



CoP name: Improving Global Agricultural Data

Report submission date: 14 October 2024

1. Progress on goals and objectives of CoP Agreement
 - a. Organize sessions for plenary (2 a year)
 - i. RDA P22. May 2024 - virtual
Session: Addressing Agricultural Data Ethics, Agrisemantics, and AI - [Agenda Recording](#)
 - ii. RDA P21. October 2023 in Salzburg (Austria) - hybrid
Session: BoF - Describing Chemical, Physical and Biological samples digitally: Seeking harmonization - [Agenda Recording](#)
 - iii. RDA P20. March 2023 in Gothenburg (Sweden) - hybrid
Session: Improving Global Agricultural Data (IGAD) Community of Practice First Steps and Way Forward - [Agenda Recording](#)
 - iv. RDA P19. June 2022 in Seoul (Republic of Korea) - hybrid
Session: IGAD Community of Practice session [Agenda Recording](#)
 - b. Organize the IGAD Annual Week (either April or September, once a year)
The CoP organized annual events (called Annual Meeting rather than Annual Week) that spanned over one or two weeks. All events entailed a call for expressions of interest inviting members to propose a session, a selection process, and guiding the session leaders to organize their own session. The calls had a decent response rate and the proposals were of good quality, which allowed us to have between 4 and 7 sessions per event, covering diverse topics and engaging different types of actors.
Links: *[The links to the detailed programmes in the RDA website don't work]*
 - i. 3rd IGAD Annual Meeting: June 2023 - virtual - [Agenda Recordings](#)
 - ii. 2nd IGAD Annual Meeting: March-April 2022 - virtual - [Agenda Recordings](#)
 - iii. 1st IGAD Annual Meeting: May 2020 - virtual - [Agenda](#)

- c. Develop communication plan based on capacity development and knowledge sharing activities
 - i. Objective: Facilitate knowledge sharing to understand the gaps and stimulate the discussion and developments
 - ii. The migration of the website has delayed this communication plan; new and old posts are not always behaving as expected and without dedicated communications assistance we have not been able to troubleshoot.

 - d. Ensure global south participation

The calls for expressions of interest for the Annual Meetings were disseminated in international communities with significant membership in the Global South. Presenters from the Global South spoke at the Annual Meetings, and some new CoP members are from the Global South, but increased participation hasn't always meant increased membership: not all participants in sessions have registered to RDA.

Two people from Kenya and India are among the proponents of the Ethics in Agricultural (Ag) Data Working Group. The WG aims at attracting a good number of members from the Global South.

Many topics addressed at the Annual Meetings are of high interest to practitioners in the Global South: ethical and legal issues related to data rights and power imbalances, producers' data, indigenous knowledge.

 - e. Survey to assist any newcomers to RDA to identify any who may onboard to IGAD
 - i. to be a focal point and find out what people want
 - ii. to actively invite to follow up with them proactively
 - iii. We have not yet administered this survey, in part due to the website modernization and adherence to GDPR (preventing getting new RDA membership information). We are regrouping to establish a survey that can be dropped into relevant group posts, reaching both old and newer RDA members.

 - f. Introductory sessions to explain how RDA works
 - i. Meet and Greet September 2023- we held a meet and greet session with speakers from five related RDA groups. [Announcement Recording](#)

 - g. Prepare a video to promote the CoP
 - i. Did not do.

 - h. Submit Review (Public Report) to Council after 18 months
2. CoP's development within the overall discipline /domain landscape and RDA CoP specific contribution
- a. Ethics in Ag Data WG

The IGAD CoP has been encouraging members to propose new WGs for a long time, and recently on the initiative of six members, the Ethics in Agricultural (Ag) Data Working Group was proposed and accepted by RDA.

The Ethics in Agricultural (Ag) Data WG is now officially recognized and starting its activities: <https://www.rd-alliance.org/groups/ethics-in-agricultural-ag-data-wg/>.

The group will create RDA Recommendations for the ethical treatment of agricultural data that can be widely adopted/endorsed by farmers, researchers, practitioners, institutions, and other relevant actors. Of particular focus are challenges and risks for the most marginalized actors in the data value chains: smallholder farmers and indigenous people. The working group's initial membership represents a diversity of backgrounds and geographic locations. The first task of the WG will be that of expanding the membership, ensuring a broad diversity of perspectives and the presence of representatives of groups that are normally marginalised when it comes to data governance.

