

EBIC Comments on the Arcadia report

“A Legal Framework for Plant Biostimulants and Agronomic Fertiliser Additives in the EU”

The comments below are organized thematically and do not cover every detail of the Arcadia report on a point-by-point basis. Only the most salient points are addressed in detail.

In summary, there are some interesting concepts and ideas in the report, but there are also some problematic suggestions.

The **most useful** contributions of the report:

- Justification and documentation of the need for an innovative approach to regulating plant biostimulants;
- A structured and defensible approach to the concept of “history of safe use”;
- Practical suggestions for dealing with substances that are not easily characterized, such as plant extracts.

The **most problematic** aspects of the report:

- The proposal to eliminate contributions to crop “quality” from the definition of biostimulants flies in the face of extensive scientific documentation demonstrating benefits for crop quality arising from the application of plant biostimulants. The concerns that this claim is too general and could create confusion with other product categories overlooks the fact that manufacturers will formulate specific claims for their products that must be justified on the basis of the science underlying product development. The general definition of the product category for regulatory purposes and the detailed claims used when placing a given product on the market should not be confused. EBIC has developed a separate, detailed position paper on this issue. Furthermore, a general concept of quality in the definition is fully coherent with the New Approach where quality specifications are largely defined by the entities placing products on the market and not European authorities.
- The suggestions for data requirements are extremely complicated and much heavier than most existing regulatory frameworks without providing some of the benefits of the most cumbersome frameworks currently in existence. Furthermore, the suggestions for handling data requirements are often internally inconsistent. As formulated in this report, the EU risks having the most expensive biostimulants registration in the world, which could have the perverse effect of diverting biostimulants product to other, more attractive markets, depriving farmers of useful tools for improving crop quality and yields and for reducing unwanted impacts.
- Given the current high costs and complexities likely to be associated with this proposal, instead of encouraging transparency with regard to biostimulants, this proposal risks propagating work-arounds.
- Many of the proposals in the report seem to be based on flawed assumptions – not acknowledging that most biostimulants substances are, and will continue to be, subject to REACH or making inappropriate parallels between plant protection products and biostimulants, despite significant differences between the two types of products (one of the most significant being the need for resistance management for plant protection products).
- The report suggests that EU authorities should be the guarantors of product effectiveness, which would create legal liability at the EU level and be unmanageable without an excessively heavy and centralized authorization process. In the age of internet-facilitated exchange of user information and

satisfaction, regulatory requirements for claim justification should focus on demonstrating that products are bona fide biostimulants, not determining their relative merit in the marketplace. Such a decentralized system would also reflect the very different business model required for biostimulants: because of their dependence on numerous contextual factors for effective use, biostimulants require producers to develop close relationships with growers and distributors and provide direct dialogue on product use centred around numerous demonstration trials.

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Definition of biostimulants (sections 2.1 and 3.1)

EBIC supports many of the proposed changes to the definition of biostimulants. However, we do have several comments:

- It is not completely clear from the definition who the “user” is. Presumably it is the final end user, but this should be clearly defined at some time in the regulatory context.
- A general concept of quality in the definition coupled with specific claims in the registration dossier is coherent with the New Approach to regulation.
- Among the other regulatory frameworks cited in the study, there are precedents for a general concept of quality in the definition; notably the feed additive definition says “Feed additives are products used in animal nutrition for purposes of **improving the quality of feed and the quality of food from animal origin, or to improve the animals’ performance and health**” [emphasis added].
- The concept of improving quality is not limited to plant protection products as implied by the Arcadia report. Qualitative contributions of fertilizers are already widely recognized and claimed.

- The acknowledged benefits to nutrient use efficiency and tolerance to abiotic stress often have qualitative knock-on effects. For example, the improved translocation of nutrients can favour improved fruit hardness. Mechanisms that support drought tolerance also favour water content and juiciness. There are many other examples. Farmers are more likely to make the additional investment in biostimulants if they can expect (with justification) both qualitative benefits (which will directly benefit them through enhanced income) and increased fertilizer use efficiency (which will indirectly benefit them through improved ROI and less pressure regarding the environmental performance of their activities). Removing the quality claim weakens the added value of the product and thus reduces the likelihood farmers will adopt them.
- Since the completeness check is expected to include a verification that the product's claims correspond to a plant biostimulant, there is the opportunity to apply good sense and judgment in distinguishing between effects on quality due to biostimulant modes of action and modes of action related to other crop inputs.

