Flaws of the "Comparative Safety Assessment" as Developed by EFSA

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1 Introduction

On January 22 2008, the Directorate-General Environment of the European Commission asked EFSA to work on four guidelines to clearly define and describe different aspects of environmental risk assessment (e.r.a.) of genetically modified plants (GMP).[1] In its response, EFSA suggested to integrate the work in its ongoing work on reviewing the guidelines for e.r.a. and proposed a revised version of the terms of references.[2] On March 19 2008, DG Environment agreed to the revised ToR and tasked EFSA to "further develop and update its guidelines as regards the environmental risk assessment" covering following points:

"1. Environmental risk assessment of potential effects of genetically modified plants on non-target organisms through
   i. Development of criteria for the selection of non-target organisms and representative species thereof, focusing on arthropods and other invertebrates, and also considering other relevant non-target organisms in different trophic levels;
   ii. Selection and recommendation of appropriate methods to study the potential effects of GM plants on these non-target organisms;
2. Development of criteria for field trials to assess the potential ecological effects of the GM plants in receiving environments (including experimental design and analysis to ensure sufficient statistical power);
3. Identification of the EU geographic regions where GM plants (combinations crop + trait) may be released and the selection of representative receiving environment(s) which reflect the appropriate meteorological, ecological and agricultural conditions;
4. Selection of appropriate techniques to assess potential long-term effects of GM plants including experimental and theoretical methodologies, and recommendations for establishing relevant baseline information."

DG Environment further stated that "as for the guidance presently developed for food and feed, it is our objective that this guidance document on environmental risk assessment will have regulatory status and will be adopted by the Member States with the support of risk assessors at national level."[3] Finally, EFSA published two draft scientific opinions on March 5 2010 and called for public comments until April 30 2010.[4] The final document was published on Nov 12 2010.[5] ENSSER has sent in comments on the draft scientific opinions[6] and participated at the EFSA-NGO meeting on September 28 2010 to discuss the draft e.r.a. guidance.[7] In this document, ENSSER would like to continue this work and to comment on the current version of the e.r.a. guidance.

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1 Letter ENV B3/AA/D(2008)23828

2 Letter Ref.SR/SM/shv(2008)2770072

3 Letter ENV/B3/CB/zg(2008)D/4802

4 Public consultation on the draft scientific opinion on the assessment of potential impacts of genetically modified (GM) plants on non-target organisms (NTOs) http://www.efsa.europa.eu/en/consultations/call/gmo100305.htm
Public consultation on the draft guidance document for the environmental risk assessment of genetically modified plants http://www.efsa.europa.eu/en/consultations/call/gmo100305a.htm

5 Guidance on the environmental risk assessment of genetically modified plants http://www.efsa.europa.eu/en/scdocs/scdoc/1879.htm

6 http://www.ensser.org/activities/projects/reforming-the-gmo-approval-system/

7 EFSA Meeting with Non-Governmental Organisations on genetically modified organisms (GMOs) http://www.efsa.europa.eu/en/events/event/gmo100929.htm

2. Implementation of the "one door one key" procedure

The EFSA Panel on Genetically Modified Organisms (GMO) in its Guidance on the environmental risk assessment of genetically modified plants of October 2010 (Guidance) (EFSA GMO Panel 2010) aims at providing a framework for e.r.a. as part of applications for market approval of GMOs for food and feed. The Regulation (EC) No 1829/2003 on genetically modified food and feed[8] (Regulation 1829/2003) enables a " 'one door one key' procedure for the scientific assessment and authorisation of GMOs and GM food and feed resulting in a centralised, clear and transparent EU procedure where an operator is able to file a single application". This means that the market approval application for a specific GM food and feed can include an application on approving the plantation of the respective GM plant as well.[9] Regulation 1829/2003 foresees that the necessary e.r.a. follows the principles and procedures described in Directive 2001/18/EC on the deliberate release into the environment of genetically modified organisms[10] (Directive 2001/18).

