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Implementing Participatory Action Research in Agricultural Contexts[1]

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Abstract

This publication provides Extension professionals with practical guidance for implementing participatory action research (PAR) in agricultural contexts. As the fourth installment in the Ask IFAS series on PAR, it focuses on the transition from planning to action, offering strategies to launch participatory projects, collect data collaboratively, navigate group dynamics, and sustain engagement during the implementation phase. Emphasizing the importance of balancing scientific rigor with community relevance, the article highlights approaches to adaptive planning, inclusive facilitation, and participatory reflection. Real-world examples, including a heat illness prevention initiative and farmer-led trials in Malawi, demonstrate how responsive research design can strengthen both outcomes and trust. This resource is designed to support Extension educators in applying PAR principles to real-world agricultural challenges, ultimately fostering co-learning, shared ownership, and lasting change.

Introduction

Participatory action research (PAR) is more than a research methodology. It is a collaborative and iterative process grounded in equity, co-learning, and social transformation (Colmenares, 2012). By design, PAR engages stakeholders to identify problems, design studies, implement interventions, collect and analyze data, and interpret and apply results. In agricultural contexts, where knowledge systems are local, dynamic, and shaped by lived experience, PAR offers a responsive and democratic alternative to conventional or traditional research approaches (Fals Borda & Brandão, 1986).

While much attention is often given to the design and planning phases of PAR, the implementation phase is where plans are put into motion and the values of participation, flexibility, and shared ownership are tested in real-world conditions. The implementation stage requires Extension professionals to move from facilitation to coordination, mobilize resources, support data collection, navigate shifting dynamics, and maintain communication across various partners. It is also the phase where practical tensions between scientific rigor and community responsiveness are most likely to surface (Wallerstein & Duran, 2010; Patton, 2010).

Agricultural communities, shaped by environmental and societal uncertainties such as market volatility, labor pressures, and policy changes, demand research approaches that are not only evidence-based but also adaptive and deeply rooted in place (Gonsalves, 2005; Palumbo & Vacca, 2024). Traditional top-down evaluation methods often fail to capture the complexity of these systems or build the trust needed for long-term impact (Jagosh et al., 2012; Minkler & Wallerstein, 2008). PAR, by contrast, invites participants to become active co-creators of knowledge and practice, fostering solutions that are both scientifically sound and socially grounded.

This article is designed to support Extension professionals during the critical implementation phase of PAR in agriculture. Building on earlier steps, such as stakeholder engagement, issue identification, and co-design, it provides practical strategies for coordinating participatory data collection, managing group dynamics, adapting to emerging challenges, and sustaining momentum. Drawing from real-world examples, the article highlights how responsiveness and methodological rigor can coexist when rooted in mutual respect, transparency, and ongoing reflection. As agriculture faces increasingly urgent challenges, from climate adaptation to rural health, PAR offers a path to innovation and more just and resilient systems (Kindon, Pain, & Kesby, 2007; Snapp, DeDecker, & Davis, 2019).

Moving from Planning to Action

Once a collaborative research plan has been co-developed, the project transitions from visioning to doing. The shift is not merely procedural; it is relational and emotional. Participants who were involved in conceptual discussions must now engage in physical implementation, install systems, change practices, or test new approaches in real-world conditions. At this juncture, it is vital for the PAR team to revisit agreements, expectations, and responsibilities. Extension professionals should facilitate review sessions that include the following.

- **Clarifying roles and responsibilities**: Who is leading specific activities? Who is responsible for monitoring progress?
- **Timeline confirmation**: Are all parties aligned on when key milestones will be achieved?
- **Resource allocation**: Have necessary materials, tools, and training been distributed?
- **Expectations for communication**: How will feedback be shared and decisions made?

Revisiting implementation protocols and expectations at the outset of action helps reduce confusion, anticipate potential barriers, and strengthen accountability among participants. It also provides a valuable opportunity to reaffirm the group's shared values and collective motivation. Celebrating the transition from planning to action through a formal launch meeting, kickoff event, or group field visit can energize participants and reinforce a sense of shared purpose and ownership. As Chevalier and Buckles (2019) noted, implementation is not merely the next procedural step; rather, it represents "a relational re-commitment to the values and purpose that brought the group together" (p. 175). A well-designed launch meeting sets the tone for the implementation phase. The session should create space to do the following.

- Review project goals and co-developed protocols.
- Identify and resolve logistical gaps.
- Engage in team-building exercises to strengthen group cohesion.
- Discuss anticipated challenges and contingency plans.
- Celebrate collaborative efforts thus far.

This is also a time to introduce any new participants, such as farmworkers or community partners who may not have been part of earlier stages. Ensuring that everyone feels welcomed, heard, and oriented is critical for maintaining inclusive participation. Despite detailed plans, agricultural systems are inherently dynamic. Weather, pests, labor availability, and market conditions can quickly alter priorities. Flexibility is not a weakness in PAR; it is a necessary feature. Adaptive implementation means that project timelines, data collection methods, or even goals may evolve based on emergent realities. Extension professionals must embrace uncertainty not as failure, but as an opportunity for deeper learning and co-creation. As Wallerstein and Duran (2010) asserted, adaptive processes do not compromise scientific validity; rather, they strengthen it by responding to real-life complexity.