EBIC has submitted a separate position paper that covers the quality issue in more detail.

Market dynamics of biostimulants (section 2.2)

- The initial consolidation mentioned here is largely concentrated in the field of biocontrol at this time and not biostimulants. This detail is obscured by the fact that many analysts group the two sectors together under the umbrella term “biologicals”. With regard to biostimulants, the market may be in an earlier phase: structured finance (investment funds, etc.) is increasingly investing in the sector (and, in some cases, aggregating smaller companies), and some very large agro-input companies have begun to explore biostimulants, but there has been little direct consolidation at this time.
- The estimate of 600-700 products (also mentioned on p. 105) on the market was a crowd-sourced estimate of ALL plant biostimulant products on the European market, not just those produced by EBIC members.
- The lack of similarities between plant biostimulants and fertiliser additives is a key point for the final form of the future regulation. In addition to the dissimilarities between the structure and dynamics of the two markets, there is a crucial technical difference. Biostimulants are used both as stand-alone products and may also be incorporated into fertilisers in some cases, whereas fertilizer additives are by definition incorporated. Biostimulants should not, therefore, be assimilated with the term “fertiliser additives”, even if a common registry could house both product categories for practical purposes.

Comparable EU frameworks

In the section on the existing legislation (2.4.1.2), the authors fail to take into account the historical sequencing of the various regulatory frameworks they studied, yet this history has influenced the choices made. Contrary to what the authors state, REACH does not exclude plant protection products and biocides from its scope. It exempts them from the obligation to register in the REACH system because the pre-existing registries/authorizations for these two sets of products fulfil the objectives of REACH (Article 15 Reg (EC) 1907/2006).

To date, most biostimulant substances have been subject to REACH requirements, and this cannot change without an explicit amendment of the REACH regulation. Therefore, any considerations about how to regulate biostimulants substances must start from the assumption that all applicable REACH (and CLP) obligations will continue to apply to these substances and the products containing them.

For this reason, the statement on page 62 that “Designing a regulatory approach on the basis of REACH would lead to the impression that PB are dangerous chemical products when the majority of them are not of synthesised chemical nature” is difficult to justify and reflects a poor understanding of the scope of REACH. It also risks creating a situation where biostimulant products are subject to duplicate registration burdens. Every effort should be made in finalizing the future biostimulants registry to eliminate or at least minimize the cumulative burden.

Types of authorization (section 2.4.2)

Given the increasingly complexity of research-intensive biostimulants on the market, “holder authorization” is the preferred default principle for the biostimulants industry. However, the concept of “generic authorization” is worth exploring for simple, traditional products for which holder authorization would be prohibitively expensive. Given the costs of registration, it would be more equitable to re-use the concept of data consortia from REACH rather than the exact concept of “generic authorization” from the feed additives framework. The latter penalizes the first company to bring a generic product to market whereas data consortia share registration costs equitably among all entities that want to benefit from the registration.

Data requirements: principles

- The report provides useful structure around how to justify “history of safe use”, and EBIC supports this contribution. It needs to be further developed with regard to micro-organisms as the concept of Qualified Presumption of Safety (QPS) is currently underexploited. To this end, EBIC is convening a multistakeholder group to further consider how to adapt safety data requirements for micro-organisms.
- A good summary of the principles behind data waiving is given in section 2.4.7.5. The reasons for waiving include: 1) the study is not technically possible; 2) other data can be used instead; 3) the study is not scientifically possible. Given the soundness of these points, it is incomprehensible and unacceptable that data waiving should not be permitted for Tier 1, as is stated on page 86 (section 3.3.7.1). Among other things, this principle would make biostimulant registration more stringent than any other framework studied by the authors who state “None of the guidance documents that have been analysed list a limit to the usage of waivers. If properly documented, any data requirement can be waived...” (p. 51.) Data waiving should always be possible for biostimulants data requirements, *if justified*.

