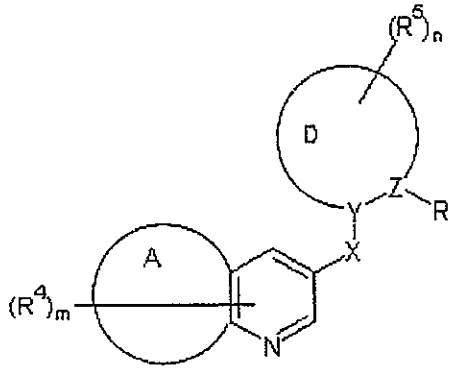
1. A nitrogen-containing heterocyclic compound represented by Formula (I):



(I)

wherein, in Formula (I), R represents a group represented by $CR^1R^2R^3$, an unsubstituted or substituted C_{6-10} aryl group, or a cyano group;

R^1 to R^3 each independently represents a hydrogen atom, an unsubstituted or substituted C_{1-8} alkyl group, an unsubstituted or substituted C_{2-8} alkenyl group, an unsubstituted or substituted C_{2-8} alkynyl group, an unsubstituted or substituted C_{3-8} cycloalkyl group, an unsubstituted or substituted C_{4-8} cycloalkenyl group, an unsubstituted or substituted C_{6-10} aryl group, an unsubstituted or substituted heterocyclic group, an unsubstituted or substituted C_{1-8} acyl group, an unsubstituted or substituted (1-imino)C_{1-8} alkyl group, an unsubstituted or substituted carboxyl group, an unsubstituted or substituted carbamoyl group, an unsubstituted or substituted hydroxyl group, an unsubstituted or substituted amino group, an unsubstituted or substituted mercapto group, a substituted sulfonyl group, a halogeno group, a cyano group, or a nitro group;

excepting in which: R^1 to R^3 are all hydrogen atoms; R^1 to R^3 are all unsubstituted C_{1-8} alkyl groups; any one of R^1 to R^3 is a hydrogen atom and the remaining two are both unsubstituted C_{1-8} alkyl groups; and, any one of R^1 to R^3 is an

unsubstituted C_{1-8} alkyl group and the remaining two are both hydrogen atoms;

R^1 and R^2 may be joined to form an unsubstituted or substituted 5- to 8-membered ring, or to form O=, R^aR^bC=, or R'–N=;

R^a represents a hydrogen atom or an unsubstituted or substituted C_{1-8} alkyl group;

R^b represents a hydrogen atom or an unsubstituted or substituted C_{1-8} alkyl group;

R' represents an unsubstituted or substituted hydroxyl group, or an unsubstituted or substituted C_{1-8} alkyl group;

R^4 each independently represents an unsubstituted or substituted C_{1-8} alkyl group, an unsubstituted or substituted C_{2-8} alkenyl group, an unsubstituted or substituted C_{2-8} alkynyl group, an unsubstituted or substituted C_{3-8} cycloalkyl group, an unsubstituted or substituted C_{4-8} cycloalkenyl group, an unsubstituted or substituted C_{6-10} aryl group, an unsubstituted or substituted heterocyclic group, an unsubstituted or substituted C_{1-8} acyl group, an unsubstituted or substituted (1-imino)C_{1-8} alkyl group, an unsubstituted or substituted carboxyl group, an unsubstituted or substituted carbamoyl group, an unsubstituted or substituted hydroxyl group, an unsubstituted or substituted amino group, an unsubstituted or substituted mercapto group, a substituted sulfonyl group, a halogeno group, a cyano group, or a nitro group;

m represents a number of R^4 and is an integer of 0 to 6;

R^5 each independently represents an unsubstituted or substituted C_{1-8} alkyl group, an unsubstituted or substituted C_{2-8} alkenyl group, an unsubstituted or substituted C_{2-8} alkynyl group, an unsubstituted or substituted C_{3-8} cycloalkyl group, an unsubstituted or substituted C_{4-8} cycloalkenyl group, an unsubstituted or substituted C_{6-10} aryl group, an unsubstituted or substituted heterocyclic group, an unsubstituted or substituted C_{1-8} acyl

group, an unsubstituted or substituted (1-imino)C_{1-8} alkyl group, an unsubstituted or substituted carboxyl group, an unsubstituted or substituted carbamoyl group, an unsubstituted or substituted hydroxyl group, an unsubstituted or substituted amino group, an unsubstituted or substituted mercapto group, a substituted sulfonyl group, a halogeno group, a cyno group, or a nitro group;

n represents a number of R^5 and is an integer of 0 to 5;

any one of R^1 to R^3 and any one of R^5 may be joined to form an unsubstituted or substituted 5- to 8-membered ring;