The applicable principles and procedures for GM food and feed risk assessment are not given by Regulation 1829/2003. GM food and feed risk assessment has to be conducted under the framework of Regulation (EC) No 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety[11] (Regulation 178/2002). The specific principles that should be applied for the risk assessment of GM food worldwide have been adopted by the FAO/WHO Codex Alimentarius in 2003, followed by three specific guidelines for GM plant, microorganisms and animals.[12]

In its Guidance, EFSA uses the concept of the "one door one key procedure" to combine the established principles and procedures for, on the one side, GM food and feed risk assessment and, on the other side, GM plant environmental risk assessment. The Guidance does not only elaborate on one common application procedure but suggests to unify risk assessment principles and procedures that have in our opinion distinct, different and even incompatible features. Unfortunately, this fusion will not strengthen but weaken e.r.a.. The Guidance applies the concepts of substantial equivalence / familiarity - developed in the context of food and feed risk analysis under the U.S. regulatory biosafety system - as methodological filters to decide whether statistical significant differences in unintended ecological effects need to be assessed through e.r.a. or if they can be declared as biological irrelevant, meaning ecological irrelevant in the context of large-scale plantations of GMPs. The comparators on which such decisions are based are usually not the unmodified parental organisms - as

8 http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=32003R1829&model=guichett

9 Press Release of the EC, 22.07.2003: European legislative framework for GMOs is now in place http://europa.eu/rapid/pressReleasesAction.do?reference=IP/03/1056&format=HTML&aged=0&language=EN&guiLanguage=en

10 http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32001L0018&model=guichett

11 http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=EN&numdoc=32002R0178&model=guichett

12 CAC/GL44: Principles for the Risk Analysis of Foods Derived from Modern Biotechnology http://www.codexalimentarius.net/download/standards/10007/CXG_044e.pdf
CAC/GL45: Guideline for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Plants http://www.codexalimentarius.net/download/standards/10021/CXG_045e.pdf
CAC/GL46: Guideline for the Conduct of Food Safety Assessment of Foods Produced Using Recombiant-DNA Microorganisms http://www.codexalimentarius.net/download/standards/10025/CXG_046e.pdf
CAC/GL68: Guideline for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Animals http://www.codexalimentarius.net/download/standards/11023/CXG_068e.pdf

required by EU legislation - but a range of currently used, foreign or obsolete plant varieties to broaden the variance range. The Guidance does not indicate which varieties and tests have to be used to assess "familiarity".

As laid down in the Guidance,[13] EFSA has introduced a "comparative safety assessment" as a new and upstream decision-making step in the e.r.a., that will be used by the EFSA GMO Panel to decide on how to deal with documented, statistically significant differences in unintended effects prior to the conduct of the established six steps of e.r.a.. The EFSA GMO Panel will be empowered to take decisions on the interpretation of scientific date at three points:

- Determination of the consistency of the observed differences;
- Determination of the non-transient nature of the observed differences; and
- Determination of the biological relevance of the observed differences;

based on the data mainly generated by the applicants.

With this approach, EFSA deviates from its previous guidance documents (eg. EFSA GMO Panel 2006 & 2008) that - in accordance with EU legislation - speak of applying a "comparative approach" as an methodological element of the e.r.a.. It is generally accepted and indeed necessary that during an e.r.a. a "comparative approach" is needed to check whether through the process of genetic engineering unintended changes in the GMP have occurred. The potential of such unintended changes to cause environmental risks need to be assessed through an environmental risk assessment. The principles and steps of such an e.r.a. are given by the EU legislation, it was EFSA's mandate to update certain elements in these steps or e.r.a. [14] but not to add a new chapter that might render the e.r.a. under EU biosafety legislation ineffective.

3 Comments on Guidance Chapter 2.1

3.1 Comparative safety assessment as new principle in e.r.a.

Firstly, ENSSER doubts that EFSA is mandated to introduce new principles in the e.r.a.. Directive 2001/18/EC clearly defines five general principles working in accordance with the precautionary principle as basis for e.r.a..[15] Based on the first EFSA presentation of the

[13] see Figure 1, p.11 and Chapter 2.1, p.12-13 of the Guidance

[14] http://registerofquestions.efsa.europa.eu/roqFrontend/questionLoader?question=EFSA-Q-2008-262# to see the correspondance between the EC and EFSA, click on "Mandate Number:"

