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Outcome of the consultation with Member States and EFSA on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* for use in plant protection as fungicide

European Food Safety Authority (EFSA)

Abstract

The European Food Safety Authority (EFSA) was asked by the European Commission to provide scientific assistance with respect to the evaluation of applications received by the European Commission concerning basic substances. In this context, EFSA's scientific views on the specific points raised during the commenting phase conducted with Member States and EFSA on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* are presented. The context of the evaluation was that required by the European Commission in accordance with Article 23 of Regulation (EC) No 1107/2009 following the submission of an application for approval of mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* as a basic substance for use in plant protection as fungicide. The current report summarises the outcome of the consultation process organised by EFSA and presents EFSA's scientific views on the individual comments received.

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Keywords: mustard seeds powder, *Sinapis alba* (*Brassica alba*), *Brassica juncea*, *Brassica nigra*, basic substance, application, consultation, plant protection, pesticide

Requestor: European Commission

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Summary

Mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra*, is an active substance for which, in accordance with Article 23(3) of Regulation (EC) No 1107/2009, the European Commission received an application from Institut Technique de l'Agriculture Biologique (ITAB) for approval as a 'basic substance'. Regulation (EC) No 1107/2009 introduced the new category of 'basic substances', which are described, among others, as active substances, not predominantly used as plant protection products but which may be of value for plant protection and for which the economic interest in applying for approval may be limited. Article 23 of Regulation (EC) No 1107/2009 lays down specific provisions for consideration of applications for approval of basic substances.

In March 2013, the European Commission requested the European Food Safety Authority (EFSA) to provide scientific assistance with respect to the evaluation of applications received by the European Commission concerning basic substances. By a further specific request, received from the European Commission in October 2016, EFSA was asked to organise a consultation on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra*, to consult the applicant on the comments received, and to deliver its scientific views on the specific points raised in the format of a reporting table within three months of acceptance of the specific request.

A consultation on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra*, organised by EFSA, was conducted with Member States via a written procedure in July-September 2016. Subsequently, EFSA also provided comments and the applicant was invited to address all the comments received in the format of a reporting table and to provide an application update as appropriate, within a period of 30 days.

The current report summarises the outcome of the consultation process organised by EFSA on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* and presents EFSA's scientific views on the individual comments received in the format of a reporting table.

Mustard seeds powder is a yellowish or light, brownish-yellow powder, odourless, mildly pungent and acrid to the taste obtained from the seeds of *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra*, mainly used as a food additive. It should be of food grade quality. Mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* is intended to be used as a fungicide seed treatment on wheat and spelt.

Mustard is used as food/food additive. According to Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, mustard is listed in Annex II of substances or products causing allergies or intolerances, for which labelling is mandatory.

Considerations regarding the estimated consumer exposure related to the requested use versus the expected exposure from food consumption of mustard, or information to substantiate why residues are not relevant is not available. Given the uses specifically involve seed treatments of cereals with powdered *Brassica alba*, *B. juncea* and *B. nigra* and not any foliar treatment, it can be reasonably assumed that consumer exposure to mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* from the applied uses will be much lower than exposure to mustard commodities in a mixed diet.

Information on the fate and behaviour of mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* or comparison with other published citable recommendations when mustard derived material is added to the agricultural / horticultural environment (for example as a green manure) is not available in the application.

Specific data on the level of toxicity of allyl isothiocyanate to aquatic organisms were not available in the application. However, as mustard powder is also claimed to be used for feeding aquatic organisms, the risk could be considered as low. Insufficient information was available to perform the risk to soil microorganism from the intended uses. Concerning the risk to other non-target organisms, the risk is expected to be low considering the representative use as seed treatment.

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1. Introduction

1.1. Background and Terms of Reference as provided by the requestor

Regulation (EC) No 1107/2009¹ (hereinafter referred to as 'the Regulation') introduced the new category of 'basic substances', which are described, among others, as active substances, not predominantly used as plant protection products but which may be of value for plant protection and for which the economic interest of applying for approval may be limited. Article 23 of the Regulation lays down specific provisions to identify a substance as a basic substance with a view to ensure that such active substances that do not have an immediate or delayed harmful effect on human and animal health nor an unacceptable effect on the environment can be approved as 'basic' and used for plant protection purposes.

Mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* is an active substance for which, in accordance with Article 23(3) of the Regulation, the European Commission received an application from Institut Technique de l'Agriculture Biologique for approval as a 'basic substance' for use in plant protection as fungicide.

