

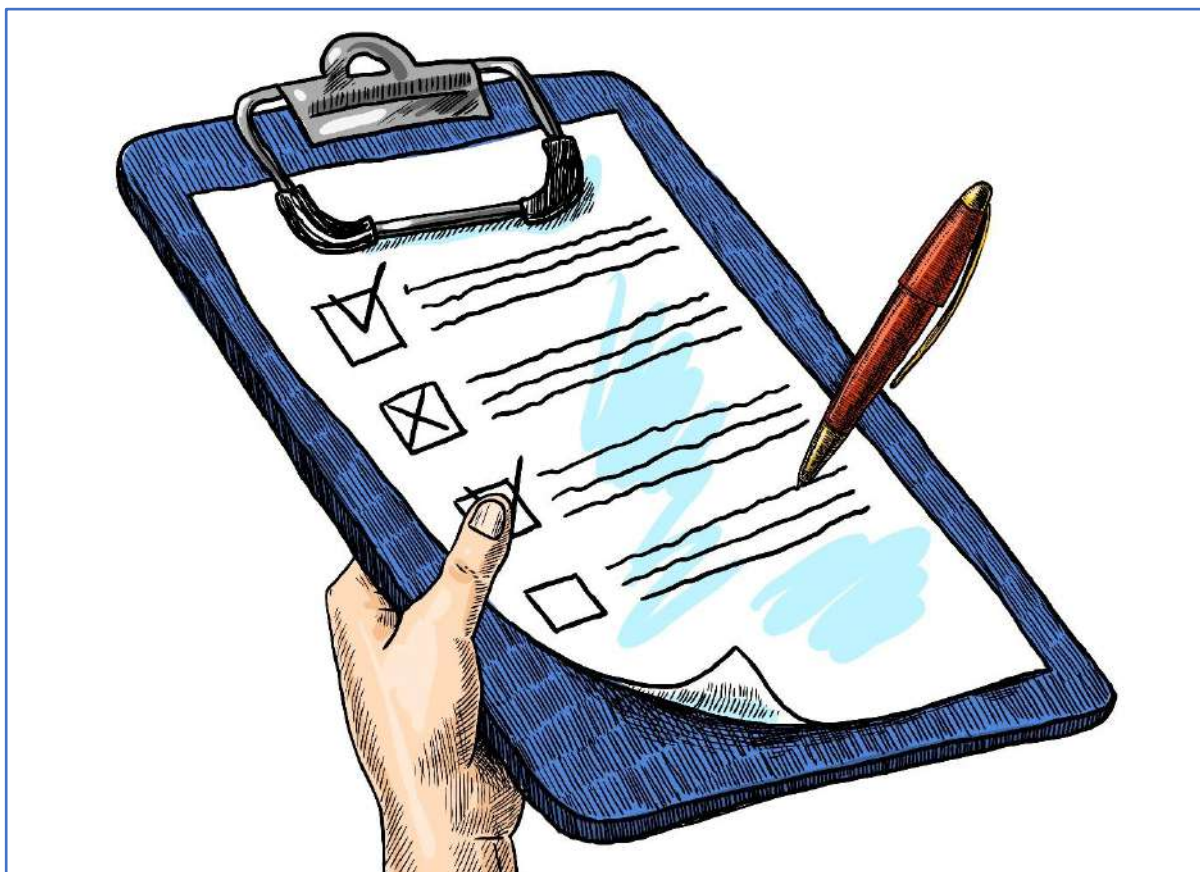
Are We Measuring the Right Things in Agricultural Extension?



In this blog, Anindita Bhattacharya reflects on her experience working with farmers in the Sundarbans, challenges conventional approaches, and offers new perspectives on measuring agricultural extension success.

CONTEXT

During my research on agricultural resilience among small and vulnerable farming households in the Sundarbans, I explored how rural families cope with frequent cyclones, flooding, and livelihood challenges. What I discovered challenged my earlier understanding of agricultural innovation and revealed the gap between my theoretical assumptions and the realities of farmers' lives.



