

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/EP2022/084016	International filing date (day/month/year) 01.12.2022	Priority date (day/month/year) 02.12.2021
International Patent Classification (IPC) or both national classification and IPC INV. A01N3/00		
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 Fax: +49 89 2399 - 4465	Date of completion of this opinion see form PCT/ISA/210	Authorized Officer Bertrand, Franck Telephone No. +49 89 2399-0
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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:
- see separate sheet**

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>1-11</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-11</u>
Industrial applicability (IA)	Yes: Claims	<u>1-11</u>
	No: Claims	

2. Citations and explanations

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 I

Basis of the report

Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

D1 WO 2020/055647 A1 (PIONEER HI BRED INT [US]) 19 March 2020

D2 US 2 669 066 A (ANTLES LEO C) 16 February 1954

D3 FRANCESCA SILVANA ET AL: "A Novel Protein Hydrolysate-Based Biostimulant Improves Tomato Performances under Drought Stress", PLANTS, vol. 10, no. 4, 16 April 2021, page 783, XP055913658, DOI: 10.3390/plants10040783

Re Item V

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

The present invention aims at maintaining corn pollen viability (esp. for protecting it from heat stress) while not yet harvested by treating the relevant plants with a protein hydrolysate.

D1-D2 relate to the post-harvest preservation of pollen. D3 does not mention corn.

Therefore, the subject-matter of the present claims 1-11 is new (Art.33(2) PCT).

However, the skilled artisan would have considered the use of protein hydrolysate for preserving corn pollen from heat stress on the plant with a reasonable expectation of success:

D3 uses the same means for the same purpose under the same conditions for tomatoes instead of maize. D1-D2 show that corn pollen is not harmed (on the contrary) by osmotic regulators like amino acids or proteins. There seems to be no prejudice against the transposition of the teaching of D3 to other plants (NB: D3 focuses on one single different plant, but by doing so, it does not mention that the reason for this focus is that the chosen measures would not work elsewhere). At the very least, there is a strong prompt for the skilled artisan to try.

Therefore, the subject-matter of the present claims 1-11 does not involve an inventive step (Art.33(3) PCT).

Re Item VIII

Certain observations on the international application

A few clarity issues are further raised (Art.6 PCT):

- the heat stress according to the present claims 2-4 does not participate to the sought effect, i.e. is not part of the proposed solution, but rather relates to a more specific technical problem; however, the skilled artisan treating a plant according to the present invention cannot be sure of a future significative heat stress occurring;
- method claims and use claims containing the same features have actually the same scope and are therefore redundant; in case such claims are meant to be different from each other, the it is unclear to which extent;
- the volume of the applied treatment according to the present claim 10 is meaningless when the concentration of the relevant ingredient(s) is not indicated.