

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 82934-WO-REG-ORG-P-1	FOR FURTHER ACTION See item 4 below	
International application No. PCT/EP2024/059878	International filing date (<i>day/month/year</i>) 11 April 2024 (11.04.2024)	Priority date (<i>day/month/year</i>) 13 April 2023 (13.04.2023)
International Patent Classification (IPC) or national classification and IPC See relevant information in Form PCT/ISA/237		
Applicant SYNGENTA CROP PROTECTION AG		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
2. This REPORT consists of a total of 7 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	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 Article 35(2) 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
4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

	Date of issuance of this report 08 October 2025 (08.10.2025)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Agnès Wittmann-Regis e-mail pct.team6@wipo.int

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/EP2024/059878

International filing date (day/month/year)
11.04.2024

Priority date (day/month/year)
13.04.2023

International Patent Classification (IPC) or both national classification and IPC
INV. C07D487/04 A01N43/60 A01N47/08 A01N47/18 A01P3/00

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:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0

Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

Hanisch, Inken

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 43bis.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 13ter.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 43bis.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>1-12, 15, 18</u>
	No: Claims	<u>13, 14, 16, 17</u>
Inventive step (IS)	Yes: Claims	<u>1-12, 15, 18</u>
	No: Claims	<u>13, 14, 16, 17</u>
Industrial applicability (IA)	Yes: Claims	<u>1-18</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

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

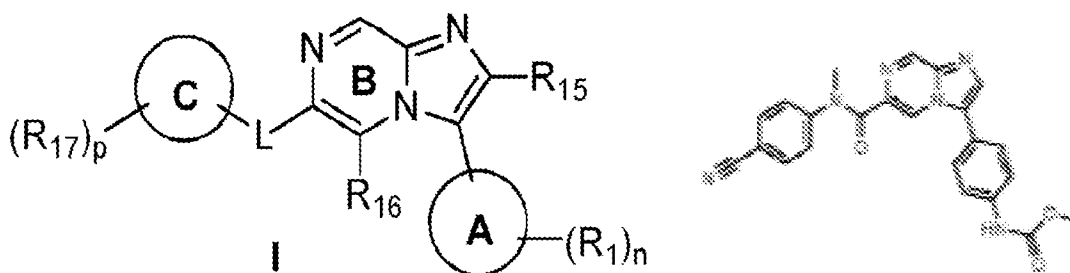
Re Item V.

Reference is made to the following documents:

- D1 WO 2014/078813 A1 (IRM LLC [US]; NOVARTIS AG [CH] ET AL.) 22 May 2014 (2014-05-22)
- D2 WO 02/48146 A2 (BASF AG [DE]; CULLMANN OLIVER [DE] ET AL.) 20 June 2002 (2002-06-20)
- D3 ZOU BIN ET AL: "Lead Optimization of Imidazopyrazines: A New Class of Antimalarial with Activity on Plasmodium Liver Stages", ACS MEDICINAL CHEMISTRY LETTERS, vol. 5, no. 8, 6 July 2014 (2014-07-06), pages 947-950, XP055840395, US, ISSN: 1948-5875, DOI: 10.1021/ml500244m
Retrieved from the Internet:
URL: <https://pubs.acs.org/doi/pdf/10.1021/ml500244m>
- D4 WO 2022/079616 A1 (NOVARTIS AG [CH]) 21 April 2022 (2022-04-21)

Novelty

D1 relates to antimalarial compounds and discloses a compound of formula (I) as defined in current claim 1 and a composition comprising the same (see in D1 claim 9 in combination with the exemplified compounds of e.g. examples 236, 245, 247, 254, 373, 415 or 482 in claim 8, below example 482):



D1 thus not only generically overlaps with the disclosure of current claims 1, 13 and 14 but anticipates subject-matter falling within the scope of said claims.

In this context, it is noted that the category of current claim 1 is not considered to be clearly defined. At present, claim 1 is seen as a compound claim, whereby the claimed compounds are suitable for use as fungicides. Claim 1 is thus not use-limited as a use of the compounds as a fungicide formulation would have been.

