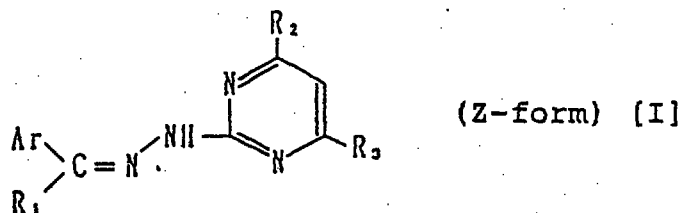


Agrochemical Composition Containing a Pyrimidine
Derivative

This invention relates to stabilized agrochemical compositions, which comprise (1) a pyrimidine derivative of the formula [I]

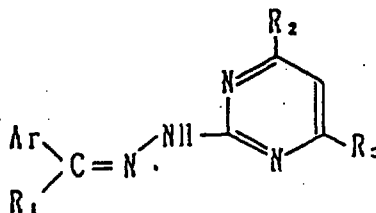


wherein Ar means a phenyl group substituted by at least a lower alkyl; R_1 , R_2 and R_3 independently mean a lower alkyl group or its salt and (2) an oxide or hydroxide of zinc, calcium or magnesium.

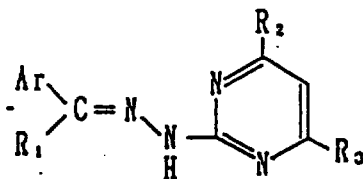
15 The pyrimidine derivatives of the above formula [I] and their salts (hereinafter referred to briefly as Compounds M) have potent controlling activities against agricultural pests causative of various plant diseases such as blast, leaf spot, stem rot, etc. and are of
20 value as an agricultural and horticultural pesticide, particularly fungicide and/or antimicrobial agent, as disclosed in Japanese Unexamined Patent Application KOKAI 151570/1980 (USP No. 4341782).

However, Compounds M have the disadvantage that
25 when formulated into a preparation, they undergo isomerization under the influence of concomitant ingredients.

In further detail, while Compounds M are Z-forms with respect to the C=N double bond and may be written
30 as



there are E-forms which may be written as



5

These two geometrical isomers can be independently isolated. Compounds M may, on the other hand, occur as a certain equilibrium mixture of these isomers. Depending on types of concomitant ingredients and other conditions, this equilibrium may shift in favor of the E-form and in disfavor of the Z-form. That is to say, the Z-forms of Compounds M in a formulation may be isomerized to the E-forms. Z form and E form are both effective as pesticidal agents. However, since the E-form is not as chemically stable as the Z-form, it is preferable that the isomerization from Z-form to E-form be somehow prevented.

Generally speaking, agrochemically active substances are put to use as formulated with various carriers and auxiliary agents. Compounds M are no exception. The compound is used not only in the form of a composition containing it as an exclusive active ingredient but also in combination with other active ingredients for simultaneous, labor-saving control of pests, particularly fungi and microbes. Once so formulated, Compounds M undergo isomerization on many occasions.

The isomerization of Compounds M occurs particularly in the presence of acid substances. While the demand for a mixture containing a Compound M and other pesticidal or fungicidal agents is great as suggested above, many of the insecticidal and fungicidal agents are either acidic in themselves or substances which are only stable under acidic conditions. Some of the auxiliary agents in prevalent use are also acidic

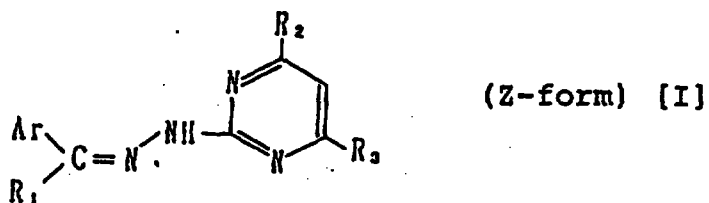
and when mixed with these substances, Compounds M isomerize to a substantial extent. Some of carriers also promote this isomerization of Compounds M to E-form.

5 It is, therefore, an object of the invention to provide an agrochemical composition in which the isomerization of Compound M is prevented.

It is a still important object to provide a stabilized agrochemical composition in which the
10 Compound M has been stabilized against isomerization without adverse effects on concomitant ingredients.

Exploring the technology for providing an agrochemical composition in which Compound M, a chemical substance having an excellent control action against
15 blast and other plant diseases, could be maintained free of isomerization, the present inventors discovered surprisingly that a certain type of oxide or hydroxide incorporated in such a composition inhibited the isomerization of Compounds M and, yet, caused no toxic
20 effect on the crops, man and domestic animals. The subsequent intensive investigation has led to the completion of the present invention.