The European Food Safety Authority (EFSA) organised a consultation with Member States on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra*, which was conducted via a written procedure in July–September 2016. The comments received, including EFSA's comments, were consolidated by EFSA in the format of a reporting table. Subsequently, the applicant was invited to address the comments in column 4 of the reporting table and to provide an application update as appropriate. The comments received and the response of the applicant thereon, together with the application update submitted by the applicant, were considered by EFSA in column 5 of the reporting table.

The current report aims to summarise the outcome of the consultation process organised by EFSA on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* and to present EFSA's scientific views on the individual comments received in the format of a reporting table.

The application and, where relevant, any update thereof submitted by the applicant for approval of mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* as a 'basic substance' in the context of Article 23 of the Regulation, is a key supporting documentation, therefore it is considered as a background documentation to this report and will also be made publicly available, excluding its appendices (ITAB; 2016a, b).

1.2. Interpretation of the Terms of Reference

On 6 March 2013 the European Commission requested EFSA to provide scientific assistance with respect to the evaluation of applications received by the European Commission concerning basic substances. By a further specific request, received by EFSA on 24 October 2016, EFSA was asked to organise a consultation on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra*, to consult the applicant on the comments received, and to deliver its scientific views on the specific points raised in the format of a reporting table.

To this end, a technical report containing the finalised reporting table is being prepared by EFSA. The agreed deadline for providing the finalised report is 24 January 2017.

On the basis of the reporting table, the European Commission may decide to further consult EFSA to conduct a full or focussed peer review and to provide its conclusions on certain specific points.

¹ Regulation (EC) No 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. OJ L 309, 24.11.2009, p. 1-50.

2. Assessment

The comments received on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* and the conclusions drawn by EFSA are presented in the format of a reporting table.

The comments received are summarised in columns 2 and 3 of the reporting table. The applicant's considerations of the comments, where available, are provided in column 4, while EFSA's scientific views and conclusions are outlined in column 5 of the table.

The finalised reporting table is provided in Appendix A of this report. In addition, an overview table on the identity and biological properties of the substance and the list of intended uses in plant protection (GAP table) are provided in Appendix C and D, respectively.

Documentation provided to EFSA

1. ITAB, 2016a. Basic substance application on mustard powder submitted in the context of Article 23 of Regulation (EC) No 1107/2009. June 2016. Documentation made available to EFSA by the European Commission.
2. ITAB, 2016b. Basic substance application update on mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* submitted in the context of Article 23 of Regulation (EC) No 1107/2009. November 2016. Documentation made available to EFSA by the applicant.

Abbreviations

a.s.	active substance
CAS	Chemical Abstracts Service number
DG SANTE	Directorates-General - Health and Food Safety
ECHA	European Chemicals Agency
GAP	good agricultural practice
MRL	maximum residue level
MS	Member State
PEC	predicted environmental concentration
RMS	rappporteur Member State
WS	water dispersible powder for slurry seed treatment

Appendix A – Collation of comments from Member States and EFSA on the basic substance application for mustard seeds powder from *Sinapis alba* (*Brassica alba*), *Brassica juncea* and *Brassica nigra* and the conclusions drawn by EFSA on the specific points raised

1. Purpose of the application

General					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
1(1)		ES: No comments			Noted.
1(2)		NL: no comments			Noted.

2. Identity of the substance/product as available on the market and predominant use

2.1. Identity and Physical and chemical properties of the substance and product to be used					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(1)		PL: no comments			Noted.
2(2)	General comment	ES: A title of the application with a more restrictive description as "Mustard seeds powder from <i>Brassica alba</i> , <i>B. juncea</i> and <i>B. nigra</i> " would be more suitable.	ES: No more comments	Applicant agree Title changed in the basic substance application Proposition "Mustard seeds powder from Brassica spp (alba, juncea and nigra) Title final choice is subject to decision from EFSA or	The proposed name of the basic substance is: Mustard seeds powder from <i>Sinapis alba</i> (<i>Brassica alba</i>), <i>Brassica juncea</i> and <i>Brassica nigra</i>

