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(54) Title: A SYNERGISTIC FUNGICIDAL COMPOSITION COMPRISING PICOXYSTROBIN, COPPER OXYCHLORIDE AND SOY PROTEIN

(57) Abstract: The present invention provides a synergistic fungicidal composition comprising picoxystrobin, copper oxychloride, and soy protein, which at particular weight concentrations exhibits superior control over fungal infection in crops, particularly rice. The composition exhibits superior effect against fungal infection particularly when used at concentrations lesser than approved/suggested amounts if used separately. The composition is economical, cheaper and creates reduced environmental pollution due to reduced usage of active compounds picoxystrobin and copper oxychloride.

WO 2023/161949 A1

A SYNERGISTIC FUNGICIDAL COMPOSITION COMPRISING PICOXYSTROBIN, COPPER OXYCHLORIDE AND SOY PROTEIN

FIELD OF THE INVENTION

The present invention is related to a stable synergistic fungicidal composition comprising synergistically effective amount of three actives. The instant invention of synergistic fungicidal composition comprises Picoxystrobin in combination with copper oxychloride and soy protein that providing significant broad-spectrum efficacy without causing any phytotoxicity to any part of the plant. The present invention is also related to a process for the preparation of said fungicidal composition.

BACKGROUND OF THE INVENTION

Fungicides are compounds, of natural or synthetic origin, which act to protect plants against damage caused by fungi. Current methods of agriculture rely heavily on the use of fungicides. In fact, some crops cannot be grown usefully without the use of fungicides. Using fungicides allows a grower to increase the yield and the quality of the crop and consequently, increase the value of the crop. In most situations, the increase in value of the crop is worth at least three times the cost of the use of the fungicide.

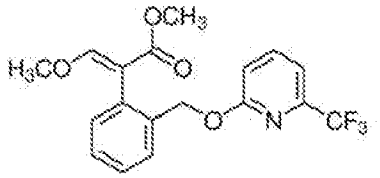
Various compositions have been developed to control fungi. Practical agricultural experience has shown that the repeated and exclusive application of an individual active compound for the control of harmful fungi in many cases leads to rapid development of those strains which have developed natural or adapted resistance against the active compound in question. Effective control of these fungi with the active compound in question is very difficult in such cases. To reduce the risk of development of resistant strains, mixtures of different active compounds are nowadays conventionally employed for controlling harmful fungus or pests. It is possible to ensure successful control over a relatively long period of time by combining active compounds having different mechanisms of action. Most crop and ornamental plants are subject to attack by several fungi. Damage due to plant diseases to ornamentals, vegetable, field, cereal and fruit crops can cause significant reduction in productivity and thereby result in increased costs to the consumer. Serious disorders in combination or singly has resulted in the need for broad-spectrum disease control. Although there are available numerous chemical compounds (fungicides), which

aid in preventing diseases of plants, each of these have practical deficiencies, which restrict their use.

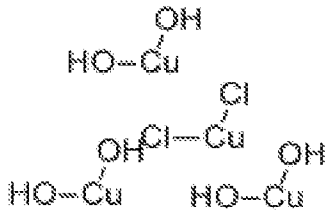
Combinations of fungicides are often used to facilitate disease control, to broaden spectrum of control and to retard resistance development. Accordingly, new advantageous combinations are needed to provide a variety of options to best satisfy particular plant disease control needs. Furthermore, certain rare combinations of fungicides demonstrate a greater-than-additive (i.e., synergistic) effect to provide commercially important levels of plant disease control. When two or more substances in combination demonstrate unexpectedly high biological activity, for example fungicidal activity, the resultant phenomenon may be referred to as synergism.

When two or more substances in combination demonstrate unexpectedly high biological activity, for example fungicidal activity, the resultant phenomenon may be referred to as synergism.

Picoxystrobin is a chemical compound from the strobilurins and methoxyacrylaytes. It is a systemic and trans -laminar, Quinone outside inhibitor (QoI) fungicide with preventive, curative and systemic activity for use on canola, cereal grain (no rice), dried peas, corns and soybeans. It inhibits mitochondrial respiration by blocking electron transfer at the Qo center of cytochrome bcl Picoxystrobin can be described by the following formula;



Copper oxychloride is a copper based broad spectrum fungicide which controls the fungal as well as bacterial diseases by its contact action. It also effectively controls the fungus resistant to other fungicides. Due to its fine particles, it sticks to the leaves and helps to restrict the growth of the fungus. It is a broad-spectrum contact fungicide with protective action. Copper because of its strong bonding affinity to amino acids and carboxyl groups, reacts with protein and acts as an enzyme inhibitor in target organisms. Copper kills spores by combining with sulphahydral groups of certain enzymes. Spores actively accumulate copper and thus germination of spores is inhibited, even at lower concentrations. Copper oxychloride can be described by the following formula;



Soy protein basically serve as plant-derived biostimulants which are readily available in the markets. Traditionally, it is made from soybean meal that has been dehulled and defatted. Soyprotein extract contains various amino acids – Aspartic, Threonine, Serine, Glutamic acid, Proline, Glycine, Valine, Cystine, Isoleucine, Methionine, Tyrosine, Phenylalanine, Lysine, Histidine, Arginine, and the percentage of each amino acid may vary in the mixture. Soy protein has a bio-stimulating effect on the health of the crops.

OBJECTS OF THE INVENTION

It is an object of the present invention to provide a novel, synergistic, broad spectrum Fungicidal combination of Picoxystrobin, Copper oxychloride and soy protein for effective control of Blast in agricultural crops, particularly Rice crop.

SUMMARY OF THE INVENTION

The present invention discloses a composition that comprises a first active ingredient Picoxystrobin, a second active ingredient Copper oxy chloride and a third active ingredient soy protein along with agriculturally acceptable excipients. The pesticidal combination of present invention is useful in controlling fungal pests, particularly in paddy and other agricultural crops.