Thus, the present invention directed to a stabilized agrochemical composition characterized by containing (1) a pyrimidine derivative of the formula [I].
25



30 wherein Ar means a phenyl group substituted by at least one lower alkyl; R₁, R₂ and R₃ independently mean a lower alkyl group, or its salt and (2) an oxide or hydroxide of zinc, calcium or magnesium.

35 The present invention also relates to a process

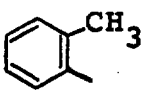
for producing a stabilized agrochemical composition as mentioned above.

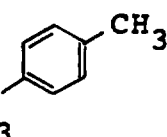
Another aspect of the present invention is concerned with a method combatting against pathogens or
5 pests in the field or the grass which comprises applying the above-mentioned stabilized agrochemical composition to the field or the grass.

Compounds M, the agrochemically active ingredients to be used in the invention, can be prepared by the
10 process described in Japanese Unexamined Patent Application KOKAI 151570/1980 (or USP No. 4341782) referred to above.

As examples of the salts of the pyrimidine compound of the formula [I], there are mentioned salts with
15 hydrochloric acid, phosphoric acid, sulfuric acid, benzenesulfonic acid, methanesulfonic acid, p-toluenesulfonic acid, trichloroacetic acid and oxalic acid etc.

Among various species of Compounds M which are
20 Z-isomers represented by formula (I), the compound in

which Ar is  and $R_1 = R_2 = R_3 = \text{CH}_3$
(hereinafter referred to sometimes as Compound M_1)

25 and the compound in which Ar is  and $R_1 =$
 $R_2 = R_3 = \text{CH}_3$ (hereinafter referred to sometimes as Compound M_2) are particularly desirable for the purposes of the invention.

30 For the purposes of the invention, preferred are the oxide or hydroxide of zinc, calcium or magnesium represented by the formulas such as Zn_2O , ZnO , CaO and MgO .

The metal oxides may be used in the form of
35 complex oxides with oxides of other metals (e.g.

barium, aluminium, etc.) or SiO_2 . Examples of such complex oxides are $\text{ZnO-Al}_2\text{O}_3$, ZnO-SiO_2 , ZnO-MgO and so on.

5 These metal oxides (inclusive of complex oxides)
or metal hydroxides can be used singly or in combina-
tion. For example, where the composition is a binary
mixture containing Compound M which has excellent
controlling effects on blight and leaf spot and cartap
hydrochloride having excellent controlling effects on
10 rice stem borers, planthoppers and other harmful
insects, the metal oxides are generally preferred to
the metal hydroxides in that the former are lenient on
cartap hydrochloride. Furthermore, in those various
mixtures, zinc oxide is generally a preferred additive,
15 for it is generally harmless to other active ingredients,
thus assuring a satisfactory stabilization of the
composition. Moreover, zinc oxide is highly effective
in the prevention itself of isomerization of Compound M
and least toxic to crops, man and domestic animals.

20 Though there is no particular limitation on the
amount of the aforesaid metal oxide or hydroxide to be
used, inclusive of said complex oxide to be added, they
are usually used with advantage or effectively in a
proportion of about 0.001 to 50 parts by weight,
25 preferably about 0.1 to 20 parts by weight, relative to
100 parts by weight of the total composition. Usually,
the agrochemical composition of this invention is
provided in the dosage forms of dusts, wettable powders,
granules, aerosols, etc. by formulating a pyrimidine
30 derivative of general formula [I] and its salt (Compound
M) and said oxide or hydroxide with, if desired, other agrochemically
active substances, carriers and auxiliary agents. In
the case of dusts, they can be made driftless dusts (DL
dusts) by, for example, incorporating appropriate
35 additives (e.g. liquid paraffin) which show drift-de-