2.1. Identity and Physical and chemical properties of the substance and product to be used					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				DGSanté	
2(3)	2.1. IDENTITY AND PHYSICAL CHEMICAL PROPERTIES OF THE SUBSTANCE AND PRODUCT TO BE USED	<p>ES: The main constituents of the mucilage from mustard seeds powder should be provided.</p> <p>The applicant should also clarify if composition of <i>Brassica alba</i>, <i>B. juncea</i> and <i>B. nigra</i> is the same.</p>	ES: No more comments	<p>Table p7 updated in the basic substance application</p> <p>Reference added</p> <p>Composition variation is indicated in table</p>	Addressed.
2(4)	2.1.5. Description and specification of purity of the active substance and product	<p>ES: The content of free constituents with activity against pest in non-drying fatty oil should be clearly established. For example, glycerides could release chemical compounds already approved as active substances (i.e. free oleic acids).</p> <p>Moreover, the applicant should provide the rate among <i>Brassica alba</i>, <i>B. juncea</i> and <i>B. nigra</i> seeds used to manufacture the mustard powder.</p>	ES: No more comments	<p>No free oleic acids are individually approved as active substances and approved vegetable oils are not for such GAP table in seed treatment.</p> <p>Manufacture of the mustard powder reference added in §2</p>	Addressed.
2(5)	2.1.1. Common name of the	ES: It might be useful to include the synonym in Spanish.	ES: No more comments	Basic substance application updated	Addressed.

2.1. Identity and Physical and chemical properties of the substance and product to be used					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
	substance and product and their synonyms/plant nomenclature				
2(6)	2.1.7.3. Analytical methods for determination of residues	ES: This issue should only include the analytical methods used for determination of residues from mustard powder. Pesticide residues present in mustard powder should be considered as impurities. Therefore, the Słowik-Borowiec et al. (2015) method should be included in the issue 2.1.7.2	ES: No more comments	Reference added, basic substance application updated	Addressed.
2(7)		NL: no comments			Noted.
2(8)	2.1.1. Common name of the substance	EFSA: the proposed name mustard powder suggests that the substance is a grind seed, while the CAS number refers to the extract. Which one is considered the basic substance?		CAS number refers to the extract in ECHA listing, lot of products are attached to extract as they are intrinsic extract: mustard from seed grinding is an extract from seeds. All mustard (black, white, Indian) in ECHA are called "ext.": <i>"Extractives and their physically modified derivatives such as</i>	The given CAS number is not covering this basic substance

2.1. Identity and Physical and chemical properties of the substance and product to be used					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
				<i>tinctures, concretes, absolutes, essential oils, oleoresins, terpenes, terpene-free fractions, distillates, residues, etc., obtained from Sinapis alba, Cruciferae."</i>	
2(9)	2.1.3.1 Sinigrin, p.8	EFSA: in Popova, 2014 sinigrin is the <i>Z</i> isomer. Clarification needed.		No <i>Z</i> or <i>E</i> isomer. No carbon double bond: =N-O Conformers (-)-sinigrin is the natural compound (described by Aldrich).	Addressed: The (-)-sinigrin is the <i>E</i> isomer, there are no data on the possible interconversion of the <i>E</i> and <i>Z</i> isomers
2(10)	2.1.5 Specification of purity, p.9	EFSA: clarification is needed if allyl isothiocyanate is considered relevant impurity or not and if its level should be limited or not	Reference is also made to FOOD STANDARDS REGULATIONS, 1988 (LN. 1988/009), ² where there is a clause "yield not less than 0.35% of allyl isothiocyanate after maceration with water for two hours 370C"	Food status agrees allyl isothiocyanate content not a relevant impurity. Food status is compulsory.	Addressed: Mustard powder should be of food grade meeting the Food Standards Regulations 1964-07 subsidiary 1988/009.

² Food Standards Regulations, 1988. Food Standards Regulations 964-07, subsidiary LN. 1988/009. 1 March 1988, 6 pp.

2.2. Current Former and in case proposed trade names

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(11)	2.2	<p>DE: It should be clarified throughout the application that the basic substance is the food stuff mustard powder but not a formulated product such as "Tillecur" (Biofa). It would be misleading to give "Tillecur" as an example for the food stuff mustard powder, as "Tillecur" is a formulated product with several co-formulants and therefore does clearly not fall under the definition of Article 23 (1) ["... a product consisting of the substance and a simple diluent"]. Please see http://www.biofa-profi.de/de/t/tillecur.html.</p> <p>The summary of intended uses should be corrected. Figures should be given for the basic substance mustard powder, not for a formulated product.</p>		<p>Reference removed in the all basic substance application.</p> <p>Strange again that DE M.S. admit that formulated PPP with not approved active substance are sold and use illegally on its territory. Clearly DE M.S. WROTE in this official statement that Tillecur fall under 1107/2009 regulation but finally sold and use illegally.</p> <p>Finally in this statement DE M.S. admit not respecting EU PPP regulation.</p> <p>Every substance used as Plant Protection Product MUST be allowed under Reg. EC 1107/2009.</p>	<p>Addressed: Tillecur was removed from 2.2 in the updated application</p>
2(12)		ES: No comments			Noted.
2(13)		NL: no comments			Noted.