A represents: a 5- to 7-membered hydrocarbon ring or a 5- to 7-membered heterocyclic ring when R is a group represented by $CR^1R^2R^3$; or a benzene ring when R is an unsubstituted or substituted C_{6-10} aryl group or a cyano group;

D represents a 5- to 7-membered hydrocarbon ring or a 5- to 7-membered heterocyclic ring;

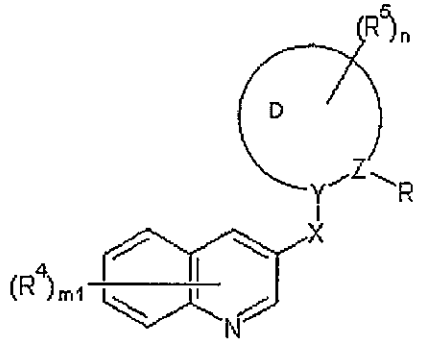
X represents an oxygen atom, a sulfur atom, a sulfenyl group, a sulfonyl group, an unsubstituted or substituted carbon atom, or an unsubstituted or substituted nitrogen atom;

Y represents a carbon atom or a nitrogen atom; and

Z represents a carbon atom or a nitrogen atom,

or a salt thereof, or an N-oxide compound thereof.

2. A nitrogen-containing heterocyclic compound, a salt thereof, or an N-oxide compound, according to Claim 1, wherein the nitrogen-containing heterocyclic compound is represented by Formula (II):



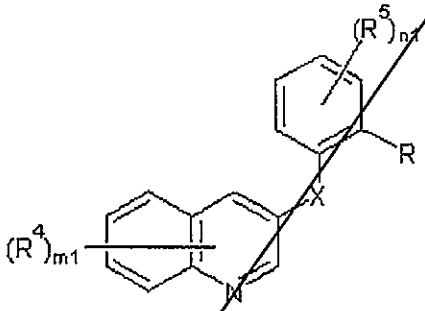
(II)

wherein each of R, R^4, R^5, n, D, X, Y, and Z represents the same meaning as those in Formula (I); and

m1 represents a number of R^4 and is an integer of 0 to 6,

or a salt thereof, or an N-oxide compound thereof.

3. A nitrogen-containing heterocyclic compound, a salt thereof, or an N-oxide compound, according to Claim 2, wherein the nitrogen-containing heterocyclic compound is represented by Formula (III):



(III)

wherein each of R, R^4, R^5, m1 and X represents the same meaning as those in Formula (II); and

n1 represents a number of R^5 and is an integer of 0 to 4.

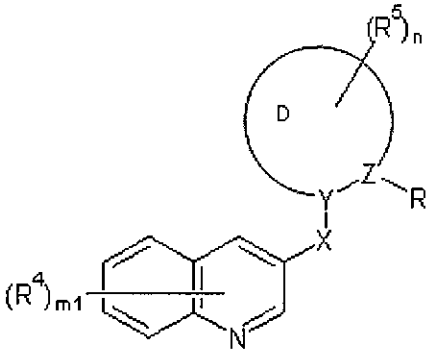
4. An agricultural fungicide comprising, as an active ingredient, at least one selected from the group consisting of the nitrogen-containing heterocyclic compound, the

salt thereof, and the N-oxide compound thereof, of any one of Claims 1 to 3.

5. An intermediate product of the nitrogen-containing heterocyclic compound, the salt thereof, or the N-oxide compound thereof, of Claim 1, the intermediate product being selected from the group consisting of 8-fluoro-3-hydroxyquinoline, 7,8-difluoro-3-hydroxyquinoline, 7,8-difluoro-3-iodoquinoline, 8-fluoro-3-hydroxy-2-methylquinoline, and 7,8-difluoro-3-hydroxy-2-methylquinoline.