Similarly, current claims 13 and 14 are also not clearly use-limited but seen as a composition comprising a compound of claims 1-12 which is suitable for fungicidal use.

Moreover, D1 already discloses intermediate compounds claimed in current claim 16 (see re current formula (XXIII) compounds 124 and 272 of D1, re current formula (IV) compound I-14 of D1 and re current formula (II) compounds I-11, I-15, I-57, I-59, I-65, I-66, I-71, I-72, I-74, I-75 and I-78 of D1).

Current claim 2 is considered to be a novel selection from the general disclosure of D1 essentially due to the proviso requiring at least two of R^2 to be other than hydrogen. The closest examples in D1 contain only one group R^2 which is not hydrogen (see above). Current claim 15 is novel over D1 as D1 does not relate to any treatment of phytopathogenic fungi. D1 furthermore does not disclose the currently claimed intermediate compounds of claims 17 and 18.

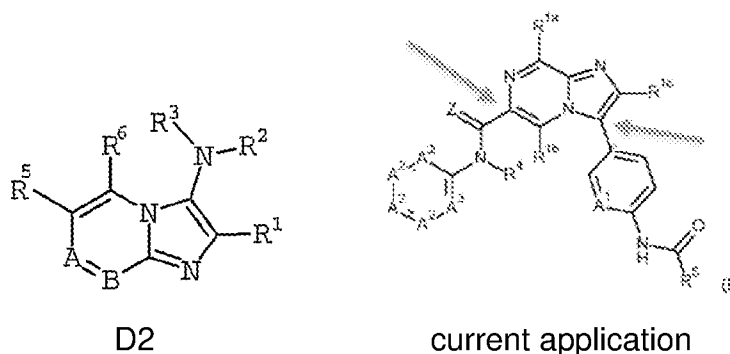
The current claims are novel over D2 essentially on account of their compounds of formula (I), in particular their substitution of the heterobicycle in 3- and 5-position. The intermediate compounds claimed in claims 16-18 are not disclosed in D2 either.

However, D3 and D4 disclose intermediate compounds claimed in current claim 17 (see D3 scheme 1 compounds 9 with R^1 as in compounds 10-12, 16, 18 and 20 as shown in table 1; see D4 compound 1.01d).

As a consequence, novelty in the sense of Article 33(2) PCT can be acknowledged for current claims 2-12, 15 and 18.

Inventive Step

In the current technical field of fungicidal compounds D2 is considered to be the closest prior art. It discloses compounds of formula I having the same heterobicyclic structure but a significantly different substitution pattern in the two positions marked by an arrow below in the current general formula.



The current compounds have fungicidal activity as well (see current pages 120f and table A). No unexpected improved result has been disclosed so that they are considered to solve the problem of providing further fungicidal compounds.

The skilled person neither had any incentive to replace the amino substituent NR^2R^3 on the imidazo-ring of D1 by the current ring comprising A^1 , substituted as claimed, nor to replace R^5 of the D1 compounds (which can be hydrogen, halogen, cyano, nitro, hydroxy, alkyl, cycloalkyl etc) by the current (thio)amide group having an aromatic ring system on the nitrogen. There was thus no hint at the current solution.

As a consequence, an inventive step in the sense of Article 33(3) PCT may be acknowledged for those current compounds which are well-delimited from the prior art.

The currently claimed novel intermediate compounds of current claim 18 share one of the non-obvious substituents of the compounds of formula (I) and are thus considered to be non-obvious as well.

Currently well-delimited intermediate compounds of current claims 16 and 17 could be considered to be non-obvious as well.

Re Item VII.

D1-D4 are not yet cited and briefly discussed.

Re Item VIII.

The claim category of current claim 1 should be clarified.

Current claim 10 contains an inconsistency as it relates to compounds wherein all A^2 are CR^2 , but the preferred embodiment of said claim discloses a formula still having two A^2 s which are not yet depicted as CR^2 , thus relating to a broader scope and consequently casting a doubt as to the scope of protection sought.