2.3. Manufacturer of the substance/products

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(14)	2.3	DE: See comment above, remove reference to "Tillecur" from the application.		Reference removed in the basic substance application No more comment	Addressed: Tillecur was removed from 2.3 in the updated application See also 2(21)
2(15)		ES: No comments			Noted.
2(16)		NL: no comments			Noted.

2.4. Type of preparation

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(17)	2.4	DE: Here, the application lists several formulation types. These seem to be (partly) inconsistent with the description of the substance as given in section 2.1 ("powder") and the simple preparation (section 2.1.4: "...obtained by grinding the ... seeds". To be clarified.		Addressed See §2.2.	Addressed: According to the description of the substance as given in section 2.1 the formulation type is water dispersible powder for slurry seed treatment (WS) See also 2(19)
2(18)		ES: No comments			Noted.
2(19)	N 2.4. TYPE OF PREPARATION OF THE SUBSTANCE / PRODUCT	NL: Minor comment: Based on the use applied for, the powder should be classified as WS only.		Corrected in basic substance application and GAP table	Addressed. See also 2(17)

2.4. Type of preparation					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(20)		EFSA: small note: the abbreviation for a powder applied as a slurry to the seed is WS		Corrected in basic substance application and GAP table	Addressed. See also 2(17)
2(21)		EFSA: Tillecur is a brand name of a formulation, cannot be a basic substance		Reference removed in the basic substance application	Addressed. See also 2(14)

2.5. Description of the recipe for the product to be used					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
2(22)	2.5	DE: It is stated that only 84.8 % mustard powder is in the "preparation". No information has been provided about the other substance(s) in the "preparation". In case it is really a preparation it seems that this would be not in accordance with the requirements for basic substances stipulated in Art. 23 of Reg. 1107/2009.		Question refused. DE M.S. is a systematically and deliberately blocking all applications for basic substances and is not respecting Reg. EC 1107/2009. Up to EFSA to remove this statement.	Addressed: EFSA's interpretation of the information presented in point 2.5 of the submission is that the table describes how the water dispersible powder for slurry seed treatment is dispersed in water before the seed treatment (a Good Agricultural Practice) and not as a composition of a "formulation"
2(23)		DE: The calculation that 1,5kg	The calculation should be	Quantities of substance for	Addressed.

2.5. Description of the recipe for the product to be used

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		mustard powder plus 4,5kg water makes 6 l of final volume is incorrect.	corrected and data in the GAP table should be updated if necessary.	100 kg of seed indicated. Volume of water is indicated for 100 kg of seed.	
2(24)	2.5. Description of the recipe for the product to be used	ES: If the % of Mustard powder in the preparation is 84.8, what is the rest 15.2%? Table need further clarifications.	ES: No more comments	Corrected in basic substance application §2, recipe and GAP table	See comment 2(22)
2(25)	2.5. Description of the recipe for the product to be used	ES: Have the applicant taking into account the importance of the particle size in the release of the active components from mustard powder? This concern should be clarified because it could be of great importance to manufacture a preparation/product with a repetitive efficiency.	ES: No more comments	Corrected in basic substance application §2 and GAP table Mustard powder is obtained by grinding. No micro or nano particles are expected. Grinding is part of the mustard specification under food standards	Addressed.
2(26)		NL: no comments			Noted

3. Uses of the substance and its product

3.1. Field of use

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
3(1)	3.4.1 as fungicide	DE: Used as wettable powder for seed treatment. The seed application should be carried out in a way that ensures that there is no overly abrasion of the powder and thus development of dust, which can be transported via drift for example in surface waters.		Recipe clarified, water is added so no dust is expected.	Addressed.
3(2)		ES: Please, specify the crops (wheat, spelt...), varieties		Crop specified: Wheat seeds: <i>Triticum vulgare</i> , <i>Triticum aestivum</i> ; Durum wheat <i>Triticum durum</i> Spelt <i>Triticum spelta</i>	Addressed.
3(3)		NL: no comments			Noted.