creasing effects. Examples of such carriers and auxiliary agents include various surfactants (for example, ligninsulfonates, alkylbenzenesulfonates, polyoxyethylene alkyl ethers, alkyl naphthalenesulfonates, etc.), dispersing agents (for example, ethylene glycol, glycerol, etc.), anti-caking agents (for example, white carbon etc.), binders, absorbents and antioxidants (for example, dibutylhydroxytoluene, 4,4'-thiobis-6-tert-butyl-3-methylphenol, pentaerythryl-tetrakis[3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionate] (hereinafter referred to as Irganox-1010) etc.), preservatives (for example, sorbic acid, potassium sorbate, etc.), synergists, wetting agents, stabilizers, solvents, excipients, diluents, suspending agents, penetration aids, thickeners or viscosity builders, and so on. As examples of the agrochemically active substances other than Compounds M, there may be mentioned organosulfur, organophosphorus, organoarsenic, organochlorine and other fungicides, organophosphorus, organochlorine, carbamate, pyrethroid and other insecticides/miticides, and various antibiotics. As examples of said carriers and auxiliary agents, there may be mentioned various vegetable powders such as soybean flour, tobacco flour, wheat flour, sawdust, etc., mineral powders such as clays (kaolin, bentonite, acid clay, etc.), talcs (talcum powder, pyrophyllite powder, etc.), silicas (diatomaceous earth (e.g. Radiolite), mica powder, etc.) and so on, as well as other solid carriers/auxiliary agents such as calcium carbonate, sulfur powder, activated carbon and so on. The following is a partial listing of the agrochemically active substances.

Organosulfur fungicides: zinc ethylenebis(dithiocarbamate), manganese ethylenebis(dithiocarbamate), ammonium ethylenebis(dithiocarbamate), dizinc bis(dimethyldithiocarbamate) ethylenebis(dithiocarbamate), etc.

Organophosphorus fungicides: S-benzyl O,O-diisopropyl thiophosphate, S,S-diphenyl O-ethyl dithiophosphate, etc.

5 Organoarsenic fungicides: ferric methanearsonate, ferric ammonium methanearsonate, etc.

Organochlorine fungicides: pentachlorophenol, tetrachloroisophthalonitrile, 4,5,6,7-tetrachlorophthalide (hereinafter referred to as fthalide), etc.

10 Other fungicides: 5-methyl-1,2,4-triazolo[3,4-b]-benzothiazole (common name: tricyclazole, hereinafter referred to as tricyclazole), N-(trichloromethylthio)-4-cyclohexene-1,2-dicarboximide, phenazine 5-oxide, methyl 1-(butylcarbamoyl)2-benzimidazolecarbamate, etc.

15 Organophosphorus insecticides: O,O-dimethyl O-4-nitro-m-tolyl phosphorochioate (hereinafter referred to briefly as MEP), S-[1,2-bis(ethoxycarbonyl)ethyl] O,O-dimethyl dithiophosphate, 2,2-dichlorovinyl dimethylphosphate, dimethyl 2,2,2-trichloro-1-hydroxyethylphosphonate, O,S-dimethyl N-acetylphosphoramidothiolate, 20 dimethyl (E)-1-methyl-2-methylcarbamoylvinyl phosphate, O,O-dimethyl S[α (ethoxycarbonyl)benzyl] dithiophosphate, O,O-dimethyl S-(N-methylcarbamoylmethyl) dithiophosphate, etc.

25 Organochlorine insecticides: 6,7,8,9,10,10-hexachloro-1,5,5a,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine 3-oxide (benzoepin), etc.

30 Carbamate insecticides: 1-naphthyl N-methylcarbamate, m-tolyl N-methylcarbamate, o-sec-butylphenyl N-methylcarbamate (hereinafter referred to as BPMC), etc.

Pyrethroid insecticides: pyrethrins, allethrin, resmethrin, 2-(4-ethoxyphenyl)-2-methylpropyl 3-phenoxybenzyl ether (hereinafter referred to as ethophenprox), etc.

35 Antibiotics: blasticidin S, kasugamycin, polyoxin,

oxytetracycline, validamycin A, etc.

Other insecticides: cartap hydrochloride, S-methyl N-(methyl-carbamoyloxy)thioacetimidate, S,S-[2-(dimethyl-amino)trimethylene]di(benzenethiosulfonate) [hereinafter referred to as bensultap (its common name)], etc.

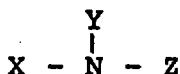
It should be understood that the invention is not limited to these specific substances. In the practice of the invention, these agrochemically active substances may be used singly or in combination. The proportion of Compound M to be contained per 100 weight parts of the composition is about 0.0001 to 50 parts by weight for dusts, about 10 to 90 parts by weight for wettable powders and aerosols, and about 0.1 to 50 parts by weight for granules. In the case of dusts, the more preferable proportion of content of Compound M ranges from 0.001 to 20 parts by weight.