I observed that farmers were already practising resilience by developing their own strategies to cope with climate risks. [Many households managed farming activities around their homes by combining crops, livestock, poultry, and fish cultivation, and by recycling farm and household resources.](#) These were not simply separate farming activities. They reflected how farmers used available resources and adjusted their farming systems as environmental conditions changed. Together, these activities supported their food security, diversified

income, and reduced risk. What initially appeared to be a collection of separate practices was, in fact, a way to spread risk and maintain livelihoods under uncertain conditions. These observations helped me understand that resilience was already embedded in many farmers' everyday practices. [Although these practices were rarely recognised as formal agricultural "technologies," they relied on diversity and local adaptation rather than single solutions to address climate risks.](#)

This experience raised an important question for me: Were we introducing resilience to farmers, or were we learning from the resilience they had already built?

More importantly, it made me question how we define and measure the success of agricultural extension. If farmers were already developing ways to manage risk, adapt technologies, and make decisions under uncertainty, then simply measuring whether they adopted a recommended practice could not capture the full impact of extension.

This reflection shaped our research direction. We focused on strengthening farmers' existing farming practices rather than simply introducing new technologies. We aimed to understand how scientific recommendations could complement farmers' own experiences and decision-making.

FARMERS DO NOT ADOPT TECHNOLOGIES, THEY ADAPT THEM

As I spent more time in the field, I met many farmers whose farming systems did not exactly match the models we had visualised. Yet, their farms were thriving. Although they adopted improved practices, they adapted them to their own realities by combining scientific knowledge, local experience, available resources, and their own understanding of the environment. [For example, some farmers adjusted the recommended arrangement and combination of crops around their homestead land according to available space and water, as well as their family's needs.](#) In contrast, [others practised sack gardening during floods to grow vegetables.](#) Rather than applying the recommendation exactly, they improvised it to fit their own farming system and priorities. The same pattern was visible in how some farmers responded to excess water. [They experimented with floating cultivation or used ponds more for fish production.](#) These choices involved more than adopting a particular technology.

Farmers had to assess their land and water resources, consider the risks they faced, and decide how different activities could work together within their household farming system. What initially appeared to be incomplete adoption from an external perspective was actually [a form of local innovation, where farmers adapted agricultural technologies and practices to local contexts, playing a key role in testing, modifying, and improving them.](#)

[The farmers were not rejecting technology; they were adapting it.](#) This reflects a growing recognition that farmers' engagement with new practices is shaped by local conditions, capacities, and long-term needs rather than simply adopting them as recommended. They continuously observe, experiment, and redesign practices as circumstances change. Working with these farmers fundamentally changed my thoughts. They made me realise that when we recommend a technology, we usually focus on technical performance, but farmers evaluate it through a much broader lens. Instead of asking whether a technology worked, they asked:

- Can our family manage this practice?
- Does it fit with the labour we have available?
- Will it reduce our risks?
- Does it suit our land, water availability, and financial situation?

These questions ultimately determined whether a recommendation became part of their farming system. Watching farmers make these decisions forced me to reconsider an assumption that often underpins agricultural extension. We often judge success by whether farmers adopt or follow the recommendation, but what I saw in the field suggested something deeper was happening. This led me to another important question that I could not ignore: Are we measuring whether farmers follow our recommendations, or whether they develop the ability to innovate and make better decisions independently?

THE QUESTION I COULDN'T IGNORE

For decades, [extension performance has often been assessed using input, output and performance indicators](#), such as the number of field visits, meetings, demonstrations, farmers trained, farmers reached, and adoption of recommended practices. These indicators remain important for assessing programme implementation and documenting what extension programmes deliver. [World Bank also identifies such indicators as measures commonly used to monitor the effectiveness of agricultural extension](#). During our research, we also documented measurable outcomes to understand programme implementation. The findings were encouraging and showed positive changes in household income, food security, and other livelihood outcomes among participating households.