[15] Directive 2001/18, Annex II, p.19-20: "A **general principle** for environmental risk assessment is also that an analysis of the 'cumulative long-term effects' relevant to the release and the placing on the market is to be carried out. [...]
General Principles
In accordance with the **precautionary principle**, the following **four general principles** should be followed when performing the e.r.a.:
- identified characteristics of the GMO and its use which have the potential to cause adverse effects should be compared to those presented by the non-modified organism from which it is derived and its use under corresponding situations;
- the e.r.a. should be carried out in a scientifically sound and transparent manner based on available scientific and technical data; the e.r.a. should be carried out on a case by case basis, meaning that the required information may vary depending on the type of the GMOs concerned, their intended use and the potential receiving environment, taking into account, i.a., GMOs already in the environment; if new information on the GMO and its effects on human health or the environment becomes available, the e.r.a. may need to be readdressed in order to:

Guidance at a seminar in the European Parliament on Jan 12, 2011[16], it can be concluded that EFSA abandoned three of the e.r.a. principles given by Directive 2001/18 and replaced them by two food and feed risk assessment concepts and one completely new concept (see Table 1). While EFSA does not list the reiterative nature of e.r.a. and the analysis of long-term effects as principles any longer, these issues are still dealt with in the Guidance.

Table 1: Principles for e.r.a.

Directive 2001/18 [17]	EFSA 2011 [18]
1. Scientifically sound and transparent manner	1. Scientifically sound and transparent manner
4. Case by case basis	2. Case-by-case basis
3. Comparison of GMO with parental organisms	3. Comparative approach
4. Readdress ERA when new information becomes available	4. Concept of familiarity
5. Analysis of the 'cumulative long-term effects'	5. Tiered approach

Secondly, ENSSER doubts that the comparative safety assessment - a recent rewording of the concept of substantial equivalence - is an appropriate principle guiding the implementation of the EU laws on biosafety and GMO environmental risk assessment.

The comparative safety assessment has been developed by Harry A. Kuiper - the former chair of the EFSA GMO Panel - and co-workers as an updated version of the concept of substantial equivalence in the context of the GM food approval process (Kuiper at al. 2001; Kuiper & Kleter 2003; Kok & Kuiper 2003). The comparative safety assessment has been set up in close cooperation and partly under the direct responsibility of the agro-biotechnology industry. ENSSER would like to remind of the fact, that the agro-biotechnology industry and/or supporting organisations as the Public Research & Regulation Initiative (PRRI, with EFSA experts as members) at many occasions and in many statements[19] has rejected the approach of process-triggered biosafety regulations. This approach is the basis of the EU biosafety regulation and the Cartagena Protocol on Biosafety with its 160 members; it is the duty of EFSA experts to implement exactly these process-triggered regulations. The continuing collaboration between EFSA risk assessors and applicants from the agro-biotechnology industry leads to strong public concerns about the lack of distance between the respective EFSA experts and the applicants and the objectiveness and independence of the decisions they take (Then & Bauer-Panskus 2010).

The concept of substantial equivalence originates in traditional food safety assessments and has been adapted to the U.S. approach of deregulating foodstuff derived from GMOs (FDA 1992). This approach has been set up under the lead of scientific and legal experts working in public and private entities developing or promoting GM crops and other products of modern biotechnology. The first assumption of the U.S. deregulation system is that the process of genetic engineering will not cause greater unpredicted and unintended effects than the application of conventional methods and thus does not lead to new risks. A second assumption is that the risk assessment is based on an additive model. If a new gene with a determined

-- determine whether the risk has changed;
-- determine whether there is a need for amending the risk management accordingly."

16 SEMINAR: GMO RISK EVALUATION. A contradictory debate. Brussels, 12.01.2011 http://www.alde.eu/event-seminar/events-details/article/seminar-gmo-risk-evaluation-a-contradictory-debate-35941/

17 Lecture Dr. Anglika Hilbeck, page 11 (shorter wording of the original Directive 2001/18 principles) http://www.alde.eu/uploads/media/Hilbeck_ALDE_GMO_debate_12-1-2011.pdf

18 Lecture Dr. Karine Lheureux, page 8 http://www.alde.eu/uploads/media/Lheureux_ALDE_GMO_debate_12-1-2011_01.pdf

19 eg. UNEP 2010a

level of risk is added to an organism, the risk level of that organism will only be increased by the predetermined risk level of the new gene. The rule is to assume that the GMO - apart from the intended change - is substantially equivalent to its conventional counterpart. Risk assessment under this concept does not require the testing of the GMO as such - for example in feeding studies - but can rely on chemical and physical analysis of the components of the GMO/GM food and its counterparts. The idea is that any unforeseen risk factors could be detected through that analysis. If no substantial differences are detected this is taken as proof for the safety of the respective GM foodstuff.