In the agricultural domain, issues of data rights, data asymmetries, producers' data sensitivity, indigenous data and traditional knowledge are considered highly relevant and urgent, as is proven by the number of online discussions and roundtables organised in the past two years on these topics, including at COP27 and COP28, and by the expressions of interest that the CoP received for the Annual Meetings .

- b. Promoting exchange on latest issues and development in the Annual Meetings.

The Annual Meetings have been a reflection of the current interests in the agricultural data practitioners' world: the proposed sessions have tackled pressing issues like the fragmented landscape of agricultural data, the need for semantic crosswalks, governance of farm-level digital technologies, related ethical and legal issues, indigenous knowledge, Artificial Intelligence, plant-pollinator interactions data standards and others. A birds of a feather group is being organized on Agricultural Data Integrity at P23, in association with IGAD, and there is potential for another new workshop group on Agrisemantics and AI, once group members have capacity to initiate.

3. Engagement and Outreach activities and related metrics

- a. We do not currently have capacity to track metrics associated with the activities described above.
- b. We participated in the RDA for Agricultural and Environmental Data Community Cross-fertilisation Workshop and subsequent events 28 June 2023, 21 November (two different times) <https://zenodo.org/records/8164523>

4. CoP Membership growth

- a. The group has grown from about 260 to 299 members.

5. Increase in stakeholder organisation support

To support exchange and dissemination of the IGAD activities, the Liaisons Group has been formed with representatives from regional organisations and thematic networks.

The group consists of at least six members who are points of contact for specific regional agricultural data networks or thematic networks, to represent broad global and topical areas.

Liaison Group Leadership

The group selects chairs from its own membership every two years.

2023-2024 co-chairs:

Marina Razmadze, GTU/Techinformi

Piotr Zaborowski, Open Geospatial Consortium Europe

Responsibilities

- Meetings: quarterly meetings by default
- Assist in planning and executing the [IGAD roadmap](#)
- Serve as a liaison to share IGAD activities with networks and bring their network's ideas and concerns to IGAD
- Promote adoption of RDA recommendations by their network
- Support the creation of new RDA working groups on topics of interest to IGAD and their network
- Exchange global agricultural data best practices between their network and IGAD and RDA
- Support participation in RDA plenaries and cross-fertilization activities: setting up agenda, inviting speakers

Membership

Two year terms, extensible. Current membership coverage:

US: USDA, EMBRAPA, AgGateway, OGC

Canada: AGR.GC.CA

Europe/UK: Nottingham University, Rothamsted Research, CCSS - Czech Republic, FAO - Italy

Caucasus: Georgia Technical University, Technical University of Moldova

Africa: Jomo Kenyatta University of Agriculture and Technology - Kenya, - Local Development Research Institute - Nairobi

6. Significant interactions with key stakeholders in the discipline / research domain and their results (if any)
 - a. WorldFAIR was a significant focus of effort of IGAD during the report period.

IGAD coordinated the [Agricultural Biodiversity Case Study of the WorldFAIR Project](#), gathering several initiatives and institutions, namely the Biodiversity Information Standards (TDWG) Biological Interaction Data Interest Group, Meise Botanic Garden, HiveTracks, Kenya Agricultural and Livestock Research Organization (KALRO) as formal partners and a large network of organisations contributing

in-kind and not receiving funding: University de São Paulo (Brazil), University of Campinas (Brazil), USDA Agricultural Research Service (USA), Agriculture and Agri-food Canada (AAFC - Canada), Federal University of São Carlos (Brazil), University of Buenos Aires, Global Biotic Interactions (GloBI), UK Centre for Ecology & Hydrology (UKCEH). IGAD identified initiatives related to plant-pollinator data standardisation being carried out by different groups within the community and assembled a representative team to collaborate on enabling FAIR data for this key ecosystem service that is vital for agriculture and many other mechanisms that sustain life on Earth. During Tasks 10.2 and 10.3, new participants joined the Case Study as in-kind contributors: namely University CES (Colombia) SIB Colombia (the country's GBIF Node), Universidade de Goiás (Brazil), Universidade Estadual Paulista (Brazil) and Universidade Federal dos Vales Jequitinhonha e Mucuri (Brazil).

The project ran from June 2022 to May 2024 and the three deliverables and associated outputs of the Case Study are detailed below.

