IBMA Considerations on
'Multiple Uses of Microbials in Agriculture'

Microorganisms are used in the area of crop protection, but also as fertiliser or biostimulant. The same microorganism may be used in agriculture but subject to different regulatory frameworks and thus to a different set of data requirements, approval procedures and time to market. Ultimately this may lead to different and even contrary decisions for the same microorganisms in the market.

The ultimate aim is to have common Regulation for microbials used in agriculture with clearly described procedures and timelines for both microbial biopesticides and biostimulants with a proportionate set of data requirements and appropriate data protection provisions. This should lead to faster market access for all these uses that are key for achieving the Farm to Fork goals.

The group agreed on the following principles:

- Ideally, data requirements and procedures should be aligned for all agricultural uses of microbials irrespectively if the use is as a biostimulant, fertiliser or for crop protection purposes;
- Given the current situation with two different sets of requirements and procedures for microbials used as biostimulants and in crop protection, we should look at options to streamline requirements and procedures and develop a fast procedure with a proportionate set of requirements;
- Innovation should not be blocked by an inappropriate regulatory system and ways to bring new products to the market should be established.

1. One common regulatory framework for the use of all microorganisms in agriculture

The use of microbials in agriculture, if applied in the same manner, creates a similar exposure for workers, bystanders, residents and the environment independently if the use is for plant biostimulation purposes or for pest/disease control.

Both types of products are used in food crops and and the assessment of risk to humans, animals and the environment should be conducted under similar rules. As both regulations have a similar set of protection goals,

- Regulation (EU) 2019/1009: Microorganism can only be added for which there is scientific evidence that they:
  - do not present a risk to human, animal or plant health, to safety or to the environment, and
  - ensure agronomic efficiency;
- Regulation (EC) No 1107/2009: It should be demonstrated, before plant protection products are placed on the market, that they present a clear benefit for plant production and do not have any harmful effect on human or animal health, including that of vulnerable groups, or any unacceptable effects on the environment.

Thus, it makes sense to develop one common EU regulatory framework for the use of microorganisms in agriculture.

The preferred situation is a separate legislation with one set of data requirements and procedures for all agricultural uses of microbials, irrespectively of their final label claims. We would like to see this achieved by 2030, in line with the Farm-to-Fork targets. This 'overarching goal' should be kept in mind when discussing other options and actions for further alignment.

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Ultimately, this should lead to a balanced set of data requirements, procedures and timelines and faster market access. In addition, this may have benefits for the farmers as in total less products may be used which reduces exposure and saves resources (e.g. labour, energy).

2. What are the options for alignment/harmonisation within the current regulatory system?

Both regulations differ in requirements and timelines whereby the Fertilizer Product Regulation (FPR) seems to have the fastest procedure, however currently only four microbial genera are listed on the positive list. In looking for possibilities for alignment it should be prevented that the more pragmatic FPR approach become ensnared in a '1107/2009' like risk assessment process. This is not desirable.

In looking for options for alignment/harmonisation, a table has been prepared that lists the most important features of both regulations: the actors involved, definitions, data requirements and procedures for active substance approval/listing and product authorisation, taxonomic level of approval/listing and the protection goals.

Both regulations provide to some extent for the possibility of adopting additional guidance to streamline procedures:

- Regulation (EC) No 1107/2009, Art. 77 on 'Guidance Documents': *The Commission may, in accordance with the advisory procedure referred to in Article 79(2), adopt or amend technical and other guidance documents such as explanatory notes or guidance documents on the content of the application concerning microorganisms, pheromones and biological products, for the implementation of this Regulation.*
- Regulation (EU) 2019/1009, Art. 42: *The Commission is empowered to adopt delegated acts (…) for the purposes of adapting those Annexes to technical progress and of facilitating internal market access and free movement for EU fertilising products*.