In contrast to the U.S., the EU regulation is firstly based on the assumption that the process of genetic engineering can lead to more unpredicted and unintended effects in the GMO than conventional breeding may cause. Secondly, it is assumed that through the introduction of a gene with a predetermined level of risk the overall risk of the GMO may be greater than the sum if the individual risks. Such potentially synergistic hazards of GMOs cannot be deduced from a compositional comparison of its components alone but requires additional testing of the whole organism. The rule is to assume that the GMO - beyond the intended change - is not equivalent to its conventional counterpart. This alternative assumption here is further backed by scores of empirical evidence demonstrating such potentialities.

The notion that the concept of substantial equivalence is a safety assessment in itself has been explicitly rejected by the EU legislator and by the Codex Alimentarius.[20] ENSSER would like to remind that there is a worldwide consensus that the comparative analysis is merely a methodological element applied in the several steps in risk assessment. ENSSER also likes to stress that the comparative safety assessment has been developed in the context of GM food safety analysis but not in the context of conducting an e.r.a.. The text of Directive 2001/18/EC does not give any indication that EFSA is mandated to apply such an assessment in the context of e.r.a.. It should also be noted that the Ad-Hoc Technical Expert Group on Risk Assessment of the Cartagena Protocol (UNEP 2010b) and the respective decision of MOP-5 on the future "Roadmap" for risk assessment[21] do not give any indications that a comparative safety assessment should be a new step or even principle in e.r.a..

3.2 Comparative safety assessment as new decision-making step in e.r.a.

In chapter 2.1, EFSA has introduced a two-tiered approach to deal with significant differences of unintended effects. While this two-tiered approach has not been explicitly mentioned and described in previous EFSA guidance documents, it features prominently in the current Guidance. As a member of the EFSA GMO Panel explains, the purpose of the comparative safety assessment is not only to compare data but also to take decisions with far reaching consequences for the application of the e.r.a. procedure:

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[20] Preambular Recital 6 of Regulation 1829/2003: "Regulation (EC) No 258/97 also provides for a notification procedure for novel foods which are substantially equivalent to existing foods. Whilst substantial equivalence is a key step in the procedure for assessment of the safety of genetically modified foods, it is not a safety assessment in itself. In order to ensure clarity, transparency and a harmonised framework for authorisation of genetically modified food, this notification procedure should be abandoned in respect of genetically modified foods."
Para 13, Codex Guidelines for the conduct of food safety assessment of foods derived from recombinant-DNA plants, CAC/GL 45-2003: "The concept of substantial equivalence is a key step in the safety assessment process. However, it is not a safety assessment in itself; rather it represents the starting point which is used to structure the safety assessment of a new food relative to its conventional counterpart."

[21] MOP 5 Decision BS-V/12 Risk assessment and risk management (Articles 15 and 16) http://www.cbd.int/decision/mop/?id=12325

> ”The comparative safety assessment is based on ‘four data pillars’, which represent data from different sources that are frequently available in advance of the ERA to characterize the GM plant, namely: molecular characterization data; compositional data; information on agronomic and phenotypic characteristics; and information on interactions of the GM plant with its receiving environment(s). The outcome of this comparative safety assessment allows the identification of those differences and hence characteristics that need to be assessed for their biological/ecological relevance in terms of adverse effects to the environment, regardless of whether they were intended or unintended, and will thus further structure the ERA.” (Bartsch 2011)

Example 1: Applying the concept of familiarity to avoid e.r.a.

Swiss researchers recently applied the concept of familiarity to declare significant difference between GM wheat and its parental lines as ecologically irrelevant and thus not to be analysed through e.r.a. before market introduction: "We found significant effects of the different wheat lines on insect community structure up to the fourth trophic level. However, the observed effects were inconsistent between study years and the variation between wheat varieties was as big as between GM plants and their controls. This suggests that the impact of our powdery mildew-resistant GM wheat plants on food web structure may be negligible and potential ecological effects on non-target insects limited." (von Burg et al. 2011).