Participatory Data Collection in Agricultural Settings

PAR fundamentally reconfigures how data is conceptualized, collected, and interpreted. Rather than framing community members solely as sources of data, PAR views them as analysts, knowledge holders, and co-educators. This collaborative data process is particularly powerful in agricultural settings, where farmers and farmworkers possess deep, practice-based insights that can enhance both research quality and community impact. Participatory data collection should be:

- **Accessible**: Materials and processes must align with local literacy levels, technological access, and languages.
- **Relevant**: Indicators should reflect issues that matter to participants and their livelihoods.
- **Empowering**: The process should deepen participants' capacity to interpret and act on their own data.

Participatory tools such as transect walks, seasonal calendars, photo documentation, farm diaries, and oral histories can be adapted to fit diverse agroecological zones (Kindon et al., 2007). For instance, rural farmers in Kenya used yield sketch maps to document spatial patterns in maize productivity, which later informed local water-use innovations (Snapp et al., 2019).

Technology can support real-time data collection and sharing. Mobile apps, digital logbooks, GPS-enabled tools, and even WhatsApp groups have been used in PAR to facilitate monitoring and feedback loops. For example, in a participatory pest monitoring project in Honduras, farmers used SMS messages to report crop damage, which enabled researchers to co-develop timely interventions (Skinkis, 2019). However, technology should not replace face-to-face interaction or local interpretation. It must be introduced with care, training, and a commitment to equity in access. Power dynamics could shape how data is collected, owned, and used. Thus, it is crucial to clarify:

- **Data ownership**: Ownership of the data, and if participants have copies of the data.
- **Consent and confidentiality**: Making sure participants are informed about how data will be shared or published.
- **Use of findings**: Clarification if the community will benefit from the findings, and how.

Transparent agreements on these issues prevent extractive research and foster mutual accountability (Minkler & Wallerstein, 2008). Joint data interpretation workshops can also be powerful opportunities for communities to make sense of findings and generate action plans.

Facilitating Group Dynamics and Communication

As actions unfold during a PAR project, Extension professionals play a critical role to maintain strong communication and cohesion across the team. Implementation often introduces new challenges, moments of success, or even conflict, all of which can influence group dynamics. To navigate these shifts

effectively, facilitation must be intentional and responsive. This includes holding regular check-ins that create space for honest feedback and adaptation, ensuring that all stakeholder groups have equal opportunities to participate in discussions and decisions. Extension professionals should also remain attentive to signs of burnout, exclusion, or role confusion among participants, as these issues can erode trust and momentum. Establishing clear mechanisms for ongoing documentation, such as meeting notes, shared logs, or decision trackers, helps the team reflect on progress, clarify next steps, and retain institutional memory throughout the implementation phase (Wallerstein & Duran, 2010).

In practice, this might mean hosting monthly reflection meetings, maintaining a shared digital folder for field notes and photos, or assigning rotating "process observers" who note group dynamics. These facilitation strategies are consistent with best practices in community-based participatory research, which emphasize adaptability, mutual accountability, and sustained engagement (Israel et al., 2005). Extension professionals should stay attuned to changes in energy, commitment, or direction, as these signals often precede turning points in the project.

The success of PAR depends on sound methods and the health of the group process. Agricultural PAR projects often bring together diverse stakeholders, farmers, Extension agents, migrant laborers, researchers, cooperatives, and advocacy groups, each with different experiences, identities, and power. Effective facilitation ensures that all voices are heard and that conflict, when it arises, is addressed constructively. Some strategies for managing group dynamics include the following.

- **Establish ground rules**: Set shared norms for communication, listening, and respect early on.
- **Use inclusive facilitation techniques**: Examples include round-robin discussions, small group breakouts, anonymous suggestion boxes, and language interpretation and translation services.
- **Acknowledge and name power differences**: Creating space to discuss class, race, gender, and institutional privilege is essential.
- **Assign rotating roles**: Include roles such as timekeeper, process observer, or summarizer to distribute responsibility.
- **Build in reflection time**: Regular check-ins allow the group to adjust, celebrate progress, and troubleshoot challenges (Chevalier & Buckles, 2019).

According to Franz and Townson (2008), Extension professionals often act as both technical advisors and group facilitators. This dual role requires attentiveness to process, not just outcomes.

Real-World Examples

Case Study 1

A well-documented example of PAR in agricultural settings is presented by Runkle et al. (2014), who described a UF/IFAS Extension-led initiative aimed at preventing heat-related illness among Hispanic female farmworkers in central Florida. The project employed a PAR approach to co-develop and implement culturally and contextually appropriate interventions, including shaded rest stations, mobile hydration kits, and tailored heat safety education. Farm managers, crew leaders, and workers were actively involved in the design and implementation process, with regular opportunities for feedback through weekly check-ins, anonymous surveys, and oral debriefs. When initial findings revealed low usage of rest stations due to supervisory pressure to maintain productivity, the team facilitated participatory reflection sessions. These discussions enabled workers to voice concerns and led to adjustments in field protocols and targeted supervisor training. The participatory structure of the project allowed barriers to be noted and addressed collaboratively, resulting in greater trust, responsiveness, and overall impact (Runkle et al., 2014).