Said other active substance, when used, is incorporated in a proportion ranging from 10:1 to 1:10, by weight, Compound M and preferably in a range of 7:1 through 1:7 on the same basis.

Furthermore, it has been found that the isomerization of Compound M in an agrochemical composition can be sometimes more effectively inhibited by incorporating a certain amine compound in addition of said oxide or hydroxide of zinc, calcium or magnesium.

The aforesaid amine compound to be used in accordance with the invention can be selected from a broad category of primary, secondary and tertiary amines containing 4 or more carbon atoms. Particularly preferred are aliphatic amines and diamine compounds.

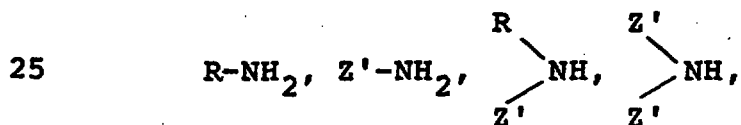
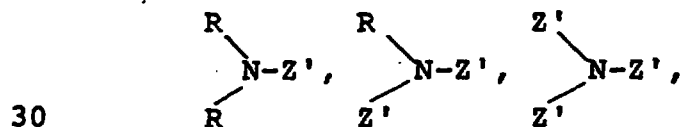
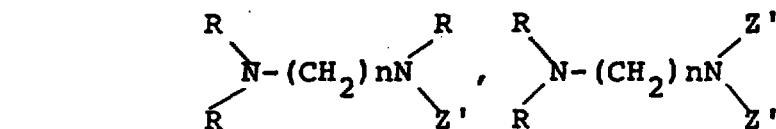
Preferable are amines containing 4 to 150 carbon atoms of the formula:

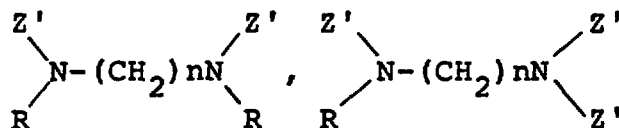


in which X, Y and Z are independently hydrogen or alkyl provided that at least one of X, Y and Z is an alkyl group, and said alkyl group may be interrupted by oxygen and may be substituted by hydroxy or amino.

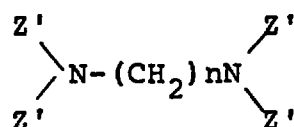
5 Particularly preferred are the cases, where one of X, Y and Z is hydrogen, and the others are the above defined alkyl, or two of X, Y and Z are hydrogen, and the other is the above-mentioned alkyl group. The aliphatic substituents including alkyl represented by X, Y and Z
10 of said amines are preferably polyoxyethylene, polyoxypropylene and/or alkyl groups which may be substituted by hydroxy group or amino group. As to the diamine compounds, alkylene diamines such as ethylenediamine, trimethylenediamine, etc. are preferred and the substituents on these diamines are also preferably polyoxy-
15 ethylene, polyoxypropylene and/or alkyl groups. It is preferable that said polyoxyethylene and polyoxypropylene groups each consist of more than one oxyethylene or oxypropylene units in series terminating with a
20 hydrogen atom.

As examples of the amine compound having 4 or more carbon atoms to be used in accordance with the invention, amines of the following formulas can be mentioned.





5

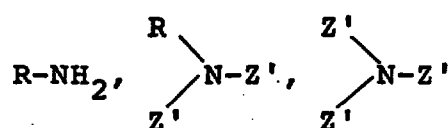


(wherein R means an alkyl group, preferably having 4 to 20 carbon atoms; Z' means a group of $-(\text{CH}_2-\text{CH}_2\text{O})_m\text{H}$ or $-(\text{CH}_2-\text{CH}_2\text{O})_m\text{CH}_3$; m and n independently means a

positive integer, preferably m is an integer of 1 to 40 and n is 2 or 3; R, Z', m and n may each mean the same or different members where each occurs more than once; provided that the total number of carbon atoms in each amine is not less than 4).

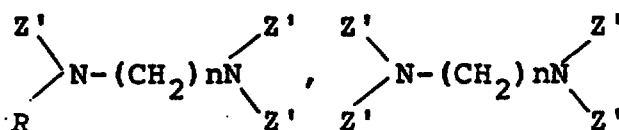
Where the agrochemical composition of the invention contains acidic substances in addition to Compounds M, amine compounds of the following formulas, among the amines of the above formulas, are particularly effective in suppressing isomerization of Compound M without adverse effects on the concomitant ingredients.