DETAILED DESCRIPTION OF THE INVENTION

Those skilled in the art will be aware that the invention described herein is subject to variations and modifications other than those specifically described. It is to be understood that the invention described herein includes all such variations and modifications. The invention also includes all such steps, features, compositions and compounds referred to or indicated in this specification, individually or collectively, and all combinations of any two or more of said steps or features.

Unless otherwise specified, all terms used in disclosing the invention, including technical and scientific terms, have the meaning as commonly understood by one of the ordinary skill in the

art to which the invention belongs. For further guidance, term definitions may be included to better appreciate the teaching of the present invention.

As used herein, the term “plant” refers to any plant or part thereof including serial and subterranean parts of the plant. It is contemplated that the parts of the plant may be for example, flowers, fruits or vegetables, shoots, leaves, needles, stalks, stems, fruiting bodies, seeds also roots and that parts of the plants may or may not be attached to the remainder of the plant

The term ‘disease control’ as used herein denotes control and prevention of a disease. Controlling effects include all deviation from natural development, for example: killing, retardation, decrease of the pests. The term ‘plants’ refers to all physical parts of a plant, including seeds, seedlings, saplings, roots, tubers, stems, stalks, foliage and fruits.

It is to be understood that the singular forms “a,” “an,” and “the” include plural referents unless the context clearly dictates otherwise.

Features that are described and/or illustrated with respect to one embodiment may be used in the same way or in a similar way in one or more other embodiments and/or in combination with or instead of the features of the other embodiments.

It should be emphasized that the term “comprises/comprising” when used in this specification is taken to specify the presence of stated features, steps or components but does not preclude the presence or addition of one or more other features, steps, components or groups thereof.

The term "fungicidal" also called antimycotic, any toxic substance used to kill or inhibit the growth of fungi.

The terms “weight percent”, “wt-%”, “percent by weight”, “% by weight” and variations thereof, as used herein, refer to the concentration of a substance as the weight of that substance divided by the total weight of the composition and multiplied by 100. It is understood that, as used here, “percent “, “%” and the like are intended to be synonymous with “weight percent”, “wt. %”, etc.

As used herein, the term “agriculturally acceptable excipient” refers to an ingredient, additive, component or supplement, liquid or solid, suitable for incorporation in agricultural compositions.

The present invention provides a fungicidal composition comprising a) Picoxystrobin as the first active ingredient b) Copper oxychloride as the second active ingredient and c) Soy protein as the third active ingredient, wherein Picoxystrobin is present in an amount ranging from 5-50% w/w, Copper oxychloride is present in an amount ranging from 25-60 % w/w, soy protein is present in an amount ranging from 1-10% w/w. In a preferred embodiment, Picoxystrobin is present in an amount of 10% w/w, Copper oxychloride is present in an amount of 35% w/w, soy protein is present in an amount of 1% w/w of the fungicidal composition.

In an embodiment, the fungicidal composition of the present invention comprising the said actives exhibits synergistic effect in control of fungal in agricultural crops, particularly in rice crop.

Surprisingly, the present inventors have now found that the presently claimed fungicidal composition when applied at significantly lesser dosages than recommended dosages when applied separately, exhibit superior efficacy as measured in terms of percent control of target pest. In other words, it was surprising to find that these conventional rice fungicides when combined at desired weight percentages at reduced individual AI (Active Ingredient) dosages, the resulting efficacy in controlling blast in paddy is unexpectedly enhanced.

Further surprisingly, it has been found that the active compound combination of the presently claimed composition exhibits a synergistic effect and not merely an additive effect. Thus, clearly, the customary dosages of the individual actives are substantially reduced, leading to lesser amount of soil residues and environmental pollution when the composition of the present invention is used.

In an embodiment, the fungicidal composition further comprises at least one agriculturally acceptable excipient. In an embodiment, the at least one excipient is selected from the group consisting of at least a wetting agent, at least a dispersing agent, at least a defoaming agent, at least a binder, at least a suitable carrier, and combinations thereof. In a preferred embodiment, the fungicidal composition is in the form of a wettable granule formulation further comprising at least a wetting agent, at least a dispersing agent, at least a defoaming agent, at least a binder, and at least a suitable carrier.

In an embodiment, the at least a dispersing agent is selected from the group consisting of sodium lignosulphonates, sodium naphthalene sulphonate- formaldehyde condensates, aliphatic alcohol ethoxylates, tristyrylphenol ethoxylates and esters, ethylene oxide/propylene oxide block

copolymers, and combinations thereof. In a preferred embodiment, the at least a dispersing agent is sodium salt of naphthalene sulfonate condensate. The at least a dispersing agent weight concentration in said fungicidal composition is in the range of 5 to 10 %w/w. In a preferred embodiment, the dispersing agent is present in an amount of 7% w/w.

In an embodiment, the at least a wetting agent is selected from the group consisting of blend of alkyl naphthalene sulfonate, sodium salt, sodium laurel sulphate, and combinations thereof. In a preferred embodiment, the at least a wetting agent is sodium laurel sulphate. The at least a wetting agent weight concentration in said fungicidal composition is in the range of 2 to 5% w/w. In a preferred embodiment, the wetting agent is present in an amount of 3% w/w.

In an embodiment, the at least an anti-foaming is selected from the group consisting of silicone emulsions, long-chain alcohols, fatty acids, organic fluorine compounds, and combinations thereof. The at least an anti-foaming agent weight concentration in said fungicidal composition is in the range of 0.1 to .3% w/w. In a preferred embodiment, the antifoaming agent is present in an amount of 0.10% w/w.

In an embodiment, the at least a binder is selected from the group consisting of Starch paste, Hydroxypropyl methyl cellulose (HPMC), lactose Polyvinyl Pyrrolidone (PVP), Lactose monohydrate, and combinations thereof

In an embodiment, the at least a carrier is selected from the group consisting of dextrose, lactose, soluble starch, galactose, amylodextrin, ammonium sulfate, maltose, mannitol, sucrose, sorbitol, china clay, EDTA (Ethylenediaminetetraacetic acid) and combinations thereof. The at least a carrier weight concentration in said fungicidal composition is in the range of 4 to 8% w/w. In a preferred embodiment, the antifoaming agent is present in an amount of 6% w/w.