3.2. Effects on harmful organisms or on plants

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
3(4)		ES: No comments			Noted.
3(5)		NL: no comments			Noted.

3.3. Summary of intended uses					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
3(6)		DE: In the footnotes the abbreviation qt is not explained.	The values should be given in kg.	Corrected in basic substance application §2, recipe and GAP table §3	Addressed.
3(7)		DE: The application rate may be inconsistent with Chapter 2.5 "Description of the recipe..."	It should be adapted (see above).	Corrected in basic substance application §2, recipe and GAP table	Addressed.
3(8)	3.3 Summary	DE: In the last sentence of the Summary, "Tillecur" is mentioned as Tillecur (84.8 % yellow mustard-powder). This is probably wrong, because in section 2.5, a content of 84.8 % mustard powder is already claimed for a dilution with water. Tillecur, however, has several other co-formulants and does not fall under Art. 23, as already mentioned above. The application gives here and in other places the false impression that Tillecur is identical to mustard powder.		Reference removed in the basic substance application	Addressed. See also 2(14)
3(9)	3.4. Summary of intended uses	ES: Please, review the units of "Application rate per treatment" (titles and		Corrected in basic substance application §2, recipe and GAP table	Addressed.

		values)			
3(10)		NL: no comments			Noted.

4. Classification and labelling of the substance

Classification and labelling of the substance

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
4(1)		NL: no comments			Noted.

5. Impact on Human and Animal Health

5.1. Toxicokinetics and metabolism in humans

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(1)		PL: no comments			Noted.
5(2)	5.1 toxicokinetics and metabolism in humans	NL: most of the studies reported here do not appear to be related to toxicokinetics and metabolism in humans.		No references added	Noted.

5.2. Acute toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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5.1. Toxicokinetics and metabolism in humans

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(3)		PL: Acceptable. The toxicological information on the substance/product, mustard powder, is sufficient. No further studies on the substance are considered necessary. The substance has not an immediate harmful effect on human or animal health.		No comment from applicant	Noted.

5.3. Short-term toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(4)		PL: no comments		Noted.

5.4. Genotoxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(5)		PL: Acceptable Exposure to breakdown products of glucosinolates		No comment from applicant	Noted.

5.4. Genotoxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		(isothiocyanates and indoles at the concentration level found in raw material) does not appear to have adverse genetic effects.			

5.5. Long-term toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(6)		Acceptable The substance does not have a delayed harmful effect on human or animal health.		No comment from applicant	Noted.

5.6. Reproductive toxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(7)		PL: no comments			Noted.

5.7. Neurotoxicity

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 4 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(8)		PL: no comments			Noted.

5.8. Toxicity studies on metabolites

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(9)		PL: no comments			Noted.

5.9. Medical Data: adverse effects reported in humans

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(10)		PL: no comments			Noted.
5(11)	Medical data	NL: mustard can cause allergic reactions and must be declared on food packaging in many EU countries. Can residues expected due to the use of mustard powder as basic substance in seed treatment? If so, than the concern for an allergic reaction should be addressed.		More reference added on adverse effect of mustard. Some other safe medicinal uses are described. Residues expected from mustard uses are identical than residues from manure uses as fertilizer.	Mustard is listed in Annex II of substances or products causing allergies or intolerances, for which labelling is mandatory, it is noted that it can be reasonably assumed that consumer exposure to mustard powder might be much lower than exposure to mustard commodities in a

5.9. Medical Data: adverse effects reported in humans

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(12)		EFSA: Mustard is used as food/food additive; according to Regulation (EU) No 1169/2011 ³ of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, mustard is listed in Annex II of substances or products causing allergies or intolerances, for which labelling is mandatory.	It should be demonstrated that no residues are to be expected from the use of mustard as plant protection product.	Residues expected from mustard uses are identical than residues from manure uses as fertilizer.	mixed diet. See 6(5) See 5(11)
5(13)		EFSA: Thioglucosides (such as sinalbin, sinigrin) are reported to be linked to goitrogenic effects, but considerations of this aspect are missing in the application and should be provided to complete the description of potential toxicological effects of components of <i>Brassica alba</i> , <i>B. juncea</i> and <i>B. nigra</i> .		More ref added	Mustard or its individual components produce a number of health effects (beneficial and potentially adverse) that are also used in the medical area, it is noted that it can be reasonably assumed that consumer exposure to mustard powder might be much lower than exposure to mustard commodities in a mixed diet. See 6(5)

³ Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004. OJ L 304, 22.11.2011, p. 18–63.

