Polyor SAS's response to ISSB's invitation to comment -

Plot-specific N-fertilizer response curves & a unique *iAgroNum* index as accountable standard metrics of sustainable agriculture

In response to IFRS-ISSB Exposure Draft Methodology for Enhancing the International Applicability of the SASB Standards and SASB Standards—Survey[1]

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[1] SASB Standards Taxonomy Updates/ International Sustainability Standards Board / Methodology for Enhancing the International Applicability of the SASB® Standards and SASB Standards Taxonomy Updates Comments to be received by 9 August 2023 May 2023 Exposure Draft IFRS® Sustainability Disclosure Standard ISSB/ED/2023/1

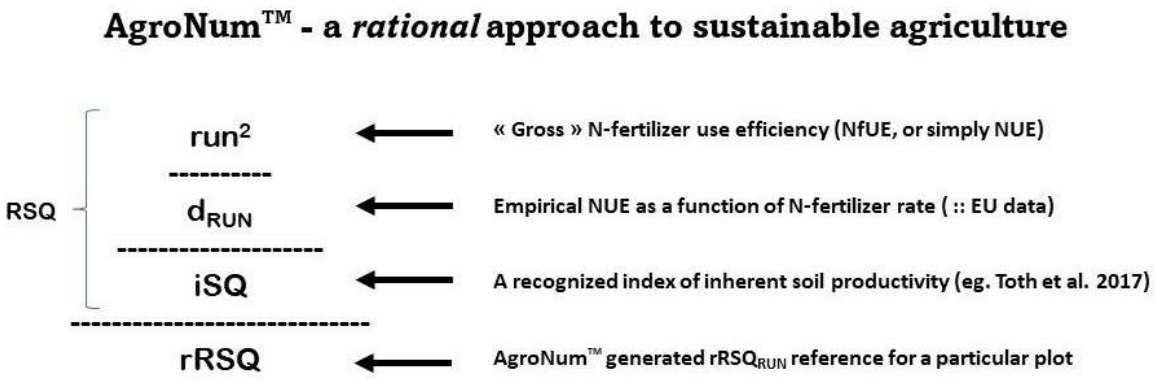
Exposure Draft ISSB/ED/2023/1 Methodology for Enhancing the International Applicability of the SASB®. Standards and SASB Standards Taxonomy Updates is published by the International Sustainability Standards Board (ISSB) for comment only. Comments need to be received by 9 August 2023 and should be submitted via the electronic survey at https://ifrs.qualtrics.com/jfe/form/SV_6o2bqaG22DiUTqu or by email to commentletters@ifrs.org or online at https://www.ifrs.org/projects/open-for-comment/ .

The present document, uploaded in part via IFRS's dedicated website is meant as a response to this request (invitation) for comments. The international and interoperability aspect of Polyor SAS's response to comment will be emphasized.

For any additional information concerning Polyor SAS & AgroNum™, visit www.polyor.fr, or contact Pierre-Philippe CLAUDE, ceo Polyor SAS directly.

In response to Question 1_c (Yes) : Assessing the sustainability of field crop production is challenging, to say the least, because of the inherent heterogeneity across any agricultural field, and thus the very imprecise and inaccurate monitoring of GHG emissions and soil carbon stocks on a routine basis. Near impossible, in fact. The existing FB-AG-110a_1 & 2 SASB standard metrics are in that respect inapplicable to primary agricultural production.

In lieu of, Polyor SAS (www.polyor.fr) has demonstrated how the sustainability of cropping practices & schedules be objectively assayed across vast geographical areas comprising fields & soils inherently very different. Polyor SAS (www.polyor.fr) has developed a rational approach to sustainable agriculture that takes accounts for N-fertilization & soil & crop productivity. This AI-implemented concept is part of existing Polyor SAS intellectual property, namely, iBMK (EP4101280), iSQT (EP3821688) and soon to be published iCRP (EP2210746.8).



This rational approach to sustainable agriculture is part of a a simple, ergonomic & very precise index of sustainability as a complement to carbon & GHG budgeting schemes presently used in carbon farming & accountability. This iAgroNum index is thus proposed as a standard to the #issb.

$$iAgroNum = 1 - \left| \left[1 - \frac{RSQ}{rRSQ} \right] \right|$$

The International Sustainability Standards Board (#issb) has developed an exposure draft that explains the methodology for updating references to jurisdiction-specific laws and regulations to improve the international applicability of SASB standards. The ISSB published the exposure draft on 11 May 2023 for a comment period ending 9 August 2023.

Polyor SAS will respond proposing changes to the FB-AG-110a.1 & FB-AG-110a.2 standard accounting metrics applicable to agricultural products. Polyor SAS firmly believes that these quantitative GHG emission standards are presently not properly applicable to field-crop production. Firms & farmers in the sector will thus be more in tune via #sfdr & #csrd taxonomy when monetizing sustainable agriculture and/or carbon farming.