27 summer wheat varieties are currently registered in Switzerland, a handful of them are recommended and actually planted (Hiltbrunner et al. 2010, SwissSem 2010). Furthermore, the annual dynamic of the predominant varieties is very high in Switzerland (Brabandt et al. 2006). A scientific meaningful and regulatory useful comparison had to use the main varieties grown in Switzerland in the last years - and not only one current, one obsolete and one foreign variety as von Burg et al. 2011 did. For an approval in the EU context, the application of the concept of familiarity would in addition require different comparative studies for all representative receiving environments (which are not identified in the EFSA Guidance). Van Burg et al. also declare the observed differences as "inconsistent" based on a period of two vegetation periods. They do not attempt to relate the differences to any ecological factors, which might explain the variability and make the effects consistent.

Firstly, the Guidance states on page 12 that "unintended effects [...] are considered to be consistent (non-transient) differences". It is accepted and necessary to determine whether observed differences are consistent or non-transient, if they may result from methodological flaws or are based on variable behaviour of the biological material. ENSSER wants to point to the fact that the Guidance neither gives a scientific definition on the two different concepts "consistent" and "non-transient" nor does it present a methodology, thresholds or any other tool to determine such consistency respective the non-transient status of the differences. Especially any decision on the non-transient nature of observed effects requires guidance on time frames for baseline and risk research (effects for example may only occur under particular climatic conditions or biotic that may not occur every year). Although it was the mandate of EFSA to select "appropriate techniques to assess potential long-term effects of GM plants including experimental and theoretical methodologies, and recommendations for establishing relevant baseline information", EFSA does not provide substantial guidance in this regard and leaves it almost completely to the applicant to decide what to do and how to do it. The European Commission obviously did not insist on a complete and comprehensive work based on the given mandate.

Secondly, EFSA empowers itself to determine the biological significance of such statistically significant differences without developing guidance on the crucial questions what kind of data are needed to judge on biological significance and what would be acceptable and not-acceptable differences in this regard. EFSA states on page 13 that "statistically significant differences [...] should be assessed specifically with respect to their biological relevance [...] The outcome of the comparative assessment allows the determination of those 'identified'

characteristics that need to be assessed for their potential adverse effects in the environment [...] and will thus further structure the ERA." ENSSER interprets this as the introduction of a decision-making step serving as bottleneck in the process of the e.r.a.. Based on this, the EFSA GMO Panel will decide through the qualification of such differences as either biological irrelevant or relevant whether the assessment of specific characteristics of GMPs will stop after the comparative safety assessment or whether their assessment will be subject to the six steps of e.r.a. as prescribed by Directive 2001/18. EFSA seems to have an ambiguous approach towards giving guidance on the scientific criteria that can justify such decisions.

As an underlying concept, EFSA resorts to the concept of familiarity - also called the "concept of history of safe use" - that should be applied when making decisions on biological and ecological relevance. In its second presentation of the Guidance at the workshop in January 2011, EFSA claims that food and feed risk assessment and e.r.a. follow the same logic.[22] A claim that cannot be supported by legal or scientific arguments. EFSA specifically states that the concept of familiarity is applicable in e.r.a.. This logic would have severe consequences on the work of the EFSA GMO Panel when making a decision of whether documented, statistically significant differences in unintended effects are biologically and environmentally insignificant or not. Under the concept of familiarity such differences would not only be judged with regard to the properties of the parental plants - as required by a principle of the Directive 2001/18 - but put into relation with the natural variation of the specific property exhibited by other, non-parental plant varieties grown under the same conditions. Apart from posing technical problems, which are not solved in the Guidance (eg. which and how many non-parental varieties need to be analysed) this approach has been judged as inappropriate for e.r.a. by scientists and experts recently:

> "Therefore, the concept of a history of safe use from food safety relates less easily to ERA, in which environmental harm is measured. Here, it is more fruitful to base arguments on the likely effect of a GMO, and then to contextualize whether that effect is sufficient to cause significant environmental harm. To retain the undoubted benefits of the equivalence approach, outlined above, the test must therefore be adapted. Second, for ERA, it makes little practical sense for the equivalence limits to be based on the natural variation of extraneous varieties." (Perry et al 2009)