25



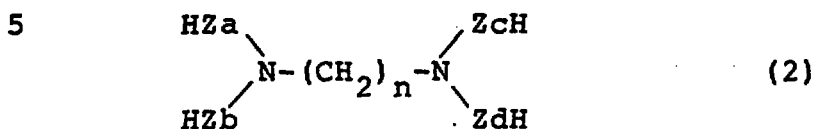
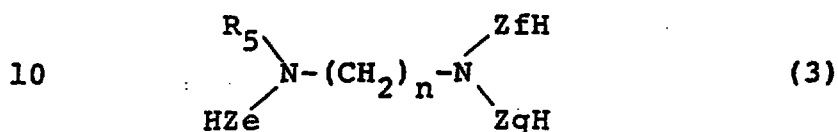
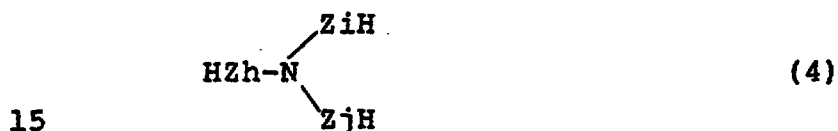
30

(wherein each of the symbols has the same meaning as defined hereinbefore.)



Furthermore, it has been found that among these amine compounds, amines of the following formulas are most desirable from the standpoint of preventing said isomerization of Compounds M, stabilizing the formula-

tion and assuring a minimum toxicity to crop plants, man and domestic animals.



[In formulas (1) through (5), R_4 , R_5 and R_6 independently mean an alkyl group of 4 to 20 carbon atoms; Z means $-CH_2CH_2O-$ or $-CH-CH_2O-$; n is 2 or

3; a through l each is an integer not less than 1 and $4 \leq a + b + c + d \leq 40$; $3 \leq e + f + g \leq 40$; $3 \leq h + i + j \leq 40$; and $2 \leq k + l \leq 40$].

Taking as an example a mixture containing one of Compounds M, substances showing a remarkable control action against blast, leaf spot, etc., and S,S'-(2-dimethylaminotrimethylene)bis(thiocarbamate)hydrochloride [hereinafter referred to as cartap hydrochloride (its common name)], a substance showing a marked ontrol action against rice stem borers, planthoppers and other noxious insects, amines of formula (5) are particularly desirable in that they do not adversely affect cartap

hydrochloride and is effective in the prevention of isomerization of Compounds M. Preferred examples of amine (5) include polyoxyethylene (hereinafter referred to briefly as POE) (2-40) laurylamine, POE(2-40) stearylamine, POE(2-40) oleylamine, polyoxypropylene (briefly POP) (2-40) laurylamine, POP(2-40) stearylamine and POP(2-40) oleylamine.

As the amine compound for use in accordance with the invention, there may be utilized commercial compounds which are sold as reagents [for example, amines of formula (1)], surfactants [for example, amines of formulas (2) through (4)] or pigment dispersing agents/-corrosion inhibitors [for example, amines of formula (5)]. Such amines can also be synthesized in accordance with the known procedures, which include the process for synthesis of surfactants which comprises adding ethylene oxide or propylene oxide to triethanolamine or ethylenediamine (for example, see H. Horiguchi: Gosei Kaimen Kasseizai (Synthetic Surfactants), Sankyo Shuppan) or the established processes for amine synthesis (for example, The Chemical Society of Japan (ed.): Zikken Kagaku Koza (Experimental Chemistry Series) 20, Synthesis of Organic Compounds (II), Maruzen). The commercially available amines which can be utilized for the practice of the invention include laurylamine, diethanolamine, triethanolamine, ethylenediamine, dimethylaminopropane, dimethylaminopropylamine and so on.

There is no critical limitation on the amount of the amine to be added but it is effective to add the amine in a proportion of about 0.05 to 10 parts by weight, preferably about 0.1 to 5 parts by weight, relative to 100 parts by weight of the total composition.

The agrochemical composition of the invention can

be manufactured by processing the aforementioned ingredient materials into a suitable dosage form in accordance with the per se known manufacturing procedures. For example, Compound M and said metal oxide or hydroxide with, if desired, auxiliary and carrier substances, with or without said amine and other one or more agrochemically active substances, are admixed in, for example, a NAUTA mixer. For the manufacture of dusts and wettable powders, the mixture is further comminuted in a mill. For the manufacture of granules, typically the mixture obtained by means of NAUTA mixer is subjected to a wet granulation process comprising addition of water, kneading, granulation and drying to give granules, but granules can be otherwise prepared, for example by coating grains as cores such as river sand, pumice, etc. with the agrochemically active substance and other additives. Flowables can be manufactured by mixing Compound M, said oxide or hydroxide, and other auxiliaries with a liquid (water or oil), either with or without one or more of other agrochemically active substances, and wet-milling the mixture. It should be understood that the method for the production of the agrochemical composition of this invention is by no means limited to the above exemplary procedures.