In an embodiment, the fungicidal composition is formulated in a form selected from the group consisting of water-soluble concentrates (SL), emulsifiable concentrates (EC), emulsions (EW), micro-emulsions (ME), Suspension concentrates (SC), oil-based suspension concentrates (OD), flowable suspensions (FS), water-dispersible granules (WG), water-soluble granules (SG), wettable powders (WP), water soluble powders (SP), granules (GR), encapsulated granules (CG), fine granules (FG), macrogranules (GG), dry flowables (DF), aqueous Suspo-emulsions (SE), capsule suspensions (CS) and microgranules (MG). In a preferred embodiment, the fungicidal

composition is in the form of suspension concentrates (SC), water-dispersible granule (WDG) and wettable powder (WP).

In a more preferred embodiment, the fungicidal composition of the present invention is formulated in the form of water dispersible granule (WDG) comprising a wetting agent, a dispersing agent, a defoaming agent, a binder and a suitable carrier.

The present invention also provides a method for controlling insects in agricultural crops, particularly in rice crop, said method comprising treating rice crop with a fungicidal composition comprising a) Picoxystrobin b) Copper oxychloride and c) Soy protein, wherein Picoxystrobin is present in an amount ranging from 5-50 % w/w, Copper oxychloride is present in an amount ranging from 25-60 % w/w and Soy protein is present in an amount ranging from 1-10 % w/w of the fungicidal composition.

In a preferred embodiment, Picoxystrobin is present in an amount of 10% w/w, Copper oxychloride is present in an amount of 35% w/w and Soy protein is present in an amount of 1% w/w of the fungicidal composition. The fungicidal composition is as described substantially in the present disclosure.

The present invention further provides a process of preparing a fungicidal composition comprising a) Picoxystrobin b) Copper oxychloride and c) Soy protein, wherein Picoxystrobin is present in an amount ranging from 5-50% w/w, Copper oxychloride is present in an amount ranging from 25-60% w/w and Soy protein is present in an amount ranging from 1-10% w/w of the fungicidal composition; as a water-dispersible formulation, said process comprising the following steps:

1. The desired quantity of active ingredients and excipients were weighed and mixed in a blender.
2. The mixture was subjected to grinding through a jet mill and grinding was carried out until a mean particle size of below 10 micron was obtained.
3. The homogenous mix was again put in a blender and a dough was prepared by dough mixer.
4. The granules were prepared by carrying the dough through an extruder.

5. The granules thus prepared were dried by using hot air or and oven.

6. The dried granules were checked for quality parameters (described in example 1 below)

EXAMPLES

The examples below are given solely for the purpose of illustration and are not to be construed as limitations of the present invention, as many variations thereof are possible without departing from the spirit and scope of the invention.

Example 1: Preparation of fungicidal composition as wettable granule (WG)

Table 1 below provides a fungicidal composition as described in the present specification, formulated as a wettable granule (WG)

Ingredient	Tentative percentage w/w
Picoxystrobin technical (Basis of 100.0%)	10.00% m/m
Copper oxychloride technical (Basis of 100.0%)	35.00% m/m
Soy protein (Basis of 100%)	1.00% m/m
Ethylene diamine tetra acetate (EDTA)	6.00 % m/m
Antifoam (Silicon based)	00.10% m/m
Sodium salt of naphthalene sulfonate condensate (Dispersing agent)	07.00% m/m
Sodium laurel sulphate (Wetting agent)	03.00 % m/m
Lactose (Binder)	Q.S to make 100%
Total Quantity	100.00% m/m

Preparation method of WG

The desired quantity of the active ingredients and adjuvants were weighed and mixed in a blender. The mixture was then subjected to grinding through a jet mill and grinding was carried out until a mean particle size of below 10 micron was obtained. After grinding, the homogenous

mix was again put in a blender and a dough was prepared by dough mixer. After this step, granules were prepared by carrying the dough through an extruder. The granules thus prepared were then dried by using hot air or and oven. The dried granules were then checked for quality parameters. Fig 1 shows a flow diagram representation of the steps involved in the preparation of the WG the Formulation F1 was tested for quality parameters as per the standard protocols and, the important quality parameters are listed below:

Table 2: Quality parameters of WG formulation

S.no.	Parameter	Desired quality
1.	Description	Description – the material shall consist of dry, free flowing granules, shall wet on mixing with water providing solution suitable for spray. The material shall be free from visible extraneous matter.
2.	A.I. Content	Picoxystrobin -10% m/m (±5%) Copper oxychloride -35% m/m (±5%) Soy protein 1% m/m (±10%)
3.	Persistent foaming	not more than 60 ml after 1 min
4.	Wettability	max 120 sec.
5.	Suspensibility	Suspensibility- 60% min.
6.	Acidity	Acidity as H_2SO_4 – 0.5% max

Example 2: Field evaluation of the bioefficacy of the present fungicidal composition

The presently disclosed fungicidal trimix (coded as CF-1035 WG) was tested for its bioefficacy against fungal on rice crop and variety local and kharif season 2020 at Nashik, Maharashtra. The plants were aligned in a plot size of 50 sq. meter**.** The trial was laid out in a random block design consisting of a total of 11 treatments in three replications. The trial was conducted at a temp. of 35°C under 70% relative humidity, no winds and under optimum soil moisture conditions.

Measured quantity of the chemical was added to required volume of water @ 375 lit. /ha for spraying. The spray tank was filled with ½ the quantity of clean required volume of water and then the measured chemical (according to the dose) was added followed by the rest half quantity of water. The solution was stirred well before application. Knapsack sprayer fitted with boom along with flood jet nozzle was used to apply the fungicidal composition.

Table 3a below provides the treatment details of the rice crop in the trial experiment conducted. For purposes of convenience, the present composition has been represented by the code "CF-1035" WG".