5.10. Additional Information related to therapeutic properties or health claims

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(14)		PL: no comments			Noted.

5.11. Additional information related to use as food

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(15)		PL: no comments			Noted.

5.12. Acceptable daily intake, acute reference dose, acceptable operator exposure level

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(16)		PL: no comments			Noted.

5.13. Impact on human and animal health arising from exposure to the substance or impurities contained in it

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
5(17)		PL: no comments			Noted.

6. Residues

Residues					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
6(1)		PL: Potentially, we cannot expect the remains of mustard powder, which will be used as a seed coating. There is no need for determining MRLs.		No comment from applicant	See 6(5)
6(2)		ES: No comments			Noted.
6(3)	2.1.7.3.	NL: In this paragraph methods should be described, which determine possible residues of the basic substance. This paragraph is <u>not</u> about the measurement of possible residues of plant protection products on the basic substance.	Reference could be made to paragraph 6 (see also next comment), where it is being described that residues are not expected. Consequently, no analytical methods are required.	Ref added Basic substance use = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	See 7(6) Reference to paragraph 6 was added in the updated application, indicating that mustard crops are used as intercrops and green fertilisers/green manure, resulting in a comparable exposure of the crops; however any further information to support this claim was not submitted in the application.
6(4)	6	NL: It is advised to add some more argumentation why residues are not relevant.		idem	See 6(3) and 6(5)
6(5)		EFSA: It is understood that if powdered <i>Brassica alba</i> , <i>B. juncea</i> and <i>B. nigra</i> is applied exclusively as a seed treatment to the listed crops, consumer exposure is		Basic substance use = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	Figures on mustard dietary consumption were not provided by the applicant in order to firmly conclude that exposure from the intended uses will be insignificant when compared to exposure through the diet. Yet,

Residues					
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		<p>expected to be negligible. Yet, some more considerations regarding the estimated consumer exposure related to the requested use vs. the expected exposure from food consumption of mustard would be desirable.</p>			<p>given the uses involve seed treatments only using powdered <i>Brassica alba</i>, <i>B. juncea</i> and <i>B. nigra</i>, it can be reasonably assumed that consumer exposure to mustard powder might be much lower than exposure to mustard commodities in a mixed diet. As mustard is listed in Annex II of substances or products causing allergies or intolerances, the only issue that may result is a potential contamination of the growing crop by residual mustard powder via the germinated seeds/roots. Again, given the specific use (soil incorporation of treated seeds to grow cereal crops) the probability for translocation / contamination of aerial plant parts for human consumption (grains) is considered very low.</p>

7. Fate and Behaviour in the environment

7.1 Fate and Behaviour in the environment

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
7(1)		PL: No real environment impact		Basic substance use = 1.5	Addressed

7.1 Fate and Behaviour in the environment

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		is expected from the usage of mustard powder as seed treatment. Mustard is used as intercrop and green fertilizer.		kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	
7(2)		ES: No comments			Noted.
7(3)	7.1 & 7.2	NL: study summaries included in the fate & behaviour section do not really concern the fate and behaviour of mustard seed in the environment, and therefore can be omitted from the assessment report. Can something be said (most preferably based on scientific sources) about the fate of mustard meal once entering the environment?		Basic substance use = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	Addressed But see comment 7(6).

7.2 Estimation of the short and long-term exposure of relevant environmental media (soil, groundwater, surface water)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
7(4)		PL: Not required			Noted.
7(5)		ES: No comments			Noted.
7(6)		EFSA: The statement: 'Mustards are used as intercrops,	Applicant should report typical yield / ha of mustard grown	Basic substance use = 1.5 kg/ha is to compare with	The source of the statement relating to typical yield / ha

7.1 Fate and Behaviour in the environment

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
		<p>green fertilisers, manure, and so no real environmental impact different from due to mustard powder uses as seed treatment or manure is expected' (ITAB, 2016a) should be better supported by comparing the dose rate per ha resulting from the proposed use to the yield per ha of green manure that may be ploughed in.</p>	<p>as a green manure and compare to the amount / ha that would result from the use being requested as a seed treatment.</p>	<p>manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha</p>	<p>that 'manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha' is not clear. The application was not updated to include relevant references or agronomical recommendations of official advisory services to support the statement in column 4.</p>