In the meantime, the EU has initiated the 'One Substance, One Assessment' (1S1A) initiative aiming to streamline scientific and technical work on chemicals at EU-level and to have coherence in assessment procedures and methodologies. This work will mainly be carried out between 2021-2023.
Although this initiative seems to target 'chemicals' it also covers 'natural substances' and 'microorganisms' as these active substances are covered by Regulation (EC) No 1107/2009. Therefore, they will be tacitly part of the 1S1A initiative. The Biocidal Product Regulation, which is covered by the 1S1A initiative, also regulates microbial products for agriculture use (although not directly applied on plants).
It must be emphasized that the 1S1A initiative will have no impact on the data requirements for any of the regulations covered by this initiative.
The EU wants that the evaluation work will be re-attributed to the following relevant EU Agencies: ECHA, EFSA, EEA, EMA and OSHA. EFSA will stay responsible for food and feed safety.
It seems that the fertilisers and biostimulants regulation (Regulation (EU) 2019/1009) is not (yet) impacted by this 1S1A initiative. Most likely because the FPR regulation is only applicable from 16 July 2022 and detailed procedures and standards are yet to be made available. However, elements concerning a 'harmonized evaluation and assessment' and a 'responsible EU agency for microbials' are in line with the recommendations in this document.

Some recommendations are:

- To harmonize the microbial contaminant limits for 'human pathogens' in both regulations. It is recommended to follow in this respect the (latest revision of the) OECD issue paper *(see table, item 3)*;
- To apply proper data protection rules for data submitted under both regulations. Proper data protection provisions can only be applied when microorganisms are registered at strain-level *(see table, item 5)*;

- To follow the 'basic substance procedure' as provided for in Article 23 of Regulation (EC) No 1107/2009 to add new microorganisms to the positive list of biostimulants *(see table, item 8)*;
- To involve an EU evaluating body in the evaluation of new microorganisms to be used as a biostimulant *(see table, item 9)*;
- To use a common set of data requirements for microorganisms in agriculture. A proposed data set can be found in the Annex.
- To make the FPR regulation (Regulation (EU) 2019/1009) part of the EU 'One Substance, One Assessment' initiative.

3. Innovation should not be blocked – How to bring new products to the market

It is important that while discussing possible options for harmonisation between biostimulant and crop protection procedures that applications for new microbial strains or species are not put on hold but that a mechanism is established that guarantees progress.

A new microbial should be covered by one of the following categories:

I. A new microbial species – or higher taxonomic level – known to have no crop protection claims;
II. A new microbial strain belonging to a species of which other strains have been approved for crop protection;
III. A new microbial species with unknown biostimulant norcrop protection claims.

Under I.
This new microbial species should follow the requirements and procedure according to Regulation (EU) 2019/1009. The new species can be added to the list of species of CMC 7: MICROORGANISMS and products can be marketed in EU Member States.

Under II.
For this new microbial strain a reasonable case should be made to show that the strain has no crop protection effect under the proposed conditions of use. That may be difficult for species for which other strains do have a crop protection effect. Depending on environmental conditions different characteristics of a microorganism may be exposed.

Under III.
Based on public literature and/or evaluations performed by other regulatory authorities (e.g. USA-EPA) information can be gathered on the possible use of this new microbial species. In case that this new species on one hand has an effect as a biostimulant, and that on the other hand there is no evidence that this new microbial species act as a crop protection product the species can (provisionally) listed as a biostimulant. The national route can be followed and 'provisional' authorisations can be granted (see Art. 38 of Reg (EU) 2019/1009).

If further information becomes available that shows that this microbial species does have crop protection effects then the listing as a biostimulant should be revisited.

Table: Overview of the most important features of the biostimulants and crop protection regulation.