CLAIMS

1. A nitrogen-containing heterocyclic compound represented by Formula (II):



(II)

wherein, in Formula (II), R represents a group represented by $CR^1R^2R^3$;

R^1, R^2, and R^3, each independently represents a hydrogen atom, an unsubstituted or substituted C_{1-8} alkyl group, an unsubstituted C_{2-8} alkenyl group, an unsubstituted C_{2-8} alkynyl group, an unsubstituted C_{3-8} cycloalkyl group, an unsubstituted C_{4-8} cycloalkenyl group, an unsubstituted C_{6-10} aryl group, an unsubstituted heterocyclic group, an unsubstituted C_{1-8} acyl group, an unsubstituted (1-imino)C_{1-8} alkyl group, an unsubstituted or substituted carboxyl group, an unsubstituted or substituted carbamoyl group, an unsubstituted or substituted hydroxyl group, an unsubstituted or substituted amino group, a halogeno group, a cyano group, or a nitro group;

excepting in which: R^1, R^2, and R^3 are all hydrogen atoms; R^1, R^2, and R^3 are all unsubstituted C_{1-8} alkyl groups; any one of R^1, R^2, andR^3 is a hydrogen atom and the remaining two are both unsubstituted C_{1-8} alkyl groups; and, any one of R^1, R^2, andR^3 is an unsubstituted C_{1-8} alkyl group and the remaining two are both hydrogen atoms;

R^1 and R^2 may be joined to form O=

R^4 each independently represents an unsubstituted or substituted C_{1-8} alkyl group, an unsubstituted C_{2-8} alkenyl group, an unsubstituted C_{2-8} alkynyl group, an unsubstituted C_{3-8} cycloalkyl group, an unsubstituted or substituted hydroxyl group, a halogeno group, a cyano group, or a nitro group;

m1 represents a number of R^4 and is an integer of 0 to 6;

R^5 each independently represents an unsubstituted or substituted C_{1-8} alkyl group, an unsubstituted C_{2-8} alkenyl group, an unsubstituted C_{2-8} alkynyl group, an unsubstituted C_{3-8}

cycloalkyl group, an unsubstituted or substituted hydroxyl group, a halogeno group, a cyano group, or a nitro group;

n represents a number of R^5 and is an integer of 0 to 5;

D represents a 5- to 7-membered hydrocarbon ring or a 5- to 7-membered heterocyclic ring;

X represents an oxygen atom;

Y represents a carbon atom; and

Z represents a carbon atom, and

the substituted C_{1-8} alkyl group is a C_{3-6} cycloalkyl C_{1-6} alkyl group, a C_{4-6} cycloalkenyl C_{1-6} alkyl group, a C_{1-6} haloalkyl group, a C_{6-10} aryl C_{1-6} alkyl group, 5- to 6-membered heteroaryl C_{1-6} alkyl group, a hydroxyl C_{1-6} alkyl group, a C_{1-6} alkoxy C_{1-6} alkyl group, a C_{1-7} acyloxy C_{1-6} alkyl group, a tri C_{1-6} alkylsilyloxy C_{1-6} alkyl group, a C_{1-6} alkyl-substituted C_{6-10} arylsulfonyloxy C_{1-6} alkyl group, a cyano C_{1-6} alkyl group, a C_{1-6} acyl C_{1-6} alkyl group, a 2- hydroxyimino C_{2-6} alkyl group, a formyl C_{1-6} alkyl group, a carboxy C_{1-6} alkyl group, a C_{1-6} alkoxycarbonyl C_{1-6} alkyl group, or an azido C_{1-6} alkyl group,

the substituted carboxyl group is a C_{1-6} alkoxycarbonyl group, a C_{2-6} alkenyloxycarbonyl group, a C_{2-6} alkynyloxycarbonyl group, a C_{6-10} aryloxycarbonyl group, or a C_{6-10} aryl C_{1-6} alkoxycarbonyl group,

the substituted carbamoyl group is a mono C_{1-6} alkylcarbamoyl group, a di C_{1-6} alkylcarbamoyl group, or a mono C_{6-10} arylcarbamoyl group,

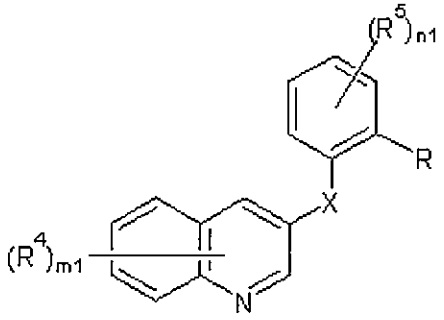
the substituted hydroxyl group is a C_{1-6} alkoxy group, a C_{3-8} cycloalkyl C_{1-6} alkoxy group, a C_{6-10} aryl C_{1-6} alkoxy group, a C_{1-6} haloalkoxy group, a C_{2-6} alkenyloxy group, a C_{2-6} alkynyloxy group, a C_{3-6} cycloalkyloxy group, a C_{6-10} aryloxy group, a C_{6-10} aryl C_{1-6} alkyloxy group, a C_{1-7} acyloxy group, a C_{1-6} alkoxycarbonyl C_{1-6} alkoxy group, or a tri C_{1-6} alkylsilyloxy group,