8. Effects on non-target species

EFSA: no comments

8.1. Effects on terrestrial vertebrates

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(1)	8.2 Effects on aquatic organisms	DE: The coating of the seed should be carried out in a quality that ensures that there is no development of dust which can cause unacceptable effects for aquatic organisms in surface waters.		Recipe clarified, water is added so no dust is expected.	Addressed
8(2)		PL: Mustard powder is not expected to be ingested by birds.		Applicant does not agree, mustard seed is also repellent for birds as they try to catch seeds during sowing.	Addressed
8(3)		ES: No comments			Noted.
8(4)	8.1	NL: No comments.			Noted.

8.2. Effects on aquatic organisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
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8.2. Effects on aquatic organisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(5)		PL: According to available literature, allyl isothiocyanate, the natural component of the mustard, may be toxic to aquatic organisms.		Reference added but Basic substance uses = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	Specific data on the level of toxicity of allyl isothiocyanate on aquatic organisms were not available in the application. Furthermore, the reference to a potential exposure from the representative use lower than that from manure and fertilizer uses was not fully supported (see comment 7(6)). However, the mustard powder is also claimed to be used for feeding aquatic organisms. Therefore, the risk to aquatic organisms can be considered as low.
8(6)		ES: No comments			Noted.
8(7)	8.2	NL: The effects of the isolated compound allyl isothiocyanate (in the frog embryo teratogenesis bioassay) are not necessarily representative for mustard seed powder, since isolated compounds may show very different effects than when included in the intact substance of origin.		Basic substance use = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	See 8(5)

8.3. Effects on bees and other arthropods species

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(8)		PL: No comments. Not enough information.			Noted.
8(9)		ES: No comments			Noted.
8(10)		NL: No comments.			Noted.

8.4. Effects on earthworms and other soil macroorganisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(11)	8.4 Effects on earthworms and other soil macroorganisms	DE: Mustard is used to expel earthworms from the soil. How is it ensured that the use of mustard powder as seed treatment does not lead to unacceptable effects on earthworms?		Applicant agrees but Basic substance use = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	No specific toxicity studies on earthworms were submitted. However, the risk is expected to be low for the representative use as a seed treatment.
8(12)		PL: No comments. Not enough information.			Noted.
8(13)		ES: No comments			Noted.
8(14)		NL: No comments.			Noted.

8.5. Effects on soil microorganisms

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(15)	8.5 Effects on soil microorganisms	DE: Mustard flour exhibits antibacterial activity. Is it ensured that there are no unacceptable effects on soil microorganisms caused by the intended use of mustard powder as seed treatment?		Applicant agrees but Basic substance use = 1.5 kg/ha is to compare with manure and fertilizer uses yielding seed yields ranged from 900 to 1,235 kg/ha	This issue cannot be considered addressed with the information provided in the application.
8(16)		PL: Mustard powder has bactericidal effect on food-borne bacteria.		idem	Noted. See also 8(15)
8(17)		ES: No comments			Noted.
8(18)		NL: No comments.			Noted.

8.6. Effects on other non-target organisms (flora and fauna)

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(19)		ES: No comments			Noted.
8(20)		NL: No comments.			Noted.

8.7. Effects on biological methods of sewage treatment

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
8(21)		ES: No comments			Noted.
8(22)		NL: No comments.			Noted.

9. Overall conclusions with respect of eligibility of the substance to be approved as basic substance

Overall conclusions with respect of eligibility of the substance to be approved as basic substance

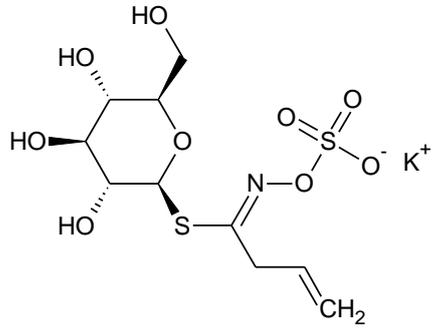
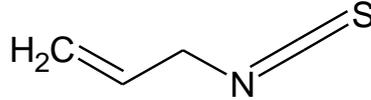
No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
9(1)		NL: No comments.			Noted.

