

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2024/075661

International filing date (day/month/year)
13.09.2024

Priority date (day/month/year)
15.09.2023

International Patent Classification (IPC) or both national classification and IPC
INV. C07D277/56 C07D401/12 C07C209/26 C07C211/16 A01N43/78

Applicant
SYNGENTA CROP PROTECTION AG

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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D-80298 Munich
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Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

Helps, Ian

Telephone No. -0



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a))
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☐ forming part of the international application as filed.
 - b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13*ter*.1(a)),
 - ☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.
5. Additional comments:

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-16</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-16</u>
Industrial applicability (IA)	Yes: Claims	<u>1-16</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

CN 110 483 306 A (SHANGHAI MAIFA BIOTECHNOLOGY CO. LTD.) 22 November 2019 (2019-11-22)

WO 2019/096860 A1 (SYNGENTA PARTICIPATIONS AG) 23 May 2019 (2019-05-23)

WO 2023/099460 A1 (SYNGENTA CROP PROTECTION AG) 8 June 2023
(2023-06-08)

WO 2021/244950 A1 (SYNGENTA CROP PROTECTION AG) 9 December 2021
(2021-12-09)

WO 2021/244951 A1 (SYNGENTA CROP PROTECTION AG) 9 December 2021
(2021-12-09)

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1 CN 110 483 306 A (SHANGHAI MAIFA BIOTECHNOLOGY CO. LTD.)
22 November 2019 (2019-11-22)

D2 WO 2019/096860 A1 (SYNGENTA PARTICIPATIONS AG) 23 May 2019
(2019-05-23)

D3 WO 2023/099460 A1 (SYNGENTA CROP PROTECTION AG) 8 June
2023 (2023-06-08)

D4 WO 2021/244950 A1 (SYNGENTA CROP PROTECTION AG) 9
December 2021 (2021-12-09)

D5 WO 2021/244951 A1 (SYNGENTA CROP PROTECTION AG) 9
December 2021 (2021-12-09)

2 The present application does not meet the criteria of Article 33(3) PCT, because the subject-matter of claims 1 to 10 does not involve an inventive step.

2.1 D3 may be regarded as being the prior art closest to the subject-matter of claim 1, and discloses fungicidal compounds based on 2-(3-fluoro-pyridin-4-yl)-amino-5-methyl-thiazol-4-carboxamides in which the carboxamide nitrogen is substituted by 2,2-dialkyl-cyclobutane (see examples X-01 to X-11). These

- compounds are racemic . Further fungicidal compounds based on 2-(3-fluorophenyl)-5-methyl-thiazol-4-carboxamides having the carboxamide nitrogen substituted by 2,2-dimethyl-cyclobutyl are disclosed in D4 and D5.
- 2.2 The subject-matter of claim 1 therefore differs from this known disclosure in that the final products are obtained in the chiral (R)-form.
- 2.3 The problem to be solved by the present invention may therefore be regarded as the provision of a chiral intermediate for the preparation of chiral herbicidal compounds..
- 2.4 The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:
- 2.5 D3 mentions that the 2,2-dimethyl-cyclobutanamine used to prepare the final products can be used in chiral form (see pages 62 to 64). However, no information is given on how to prepare a chiral form of this compound. The suggestion of the use of a chiral 2,2-dimethyl-cyclobutanamine cannot be seen as an enabling disclosure.
- 2.6 However, D2 discloses a process for the reaction of 2-phenyl-cyclobutanones with ammonium salts and hydrogen using a chiral Ruthenium cymene catalyst to obtain 2-phenyl-cyclobutanamines in chiral form (see examples 10 to 98). Starting from D3, if the skilled person is looking for a process to prepare the chiral 2,2-dimethyl-cyclobutanamine on page 62, he would be encouraged to try the use of a chiral catalyst and reaction conditions as disclosed in D2 and have a reasonable expectation of success, since the desired product has only one chiral centre.
- 3 Dependent claims 2-10 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step. Claims 2 to 4 disclose obvious embodiments of the process of claim 1. The catalysts of claim 5 are suggested in page 10, lines 25 to 35 of D2. The ammonium salts of claim 6 appear at first sight to be obvious alternatives to the salts used in the process of D3. No advantage can be seen from the choice of a bromide or chloride salt . The processes of claims 7 to 10 drawn to the preparation of specific compounds would be inventive only in conjunction with an inventive main claim.
- 4 The present application does not meet the criteria of Article 33(3) PCT, because the subject-matter of claims 11 to 16 does not involve an inventive step. The compounds of claims 11 to 13 differ from compounds under the scope of D4

and D5 (see examples) through the choice of the (R)-enantiomer. However, no advantageous effect has been shown over the racemic compounds. Claims 14 to 16 also cannot be considered inventive because the claimed compounds appear to have the same activity as the compounds of D4 and D5.

Re Item VII

Certain defects in the international application

To meet the requirements of Rule 5.1(a)(ii) PCT, D2 to D5 should be mentioned in the description and the relevant prior art disclosed therein should be briefly discussed.