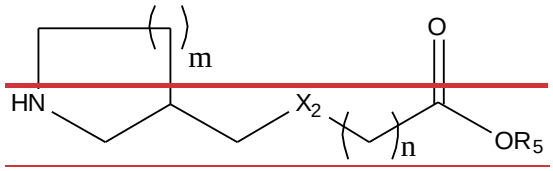
m is an integer number between 1 and 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N* oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

24. The compound of claim 23, represented by any one of the following structures:

Compound	**Structure**
123	
154	

25. A compound represented by the structure of formula **X(d)**:



X(d)

wherein

R_5 is H, C_1-C_5 linear or branched, substituted or unsubstituted alkyl (e.g., methyl, CH_2SH, ethyl, butyl, CH_2-CCH, iso-propyl, CH_2-C(O)-OCH_3), C_2-C_5 linear or branched, substituted or unsubstituted alkenyl, C_2-C_5 linear or branched, substituted or unsubstituted alkynyl (e.g., CCH, CH_2-CCH,), C_1-C_5 linear or branched haloalkyl (e.g., CF_3, CF_2CH_3, CH_2CF_3, $CF_2CH_2CH_3$, $CH_2CH_2CF_3$, $CF_2CH(CH_3)_2$,$CF(CH_3)$-$CH(CH_3)_2$), R_8-aryl (e.g., CH_2-Ph), C(=CH_2)-R_{10} (e.g., C(=CH_2)-C(O)-OCH_3, C(=CH_2)-CN), substituted or unsubstituted aryl (e.g., phenyl), substituted or unsubstituted heteroaryl (e.g., pyridine (2, 3, and 4-pyridine);

R_8 is $[CH_2]_p$

wherein **p** is between 1 and 10;

R_{10} is H, CN, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C(O)R (e.g., C(O)(OCH_3)), or S(O)$_2$R;

R is H, C_1-C_5 linear or branched alkyl (e.g., methyl, ethyl), C_1-C_5 linear or branched alkoxy (e.g., methoxy), phenyl, aryl or heteroaryl, or two gem R substituents are joined together to form a 5 or 6 membered heterocyclic ring;

X_2 is S, O, CH_2, CH(R) or C(R)$_2$;

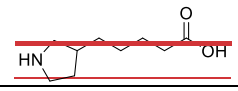
n is an integer number between 0 and 2;

m is 1 or 3;

or its agrochemically acceptable salt, stereoisomer, tautomer, hydrate, *N* oxide, reverse amide analog, isotopic variant (e.g., deuterated analog), or any combination thereof.

26. The compound of claim 25, represented by the following structure:

Compound	**Structure**

~~123~~	

~~27~~9. The compound of any one of claims ~~10-26~~1-8, wherein the compound is a substantially pure single stereoisomer;

or wherein the compound is the substantially pure *SR* stereoisomer, *RS* stereoisomer, *RR* stereoisomer, or *SS* diastereomer~~.~~.

~~28~~10. The compound of ~~any one of~~ claim~~s~~ ~~1-27~~9, wherein the substantial pure stereoisomer has a purity higher than 90%, preferably higher than 95%, most preferably higher than 98%.

~~29. The compound of any one of claims 1-28, for use in controlling the growth of an undesired plant.~~

~~30~~11. The compound of claim~~s~~ ~~29~~6-10, wherein the plant is a eudicot (dicot) or a monocotyledon (monocot); and/or ~~.~~

~~31. The compound of claim 29 or 30,~~ wherein said plant is a weed.

~~32~~12. The compound of claim ~~31~~11,

wherein the dicot plant is *Arabidopsis thaliana*, and/or the monocot plant is *Dactyloctenium aegyptium* or *Eragrostis teff*;

wherein said weed comprises: *Abutilon theophrasti* , *Amaranthus palmeri*, *Ambrosia artemisiifolia* , *Alopecurus myosuroides* , *Avena sterilis* , *Chenopodium album* , *Conyza Canadensis* , *Digitaria sanguinalis* , *Echinochloa colona*, *Euphorbia heterophylla* , *Lolium perenne* , *Lolium rigidum* , *Matricaria chamomilla* , *Phalaris paradoxa* , *Poa annua* , *Portulaca oleracea* , *Setaria viridis*, *Solanum nigrum* or any combination thereof;

or combination thereof.

~~33. The compound of claim 30, wherein the dicot plant is *Arabidopsis thaliana*, and/or the monocot plant is *Dactyloctenium aegyptium* or *Eragrostis teff*.~~

~~34~~13. The compound of any one of claims ~~29-33~~6-12, for use in pre-plant treatments, pre-emergence treatments, post-emergence treatments, or any combination thereof.