Cropping systems are a function of complex world structures that have historically had, and continue to have, power imbalances embedded within them. The 12 principles of data feminism were developed to aid in identifying, examining, and addressing power inequities related to data generation, interpretation, and dissemination. We believe these principles provide an accessible, and untapped framework for helping agricultural researchers understand, acknowledge, and address power inequities. We posit that applying these principles will concomitantly foster creativity, leading to better outcomes for sustainable agriculture as a whole.

Sent to npj:

*Refined:*

*Cropping systems are a function of complex world structures that have historically had, and continue to have, power imbalances embedded within them. The seven principles of data feminism were developed by data scientists to aid in identifying, examining, and addressing power inequities related to data generation, interpretation, and dissemination. We believe these principles provide an accessible, but under utilized framework for helping agricultural researchers understand, acknowledge, and address power inequities. We posit that applying these principles concomitantly fosters creativity, leading to better outcomes for sustainable agriculture as a whole. In this paper we present the seven principles and provide examples of how application of select principles led to a creative and more impactful outcome in cropping systems work. Many researchers already apply these principles in their work, but we hope that providing this explicit framework in an agricultural context will make the application of those principles more intentional, visible, and ubiquitous.*

*Gibber gabber*

Cropping systems reflect cultural, social, political, economic, historical, and ecological forces.

Agriculture, like other sectors, has had power imbalances embedded since its inception.

Sustainable agriculture will require

A mix of these forces have driven a reduction in cropping system diversity on a global level, despite strong scientific evidence diversity offers blha blah. We believe in order to be effective, cropping system research itself would benefit from an intentional shift in research frameworks. The principles of data feminism provide a potentially helpful guide for this shift. The principles were developed to help identify, examine, and address power inequeties related to data generation, interpretation, and dissemination. Here we discuss the potential application, and potential benefits reaped, of each principle in the context of cropping system research, specifically with regards to cropping system diversity.

Crop choices/cropping systems reflect a complex web of human and ecological systems; they are not purely a physical science research area

1. Examine power (Andrea's work with women landowners?)

2. Challenge power (Andrea's work with women landowners?)

3. Elevate emotion and embodiment (David's weed work?)

4. Rethink binaries and hierarchies (Castellano's nitrogen project?)

5. Embrace pluralism and experiential ways of knowing (Stefan workable field days?)

6. Consider context (Cameron's rice work?)

7. Make labor visible

On farm research has always been a stalwart of equitable research practices. However measurements taken in on-farm research settings are still often constrained to XX data. Experiential data is important!!

Andrea’s paper (<https://www.frontiersin.org/articles/10.3389/fsufs.2023.1064251/full>) on how cover crop biomass is not the same on researcher and farmer’s fields, Annabelle’s about fungicides (some things need larger plots). Seig Snapp’s paper? I’m sure there are others, David may be able to help.

Decision book – see a man. Librarian or farmer? Kaneman puzzle.

judgments and choices often deviate substantially from the predictions of normative statistical and economic models

Scientists are imperfect. Part of data feminism is embracing this. There are two extremes. Letting the ‘data speak for themselves’, and relying on instincts, judgement, personal experience. Outcomes from both extremes are bad. Examples: the ‘increase’ in women farmers, the feeling that steve is a farmer. Data tells us steve is a librarian, but how was the data informing that conclusion collected? Is it based on nationally collected data that has a binary choice of gender and allows for only one farm owner?

Data feminism helps us, wherever we sit on the spectrum, to move towards the middle.

Color blind figures – not specific to agriculture but is rampant.

Agricultural research is not neutral. It has been conducted to serve the goals of individualism, efficiency, and profit.

Positionality in agriculture – not fully embraced. How it impacts farmer interviews (easy on the eyes), international researchers and their work (good you’re one of us) . It’s often something acknowledged by folks representing some type of minority. Forcing everyone to ignore this is detrimental. Example?

The importance and acknowledgement of positionality in agricultural fieldwork settings has been discussed (CITE)

Field work,

1. Examine power

Moving from general to specific

Define the cropping system you are working in (geographically, culturally, etc.) Historical power inequities, impacts still visible in the current systems.

Examine your own positionality.

Ag in it’s current state is a function of a legacy of power inequities. Land ownership, access to credit, access to resources, Land Grant establishment and their goals, integration of cultures, too much that I can’t talk about.

Who owns land? Who manages the land? Who buys things to support production? Who works the land? Who buys the product? Who sells the product?

These aren’t problems you have to solve in your research. But you should be aware of how your research fits into these structures. Are you investigating how a new tillage practice impacts crop yields? Who would be making the decision to adopt that practice? Who would in charge of implementing the practice? Maybe this is more ‘consider context’??

What was the context under which this data was generated?

* Were farmers compensated for generating this data?
  + If so, how?
  + If not, was there an agreement

Who is the analysis of this data intended to inform?

* Who are the decision makers?
* Is anyone being disempowered in the decision making process?

Are you making someone do something?

Is there a way you can yield some part of the decision/research design to them?

1. Challenge power – analyze, teach

What would a more fair exchange look like? If ‘knowledge’ or ‘experience’ is the exchange, how is that being formalized and respected? E.g. personalized summaries of findings, exit interview, etc.

Is anyone being left out of the analysis process?

Is anyone not getting access to the results of the analyses?

Best practices for farmer collaboration?

Encouraging shared risk taking, information transfer, and collaborative business management practices were cited as high probability approaches to agricultural success.

1. Elevate emotion and embodiment, challenge the rational

There is no such thing as a neutral figure, all figures are rhetoric. Embrace your framing, don’t hide it.

Is this the chapter on figure captions??

Talk in the positive, it’s a good habit. Say what you mean. Corn yields in cover cropped plots were lower vs corn yields in plots without cover crops were higher.

Can you present the data in a way that captures actual experiences?

Need help thinking of an example. For example, number of field passes, or hours spent in a tractor.

1. Rethink binaries and hierarchies - counting

Organic versus conventional. No-till. Family or corporation owned. Male versus female operated.

How do you describe treatments? What are they representing? How do you decide what is representative?

How are genders listed even?! Male, female. Why not alphabetical order?

1. Embrace pluralism and experiential ways of knowing - ninjas

How are recommendations generated? How should they be? If in cooperation with farmers, see #1-2.

Nutrient recommendations, how are they generated? How is ‘representative’ management decided?

N trials – X% of farmers apply manure. None of the N trials in the state did.

1. Consider context

Don’t be a data ninja. It’s tempting, lots of people do it, it’s a bad idea.

https://www.jstor.org/stable/27098549

https://asmith.ucdavis.edu/news/do-satellites-see-double-crops

1. Make labor visible – show your work

Hmmm. Who was involved in collecting this data?

Julie’s “who wants to work with reseachers?” Researchers sometimes have an inflated sense of the value they add to a farmer’s experience. Coordination, organizational efforts, mental work.