Treat	Treatment details	Dose (gm) (a.i)/hectare)	Dose(gm)/hectare
T-1	Untreated control	-	0
T-2	Picoxystrobin 22.52 SC	90	400
T-3	Copper oxy chloride 50 WP	500	1000
T-4	CCP-1035 WG (Sample-1)	75 + 262.5 + 7.5	750
T-5	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	875
T-6	CCP-1035 WG (Sample-1)	100 + 350 +10	1000
T-7	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	1125
T-8	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	1250
T-9	CCP-1035 WG	75 + 262.5	750
T-10	CCP-1035 WG (Sample-2)	87.5 + 306.3	875
T-11	CCP-1035 WG (Sample-2)	100 + 350	1000
T-12	CCP-1035 WG (Sample-2)	112.5 + 394	1125
T-13	CCP-1035 WG (Sample-2)	125 + 437.5	1250

Note

Sample-1 CCP-1035 WG Picoxystrobin 10% + Copper oxychloride 35% + Soy protein 1% WG

Sample-2 CCP-1035 WG Picoxystrobin 10% + Copper oxychloride 35% WG

Table 3(b) below provides the treatment details of the rice crop in the trial experiment conducted. For purposes of convenience, the present composition has been represented by the code “CF-1035” WG”.

Treat	Treatment details	Dose (a.i(g)/hectare)	Dose (gm) /hectare
T-1	Untreated	-	-
T-2	Picoxystrobin 22.52 SC	90	400
T-3	Copper oxy chloride 50 WP	500	1000
T-4	CCP-0740 WG (Sample-1)	52.5 + 300 +3.75	750
T-5	CCP-0740 WG (Sample-1)	61.25+ 350 + 4.38	875
T-6	CCP-0740 WG (Sample-1)	70 + 400 + 5.0	1000
T-7	CCP-0740 WG (Sample-1)	78.8 + 450 + 5.63	1125
T-8	CCP-0740 WG (Sample-1)	87.5 + 500 + 6.25	1250
T-9	CCP-0740 (Sample-2)	52.5 +300	750
T-10	CCP-0740 WG (Sample-2)	61.25+ 350	875
T-11	CCP-0740 WG (Sample-2)	70 + 400	1000
T-12	CCP-0740 WG (Sample-2)	78.8 + 450	1125
T-13	CCP-0740 WG (Sample-2)	87.5 + 500	1250

Note

Sample-1 CCP-0740 WG Picoxystrobin 7 % + Copper oxychloride 40% + Soy protein 0.5% WG
Sample-2 CCP-0740 WG Picoxystrobin 7 % + Copper oxychloride 40% WG

Table 3(c) below provides the treatment details of the rice crop in the trial experiment conducted. For purposes of convenience, the present composition has been represented by the code “CF-1035” WG”.

Treat	Treatment details	Dose (a.i (g)/hectare)	Dose (gm)/hectare
T-1	Untreated	-	-

T-2	Picoxystrobin 22.52 SC	90	400
T-3	Copper oxy chloride 50 WP	500	1000
T-4	CCP-1583 WG Sample -1	112.5 + 285 + 15	750
T-5	CCP-1538 WG Sample-1	131.3+333+17.5	875
T-6	CCP-1538 WG Sample-1	150 + 380 + 20	1000
T-7	CCP-1538 WG Sample-1	168.8 + 427.5+22.5	1125
T-8	CCP-1538 WG Sample-1	187.5 + 475 + 25	1250
T-9	CCP-1583 WG Sample -2	112.5 +285	750
T-8	CCP-1538 WG Sample-2	131.3+333	875
T-9	CCP-1538 WG Sample-2	150 + 380	1000
T-10	CCP-1538 WG Sample-2	168.8 + 427.5	1125
T-11	CCP-1538 WG Sample-2	187.5 + 475	1250

Note
Sample-1 CCP-1538 WG Picoxystrobin 15 % +Copper oxychloride 38 % + Soy protein 2% WG
Sample-2 CCP-1538 WG Picoxystrobin 15 % +Copper oxychloride 38 % WG

EVALUATION OF BIO-EFFICACY AGAINST DISEASE MANAGEMENT

Evaluation method for Blast disease –

Observe randomly selected 75 leaves /replication and 3 replication/plot and rate visually each disease as per the ratings below. Calculate the per cent disease index (PDI) as per given formula

Grade	Spots on Leaves
0	No visible symptoms
1	< 1% leaf area affected
3	1-10% leaf area affected
5	11-25% leaf area affected
7	26-50% leaf area affected
9	>50 leaf area affected

$$PDI = \frac{\text{Sum of numerical rating}}{\text{Total no. of plants/Leaves observed X Maximum grade}} \times 100$$

$$\text{\% Disease Control} = \frac{\text{Control (PDI) - Treated Plot (PDI)}}{\text{Control (PDI)}} \times 100$$

Table 4: Effect of fungicide treatments on rice blast disease at 20 days after 1st and 2nd application for CCP-1035 WG comprising Picoxystrobin 10% + Copper oxychloride 35% + Soy protein 1%

Treatments	Dose (a.i.(gm)/ha)	Percent disease index and Percent control over Untreated (Average 75 leaves /Treatments)			
		20 DA1A (PDI)	% Control	20 DA2A (PDI)	% Control
Untreated control	-	35.4	-	48.0	-
Picoxystrobin 22.52 SC	90	7.5	78.81	9.5	80.20
Copper oxy chloride 50 WP	500	13.5	61.86	15.0	68.75
CCP-1035 WG (Sample-1)	75+ 262.5 +7.5	5.5	84.46	6.5	86.45
CCP-1035 WG (T4) (Sample-1)	87.5 + 306.3 + 8.75	4.1	88.41	5.2	86.45
CCP-1035 WG (T5)	100 + 350 + 10	4.0	88.70	5.0	89.58
CCP-1035 WG (T6)	112.5 + 394 + 11.25	3.5	90.11	4.5	90.62

Treatments	Dose (a.i.(gm)/ha)	Percent disease index and Percent control over Untreated (Average 75 leaves /Treatments)			
		20 DA1A (PDI)	% Control	20 DA2A (PDI)	% Control
CCP-1035 WG (T7)	125 + 437.5 + 12.50	3.4	90.39	4.25	91.14
CCP-1035 WG (SAMPLE 2)	75 + 262.5	7.8	77.96	7.5	84.38
CCP-1035 WG (T8)(Sample 2)	87.5 + 306.3	6.5	81.63	6.9	85.62
CCP-1035 WG (T9)	100 + 350	6.5	81.63	6.8	85.83
CCP-1035 WG (T10)	112.5 + 394	6.0	83.05	6.5	86.45
CCP-1035 WG (T11)	125 + 437.5	5.8	83.61	6.0	87.50

Table 4 shows the representation of the percent control achieved at 20 days after the after various treatments for the rice blast. T6 (112.5 + 394 + 11.25) gm a.i/hectare. No phytoxicity was observed in case of CCP 1035 WG . Data is shown in the below table.