Product characterization

- It is problematic to require that all ingredients be declared without specifying minimum thresholds. Some biostimulants products include hundreds of components. Simplifying the requirements for declaration of ingredients would also facilitate the creation of “grouped” registrations among families of products that share core ingredients (which could reduce both the costs of operating the registry and the costs to applicants).¹ The threshold of 1% is used in many frameworks.
- Unlike plant protection products where novel molecules are designed to target a specific mode of action, the nature of biostimulants is such that it is not always possible to isolate active ingredients. Furthermore, it can be the interaction among the substances used by the

¹ Under REACH, constituents of UVCB substances must be specified under the following conditions:

- If they are present at levels >10%, as well as
- >0.1% if they impact classification and persistent, bioaccumulative and toxic (PBT) properties
- Any other (groups of) known constituents.

plant and not a single substance that confers the biostimulant properties. The report's insistence on providing a "clear distinction" between the substance(s) conferring the plant biostimulant effect is not always possible. (section 3.3.1)

- For the above reasons, EBIC welcomes the report's recognition and practical suggestions for dealing with substances that are not easily characterized, such as plant extracts. This principle could be extended to all biostimulants where it is not possible to isolate the active ingredients as described above.
- Being able to group products (e.g. different concentrations of substances or joint registrations) would be helpful to reduce costs for both applicants and authorities. While the report evokes this possibility, it does not examine how this might work in practice. Before finalization, data requirements must be tested against these scenarios to make sure they are practicable.
- While we agree with the principle of depositing micro-organism strains in a collection (p. 69), insisting on this step before registration could significantly slow down the time for bringing a product to market. Before deposition, you need to obtain a patent on the strain. Is there a way to revise this requirement to prevent unreasonable delays in bringing a new product to market?

Safety data requirements

- There seems to be a contradiction between the report's statement that "argumentation and data justification based on history of use shall be fully considered by the regulatory authority" and the statement that "data waiving justifications are not permitted under Tier 1" (and with slide 30 in the presentation made on 17 March 2014 about checking that data waivers for Tier 1 dossiers are justified). If, for example, there is a history of safe use in human nutrition, why wouldn't that justify waiving requirements for data on skin irritability?
- It is not clear why data should have to be provided for substances that are considered to be exempted from REACH registration according to Annexes IV (Substances "considered to cause minimum risk because of their intrinsic properties") or V (Substances for which REACH "registration is deemed inappropriate or unnecessary") of the REACH Regulation (1907/2006). Excluding the possibility of data waiving in Tier 1 effectively invalidates the concept of data bridging from REACH and significantly increases the cumulative regulatory burden.
- If it can be justifiably argued that the components are without risk, then Tier 1 should be limited to a test to demonstrate there is no additional interaction.
- On page 84, the report says that Tier 1 would consist of in vitro tests. This is contradicted on pp. 86 and especially 92 where a number of in vivo tests are listed as mandatory for Tier 1.
- The issue of expert judgment on whether it is necessary to move from one tier to another is vague, particularly since the proposal would not introduce the element of exposure until Tier 3. Hazard alone is not sufficient for expert judgment. A strong hazard with very little exposure may actually be less worrisome than a moderate hazard with a significant level of exposure. This is why REACH's tiered system is based on the tonnage produced which ultimately affects exposure.
- Furthermore, the expert judgment should include an evaluation of whether additional testing is required or whether enough information has been produced to devise appropriate risk management measures (keeping in mind that these could range from procedures to special equipment to simple instructions).
- The fact that exposure scenarios would not be introduced until Tier 3 creates an internal incoherence with the fact that the proposed Tier 2 would include chronic toxicity which is defined as prolonged or repeated exposure. Exposure scenarios are critical to determine whether chronic toxicity tests are even relevant.