The dosage of the agrochemical composition of this invention depends on the field conditions, application timing, method of application, diseases or pests to be controlled, crop plants involved, and so on but is generally about 0.05 to 50 g and preferably about 0.1 to 15 g, as active component (Compound M and any other active substance), per are of the field or the grass.

In accordance with the invention, the isomerization of Compounds M which are in z-form to the corresponding E-isomers in a composition can be inhibited even when the composition is stored for a long time period

as shown in the below-mentioned Test Example, and thus stable agrochemical products can be provided.

The following Examples, Reference Examples and Test Example are further illustrative of the invention.

5 In these examples, all % and parts are by weight unless therwise specified.

In the following Examples, Compound M_1 and Compound M_2 , both of which are species of Compounds M as aforementioned, were employed. Since these compounds
10 are z-isomers, they are designated as $M_1(Z)$ and $M_2(Z)$, respectively, thus being differentiated from the corresponding E-isomers which are designated as $M_1(E)$ and $M_2(E)$, respectively.

Example 1

15 Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 2 parts of cartap hydrochloride, 3 parts of BPMC, 0.3 part of isopropyl acid phosphate, 5 parts of white carbon, 0.2 part of zinc oxide and 86 parts of clay are weighed and milled in a pulverizing mill. The
20 mixture is further milled in a flash mixer to provide a dust.

Example 2

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 3 parts of BPMC, 5 parts of white carbon, 0.5
25 part of isopropyl acid phosphate, 10 parts of zinc oxide and 78 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

Example 3

Two parts of Compound $M_1(Z)$, 1.5 parts of
30 fthalide, 2 parts of cartap hydrochloride, 0.3 part of isopropyl acid phosphate, 2 parts of white carbon, 0.1 part of zinc oxide and 92.1 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

35 Example 4

Two parts of Compound $M_1(Z)$, 1.5 parts of
fthalide, 3 parts of BPMC, 0.5 part of isopropyl acid
phosphate, 5 parts of white carbon, 10 parts of calcium
oxide and 78 parts of clay are weighed and processed in
5 the same manner as that in Example 1 to provide a dust.

Example 5

Two parts of Compound $M_1(Z)$, 2 parts of
fthalide, 0.3 part of isopropyl acid phosphate, 0.2
part of zinc oxide, 2 parts of white carbon and 93.5
10 parts of clay are weighed and processed in the same
manner as that in Example 1 to provide a dust.

Example 6

Two parts of Compound $M_2(Z)$, 1.5 parts of
fthalide, 3 parts of BPMC, 0.3 part of isopropyl acid
15 phosphate, 5 parts of white carbon, 0.5 part of
magnesium oxide and 87.7 parts of clay are weighed and
processed in the same manner as that in Example 1 to
provide a dust.

Example 7

20 Two parts of Compound $M_1(Z)$, 1.5 parts of
fthalide, 2 parts of bensultap, 0.3 part of validamycin
A, 0.3 part of isopropyl acid phosphate, 3.0 parts of
white carbon, 5.0 parts of zinc oxide, 85.9 parts of
clay are weighed and processed in the same manner as
25 that in Example 1 to provide a dust.

Example 8

Two parts of Compound $M_1(Z)$, 1.5 parts of
fthalide, 2 parts of bensultap, 3 parts of BPMC, 0.5
part of isopropyl acid phosphate, 5 parts of white
30 carbon, 10 parts of zinc oxide, 76 parts of clay are
weighed and processed in the same manner as that in
Example 1 to provide a dust.

Example 9

Two parts of Compound $M_2(Z)$, 1.5 parts of
35 fthalide, 2 parts of bensultap, 0.2 part of isopropyl

acid phosphate, 1 part of white carbon, 5 parts of magnesium oxide, 88.3 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

5 Example 10

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 0.5 part of etofenprox, 0.3 part of nalidamycin A, 0.05 part of irganox-1010, 0.1 part of potassium sorbate, 0.2 part of isopropyl acid phosphate, 2.0
10 parts of white carbon, 2.0 parts of zinc oxide, 91.35 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

Comparative Example 1

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 2 parts of cartap hydrochloride, 3 parts of
15 BPMC, 5 parts of white carbon, 0.3 part of isopropyl acid phosphate and 86.3 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

20 Comparative Example 2

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 3 parts of BMPC, 5 parts of white carbon, 0.5
part of isopropyl acid phosphate and 88 parts of clay
are weighed and processed in the same manner as that in
25 Example 1 to provide a dust.