However, as I reflected on these results, I realised that they revealed what had improved without fully explaining what had truly changed. Increased income or improved food security could show immediate outcomes, but did they indicate whether farmers had become more resilient, more confident, and better prepared to deal with future uncertainty? [Research on agricultural resilience also suggests that these outcomes alone may not fully capture farmers' capacity to prepare for shocks, absorb disruptions, adapt their practices, and respond to changing conditions](#).

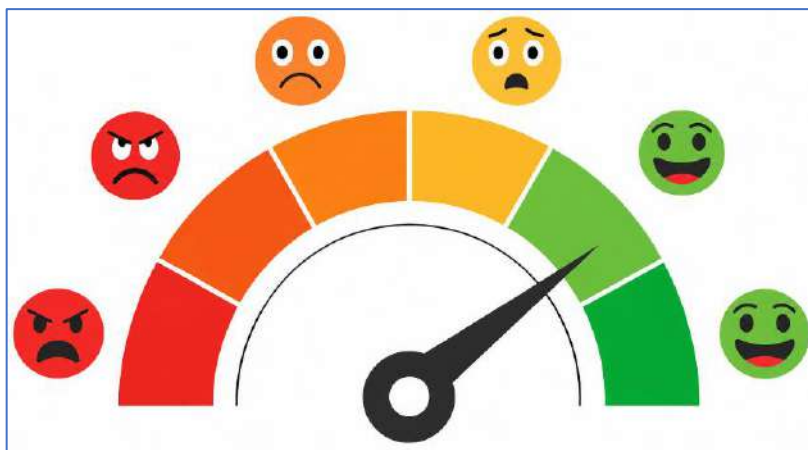
The question was much harder to answer, but it brought me closer to the real purpose of agricultural extension. I began to see evaluation differently. Indicators can tell us what we delivered and what immediate changes occurred. Still, they do not always reveal whether farmers have developed the capacity to adapt, innovate, experiment, and make decisions independently. [Some research similarly distinguishes between changes in farming practices and bigger changes in farmers' capacities, including their ability to learn, make decisions, and innovate](#).

This reflection led me to wonder whether we are measuring the right outcomes. If [the ultimate goal of extension is not only to improve immediate livelihood outcomes, but also to strengthen farmers' capacity to adapt, innovate, and respond to uncertainty](#), should its success be evaluated differently? I believe it should. [This requires including outcomes related to risk advisory and climate adaptation, soil, water and pest management, reductions in](#)

cultivation costs, enterprise and market intelligence, inclusion and empowerment, and the integration of farmer innovation and local knowledge.

THE CHANGING ROLE OF EXTENSION IN THE DIGITAL AND AI ERA

The need to rethink how we assess extension has become even more relevant as agricultural extension continues to evolve. Today, farmers can access enormous amounts of agricultural information through smartphones, social media, digital platforms, and mobile applications. Artificial

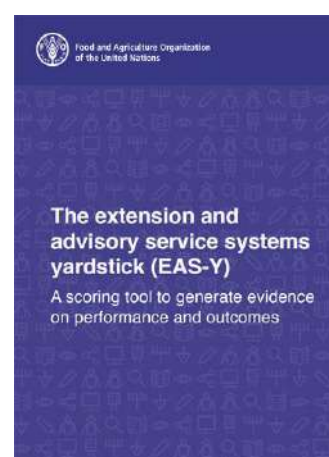


intelligence (AI) is adding another dimension by providing instant answers to farming questions. This creates great opportunities; however, information alone does not guarantee better decisions. A recommendation suitable for one location may fail in another because [farming decisions depend on local environmental conditions, including soil characteristics and resource availability](#).

In this environment, the future role of extension will not be limited to simply providing information, because it is already abundant. Evidence from digital advisory services illustrates this challenge. [Personalised smartphone-based crop advisories do not immediately increase farmers' adoption of recommended practices, although they often help reduce risks](#). This suggests that more information does not necessarily lead to better decisions. Farmers still need to interpret information in relation to their own land, resources, risks and experience. So, the [greater challenge therefore is helping farmers interpret information, evaluate options, combine scientific knowledge with local experience, and make decisions suited to their circumstances](#).

