Discussion Guide

Data Governance in Agriculture

How to use this document

This is a resource to learn about agricultural data governance through reflection and discussion. Follow or adapt the guide to use with your team. There are suggestions of activities to engage with the material in boxes labeled: "Try it out!"

Note: Highlighted terms are defined in the Glossary!

Start by reflecting on your daily life. Here are some questions to gain an awareness of your regular interactions with data collection, use, storage, and sharing.

Try it out!
Take a few minutes to write your answers individually and then talk about it among your group.

When do you use data in your daily life?

What kind of data?

What do you use it for?

Who collects data about you?

What kind of data?

What do they use it for?

How do you feel about that?

What is agricultural data?

Agricultural data is a broad category of data types about agricultural activities, including data about the land, data about crops and livestock, data about or generated by farm equipment.

Try it out!
Take turns completing this sentence out loud.
"Agricultural data is..."

There is no universal definition for agricultural data. *How does our description align with how you think of agricultural data?*

Examples of agricultural data at the farm level:

Fields: field size, location, crops planted

Soil: depth, texture, organic carbon, pH, density

Crops: species, genus, yield, price

Field work: type of work (seeding, plowing, harvest), labour

Expenses: date, type (equipment, fertilizer, fuel, machinery, seeds, pesticides, land), amount, association with crops

Sales: date; name of buyer/market; crop; amount sold (kg); revenue ($)

What other information or data categories are relevant to your work?

There are many other data categories and types that are relevant to agricultural activity. For example: data about weather, biodiversity, greenhouse gas emissions, as well as food security and nutrition.

Now that you can define agricultural data, take stock of your interactions.

Who collects agricultural data? For what purpose?

Do you collect any agricultural data yourself?

Where can you find publicly available agricultural data?

Is there data you want but don't know where to find?

What is the value of agricultural data? How do you use it?

What benefits can come from accessing and sharing agricultural data?

What concerns you about accessing and sharing agricultural data?

What is data governance?

Data does not exist in a vacuum. There are people, technologies, and systems involved in data collection, storage, use, and sharing. These are matters of data governance.

Data governance is another term without a universal definition.

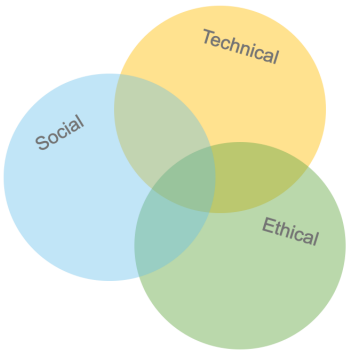
Try it out!
Either on your own or on a collective sheet or board, write assumptions and first impressions of this concept.

The Data Governance Institute uses the definition: "a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models which describe who can take what actions with what information, and when, under what circumstances, using what methods." [1]

Google Cloud defines data governance as "setting internal standards—data policies—that apply to how data is gathered, stored, processed, and disposed of [and] complying with external standards set by industry associations, government agencies, and other stakeholders." [2]

Thinking more broadly, data governance includes:

- **Technical and logistical** management of data within an organization, including practical challenges.
- **Social processes and relationships** between people and organizations who structure or are influenced by data collection, storage, use, sharing, etc.
- **Ethical considerations** of what information can and should be collected, by whom, shared with whom, and used for what purposes.



Let's explore each of these components of data governance in the agriculture sector.

Practical challenges

There are many technical dimensions of data governance. Consider the many tools and instruments involved in the life cycle of agricultural data, from data generation and collection to storage and processing, to analysis and visualization, and sharing.

Here are some examples of practical challenges we've come across in our work with farmers and others interested in using agricultural data:

[1] https://datagovernance.com/the-data-governance-basics/definitions-of-data-governance/ (Accessed February 1, 2024)

[2] https://cloud.google.com/learn/what-is-data-governance (Accessed February 1, 2024)

Reliable technology: Many farmers face technical difficulties for on-farm data collection. Data collection and management tools sometimes require internet connection, but rural farms may not have access to the internet in the fields.

Data variety: Agricultural data can include many different kinds of information, and not everyone collects or measures that information in the same way. For example, a farm could measure its cabbage yield by counting the heads or by weight. When comparing different farm operations, the inconsistency presents a challenge.

Data interoperability: There are many different ways of recording and storing agricultural data. A farm might have information on paper certification forms, data collected from a soil moisture sensor on their farm, and weather and climate data from a public database or application.

Long-term planning: Collecting consistent measurements over time on a farm and across farms can be beneficial, but it requires coordination. Planning is also needed to determine who will handle the steps of data management long-term.

Diversity of agricultural operations: Even within a sector, there is great diversity in farm practices for data collection and data management. For example, to learn more about the diverse ways that farmers are analyzing and sharing soil organic carbon data across British Columbia and over time, read about the BC ACARN and BC Living Lab in the BC Agricultural Data Protocols Workshop Proceedings.

Do you have other practical challenges in your governance of agricultural data?