Polyor SAS's AgroNum approach to sustainable agriculture & soil organic matter (carbon) conservation (www.polyor.fr) should constitute a valuable add-on to such SA accounting standards integrating both nitrogen-fertilization rates & the nitrogen content of crop residues when setting target yields & N-fertilization rates. Doing so will ensure that soil organic carbon (SOC) is conserved by minimizing SOC degradation rates overtime.

In response to Question 2 (No) : Given that climate related GHG & carbon emission tracking from agricultural fields is quasi impractical, ***the proposed iAgroNum sustainability metric is de facto a non-climate related metric***. The sustainability disclosure tropics and metrics in Table 1 (Appendix b, Volume B20 / Agricultural Products / FB-AG-110a.1 & 2) are thus a priori inappropriate.

Rather, Polyor SAS proposes the use of a sustainability metric such as iAgroNum™ as defined in reference to an in lieu of the aforesaid FB-AG-110a.1 & FB-AG-110a.2 standard accounting metrics. The project would simply consist in further documenting the relationship between iAgroNum and soil organic carbon conservation, GHG emissions and existing carbon-farming paradigms. This will require that Polyor SAS meta-analyze even more georeferenced soil organic carbon trials across Europe. Work already in progress.

This said, iAgroNum should eventually do away with the need for such soil/atmospheric carbon balancing and act as a substitute for such error prone accounting. Sustainability will then be metered as such, carbon-farming, carbon-sequestration, and soil organic matter build-up being added benefits but not synonymous with sustainable agriculture.

Polyor SAS maintains that the sustainability of a cropping practice is above all a function of its grain *nitrogen-yield*, RDN (kg-N_{grain}/ha). AgroNum™ selects for cropping practices with $N_{fertilizer}$ *use efficiencies*, RUN (RDN/kg-$N_{fertilizer}$/ha), that are neither too high nor too low, and then precisely retro-calculates such sustainable yields. Recall that excessively low N-fertilizer use efficiencies (RUN) lead high residual mineral-N levels & ground-water pollution; excessively high RUNs deprive crop residues of the nitrogen necessary for their humification into stable soil organic matter.

The accuracy of AgroNum™ is ensured by various AI algorithms. AgroNum™ also enables the dynamic in-season adjustment according to weather and plot heterogeneity of these targeted sustainable RDN nitrogen-yields. AgroNum™ is very ergonomic the farmer having only to enter via www.polyor.fr the plot's centermost GPS latitude & longitude and current yield and N-fertilization rates.

A unique & plot-specific nitrogen response curve is then generated. Once the initial target RDN updated in-season, early spring for instance, as affected by current meteorology and heat-units, the corresponding sustainable TUN is readjusted accordingly.

AgroNum™ for sustainable agriculture & integrated fertilizer management is objective, impartial, ergonomic & *interoperable*, and this without any additional soil sampling, or extensive capture & uploading of data from in-field sensors, drones, etc. By means of artificial intelligence, AgroNum™ predicts such sustainable target nitrogen yields applicable to all non-*Fabaceae* field-crops across Europe. Farmers need only specify TUN, the desired rate of N-fertilization, and the centermost GPS coordinates of the plot. Polyor will then transmit a sustainable RDN ↔ TUN pair in lieu of target grain-N yield & N-fertilizer recommendations for that plot.

As an integrated fertilizer management alternative for calculating TUN N-fertilizer recommendations (kg-N_fert/ha), AgroNum™ has the advantage of being precise, impartial, dynamic, easy to use and, most importantly, sustainable. Strictly speaking, AgroNum™ is more about soil conservation than about climate related issues such as carbon farming & sequestration. Rather, AgroNum™ seeks to ensure sustainability in a more conventional way by integrating both socio-economic aspects such as *yield gaps,* and environmental aspects of sustainable development.

AgroNum™ is applicable to all non-*Fabaceae* field-crops such as winter & spring cereals, rapeseed, grain maize and sunflower. Calibrated for use across Europe, AgroNum™'s domain can and will be extended world-wide in due time. As of today, AgroNum™ has been tested virtually in Europe by building a database containing 20764 georeferenced cropping schedules. AgroNum™ target yields are approximately 40% higher, in line with the yield gaps reported by Schils et al. 2018 in European cereal production.

Polyor SAS's AgroNum™ concept is new and disrupts the state of the art in precision agriculture and integrated fertilizer management. It is therefore appropriate for Polyor SAS to develop a comprehensive intellectual property strategy via the French Inpi & European EPO.

In closing, note that a sort of "white paper" describing validating the rationale & positioning of AgroNum™ can be downloaded via www.polyor.fr/Validation/Rationale & Positioning.