Example 3: Evaluation of phytotoxicity of the present fungicidal composition

Visual observations were recorded at 3, 7 and 10 days after application (DAA) of testing products. The parameters observed were leaf injury on tip/surface, necrosis, vein clearing, epinasty, hyponasty and wilting. The score scale (1-10) followed for leaf injury on tips/surface is given below in Table.

Table 5: Phytotoxicity symptoms scoring and rating for leaf injury on tip/surface

Leaf injury on tips/surface	Rating
0-10%	1
11-20%	2
21-30%	3
31-40%	4
41-50%	5
51-60%	6

Leaf injury on tips/surface	Rating
61-70%	7
71-80%	8
81-90%	9
91-100%	10

Phytotoxicity studies

Table 6. Phytotoxic effect of various treatments on Rice crop after 3 DAA

Treatments	Treatment details	Dose/hectare	3 DAA					
			L	N	V	E	H	W
T-1	Untreated control	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1035 WG (Sample-1)	75+ 262.5 +7.5	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1035 WG (Sample-1)	100 + 350 + 10	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1035 WG (Sample -1)	75+ 262.5	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-1035 WG (Sample-2)	87.5 + 306.3	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-1035 WG (Sample-2)	100 + 350	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-1035 WG (Sample-2)	112.5 + 394	*0*	*0*	*0*	*0*	*0*	*0*

Treatments	Treatment details	Dose/hectare	3 DAA					
			L	N	V	E	H	W
T-12	CCP-1035 WG (Sample-2)	125 + 437.5	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-6(a). Phytotoxic effect of various treatments on Rice crop after 7 DAA

Treatments	Treatment details	Dose/hectare	7 DAA					
			L	N	V	E	H	W
T-1	Untreated control	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1035 WG (Sample-1)	75+ 262.5 +7.5	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1035 WG (Sample-1)	100 + 350 + 10	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-1035 WG (Sample-2)	75 +262.5	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-1035 WG (Sample-2)	87.5 + 306.3	*0*	*0*	*0*	*0*	*0*	*0*

T-11	CCP-1035 WG (Sample-2)	100 + 350	*0*	*0*	*0*	*0*	*0*	*0*
T-12	CCP-1035 WG (Sample-2)	112.5 + 394	*0*	*0*	*0*	*0*	*0*	*0*
T-13	CCP-1035 WG (Sample-2)	125 + 437.5	*0*	*0*	*0*	*0*	*0*	*0*

Note:

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-6(b) Example-1 Phytotoxic effect of various treatments on Rice crop after 10 DAA

Treatments	**Treatment details**	**Dose/hectare**	**10 DAA**					
			L	**N**	**V**	**E**	**H**	**W**
T-1	Untreated control	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxychloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1035 WG (Sample-1)	75+262.5+7.5	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1035 WG (Sample-1)	100 + 350 + 10	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP=1035 WG (Sample-2)	75 +262.5	*0*	*0*	*0*	*0*	*0*	

Treatments	Treatment details	Dose/hectare	10 DAA					
			L	N	V	E	H	W
T-9	CCP-1035 WG (Sample-2)	87.5 + 306.3	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-1035 WG (Sample-2)	100 + 350	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-1035 WG (Sample-2)	112.5 + 394	*0*	*0*	*0*	*0*	*0*	*0*
T-12	CCP-1035 WG (Sample-2)	125 + 437.5	*0*	*0*	*0*	*0*	*0*	*0*

Example 4 Fungicidal treatment on rice blast at 20 days after 1st and 2nd application was tested for CF 0740 WG comprising Picoxystrobin 7% + Copper oxychloride 40%+ Soy protein 0.5%WG.

Table 7: Effect of fungicide treatments on Rice blast disease at 20 days after 1st and 2nd Application

Treatments	Dose (a.i./ha)	Percent disease index and Percent control over Untreated (Average 75 leaves /Treatments)			
		20 DA1A (PDI)	% Control	20 DA1A (PDI)	% Control
Untreated	-	35.4	-	48.0	-
Picoxystrobin 22.52 SC	90	7.5	78.81	9.5	80.20
Copper oxy chloride 50 WP	500	13.5	61.86	15.0	68.75
CCP-0740 WG (Sample-1)	52,5 +300 +3.75	8.5	75.98	7.50	84.38
CCP-0740 WG (Sample-1)	61.25+ 350 + 4.38	8.1	77.11	7.30	84..79

Treatments	Dose (a.i./ha)	Percent disease index and Percent control over Untreated (Average 75 leaves /Treatments)			
		20 DA1A (PDI)	% Control	20 DA1A (PDI)	% Control
CCP-0740 WG (Sample-1)	70 + 400 + 5.0	8.0	77.40	7.25	84.89
CCP-0740 WG (Sample-1)	78.8 + 450 + 5.63	7.5	78.81	7.00	85.41
CCP-0740 WG (Sample-1)	87.5 + 500 + 6.25	7.25	79.51	6.50	86.45
CCP-0740 WG (Sample-2)	52.5 +300	11.0	68.92	9.00	81.25
CCP-0740 WG (Sample-2)	61.25+ 350	10.2	71.18	8.70	81.87
CCP-0740 WG (Sample-2)	70 + 400	10.0	71.75	8.50	82.29
CCP-0740 WG (Sample-2)	78.8 + 450	9.50	73.16	8.00	83.33
CCP-0740 WG (Sample-2)	87.5 + 500	9.0	74.57	7.50	84.38