Try it out!
You could draft up a SWOT analysis (strengths, weaknesses, opportunities, and threats) or GROW table (goal, reality, options, and will) to gain clarity on practical challenges for data governance in your projects and plans to resolve them.

Social processes

There are people involved in data governance. Even when using automated systems or artificial intelligence, there are people creating the systems and making decisions.

Let's map out the social aspects of data governance.

Consider everyone who can influence or be impacted by the data governance in your farm operation, organization, or project.

Who are the people and organizations involved?

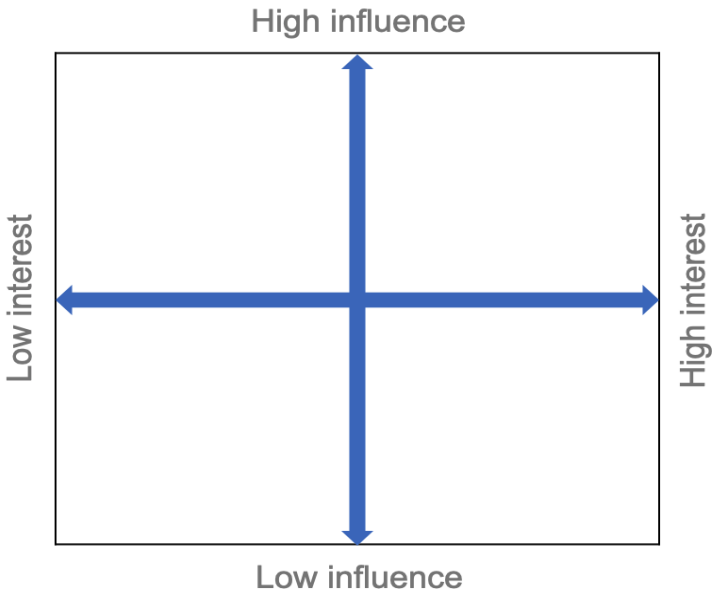
For agricultural data governance projects, here are some usual players: farmers, farm workers, sector/industry organizations, private sector, government, donors/funders, researchers.

While there are many people and organizations in your data governance list, they may not have the same level of interest or influence.

Place the listed people and organizations along the two axes in this diagram.

Try it out!
To make your list, answer the questions:

Who will be impacted?
Who is responsible for the project?
Who are you accountable to?
Who makes the decisions?
Who can support or obstruct the project?



Influence: *How much power or control do they have over the decision and processes?*

Interest: *How much are they affected by the project outcomes or process?*

You could also try this activity to map out people or organizations with different levels of resources or capacity.

Try it out!

On another page, recreate this diagram with the intersection of two arrows. Start by filling out the map individually and then take turns comparing the entries with your colleagues. Some additional questions for discussion:

Are "high interest" people or organizations who have "low influence"? Does the model need to be adjusted to include and empower those who will be most affected? How do those with high influence interact with those with low influence? Who needs to be kept informed or consulted? Who is responsible for engaging with each group?

Ethical considerations

Agricultural data governance can produce good and bad outcomes. One way to have a constructive discussion about ethics in data governance is to start with hopes and concerns.

What are your hopes and concerns about the ethical dimensions of agricultural data governance in your project or team?

What is your greatest hope or ambition for the process and outcome of data governance?

What is your greatest concern or fear about the process and outcome of data governance?

Who else needs to be involved or consulted in making decisions about ethical data governance?

Hopes	Concerns

Check your list of people and organizations from the last activity. What are their hopes and concerns? What do you all have in common? Where are their differences?

Another approach could be a "How might we…" exercise. Start with a problem or concern. Then rephrase it as a question that starts with "How might we…" followed by a broad statement about the positive desired outcome or goal.

> ***Try it out!***
> *Take a few minutes to write your answers individually and then talk about it among your group.*

Framing the problem: Make sure your problem is specific. You might need to ask yourself "why?" or "what is causing this?" a few times to get down the root.

Writing your question: Rephrase the problem into a question. A helpful "how might we" question will describe a positive outcome. The question should be broad enough that there are many possible solutions, while also being specific enough to stay connected to the original problem.

> Feeling stuck? Try this: *How might we _____ [action] for _____ [person, group, or organization] so that _____ [outcome]?*

Brainstorming responses: Challenge yourself and your team to be creative! Set aside judgment of what you could or should do; enjoy the freedom of what might be possible.

Example problem:	**Example "How might we…" question:**
I want access to soil data to analyze soil organic carbon levels across the province, but (other) farmers are not comfortable sharing this data.	How might we cultivate trust between those collecting and using agricultural data? How might we ensure and communicate to farmers that data is safe and secure? How might we make data sharing beneficial for all involved?
[your problem]	How might we…

To ensure that the agreements and processes of data governance balance risks and benefits ethically, you might use an existing framework.

What ethical principles are relevant to your use of agricultural data?