Aspect	Regulation (EC) No 1107/2009 Microorganism in Crop Protection	Regulation (EU) 2019/1009 Microorganism as Biostimulant	Comments Options to streamline procedures
GENERAL POINTS			
1. Applicable	Entry into force – 14 June 2011 Regulation mandatory for placing a Plant Protection Product (PPP) on the market	Entry into force 5 June 2019 Fully applicable 16 July 2022 Regulation is not mandatory, national legislation still valid	Regulation (EU) 2019/1009: For microbials there are no EU harmonized standards available (by 16 July 2022). In the meantime, 'scientifically accepted methods' should be used. CE marking for a EU fertilising product is possible, but this should be discussed with notifying bodies (HU, PL, NL). These notifying bodies act independently, but should use the same standards. Other aspects of Regulation (EU) 2019/1009 regarding microbials conformity checks (like timelines, fees, and procedures) are unclear.
2. Definitions	Plant Protection Products can, amongst other, be intended for the following use: '*influencing the life processes of plants, such as substances influencing their growth, other than as a nutrient or a plant biostimulant*'.	The use under Regulation (EC) No 1107/2009 excludes the use as a plant biostimulant that is now regulated by Regulation (EU) 2019/1009.	

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	Article 3 (15) 'microorganisms' means any microbiological entity, including lower fungi and viruses, cellular or non-cellular, capable of replication or of transferring genetic material;	'microorganism' means a microorganism as defined in point 15 of Article 3 of Regulation (EC) No 1107/2009	None. The definition is done by exclusion from Reg. 1107/2009.
3. General requirements (incl. human pathogens)	The revised data requirements are based on the ecology and biology of the microorganism with 'biological properties' as the key-chapter.	The microorganism should been clearly identified and supported by data demonstrating that their use is safe. For the '4 listed microbials' safety of End Use Product (EUP) for humans has to be demonstrated by the absence of human pathogens (Quality Control).	None.
	The OECD issue paper on microbial contaminant limits for microbial pest control products (Series on Pesticides No. 65) is intended to be used as guidance in the safety assessment of microorganisms and microbial plant protection products.	Human pathogens in a microbial plant biostimulant should not exceed the limits as set out in the table in Annex I, Part II, Requirements related to PFCS.	*Suggestion for harmonization: To harmonize the microbial contaminant limits for 'human pathogens' in both regulations. It is recommended to follow in this respect the (latest revision of the) OECD issue paper.*
4. Protection goals	It should be demonstrated, before plant protection products are placed on the market, that they present a clear benefit for plant production and do not have any harmful effect on human or animal	Microorganism can only be added for which there is scientific evidence that they: I. do not present a risk to human, animal or plant health, to safety or to the environment, and II. ensure agronomic efficiency.	PPP protection goals are set for product; for biostimulants protection goals are set for the microorganisms. The EUP should fulfil requirements of PFC and each component of the CMC.

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	health, including that of vulnerable groups, or any unacceptable effects on the environment.		
5. Data protection	For submitted data the provisions for data protection apply (Articles 59 – 62 of Regulation (EC) No 1107/2009). To attract protection, the studies must be necessary to support the authorisation and data protection must have been claimed by the applicant.	The microorganism should been clearly identified and supported by data demonstrating that their use is safe. When put into the list everybody can place EUP on the market. As the submitted data are not protected under Regulation (EU) 2019/1009 the question is who will submit data for a new listing, knowing that everybody can use the info and place products on the market?	*Suggestion for harmonization: To apply proper data protection rules for data submitted under both regulations.* *Proper data protection provisions can only be applied when microorganisms are registered at strain-level.* *However, the difference should be acknowledged between the positive listing of the active substance for use as a biostimulant and the authorization of PPPs by MSs at strain-level.*
ACTIVE SUBSTANCE			
6. Applicant	Producer of the active substance (Art. 7)	For microorganism: not specified. Not clear whom should submit application to EU COM and no provisions to encourage first applicants to generate data.	
7. Data requirements	Part B of Regulation (EU) No 283/2013 (active substance) is specifically for microorganisms amended by Regulation (EU) 2022/1439).	Data to be submitted to add a new microorganism to the list: a) name of the microorganism; b) taxonomic classification of the microorganism: genus,	