- On page 75 (section 3.3.4), the report erroneously states that EBIC recommends a maximum limit value of 2 mg Cr per kg product. The EBIC recommendation specified Cr(VI), not total Cr.
- The costs listed in the report for the proposed Tier I (pp. 106, 108) are not realistic.
 - Labs working under GLP will not usually perform an OECD 405 without preliminary information like EPISKIN in vitro test. Thus, you would need to add at least €2500 in addition to the €1000 for OECD 405. EBIC members have faced this situation recently.
 - Under GLP, ecotox testing requires a suitable analytic method to follow the substance during the trial (usually different from the analytic method used for the analysis of the biostimulant itself due to the very low amount of the substance in the test).
 - Some labs propose low-cost tests for ecotoxicity but never under GLP. From the experience of EBIC members, the cost of testing to a national standard or OECD GLP standard can differ by a factor of 10. Therefore, data requirements should differ for products already in the market and tested in the past (with old standards) and a new product to be tested and starting from scratch (as is the case for REACH). This would help with transitional measures and cost management for products that are already on the market.
- As an alternative to a stand-alone approach for defining safety endpoints and tiers, we suggest that the registry use a decision-tree system based on the composition of the biostimulant in question:
 - Components for which REACH registration is required: Data fulfilling requirements in either REACH Annex VII, VIII, IX or X, depending on the tonnage of the substance produced or imported (or justifiable waivers why this is unnecessary) The Chemical Safety Report (CSR) required for substances produced in quantities over 10 t may be particularly helpful.
 - Components that already have been tested according to the requirements in another equivalently stringent framework (e.g. plant protection): Data fulfilling the requirements of the non-REACH framework in which they were registered for use in the European Union.
 - Components exempted from REACH requirements due to the criteria in annexes IV and V: Justification that the substance(s) satisfy the criteria for exemption from REACH registration according to Annexes IV or V of the REACH Regulation (1907/2006).
 - Micro-organisms: Data demonstrating the safety of microbes, according to criteria developed by a dedicated task force, guaranteeing a similar level of protection to at least REACH Annex VII. This is the only group of components for which specific safety endpoints need to be defined for biostimulants above and beyond what exists in other frameworks.

Justifying product claims (sections 2.4.7.6 and 3.3.6)

- EBIC disagrees with the premise that the European authorities should be the guarantor of product efficacy. Furthermore, such a role would create legal liability for the European authorities. The report argues that the biostimulant registry should follow the general trend of proving the efficacy/utility of products and then cites the plant protection framework as the sole example. However, there are two fundamental differences between plant protection products and biostimulants. The first difference is the target: PPPs are designed to protect against or reduce pathologies. Their failure could be catastrophic for the treated crop and neighboring farms. Biostimulants provide add-on benefits that are desirable but not fundamental. The consequences of their failure are less significant. Second, weak PPP effects

are known to be a contributor to the emergence of pest resistance to PPP products. It is therefore crucial for new products to have a minimum guaranteed level of efficacy for resistance management. Resistance is not an issue for biostimulants effects.

- A knock-on consequence is that there is no added value from the report's suggestion that the efficacy argumentation for biostimulants should compare the product to one already on the market because it addresses an issue that is irrelevant for biostimulants.
- Claim justification under the future regulation should serve only to demonstrate the proof-of-concept that the product is a bona fide biostimulants product.
- Eliminating the requirement for proof of efficacy would eliminate the need to define centralized protocols and arbitrary minimum numbers of tests and crop groups.
- While EBIC agrees that this product segment currently suffers from a lack of credibility, due to the relative immaturity of the market and the unscrupulous behaviour of some market actors who do not sell science-based products, this situation is already in the process of correcting itself through the large number of trials that are conducted by biostimulants producers and their commercial partners to communicate the effectiveness of biostimulants and the conditions under which they are effective. To further strengthen the reputation of credible products, EBIC is in the process of launching a multi-stakeholder initiative to develop agreed methodologies to improve the quality and consistency of demonstration trials of biostimulants in order to foster better information in the market on how/when to use biostimulants effectively.
- Such trials will be complemented by online information from producers and distributors about products. Furthermore, in the age of the social internet, users have the opportunity to exchange information and opinions about various products and to rate them for effectiveness, just like consumers of any products. Expensive top-down, centralized systems for guaranteeing minimum quality are no longer needed (unlike in the 1960s when many of the frameworks studied by the authors were conceived, as mentioned in the report).

