

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

# PCT

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

To:

see form PCT/ISA/220

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/EP2019/077185

International filing date (day/month/year)  
08.10.2019

Priority date (day/month/year)  
09.10.2018

International Patent Classification (IPC) or both national classification and IPC  
INV. C07D205/04 C07D401/06 C07D401/10 C07D401/14 C07D403/06 C07D403/10 C07D405/06 C07D413/06  
C07D417/06 A01N35/06

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 43*bis*.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 66.1*bis*(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

Bakboord, Joan



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**Box No. I Basis of the opinion**

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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:
    - in the form of an Annex C/ST.25 text file.
    - on paper or in the form of an image file.
  - b.  furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
  - c.  furnished subsequent to the international filing date for the purposes of international search only:
    - in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
    - on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).
4.  In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

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**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**

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1. Statement

Novelty (N)	Yes: Claims	<u>1-15</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-15</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-15</u>
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

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

1 The present application relates to 2-azaspiro[3.5]nonane derivatives as herbicides.

2 Reference is made to the following documents:

D1 WO 2014/096289 A2, cited in the application

D2 WO 2015/197468 A1, cited in the application

3 Novelty

Documents D1 and D2 generically disclose the compounds of formula I. However the azetidenyl group is not exemplified. The compounds are herbicides.

A compound of formula I is not disclosed in the cited prior art. Claims 1-10 therefore fulfil the requirements of Art 33(2) PCT.

Claims 11 - 13 describe a herbicidal composition comprising a compound of formula I and are novel by consequence.

Claim 14 describes a method of controlling weeds comprising applying a compound of formula I and is novel by consequence.

Claim 15 describes the use of a compound of formula I as a herbicide and is novel by consequence.

4 Inventive step

Starting from any of documents D1 or D2 the problem to be solved may be regarded to be the provision of further cyclohexanedione derivatives to be used as herbicides. The solution of the applicant resides in the compounds of formula I, which are specifically substituted with a spiro azetedenyl group. This group is generically also disclosed in documents D1 and D2 but none of the examples shows this substituent. The applicant in table B3 shows that a compound of formula I (compound 1.001) exhibits improved crop safety vis-à-vis a structurally similar compound of document D1 (compound A-38), whilst retaining good overall weed control. As the structural modifications have not been made obvious by the prior art the solution of the applicant may be regarded to represent an inventive step (Art 33(3) PCT).