Deliverable 10.1 - "Agriculture-related Pollinator Data Standards Use Cases Report"

(<https://doi.org/10.5281/zenodo.8176978>) is a result of Task 10.1 - Discovery phase - which aimed at mapping existing, relevant good practices and standards tailored for plant-pollinator data. This work was carried out by all the beneficiaries (Embrapa, Meise Botanic Garden, HiveTracks and KALRO, who performed a specific survey for the African Continent), together with some of the in-kind contributing organisations, and presented an overview of projects, good practices, tools, and examples for creating, managing and sharing data related to plant-pollinator interactions, along with a work plan for conducting pilots in the following phase of the Work Package. The report presents the main existing data indexing platforms and aggregators for plant-pollinator interaction data, as well as citizen science and community-based sourcing initiatives. It also describes current challenges for taxonomic knowledge and presents two data models and one semantic tool to be explored in the following task. This Case Study comprehensively examined the methods and platforms used to create and share plant-pollinator interactions data. The report shows that a large amount of data on plant-pollinator interaction is made available as supplementary files of research articles in a diversity of formats and that there are opportunities for improving current practices for data mobilisation in this domain. The diversity of approaches and the absence of appropriate data vocabularies causes confusion, information loss, and the need for complex data interpretation and transformation. Our explorations and analyses provided valuable insights for structuring the following phase of the project, including the selection of the pilot use cases, which were explored in the following Tasks and Deliverables.

During Task 10.1, Meise Botanic Garden collaborator Maarten Trekels presented the Case Study during the [IGAD session](#) at the 20th RDA Plenary in Sweden (March 2023). Debora Drucker presented the Agricultural Case Study in Paris at the Unesco & Codata event "[Towards a FAIRer World: Implementing the UNESCO Recommendation on Open Science to address global challenges](#)"; March 2023. Those events contributed to finding more initiatives for the discovery phase. The

results of the discovery phase were presented as part of the RDA 10th anniversary during a [webinar](#) on 22 August 2023.

Deliverable 10.2 - “Agricultural Biodiversity Standards, Best Practices and Guidelines Recommendations” (<https://doi.org/10.5281/zenodo.10666593>) was carried out as a joint effort by all Work Package participants and presents results from Task 10.2 - the Pilot Phase of the Case Study, which involved six pilot studies adopting standards and recommendations from the discovery phase: (i) Observations of plant-pollinator interactions in the Pampean region of Argentina, conducted by Facultad de Agronomía - Universidad de Buenos Aires; (ii) The Brazilian Plant-Pollinator Interactions Network (REBIPP); (iii) The Plant-Pollinator Interaction Data Collection by the Kenya Agricultural and Livestock Research Organization (KALRO) on the African continent; (iv) Pollinator data from HiveTracks, a startup that works with smallholder beekeepers across the world to crowdsource environmental data collection; (v) The United States Department of Agriculture Plant Pollinator Interaction Prototype Data and Database Development; (vi) Plant-pollination interactions in wild ecosystems, Colecciones Biológicas from the Universidad CES & SIB Colombia. The pilots enabled the handling of concrete examples and the generation of reusable materials tailored to this domain, as well as providing better estimates for the overall costs of adoption for future projects. Our approach for plant-pollinator data standardisation was based on the widely used standard for representing biodiversity data, Darwin Core, developed and maintained by the Biodiversity Information Standards (TDWG), in conjunction with a data model and vocabulary proposed by the Brazilian Network of Plant-Pollinator Interactions - REBIPP. The pilot studies also underwent a process of “FAIRification” (i.e., transforming data into a format that adheres to the FAIR data principles) using the GloBI platform. Additionally, the publishing model for Biotic Interactions developed in collaboration with the Global Biodiversity Information Facility (GBIF), which leads the Case Study on Biodiversity, as part of the proposed Unified Data Model, was presented, along with a concrete example of its use by two of the pilots. This effort led to the development of ‘FAIR best practices’ guidelines for sharing plant-pollinator interaction data. The primary focus of this work was to enhance the interoperability of data on plant-pollinator interactions, aligning with WorldFAIR efforts to develop a Cross-Domain Interoperability Framework. WP 10 has successfully promoted the adoption of standards and increased the interoperability of plant-pollinator interactions data, resulting in a process that allows for tracing the provenance of the data, as well as facilitating the reuse of datasets crucial for understanding this essential ecosystem service and its changes due to human impact, which can be reused by any plant-pollinator interactions data holder. The effort demonstrated that there are several possible paths for FAIRification, tailored to institutional needs, and has shown that different approaches can contribute to promoting data interoperability and data availability for reuse, which is the ultimate goal of this initiative. Consequently, WP10 has successfully ensured FAIR data for understanding plant-pollinator interactions at biologically-relevant scales for crops, with broad participation from initiatives in Europe, South America, Africa, North America, and elsewhere. WP10 has also established concrete guidelines on

FAIR data best practices customised for pollination data, metadata, and other digital objects, promoting the scalable adoption of these standards and FAIR data best practices by multiple initiatives.