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		species, strain and procurement method; c) scientific literature reporting about safe production, conservation and use of the microorganism; d) taxonomic relation to microorganism species fulfilling the requirements for a Qualified Presumption of Safety as established by the European Food Safety Authority; e) information on the production process, including, where relevant, processing methods such as spray drying, fluid-bed drying, static drying, centrifugation, deactivation by heat, filtration and grinding; f) information on the identity and residue levels of residual intermediates, toxins or microbial metabolites in the component material; and g) natural occurrence, survival and mobility in the environment.	
8. Procedure	Active substance data package to be provided and assessed by RMS; Decision in Standing Committee,	New Active Substance: delegated act by COM	*It should be clarified and communicated who will submit the dossier and who will do the evaluation for NAS*

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	implementing act by COM.		*under Regulation (EU) 2019/1009.* *A suggestion is to follow the 'basic substance procedure' as provided for in Article 23 of Regulation (EC) No 1107/2009. The submission for a 'basic substance' can be done by Member States or any other interested party and the evaluation will be performed by EFSA (see Working Document SANCO/10363/2012 rev.10, 25 January 2021).*
9. EU Evaluating Body	The European Food Safety Authority (EFSA) evaluates every active substance for safety before it can be placed on the market and used in a plant protection product EFSA needs to issue scientific opinion on every active substance (existing ones at renewal and new active substances)	There is no EU evaluating body involved in the listing of microorganisms according to the Regulation. Microorganism on the list do not have to be renewed.	*Both types of evaluation (crop protection and biostimulant) are considered a food safety issue.* *Suggestion for harmonization: involve an EU evaluating body in the evaluation of new microorganisms.*
10. Number of approved microorganisms	More than 65 microorganisms are approved; more than 25 are pending	4 microorganisms are presumed to be safe; EUP considered to be safe (no pathogens, etc.) *Azotobacter* spp. *Mycorrhizal fungi* *Rhizobium* spp. *Azospirillum* spp.	*Biostimulants used for nitrogen and phosphorous fixation*

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11. Decision	Microorganisms are approved at EU level (by MSs voting, qualified majority is needed). Approval Regulation will be issued based on specific decision making criteria for microorganisms	Active substance/microorganisms: COM by adopting delegated act. The COM procedure is not yet known.	The decision-making procedure should be clarified including the involvement of MSs and Standing Committee. Lead DG: GROW - DG Internal Market, Industry, Entrepreneurship and SMEs. Associated DGs: AGRI - DG Agriculture and Rural Development ENV - DG Environment JRC - Joint Research Centre SANTE - DG Health and Food Safety TRADE - DG Trade
12. Level at which microorganisms are approved/ listed	Microbials are approved at strain level (except for baculoviruses that are approved as a group) one entry, strains in the review report	Microorganisms are listed at genus or at a higher taxonomic level.	For the use as a biostimulant the preferred option is to identify microorganisms at strain level as this will be the only way to register strains of microorganisms that already have strains approved that are used in crop protection.
13. Timelines/ renewal procedure	Time to market from submission active substance to PPP 5-10 years An active substance will be approved for 10 years (low-risk substances for 15 years). The renewal of an approval will be for a period not exceeding 15 years.	Timelines for the active substance are not clear). No renewal procedure is foreseen.	Timelines should be clarified (depends on procedure).

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Plant Protection Product (PPP)/End Use Product (EUP)			
14. Applicant	Applicant is not defined (Art. 33)	Manufacturer/importer (EU entity)	
15. Data requirements	Part B of Regulation (EU) No 284/2013 (Plant protection product) is specifically for microorganisms amended by Regulation (EU) 2022/1440).	Requirements depend both on function (called "PFC" = Product Function Category) and composition (called "CMC" = Component Material Categories) of the fertilizers. An EU fertilising product belonging to PFC 6(A) (Microbial Plant Biostimulant) may contain microorganisms, including dead or empty-cell micro-organisms and non-harmful residual elements of the media on which they were produced, which: – have undergone no other processing than drying or freeze-drying; and – are listed in the following table: *Azotobacter* spp. *Mycorrhizal fungi* *Rhizobium* spp. *Azospirillum* spp. Annex IV contains the requirements for 'Conformity assessment procedures'	*The Technical Committee CEN/TC 455 'Plant biostimulants and agricultural microorganisms' creates the European standards that should be used for assessing biostimulants.* *(harmonized standards should be available in 2024, until then scientifically approved methods should be used)*