As seen in Table 7 a showing maximum percent of control of rice stem borer in CF-0740 WG at 87.5 + 50 + 18.75 gm a.i per hectare with phytotoxicity in higher doses (Shown in the below table)

Table-8. Example-2 Phytotoxic effect of various treatments on Rice crop after 3 DAA

Treatments	Treatment details	Dose/hectare	3 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-

T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-0740 WG (Sample-2)	52.5 + 300 +3.75	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-0740 WG (Sample-1)	61.25+ 350 + 4.38	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-0740 WG (Sample-1)	70 + 400 + 5.0	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-0740 WG (Sample-1)	78.8 + 450 + 5.63	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-0740 WG (Sample-1)	87.5 + 500 + 6.25	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-0740 WG (Sample -2)	52.5 + 300	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-0740 WG (Sample-2)	61.25+ 350	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-0740 WG (Sample-2)	70 + 400	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-0740 WG (Sample-2)	78.8 + 450	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-0740 WG (Sample-2)	87.5 + 500	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-8a Example-2 Phytotoxic effect of various treatments on Rice crop after 7 DAA

Treatments	**Treatment details**	**Dose/hectare**	**7 DAA**					
			L	**N**	**V**	**E**	**H**	**W**
T-1	Untreated	-	-	-	-	-	-	-

T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-0740 WG (Sample-1)	52.5 + 300 + 3.75	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-0740 WG (Sample-1)	61.25+ 350 + 4.38	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-0740 WG (Sample-1)	70 + 400 + 5.0	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-0740 WG (Sample-1)	78.8 + 450 + 5.63	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-0740 WG (Sample-1)	87.5 + 500 + 6.25	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-0740 WG (Sample-2)	52.5 +300	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-0740 WG (Sample-2)	61.25+ 350	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-0740 WG (Sample-2)	70 + 400	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-0740 WG (Sample-2)	78.8 + 450	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-0740 WG (Sample-2)	87.5 + 500	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-8b Example-2 Phytotoxic effect of various treatments on Rice crop after 10 DAA

Treatments	Treatment details	Dose/hectare	10 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-0740 WG (Sample-1	52.5 + 300 + 3.75	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-0740 WG (Sample-1)	61.25+ 350 + 4.38	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-0740 WG (Sample-1)	70 + 400 + 5.0	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-0740 WG (Sample-1)	78.8 + 450 + 5.63	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-0740 WG (Sample-1)	87.5 + 500 + 6.25	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-0740 WG (Sample-2)	52.5 + 300	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-0740 WG (Sample-2)	61.25+ 350	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-0740 WG (Sample-2)	70 + 400	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-0740 WG (Sample-2)	78.8 + 450	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-0740 WG (Sample-2)	87.5 + 500	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Phytotoxic studies:

Examples:

Fungicidal treatment on rice blast at 20 days after 1st and 2nd application was tested for CF-1583 WG comprising Picoxystrobin 15% + Copper oxy chloride 8% + Soy protein 3% WG.

Table-9.: Effect of fungicide treatments on rice blast disease at 20 days after 1st and 2nd Application

Treatments	Dose (a.i./ha)	Percent disease index and Percent control over Untreated (Average 75 leaves /Treatments)			
		20 DA1A (PDI)	20 DA1A (PDI)	20 DA1A (PDI)	20 DA1A (PDI)
Untreated	-	35.4		48	-
Picoxystrobin 22.52 SC	90	7.5	78.81	9.5	80.20
Copper oxy chloride 50 WP	500	13.5	61.86	15	68.75
CCP-1538 WG Sample-1	112.5 +285 +15	7.5	78.81	6.5	86.45
CCP-1538 WG Sample-1	131.3+333+17.5	7.1	79.94	6.0	87.50.
CCP-1538 WG Sample-1	150 + 380 + 20	7.0	80.22	6.0	87.50
CCP-1538 WG Sample-1	168.8 + 427.5+22.5	6.5	81.63	5.5	88.54
CCP-1538 WG Sample-1	187.5 + 475 + 25	6.25	82.35	5.25	89.06
CCP-1538 WG Sample-2	131.3+333	9.5	73.16	7.50	84.38
CCP-1538 WG Sample-2	150 + 380	9.0	74.57	7.0	85.41
CCP-1538 WG Sample-2	168.8 + 427.5	9.0	74.57	6.8	85.83
CCP-1538 WG Sample-2	187.5 + 475	8.5	75.99	6.5	86.45

As seen in Table 9 showing maximum percent of control of rice stem borer in CI- 1483 WG @ 87.5 + 50 + 18.75 gm a.i per hectare gm a.i per hectare with phytotoxicity in higher doses (Shown in the below table)

Table-9. a Example-3 Phytotoxic effect of various treatments on Rice crop after 3 DAA

Treatments	Treatment details	Dose/hectare	3 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-1538 WG Sample-1	112,5 +285 +15	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1538 WG Sample-1	131.3+333+17.5	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1538 WG Sample-1	150 + 380 + 20	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1538 WG Sample-1	168.8 + 427.5+22.5	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-1538 WG Sample-1	187.5 + 475 + 25	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-1538 WG Sample-2	112.5 +285	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1538 WG Sample-2	131.3+333	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-1538 WG Sample-2	150 + 380	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-1538 WG Sample-2	168.8 + 427.5	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-1538 WG Sample-2	187.5 + 475	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-9. b Example-3 Phytotoxic effect of various treatments on Rice crop after 7 DAA

Treatments	Treatment details	Dose/hectare	7 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-1538 WG Sample-1	112..5 + 285 + 15	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1538 WG Sample-1	131.3+333+17.5	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1538 WG Sample-1	150 + 380 + 20	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1538 WG Sample-1	168.8 + 427.5+22.5	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-1538 WG Sample-1	187.5 + 475 + 25	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-1538 Sample - 2	112.5 + 285	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1538 WG Sample-2	131.3+333	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-1538 WG Sample-2	150 + 380	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-1538 WG Sample-2	168.8 + 427.5	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-1538 WG Sample-2	187.5 + 475	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-9. c Example-3 Phytotoxic effect of various treatments on Rice crop after 10 DAA