Registration procedure

- Some of the underlying assumptions about the registration procedure seem to be flawed.
 - The authors claim that REACH only covers dangerous chemical products (p. 62) when it covers all chemicals that have not been explicitly exempted due to their inclusion in a pre-existing framework considered to be at least as stringent as REACH. A few additional substances are explicitly exempted due to their nature.
 - In annex II, the authors erroneously state that the substances covered by REACH are mainly used by industry, but a wide range of chemical products covered by REACH are used directly by consumers, including detergents and other cleaning products, paints, solvents and many others. Many of these products could be used in the kitchen and thus introduced into the food chain.
 - Annex II also implies that no products used in the food chain are regulated by REACH, but this is untrue as fertilizers fall under the scope of REACH.
 - While specific types of fertilizers are currently included in a positive list, individual fertilizer products are not pre-authorized, contrary to what is implied in Annex II.
- Data protection should start from the time of submission, not approval, Otherwise, it is possible for data to be stolen in the intervening period.
- The duration of data protection should be defined as a function of the validity of the duration initial product registration/approval. A similar period of protection would be accorded to new data submitted at a later date even if that protection extends beyond the duration of the initial product approval.
- The diagram on p. 99 seems to exclude the possibility of a request for additional information and modification of the dossier as an alternative to outright rejection, which contradicts what

is said on p. 97. The opportunity to improve a submission would be preferable to outright rejection.

- Page 99 refers to a negative list for biostimulants. This seems unnecessary: anything that is not included in the registry is automatically on a negative list until such time as it is properly registered.

Other points

- Throughout the report, there seems to be a lack of clarity between references to components, products and active ingredients.
- The report isn't clear on whether GLP certification is required for all tests or only for the safety data. Is this on purpose or an oversight?
- The report does not specify if the CLP approach for classifying mixtures can (or should) be used in registering biostimulants. Without this principle, costs of registration could be significantly higher than estimated. Biostimulant products can be considered to be mixtures in the same way as other products treated by the guidelines developed for the application of CLP requirements (Classification, Labelling and Packaging, Reg. 1272/2008). There are a number of principles in the guidance documentation that help determine the hazard classification for mixtures. EBIC acknowledges that the literature (including a SCHER report) includes an important number of articles describing antagonist and synergist effects, but without any robust conclusion supporting another methodology. Furthermore all chemical mixtures (detergents, paints and varnishes, biocides mixtures, PPP mixtures, etc.) and more broadly chemical mixtures available to general public are currently evaluated using CLP, so there is no justification for fertilizing materials to receive prejudicial treatment.
- In several places, the report suggests preliminary consultations with national safety agencies or national helpdesks (pp. 88, 91, 94). In the experience of EBIC members, interpretations by such bodies at the national level vary widely. For this reason, it is important either to have a centralized (but multi-lingual) resource or to ensure sufficient training and monitoring to ensure consistent interpretations.
- With regard to achieving the regulatory objectives in a cost-effective manner, can an applicant choose to test a final product over licensing data for all of its components? In the case of a complex formulation, it could be more cost-effective to test the final product than to license data for a large number of component substances.
- The report does not cover the issue of minor and major changes. While this may be out-of-scope, it has important implications for final data costs, etc. depending on the requirements for additional data, etc. that are triggered by changes to the original dossier.
- There are a number of inconsistencies throughout the report that make it difficult to be sure of the authors' intent. For example, page xii says that registration would be for 15 years and page 99 says it would be for 10 years.
- The country of manufacture should always be included on the label (as this would facilitate "generic" labels that could be used in more than one country.
- The report overlooks some existing national regulation (notably Austria) and is inaccurate regarding the situation in other EU Member States (notably Spain):
 - There are two special categories of products included in the National Spanish Fertiliser Regulation which include either products containing aminobacids or products containing humic acids. These products AT THIS MOMENT, and for many years before have been considered FERTILISERS and there has been no need to register them and they have been placed and sold in the market historically. As an example, one of EBIC's member companies has several products containing only amino acids which have been sold in the market for more than 20 years.

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- The latest modification is ROYAL DECREE 506/13. EBIC can provide an accurate translation if requested.
 - Among other provisions, this Royal Decree states that mixtures made with a National fertiliser or an EC FERTILISER WITH products based on amino acids or on humic acids can be also formulated and placed in the market as FERTILISER MIXTURES.