WHAT WE SHOULD MEASURE

If agriculture is becoming more uncertain because of climate change, market volatility, and rapid technological advances, the way we evaluate extension must also evolve. This does not mean replacing traditional indicators, which remain important for understanding what an extension programme delivers and the changes it achieves. Instead, they need to be complemented by measures that capture a deeper question: what can farmers do with what they learn? [In this regard, the Extension and Advisory Systems Yardstick \(or EAS-Y\) tool developed by FAO offers a useful starting point because it considers both performance and outcomes, including changes in farmers' skills, behaviour and livelihoods, rather than focusing only on activities and outputs.](#)



Building on this broader perspective, extension evaluation can ask a series of questions that focus more directly on farmers' capabilities and longer-term outcomes.

For example:

1. Are farmers becoming more resilient?

[Extension success should be reflected in whether farming households can better cope with climate shocks, market uncertainties, and unexpected disruptions.](#) This means looking beyond income changes alone and understanding whether families have more diverse livelihoods and greater ability to recover after disruptions such as floods or cyclones.

2. Are farmers continuing to use and adapt knowledge after project support ends?

The real impact of extension is not whether farmers adopt a practice during a project period. It is whether they continue using, modifying, and improving it according to their own circumstances after external support is withdrawn. Follow-up visits, farmer discussions, and long-term assessments can help identify whether knowledge has become part of farmers' own decision-making systems.

3. Are women and youth becoming active participants in farm decisions?

[Resilient farming systems depend on inclusive decision-making.](#) Extension outcomes should therefore consider whether women and young people are becoming more involved in crop choices, resource management, farm investments, and innovation. Household discussions and surveys can reveal participation changes that are often missed.

4. Are farmers developing the ability to experiment and innovate?

Farmers are not simply users of technologies; they continuously test, modify, and improve practices based on their experiences. [Extension success should capture these farmer-led adaptations by documenting local innovations, problem-solving approaches, and knowledge exchange among farming communities.](#)

5. Are farmers more confident in managing uncertainty and making decisions?

One of the most important outcomes of extension is whether farmers feel capable of evaluating information, choosing suitable options, and adjusting their practices when conditions change. This can be measured by assessing whether they can explain why they choose a particular practice, compare options, assess risks, and modify recommendations to fit their own conditions. A farmer who can make informed decisions independently demonstrates a deeper extension impact than one who follows a recommendation.

These outcomes are harder to measure than conventional indicators, but they provide a more meaningful understanding of extension impact. Extension should not aim to create identical farms, achieve maximum adoption rates, or create long-term dependence on external support. Short-term project outputs such as the number of farmers trained, technologies demonstrated, or activities completed are important for understanding what a programme delivered during its implementation. But these outputs are only the first level of



change. The next question is whether they lead to meaningful outcomes, such as changes in farming practices, income, food security, or risk management. Beyond these outcomes lies a deeper level of change: whether farmers develop lasting capabilities to interpret knowledge, assess risks, experiment with new options, adapt practices, solve problems, and make informed decisions as conditions change. The real measure of extension success lies beyond what happens during a project. It is about whether the changes farmers make through extension support translate into lasting abilities to adapt, experiment, solve problems, and make informed decisions independently long after project support ends.

CONCLUSION

Looking back on my years of working with farmers, I may not remember every number from the research, but I clearly remember the conversations, observations and lessons that changed how I understood farming and agricultural extension. What I remember most is the lesson the farmers taught me: the value of agricultural extension.

The farmers who changed my perspective were successful not because they followed every recommendation exactly. They were successful because they built farming systems that reflected their environment, resources, priorities, and aspirations. Perhaps this is the real purpose of agricultural extension. In a world facing climate uncertainty, rapid digital transformation, and continuous technological change, *the true impact of extension should not be measured only by how much information we deliver or what farmers receive from us, but by what they can create with what they learn. Ultimately, the purpose of extension is not simply to promote the adoption of particular practices, but to strengthen farmers' ability to learn, adapt, and respond effectively to changing circumstances over the long term.*

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