Besides the Deliverable, a cookbook "[Cookbook Guidelines and Recommendations for Publishing Plant Pollinator Interactions Data](#)" and a "Tutorial to standardise a plant-pollinator dataset with OpenRefine (<https://doi.org/10.5281/zenodo.10688865>)" were developed to make Plant-Pollinator data FAIR.

In October 2023, as part of the WorldFAIR [webinar](#) series, the Agriculture and Biodiversity Case Studies promoted a joint webinar entitled "WorldFAIR Output Webinar Series: Updates from Biodiversity (WP9) & Agricultural Biodiversity (WP10)". The collaboration with one of the pilots, University CES & SIB Colombia, was initiated in that opportunity.

Deliverable 10.3 - "Agricultural Biodiversity FAIR Data Assessment Rubrics" (<https://doi.org/10.5281/zenodo.10719265>) was carried out as a joint effort by all Work Package participants and presents results from Task 10.3 Assessment & Metrics with Agricultural Biodiversity FAIR data assessment rubrics, introducing a set of FAIR assessment tools tailored to the plant-pollinator interactions domain. These tools are designed to help researchers and institutions evaluate adherence to the FAIR principles. In the discovery phase, it was found that a significant amount of data on plant-pollinator interactions is available as supplementary files of research articles, in a diversity of formats such as PDFs, Excel spreadsheets, and text files. The diversity of approaches and the lack of appropriate data vocabularies lead to confusion, information loss, and the need for complex data interpretation and transformation. The proposed framework primarily targets researchers in this domain who wish to assess the FAIRness of the data they produce and take action to improve it. However, we believe it can also benefit data reviewers, data stewards, data repository managers and librarians dealing with plant-pollinator data. Our approach focused on being as familiar as possible with the researcher's practices, language, and jargon. Ultimately, we aimed to promote data publishing and reuse in the plant-pollinator interactions domain. We presented a "Rubric for the assessment of Plant-Pollinator Interactions Data" with examples from the data from the pilots developed in Deliverable 10.2 and in relation to the FAIR Implementation Profile (FIP) created by Work Package 10. We conducted "Dataset Assessments" of available data from research projects surveyed in the discovery phase. Additionally, we describe the process in detail in the "Automated FAIR-enabled Data Reviews" generated by the Global Biotic Interactions (GLOBI) infrastructure, with examples from the pilots. We believe the tools described in this report can encourage data publishing and reuse in the plant-pollinator interactions domain. Moving from diverse approaches and siloed initiatives to widely available FAIR plant-pollination interactions data for scientists and decision-makers will enable the development of integrative studies that enhance our understanding of species biology, behaviour, ecology, phenology, and evolution.

The final WP10 results were presented at the [IGAD session](#) at the 22nd RDA Plenary in May 2024 and at the WorldFAIR Webinar Series "[Reusing Plant-Pollinator Datasets: a Global Perspective with Guidelines and Recommendations inspired by Pilot Studies from Africa, the Americas and Europe.](#)" held in April 2024.

All the FAIR data and code resulting from this work are available at a GloBI dedicated website <https://www.globalbioticinteractions.org/worldfair/>. The Agricultural Biodiversity Case Study results were presented in the TDWG meeting in September 2024 and the team is preparing an article to communicate the findings. Finally, this initiative has successfully ensured FAIR data for understanding plant-pollinator interactions at biologically-relevant scales for crops.

Conclusion: While IGAD did not complete all planned activities over the last eighteen months, it remained extremely active during the report period. Capacity to develop and execute a communication plan and newcomer survey that could use the modernized RDA website effectively was minimal, nor could we effectively track the outreach of our activities. Because many IGAD members are from the global south and cannot afford to attend plenaries, we have continued to organize virtual events outside of plenaries. However, capacity has been limited to organize multiple meetings (including two plenary sessions) each year, especially while executing major initiatives like WorldFAIR. In the future, we can revise our roadmap to be realistic and seek communications support. We have already begun planning regular webinars again, with assistance from our Liaisons group, that can establish a regular exchange of information among our membership and remind them of the opportunities to engage with other RDA working and interest groups.