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16. Procedure	Product data package to be provided and assessed by MS; Authorisation (at MS-level) granted by MS	Notification to notifying body, check compliance with standards criterion set up with reliable methodologies	*Once in place this procedure could also be applied to PPPs.*
17. Authorisation of products	PPP are authorised at MS-level.	An EU fertilising product complying with the requirements of the Regulation and approval from any notified body should be allowed to move freely on the internal market and should be eligible for CE marking.	*The CE marking, indicating the conformity of an EU fertilising product with this Regulation, is the visible consequence of a whole process comprising conformity assessment in a broad sense.* *Manufacturers shall draw up an EU declaration of conformity and affix the CE marking.* *Label requirements in case of a mixture: info required at strain level. However, Mycorrhiza cannot be identified at strain level so these should be exempted.* PFC 6(A): Microbial Plant Biostimulant *"All intentionally added microorganisms shall be indicated. Where the microorganism has several strains, the intentionally added strains shall be indicated. Their concentration shall be expressed as the number of active units per volume or weight, or in any other*

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			manner that is relevant to the microorganism, e.g. colony forming units per gram (cfu/g)".
18. Timelines/ renewal procedure	The duration of an authorization will be set for a period not exceeding 1 year from the date of expiry of the approval of the active substance and then has to be renewed (within 12 months).	Once the product has been submitted and notified body agrees (CE marking), you can market the product in all MS, but every 5 years it has to be renewed. Time to market from submission to EUP on the market is not clear (expect from a few months <1 year)	

Annex

Proposed data set for a microorganism to be used in agriculture

A new strain of a microorganism should be approved for use in agriculture on the basis of the following data (in red the current requirements for a biostimulant):

- Name of the microorganism;
- Taxonomic classification of the microorganism: genus, species, strain and procurement method;
- Information on the culture collection where the microbial strain is deposited;
- Scientific literature reporting about safe production, conservation and use of the microorganism and metabolites;
- Biological properties of the microorganism including mode of action;
- Taxonomic relation to microorganism species fulfilling the requirements for a Qualified Presumption of Safety as established by the European Food Safety Authority;
- Information on the possibility of the transfer of genetic material to microorganisms of concern for human health. This may also be addressed by a data waiver;
- Information on the production process, including, where relevant, processing methods such as spray drying, fluid-bed drying, static drying, centrifugation, deactivation by heat, filtration and grinding;
- The determination of the microbial contamination of the preparation after storage;
- Analytical profile of batches/information on quality control (GLP);
- Information on the identity and residue levels of residual intermediates, toxins or microbial metabolites in the component material. Regarding metabolites a 'stepwise approach' should be followed where further information is only required in the case of a known 'metabolite of concern';
- Where relevant, acceptable methods for the determination of the microorganism in the technical material, formulation and for the determination of the content of contaminating microorganisms;
- Where relevant, a basic set of valid acute toxicity studies (e.g. baculovirus);
- As the setting of health-based reference values is not needed, no operator, worker, resident and bystander exposure estimates are needed;
- The consumer risk assessment is based on what toxins/secondary metabolites are produced by the microbial strain and if they leave a residue in plants;
- Natural occurrence, survival (multiplication) and mobility in the environment (soil, water and air);
- Effects on non-target organisms (birds, wild mammals, fish, *Daphnia magna*, algae, bees, non-target arthropods, earthworms, soil microorganisms, non-target terrestrial plants and organisms involved in biological methods for sewage treatment);
- Efficacy requirements to demonstrate the efficacy of product (dose, duration and frequency of application) and the absence of any negative side-effects. EPPO standards for the EUP are in progress[1].

[1] EPPO Standard PP 1/319 (1) '*General principles for efficacy evaluation of plantprotection products with a mode of action as plant defence inducers*' does not cover biostimulants.