10. Other comments

Other comments

No.	Column 1 Reference to Application Template	Column 2 Comments from Member States / EFSA	Column 3 Proposal by Member States/EFSA on how the application should be updated to address the comment	Column 4 Follow up response from applicant	Column 5 EFSA's scientific views on the specific points raised in the commenting phase conducted on the application
10(1)		ES: No comments			Noted.
10(2)		NL: No comments.			Noted.

Appendix B – Used compound codes

Code/trivial name	Chemical name/SMILES notation	Structural formula
(-)-sinigrin	potassium 1- <i>S</i> -[(1 <i>E</i>)- <i>N</i> -(sulfonatoxy)but-3-enimidoyl]-1-thio-β-D-glucopyranose <chem>[K+].[O-]S(=O)(=O)O\N=C(\S[C@@H]1O[C@H](CO)[C@@H](O)[C@H](O)[C@H]1O)CC=C</chem>	
allyl isothiocyanate	3-isothiocyanatoprop-1-ene <chem>C=CC\N=C=S</chem>	

Appendix C – Identity and biological properties

Common name (ISO)	There is no ISO common name for this substance
Chemical name (IUPAC)	Not relevant, the substance is a complex mixture
Chemical name (CA)	Not relevant, the substance is a complex mixture
Common names	White mustard, Indian mustard, Chinese mustard, black mustard
CAS No	84929-33-9 (<i>Brassica alba</i> seed extract)
CIPAC No and EEC No	284-517-9 (EINECS/ELINCS)
FAO specification	Not available
Minimum purity	Not relevant Purity is depending on the origin
Relevant impurities	none
Molecular mass and structural formula	Not relevant, the substance is a complex mixture
Mode of Use	Seed treatment
Preparation to be used	Water dispersible powder for slurry seed treatment (WS)
Function of plant protection	fungicide

Appendix D – List of uses

Crop and/or situation (a)	Member State or Country	Example product name as available on the market	F G I (b)	Pests or group of pests controlled (c)	Formulation		Application				Application rate per treatment			Total rate kg a.i./ha min max (kg/ha) (l)	PHI (days) (m)	Remarks
					Type (d-f)	Conc of a.i. g/kg (i)	Method kind (f-h)	Growth stage and season (j)	Number min max (k)	Interval between applications (min)	kg a.i./hl min max (kg/ha) (l)	Water l/ha min max	kg a.i./ha min max (kg/ha) (l)			
Wheat seeds <i>Triticum vulgare</i> <i>Triticum aestivum</i> Durum wheat <i>Triticum durum</i> Spelt <i>Triticum spelta</i>	France All MS		F	fungi like Common bunt: <i>Tilletia caries</i> <i>Tilletia foetida</i>	Water dispersible powder for slurry seed treatment (WS)	824 to 997	Seed application before seedling *	Summer to Autumn	1	None	1.5 per 100 kg of Seed *	4.5L of water added per 100 kg of Seed	1.125 to 3 †	1.125 to 3 †	None: Not applicable Seed treatment	Mix preparation between mustard powder and water must be done before seed treatment.

* The product is used for seed treatment application

† Considering 0.9 to 2 qt (90-200 kg) of seeds per ha.

(a): For crops, the EU and Codex classification (both) should be taken into account ; where relevant, the use situation should be described (e.g. fumigation of a structure)

(b): Outdoor or field use (F), greenhouse application (G) or indoor application (I)

(c): e.g. pests as biting and suckling insects, soil born insects, foliar fungi, weeds or plant elicitor

(d): e.g. wettable powder (WP), emulsifiable concentrate (EC), granule (GR) etc..

(e): GCPF Codes – GIFAP Technical Monograph N° 2, 1989

(f): All abbreviations used must be explained

(g): Method, e.g. high volume spraying, low volume spraying, spreading, dusting, drench

(h): Kind, e.g. overall, broadcast, aerial spraying, row, individual plant, between the plant – type of equipment used must be indicated

(i): g/kg or g/L. Normally the rate should be given for the active substance (according to ISO)

(j): Growth stage at last treatment (BBCH Monograph, Growth Stages of Plants, 1997, Blackwell, ISBN 3-8263-3152-4), including where relevant, information on season at time of application

(k): Indicate the minimum and maximum number of application possible under practical conditions of use

(l): The values should be given in g or kg whatever gives the more manageable number (e.g. 200 kg/ha instead of 200 000 g/ha or 12.5 g/ha instead of 0.0125 kg/ha)

(m): PHI - minimum pre-harvest interval