Comparative Example 3

Two parts of Compound $M_2(Z)$, 0.3 part of isopropyl acid phosphate, 1 part of white carbon and
96.7 parts of clay are weighed and processed in the
30 same manner as that in Example 1 to provide a dust product

Comparative Example 4

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 2.0 parts of cartap hydrochloride, 0.3 part
35 of isopropyl acid phosphate, 2.0 parts of white carbon,

92.2 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

Comparative Example 5

5 Two parts of Compound $M_2(Z)$, 2.0 parts of cartap hydrochloride, 0.3 part of isopropyl acid phosphate, 2.0 parts of white carbon, 93.7 parts of clay are weighed and processed in the same manner as that in Example 1 to provide a dust.

Comparative Example 6

10 Two parts of Compound $M_2(Z)$, 1.5 parts of fthalide, 3.0 parts of BPMC, 0.3 part of isopropyl acid phosphate, 5.0 parts of white carbon, 88.2 parts of clay are weighed and processed in the same manner as Example 1 to provide a dust.

15 Comparative Example 7

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 2.0 parts of bensultap, 0.3 part of validamycin A, 0.1 part of potassium sorbate, 0.3 part of isopropyl acid phosphate, 3.0 parts of white carbon, 20 90.8 parts of clay are weighed and processed in the same manner as Example 1 to provide a dust.

Comparative Example 8

Two parts of Compound $M_1(Z)$, 1.5 parts of fthalide, 2.0 parts of bensultap, 3.0 parts of BPMC, 25 0.5 part of isopropyl acid phosphate, 5.0 parts of white carbon, 86 parts of clay are weighed and processed in the same manner as Example 1 to provide a dust.

Comparative Example 9

30 Two parts of Compound $M_2(Z)$, 1.5 parts of fthalide, 2.0 parts of bensultap, 0.2 part of isopropyl acid phosphate, 1.0 part of white carbon, 93.3 parts of clay are weighed and processed in the same manner as Example 1 to provide a dust.

35 Comparative Example 10

Two parts of Compound $M_1(Z)$, 1.5 parts of
fthalide, 0.5 part of etophenprox, 0.3 part of
validamycin A, 0.1 part of potassium sorbate, 0.05 part
of irganox-1010, 0.2 part of isopropyl acid phosphate,
5 2.0 parts of white carbon, 93.35 parts of clay are
weighed and processed in the same manner as Example 1
to provide a dust.

Test Example

Twenty grams each of the products according to
10 Examples 1 through 10 and Comparative Examples 1
through 10 were respectively put in sampling bottles,
and after hermetic closure, stored at room temperature
for one year. Then, the samples were taken out and
immediately subjected to high performance liquid
15 chromatography for assaying the content of the E- and
Z-isomers of Compounds M_1 and M_2 .

The fractional content of compound M (E) after
one-year storage at room temperature was calculated by
means of the following equation.

$$\begin{aligned} 20 \quad & \text{Fractional Compound M(E) content (\%)} = \\ & \frac{\text{Amount of Compound M(E)}}{\text{Combined amount of Compound M(E) + Compound M(Z)}} \times 100 \end{aligned}$$

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Result

Additive		Proportion of Additives (%)	Fractional E-isomer content during 1 year- storage at room temperature
Example 1	Zinc oxide	0.2	4.3
2	Zinc oxide	10.0	0
3	Zinc oxide	0.1	4.9
4	Calcium oxide	10.1	3.8
5	Zinc oxide	0.1	4.0
6	Magnesium oxide	0.5	2.3
7	Zinc oxide	5.0	0.6
8	Zinc oxide	10.0	0.2
9	Magnesium oxide	5.0	1.3
10	Zinc oxide	2.0	1.7