Treatments	Treatment details	Dose/hectare	10 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-
T-2	Picoxystrobin 22.52 SC	90	*0*	*0*	*0*	*0*	*0*	*0*
T-3	Copper oxy chloride 50 WP	500	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-1538 WG Sample -1	112.5 + 285 +15	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1538 WG Sample-1	131.3+333+17.5	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1538 WG Sample-1	150 + 380 + 20	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1538 WG Sample-1	168.8 + 427.5+22.5	*0*	*0*	*0*	*0*	*0*	*0*
T-7	CCP-1538 WG Sample-1	187.5 + 475 + 25	*0*	*0*	*0*	*0*	*0*	*0*
	CCP-1538 WG Sample-2	112.5 +285	*0*	*0*	*0*	*0*	*0*	*0*
T-8	CCP-1538 WG Sample-2	131.3+333	*0*	*0*	*0*	*0*	*0*	*0*
T-9	CCP-1538 WG Sample-2	150 + 380	*0*	*0*	*0*	*0*	*0*	*0*
T-10	CCP-1538 WG Sample-2	168.8 + 427.5	*0*	*0*	*0*	*0*	*0*	*0*
T-11	CCP-1538 WG Sample-2	187.5 + 475	*0*	*0*	*0*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Example -6: Phytotoxicity of 2 different formulations (CCP-1035 WG & CCP-1035 EC)

Table-10a Example-1 Phytotoxic effect of 2 different formulations of CCP-1035 WG & CCP-1035 EC on Rice crop after 3 DAA

Treatments	Treatment details	Dose/hectare	3 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-
T-2	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	*0*	*0*	*0*	*0*	*0*	*0*
T-3	CCP-1035 WG (Sample-1)	100 + 350 + 10	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1035 EC (Sample-4)	87.5 + 306.3 + 8.75	*1*	*1*	*1*	*0*	*0*	*0*
T-7	CCP-1035 EC (Sample-4)	100 + 350 + 10	*3*	*3*	*3*	*0*	*1*	*0*
T-8	CCP-1035 EC (Sample-4)	112.5 + 394 + 11.25	*3*	*3*	*3*	*0*	*0*	*0*
T-9	CCP-1035 EC (Sample-4)	125 + 437.5 + 12.50	*3*	*3*	*3*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Table-10a. Example-2 Phytotoxic effect of 2 different formulations of CCP-1035 WG & CCP-1035 EC on Rice crop after 7 DAA

Treatments	Treatment details	Dose/hectare	7 DAA					
			L	N	V	E	H	W
T-1	Untreated	-	-	-	-	-	-	-
T-2	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	*0*	*0*	*0*	*0*	*0*	*0*

T-3	CCP-1035 WG (Sample-1)	100 + 350 + 10	*0*	*0*	*0*	*0*	*0*	*0*
T-4	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1035 EC (Sample-4)	87.5 + 306.3 + 8.75	*1*	*1*	*1*	*0*	*0*	*0*
T-7	CCP-1035 EC (Sample-4)	100 + 350 + 10	*3*	*3*	*3*	*0*	*1*	*0*
T-8	CCP-1035 EC (Sample-4)	112.5 + 394 + 11.25	*3*	*3*	*3*	*0*	*0*	*0*
T-9	CCP-1035 EC (Sample-4)	125 + 437.5 + 12.50	*3*	*3*	*3*	*0*	*0*	*0*

DAA – Days after application,

L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

In Table 5 fungicidal mixture coded as CCP-1035 WG (Picoxystrobin 10% + Copper oxy chloride 35% + Soy Protein 1% WG) in all four doses (sample 1) showing no phytotoxicity. However, in sample 4(1035 EC) having phytotoxicity (yellowing on foliage, leaf tip injury, necrosis, vein clearing and in some plants hyponasty and wilting.)

Table-10. c Example-3 Phytotoxic effect of 2 different formulations of CCP-1035 WG & CCP-1035 EC on Rice crop after 10 DAA

Treatment	**Treatment details**	**Dose/hectare**	**10 DAA**					
			L	**N**	**V**	**E**	**H**	**W**
T-1	Untreated	-	-	-	-	-	-	-
T-2	CCP-1035 WG (Sample-1)	87.5 + 306.3 + 8.75	*0*	*0*	*0*	*0*	*0*	*0*
T-3	CCP-1035 WG (Sample-1)	100 + 350 + 10	*0*	*0*	*0*	*0*	*0*	*0*

T-4	CCP-1035 WG (Sample-1)	112.5 + 394 + 11.25	*0*	*0*	*0*	*0*	*0*	*0*
T-5	CCP-1035 WG (Sample-1)	125 + 437.5 + 12.50	*0*	*0*	*0*	*0*	*0*	*0*
T-6	CCP-1035 EC (Sample-4)	87.5 + 306.3 + 8.75	*1*	*1*	*1*	*0*	*0*	*0*
T-7	CCP-1035 EC (Sample-4)	100 + 350 + 10	*3*	*3*	*3*	*0*	*0*	*0*
T-8	CCP-1035 EC (Sample-4)	112.5 + 394 + 11.25	*3*	*3*	*3*	*0*	*0*	*0*
T-9	CCP-1035 EC (Sample-4)	125 + 437.5 + 12.50	*3*	*3*	*3*	*0*	*0*	*0*

DAA – Days after application,
L- Leaf injury on tips/surface, N-Necrosis, V- Vein clearing, E- Epinasty, H- Hyponasty, W-wilting

Results and Conclusion

Table 4 showing that maximum percent control of Rice blast observed in CCP-1035 WG @ 100 + 350 + 10 gm a.i. per hectare to 112.5 + 394 + 11.25 gm a.i. per hectare without any phytotoxicity. Results was observed superior than other possible combinations.