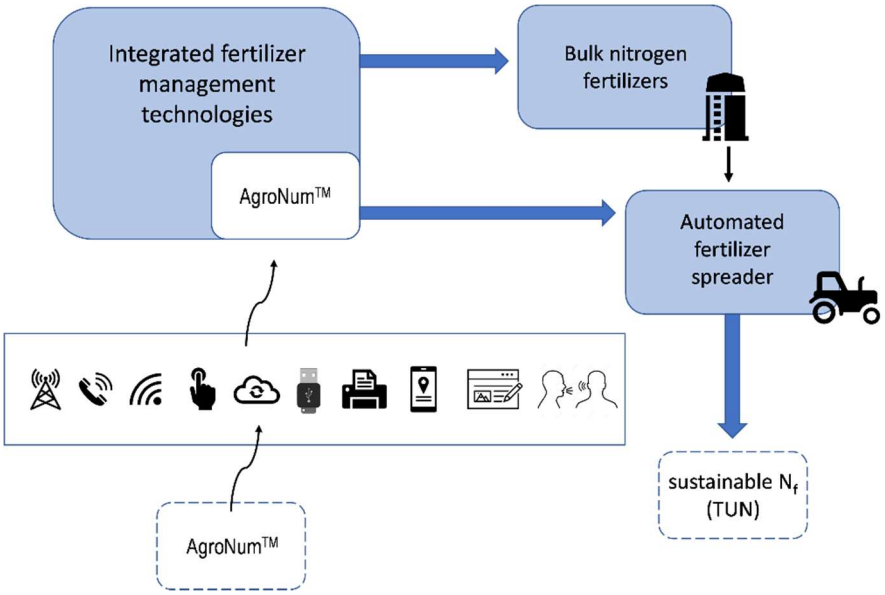
In response to Question 3_a (Yes) : Polyor SAS believes that replacing jurisdiction-specific references with internationally recognizable frameworks & guidance should be the first course of action. For instance, the AgroNum algorithm that calculates the iAgroNum was calibrated across Europe using standardized site & soil-specific data from 2000 or so fields; 25 million data were aggregated.

More so, and as required by the aforesaid ISSB's exposure draft (Appendix A3, page 13), "*the preferred approach is to replace a jurisdiction-specific reference with an international reference if the information guiding a preparer remains substantially the same,* regardless of where the preparer operates." As of today, the said *preparer* (sic) can obtain a precise, reliable & faithful iAgroNum value for any agricultural field or plot across Europe.

This said, the AgroNum algorithm is perfectly applicable worldwide using standardized reproducible data extracted from international agricultural, soil & climate data bases, for instance WoSIS's soil-grid (https://soilgrids.org/) harmonized international soil databases, and many others. This globalization of AgroNum is currently work in progress at Polyor SAS.

In response to Question 4 (NA)

In response to Question 5_a (What other methods?) : Interoperability ! Existing precision agriculture and carbon-farming approaches to sustainable agriculture are very data intensive and require the uploading of large amounts of quasi real time information from the field. Despite recent advances in data science, this remains complex, at times tedious for the end user, and most importantly is not conducive to interoperability between the various technologies and stakeholders. Polyor's AgroNum approach to assessing agricultural sustainability would be useful to guide ISSB's future work given that it is interoperable with all data input interfaces. More so, very little information from the plot is needs to be uploaded, the bulk of the AI data integration is done automatically with little or no need for curation. Various ISSB stakeholders need only specify the field-plot centermost GPS coordinates, the current nitrogen fertilizer application rate, and the harvested grain yield to obtain an iAgroNum metric value. This is very objective, precise & impartial.



In response to Question 5_b (Specific comments/suggestions?) : Primary agricultural production, of grain and cereal crops for instance, is not just another industry. Many farmers, a few buyers, and most of the transformative industry downstream. Still, the sustainability of crop production needs to be better integrated into ISSB standards & metrics. As of today, the problem is that such standards are in a sense too … *metric*. Let me explain.

Accounting for sustainability in agriculture is for most a balancing act. Inputs & outputs need to be equal if not proportional. In the case of carbon-farming, inputs of carbon to soils need to be greater than GHG equivalents emitted. These balance sheet approaches to sustainable agriculture supposes that these sorts of variables can in fact be measures accurately and precisely for every source reporting. This is rarely if ever the case with agricultural fields. Such heterogenous ensembles are treated as if they were point sources. Alas, agricultural pollution & emissions are inherently non-point, diffuse across the whole field. Routine sampling will never allow for precise estimates as required by financial accounting & carbon-credit.

At the risk or irking carbon-farming advocates, sustainable agriculture metrics need be much more precise and less dependent on such mass-balance approaches as aforesaid. Indices of sustainability need to be correlated but not synonymous with soil organic build-up & conservation.

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