Comparative

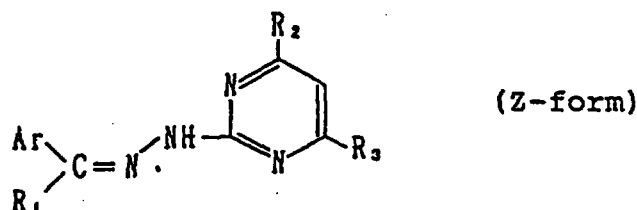
Example 1	-	-	14.0
2	-	-	21.5
3	-	-	15.3
4	-	-	15.2
5	-	-	19.5
6	-	-	16.4
7	-	-	16.9
8	-	-	22.6
9	-	-	16.2
10	-	-	14.2



CLAIMS

1. A stabilized agrochemical composition, which comprises (1) a pyrimidine derivative of the formula

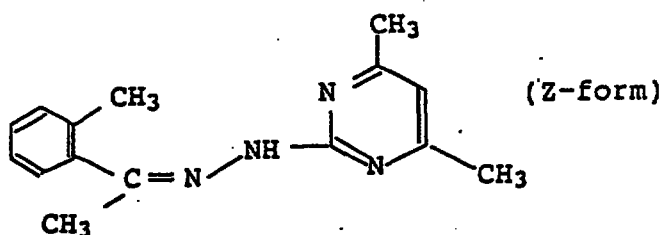
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10 wherein Ar means a phenyl group substituted by at least one lower alkyl; R_1 , R_2 and R_3 independently mean a lower alkyl group or its salt and (2) an oxide or hydroxide of zinc, calcium or magnesium.

2. A stabilized agrochemical composition as claimed
15 in Claim 1 wherein the pyrimidine derivative is the compound of the formula

20



3. A stabilized agrochemical composition as claimed in Claim 2 wherein the oxide is zinc oxide.

4. A stabilized agrochemical composition as claimed
25 in Claim 2 which further comprises 4,5,6,7-tetrachlorophthalide.

5. A stabilized agrochemical composition as claimed in Claim 2 which further comprises 5-methyl-1,2,4-triazolo[3,4-b]benzothiazole.

30 6. A stabilized agrochemical composition as claimed in Claim 4 or 5 which further comprises S,S'-(2-dimethylaminotrimethylene) bis(thiocarbamate)hydrochloride.

7. A stabilized agrochemical composition as claimed in Claim 4 or 5 which further comprises S,S'-[2-(dimethylamino)trimethylene] di(benzenethiosulfonate).
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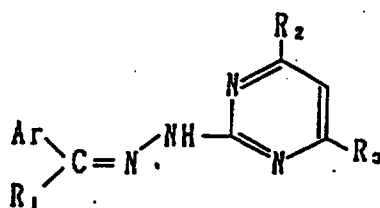
8. A stabilized agrochemical composition as claimed in Claim 4 or 5 which further comprises.

2-(4-ethoxyphenyl)-2-methylpropyl 3-phenoxybenzyl ether.

9. A stabilized agrochemical composition as claimed in Claim 7 or 8 which further comprises validamycin A.

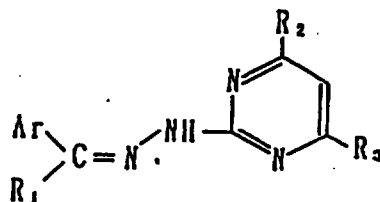
10. A stabilized agrochemical composition as claimed in Claim 1 wherein the amount of the oxide or hydroxide is in the range of about 0.001 to 50 parts by weight relative to 100 parts by weight of the total composition.

11. A process for producing a stabilized agrochemical composition, which comprises mixing (1) a pyrimidine derivative of the formula



20 wherein Ar means a phenyl group substituted by at least one lower alkyl; R_1 , R_2 and R_3 independently mean a lower alkyl group or its salt, (2) an oxide or hydroxide of zinc, calcium or magnesium, and (3) carrier.

25 12. A method for combatting against plant pathogens or pests in the field or the grass which comprises applying a stabilized agrochemical composition containing a pyrimidine derivative of the formula



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wherein Ar means a phenyl group substituted by at least one lower alkyl; R_1 , R_2 and R_3 independently mean a lower alkyl group or its salt and an oxide or hydroxide of zinc, calcium or magnesium to the field or the
5 grass at a dosage about 0.05 to 50 g as the active ingredient per are of the field or the grass.

13. A composition according to claim 1, substantially as hereinbefore described with reference to any of the Examples.

14. A process according to claim 11, substantially as hereinbefore described with reference to any of the Examples.

15. A composition when prepared by a process according to claim 11 or 14.

16. A method according to claim 12, substantially as hereinbefore described.