> ***Try it out!***
> *You could start by pairing up to come up with some ideas and then list all possible responses in one place. People often enjoy writing responses on stickers or note cards so that they can be sorted, organized, and prioritized as a group.*

Two common data governance frameworks with relevance to agriculture are:

FAIR Principles

Guidelines for "good data management," which improve the discovery and (re)use of data by humans and computers

Findable: Data (or any digital object), *metadata* (i.e., information about that digital object), and infrastructure (e.g., data registered or indexed in a searchable resource) should be easy to find for both humans and computers.

Accessible: Once found, there should be clear means of accessing the data, metadata, or infrastructure of interest.

Interoperable: Data should work in conjunction with applications or workflows for analysis, storage, and processing.

CARE Principles

Principles for data governance to support Indigenous Data Sovereignty and self-determination

Collective Benefits: Indigenous Peoples must benefit from the data and its use(s), as defined by Indigenous Peoples.

Authority to Control: Indigenous Peoples and governing bodies determine how Indigenous Peoples[3] are represented and identified within/by data; Indigenous Peoples' rights and interests in Indigenous data must be recognised.

Responsibility: Those working with Indigenous data are accountable to Indigenous Peoples and have a responsibility to be transparent about data use.

[3] Also applies to Indigenous lands, territories, resources, and knowledges.

Reusable: Metadata and data should be well-described so that they can be (re)used, replicated, or combined in different settings.

See: https://www.go-fair.org/

Ethics: Indigenous Peoples' rights, their current and future wellbeing, and justice should be prioritized at all stages. Minimize harm; maximize benefit.

See: https://www.gida-global.org/care

The Global Indigenous Data Alliance created the CARE Principles for Indigenous Data Governance. There are cases when agricultural projects included Indigenous data or data about Indigenous Peoples, lands, territories, resources, and knowledges.

The CARE Principles were designed to balance and complement the FAIR Principles. But they are not necessarily applied together. There are times when prioritizing open access and reuse of Indigenous data can be contrary to Indigenous self-determination.

There are similar trade-offs between increasing access to data and protecting the data rights and data sovereignty of the data subjects when it comes to agricultural data. Ethical data governance in agriculture will require attention to these trade-offs and trust between the people and organizations involved.

Resources to learn more

To learn more about ethical data governance in agriculture, including an introduction to Indigenous data governance, see the ***Workshop Series Summary Report*** in our Toolkit for Ethical Data Governance in Agriculture.

To learn more about the legal mechanisms of data ownership, data access, and data governance in agriculture, start with the short "Analysis Brief" or see the full report. The researchers also propose a new data governance approach for benefit sharing.

de Beer, Jeremy, Chidi Oguamanam, and Éliane Ubalijoro. 2023. "Analysis Brief – Ownership, Control, and Governance of the Benefits of Data for Food and Agriculture." *Future Earth Canada Hub*. https://sustainabilitydigitalage.org/featured/analysis-brief-ownership-control-and-governance-of-the-benefits-of-data-for-food-and-agriculture/.

de Beer, Jeremy, Chidi Oguamanam, and Éliane Ubalijoro. 2022. "Ownership, Control, and Governance of the Benefits of Data for Food and Agriculture: A Conceptual Analysis and Strategic Framework for Governance." Ottawa. https://doi.org/https://doi.org/10.5281/zenodo.7054790.

For a summary of data governance concerns from farmers around the world, read this OECD report. The report evaluates how existing policy frameworks and best practices address farmer concerns, and where they fall short.

Jouanjean, Marie-Agnes, Francesca Casalini, Leanne Wiseman, and Emily Gray. 2020. "Issues Around Data Governance in the Digital Transformation of Agriculture: The Farmers' Perspective." *OECD Food, Agriculture and Fisheries Papers*. http://dx.doi.org/10.1787/53ecf2ab-en.

Hear about agricultural data governance directly from farmers in an international food sovereignty organization. They include questions to prompt reflection and dialogue.

Nyéléni. 2019. "The Digitalization of Food." *Nyéléni Newsletter - Number 37*. https://nyeleni.org/en/category/newsletters-nyeleni-in-english/newsletter-no-37-the-digitalization-of-the-food-system/. [Also available in French and Spanish]

BC ACARN hosted a two-day workshop in 2023 to discuss agricultural data governance challenges with the BC Living Labs network. See summary and video recordings here:

BC ACARN. 2023. "Proceedings of the BC Agricultural Data Protocols Workshop." *British Columbia Agricultural Climate Action Research Network*. https://www.bcacarn.ca/resources/data-protocols-workshop/

ABOUT THIS DOCUMENT

This is a resource to learn about agricultural data governance through reflection and discussion. Follow or adapt the guide to use with your team.

This document is part of the **Toolkit for Ethical Data Governance in Agriculture**. You might also like the **Glossary**. Or watch the recordings from our **Workshop Series** as a primer before using the **Discussion Guide**.

Dr. Sarah-Louise Ruder led the creation of this discussion guide. Shauna MacKinnon, Dr. Hannah Wittman, and the project advisory group provided feedback and suggestions. Some "Try it Out!" activities draw on Workshop Tactics by Pip Decks (2023).

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