I/We Claim:

1) An fungicidal composition comprising a) Picoxystrobin as first active ingredient b) copper oxychloride as second active ingredient and c) Soy protein as third active ingredient, wherein Picoxystrobin is present in an amount ranging from 5-50%w/w, Copper oxychloride is present in an amount ranging from 25-60%w/w, and soy protein is present in an amount ranging from 1-10%w/w.

2) The fungicidal composition as claimed in claim 1, further comprising at least one agriculturally acceptable excipient.

3) The fungicidal composition as claimed in claim 1, wherein said fungicidal composition is formulated in a form selected from the group consisting of water-soluble concentrates (SL), emulsifiable concentrates (EC), emulsions (EW), micro-emulsions (ME), Suspension concentrates (SC), oil-based suspension concentrates (OD), flowable suspensions (FS), water-dispersible granules (WG), water- soluble granules (SG), wettable powders (WP), water soluble powders (SP), dry flowables (DF), granules (GR), encapsulated granules (CG), fine granules (FG), macrogranules (GG),aqueous Suspoemulsions (SE), capsule suspensions (CS) and microgranules (MG).

4) The fungicidal composition as claimed in claim 3, wherein said fungicidal composition is in the form of wettable granule (WG) formulation.

5) The fungicidal composition as claimed in claim 4, wherein said fungicidal composition further comprises at least a wetting agent, at least a dispersing agent, at least a defoaming agent, at binding agent and at least a carrier.

6) The fungicidal composition as claimed in claim 5, wherein said at least a dispersing agent is selected from the group consisting of sodium lignosulphonates, sodium naphthalene sulphonate- formaldehyde condensates, aliphatic alcohol ethoxylates, tristyrylphenol ethoxylates and esters, ethylene oxide/propylene oxide block copolymers, and combinations thereof; and wherein said at least a dispersing agent is present in an amount ranging from 5-10% w/w of the fungicidal composition.

7) The fungicidal composition as claimed in claim 5, wherein said at least a wetting agent is selected from the group consisting of blend of alkyl naphthalene sulfonate, sodium salt, sodium laurel sulphate, and combinations thereof; and wherein said wetting agent is present in an amount ranging from 2-5% w/w of the fungicidal composition.

8) The fungicidal composition as claimed in claim 5, wherein said at least an defoaming agent is selected from the group consisting of silicone emulsions, long-chain alcohols, fatty acids, organic fluorine compounds, and combinations thereof; and wherein said at least a defoaming agent is present in an amount ranging from 0.1-.3% w/w of the fungicidal composition.

9) The fungicidal composition as claimed in claim 5, wherein said an at least a carrier is selected from the group consisting of dextrose, lactose, soluble starch, galactose, amylodextrin, ammonium sulfate, maltose, mannitol, sucrose, sorbitol, china clay, EDTA and combinations thereof, and wherein said at a carrier is present in an amount ranging from 4-8% w/w of the fungicidal composition.

10) The fungicidal composition as claimed in claim 1, wherein Picoxystrobin is present in an amount of 10% w/w, Copper oxychloride is present in an amount of 35% w/w, and Soy protein is present in an amount of 1% w/w of the fungicidal composition

11) A method for controlling pest in rice, said method comprising treating rice crop with a fungicidal composition as claimed in claim 1.

12) A process for preparing an fungicidal composition as claimed in claim 1 as a water-dispersible formulation, said process comprising:

a) preparing a blend of Picoxystrobin, Copper oxychloride and, soy-protein, and suitable agriculturally acceptable excipients to obtain a first pre-mix;

b) grinding the first pre-mix by jet-milling to obtain a second pre-mix having mean particle size of less than 10 microns;

c) preparing a dough from the second pre-mix;

d) subjecting the second pre-mix to an extruder to obtain granules; and

e) drying the granules to obtain the water-dispersible formulation.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2022/050405

A. CLASSIFICATION OF SUBJECT MATTER
A01N43/40,C07D213/64 Version=2022.01

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A01N

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

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

PatSeer, IPO Internal Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Sabita Nath et.al. "Evaluation of newer fungicides in managing the blast disease of rice in sundarbans, west bengal, india", Plant Archives, 2020, Vol. 20 (2), 4992-4996. Abstract, Tables 1-3	1-12
Y	Audisio, M et.al. "Picoxystrobin (Acanto®): four-year trials against rice diseases", Proceedings, Phytopathological Days, Chianciano Terme (Siena), 18-21 March 2014, Volume two. Abstract	1-12
Y	Halima Qudsia et.al. "Comparative Efficacy of Different Chemical Treatments for Paddy Blast, Brown Leaf Spot and Bacterial Leaf Blight Diseases in Rice (Oryza Sativa L.)", Appli Microbiol Open Access 2017, 3:3, 1-4, DOI: 10.4172/2471-9315.1000138. TABLE 3	1-12
Y	Kumar, M.K.P, et.al. "Appraise a combination of fungicides against blast and sheath blight diseases of paddy (Oryza sativa L.)", Journal of	1-12

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23-08-2022	23-08-2022
Name and mailing address of the ISA/ Indian Patent Office Plot No.32, Sector 14,Dwarka,New Delhi-110075 Facsimile No.	Authorized officer Ravi S Telephone No. +91-1125300200

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2022/050405

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Experimental Biology and Agricultural Sciences, 2014 Abstract	
Y	Mahesh, M et.al. "Bioefficacy of new fungicide (Picoxystrobin 7.5%+Tricyclazole 22.5% w/v) 30SC for the management of paddy blast caused by Pyricularia oryzae", Environment and ecology, 2016, Vol. 34(2A), 767-772 Abstract	1-12
Y	IN-DEL-2014-01820A (CRYSTAL CROP PROTECTION PVT. LTD, 31 AUGUST, 2016) claims 1-14	1-12
A	IN201921032234A (GSP CROP SCIENCE PVT. LTD, 12 FEBRUARY, 2021) Abstract	1-12

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2022/050405

Citation	Pub.Date	Family	Pub.Date
IN DEL-2014-01820 A	08-01-2016	US 2016006791 A1	07-01-2016
IN 201921032234 A	12-02-2021	IN 384521 A1	16-12-2021