Based on the scientific understanding of the complex situations that need to be addressed through e.r.a., there is no international or EU legislation that has adopted the concept of familiarity in e.r.a.. In its attempt to justify its proposal, EFSA has to go back as far as 1993 and quote an OECD (1993) report of a working group that suggested to apply the concept of familiarity in e.r.a.. When the Cartagena Protocol on Biosafety negotiations started two years after this OECD report was adopted, some of the delegations brought its recommendations into the biosafety negotiations. The inclusion of the concept of familiarity into international environmental legislation had been discussed at the second and third meeting of the Working Group on Biosafety in 1997 and was finally rejected during the fourth meeting in 1998.[23] The final text does not refer to or reflect the familiarity principle as set up by OECD.

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[22] Lecture Dr, Claudia Paoletti, page 5
http://www.alde.eu/uploads/media/Paoletti_ALDE_GMO_debate_12-1-2011_01.pdf

[23] Reports available at:
Second Ordinary Meeting of the Open-Ended Ad Hoc working Group on Biosafety (BS WG 2)
http://bch.cbd.int/protocol/meetings/documents.shtml?eventid=1054
Third Ordinary Meeting of the Open-Ended Ad Hoc working Group on Biosafety (BS WG 3)
http://bch.cbd.int/protocol/meetings/documents.shtml?eventid=1037
Fourth Ordinary Meeting of the Open-Ended Ad Hoc working Group on Biosafety (BS WG 4)
http://bch.cbd.int/protocol/meetings/documents.shtml?eventid=1055
additional in-session documents can be provided by the authors

In a second more technical approach, EFSA suggests that "limits of concern" need to be established to support decisions on biological and ecological relevance. EFSA gives examples of such limits of concern for experiments at different scales of environmental complexity but it does not give guidance on the specific requirements of GM plant e.r.a.. Again, it is left almost completely to the applicant to decide what to do and how to do it. In a recent scientific publication, risk assessment experts including EFSA members state that:

> "little guidance is available how to perform equivalence testing for GMOs in practice. Although the EFSA Guidance Document [of 2006] discusses general principles for risk assessment and recommends the use of appropriate statistical tools, detailed protocols for the design of experiments and statistical analysis are not provided." (van der Voet et al. 2011)

These authors develop a statistical approach that combine tests for equivalence with tests on differences in order to establish a scientific approach for the application of the concepts of equivalence and of familiarity. The publication focuses exclusively on data of compositional analyses in the context of food and feed risk assessments with little or no relevance for e.r.a.. The crucial question which conventional varieties need to be tested in which receiving environments to establish a sound basis for the application of the concept of familiarity GM plant risk assessment is not dealt with in this publication. In this context, the Roadmap for risk assessment of the Cartagena Protocol advises:

> "In all cases where information, including baseline data, is derived from other sources, it is important to establish the validity and relevance of the information for the risk assessment. For instance, it should be taken into account that the behavior of a transgene, as that of any other gene, may vary because it depends on the genetic and physiological background of the recipient as well as on the ecological characteristics of the environment that the LMO is introduced into." [24]

Despite of the still missing scientific foundation of the concept of familiarity in e.r.a., EFSA propagates the use of this concept for GM plant market approvals. While this would add a substantial burden of a plethora of tests on the applicants (as described in Example 1) EFSA does not give any guidance on how to plan and conduct these tests. It can be predicted that applicants will use this lack of guidance to create own experimental protocols with the aim to declaring GM crops as safe and avoiding e.r.a. on observed differences between the GM plant and its parents. ENSSER is of the opinion, that the underlying assumptions of EFSA[25] in writing the Guidance with regard to the concepts of substantial equivalence and familiarity are scientifically flawed and in addition not supported by the current international and EU legal frameworks.

[24] MOP 5 Decision BS-V/12 Risk assessment and risk management (Articles 15 and 16) http://www.cbd.int/decision/mop/?id=12325

[25] "The underlying assumption of the comparative assessment for GM plants is that the biology of traditionally cultivated plants from which the GM plants have been derived, and the appropriate comparators is well known. To this end the concept of familiarity was developed by the OECD (OECD, 1993). In the ERA, it is appropriate to draw on previous knowledge and experience and to use the appropriate comparator in order to highlight differences associated with the GM plant in the receiving environment(s)." EFSA GMO Panel (2010), page 11

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