the substituted amino group is a mono C_{1-6} alkylamino group, a di C_{1-6} alkylamino group, a mono C_{1-6} alkylideneamino group, a mono C_{6-10} arylamino group, a di C_{6-10} arylamino group, a C_{6-10} aryl C_{1-6} alkylamino group, a C_{1-6} acylamino group, or a C_{1-6} alkoxycarbonylamino group, and

the heterocyclic group is a 5-membered heteroaryl group, a 6-membered heteroaryl group, a condensed heteroaryl group, a saturated heterocyclic group or a partially unsaturated heterocyclic group having 1 to 4 heteroatoms selected from the group consisting of a nitrogen atom, an oxygen atom, and a sulfur atom, as a constituent atom of a ring,

or a salt thereof, or an N-oxide compound thereof.

2. A nitrogen-containing heterocyclic compound, a salt thereof, or an N-oxide compound, according to Claim 1, wherein the nitrogen-containing heterocyclic compound is represented by Formula (III):



(III)

wherein each of R, R^4, R^5, m1 and X represents the same meaning as those in Formula (II); and

n1 represents a number of R^5 and is an integer of 0 to 4.

3. An agricultural fungicide comprising, as an active ingredient, at least one selected from the group consisting of the nitrogen-containing heterocyclic compound, the salt thereof, and the N-oxide compound thereof, of Claims 1 or 2.

4. A nitrogen-containing heterocyclic compound, a salt thereof, or an N-oxide compound, according to claim 1, wherein R^1 represents the unsubstituted or substituted hydroxyl group, R^2 represents the hydrogen atom or the unsubstituted or substituted C_{1-8} alkyl group, and R^3 represents the hydrogen atom, the unsubstituted or substituted C_{1-8} alkyl group, the unsubstituted C_{2-8} alkenyl group, the unsubstituted C_{2-8} alkynyl group, the unsubstituted C_{3-8} cycloalkyl group, the unsubstituted C_{6-10} aryl group, the unsubstituted hererocyclic group, the unsubstituted C_{1-8} acyl group, the unsubstituted (1-imino)C_{1-8} alkyl group, the C_{1-6} alkoxycarbonyl group, the unsubstituted or substituted hydroxyl group, or, the cyano group.

5. A nitrogen-containing heterocyclic compound, a salt thereof, or an N-oxide compound, according to claim 1, wherein R^4 represents a C_{1-6} alkyl group, a C_{1-6} haloalkyl group, a C_{2-6} alkenyl group, a C_{3-8} cycloalkyl group, a hydroxyl group, a C_{1-6} alkoxy group,

or a halogeno group.

6. A nitrogen-containing heterocyclic compound, a salt thereof, or an N-oxide compound according to claim 1, wherein R^5 represents a C_{1-6} alkyl group, a C_{1-6} haloalkyl group, a C_{6-10} aryl C_{1-6} alkyl group, a C_{3-8} cycloalkyl group, a C_{1-6} alkoxy group, a halogeno group, a cyano group or a nitro group.

7. A nitrogen- containing heterocyclic compound, a salt thereof, or an N-oxide compound, according to claim 6, wherein the nitrogen-containing heterocyclic compound is 2-[2-fluoro-6-(8-fluoroquinolin-3-yloxy)-phenyl]-3,3-dimethyl-butan-2-ol, 2-[2-fluoro-6-(8-fluoroquinolin-3-yloxy)-phenyl]-propan-2-ol, 2-[2-fluoro-6-(8-fluoro-2-methylquinolin-3-yloxy)-phenyl]-propan-2-ol, or 2-[2-fluoro-6-(7,8-difluoro-2-methylquinolin-3-yloxy)-phenyl]-propan-2-ol.

8. An agricultural fungicide for seed treatment comprising, as an active ingredient, at least one selected from the group consisting of the nitrogen-containing heterocyclic compound, the salt thereof, and the N-oxide compound thereof, of claim 1.

9. A method for treating a seed using an agricultural fungicide comprising, as an active ingredient, at least one selected from the group consisting of the nitrogen-containing heterocyclic compound, the salt thereof, and the N-oxide compound thereof, of claim 1.