Case Study 2

In Malawi, a series of farmer-led trials focused on improving soil fertility through composting, intercropping, and reduced tillage. Rather than externally defining success metrics, the project let farmers establish their own criteria (e.g., taste of the produce, labor effort, moisture retention). Some of the participatory tools used included farmer field schools, video diaries, and community ranking sessions. Women prioritized moisture retention and ease of weeding, while men emphasized yield size. Farmers helped redefine trial parameters midseason to reflect changing rainfall patterns. The project revealed how differing values and microclimates influence practice adoption. It also showed that participatory trials improve both ecological outcomes and learning capacity (Snapp et al., 2019).

Balancing Rigor and Responsiveness

Balancing methodological rigor with responsiveness is a defining characteristic of high-quality PAR. Rather than rigid adherence to predetermined plans, PAR emphasizes adaptability grounded in transparency, reflexivity, and systematic documentation (Reason & Bradbury, 2008; Patton, 2010). In this approach, rigor is not compromised by change; it is maintained through clear records of decisions, critical engagement with evolving conditions, and inclusive interpretation of results. Several key strategies can help achieve this balance. Using adaptive protocols that allow for the substitution of data points or rescheduling of activities ensures that research can

proceed even when disruptions arise (Wallerstein & Duran, 2010). Maintaining a decision log that captures what changes were made, when, and why provides a transparent record of the adaptive process and supports accountability (Patton, 2010). Importantly, involving participants in revising methods and interpreting unexpected outcomes reinforces the scientific integrity of the research and strengthens shared ownership and engagement (Minkler & Wallerstein, 2008). Best practices include documenting when and how adaptations occur, explicitly reflecting on their implications for data interpretation, and using triangulation across multiple sources, such as observations, interviews, and field notes, to strengthen the credibility of findings.

Real-world examples illustrate how these principles play out in practice. In a community garden PAR project in California, a heat wave disrupted planned planting timelines. Rather than view this event as a breakdown of fidelity, researchers collaborated with participants to adjust schedules and used the disruption to explore how climate variability influences food system resilience (London et al., 2013). Likewise, in a UF/IFAS Extension-led PAR initiative focused on heat illness prevention among Hispanic female farmworkers in central Florida, emergent concerns prompted midseason changes to the evaluation protocol (Runkle et al., 2014). Survey tools were adapted to capture evolving risks, and oral storytelling sessions were added to gather richer, culturally relevant insights. These modifications, rather than weakening the study, deepened community engagement and improved the relevance and quality of findings. Together, these cases demonstrate that methodological rigor in PAR is sustained not by resisting change but by co-constructing knowledge through dialogue, flexibility, and responsiveness to real-world complexity.

Supporting Group Learning during Implementation

Implementation is not only about execution; it is an ongoing cycle of learning. In PAR, structured reflection opportunities help groups assess what is working, adapt to new information, and stay aligned with their shared purpose. Extension professionals can facilitate group learning through the following methods.

- **Monthly reflection meetings**: Open forums for reviewing data, identifying challenges, and proposing course corrections.
- **Field walks or peer visits**: Collective visits to project sites allow for shared observation, learning, and affirmation.
- **Story circles**: Small group sessions where participants narrate personal experiences related to the intervention.
- **Data walls or participatory mapping**: Visual displays of emerging data that the group can annotate or respond to in real time. Community-generated maps tracking spatial changes (e.g., erosion reduction, new plantings).
- **Harvest celebrations and seasonal reviews**: Ceremonial events that build momentum and honor collective effort, particularly in agroecological systems (Chevalier & Buckles, 2019).

Each of these methods promotes learning as a social process rather than as individual knowledge acquisition. The methods also help surface informal knowledge that might otherwise go unrecorded (Chevalier & Buckles, 2019; Colmenares, 2012). As Chevalier and Buckles (2019) remind us, PAR is not just a means to an end; it is a practice of democracy in action.

Conclusion

Implementation is the heartbeat of PAR in agriculture. It is where trust is tested, knowledge becomes tangible, and transformation begins to take shape. For Extension professionals, successful implementation demands logistical savvy and a deep commitment to equity, learning, and relationship building. Participatory data collection and group facilitation are the core of PAR implementation, not ancillary tasks. When Extension professionals build trust, share power, and embrace flexibility, they generate better data and foster deeper transformation. Case studies from Florida to Malawi demonstrate that when communities lead, research becomes more responsive, more equitable, and ultimately more sustainable.

By embracing adaptive planning, supporting participatory data collection, fostering inclusive group dynamics, and sustaining reflective practice, PAR projects in agriculture can become more than interventions; they can become catalysts for lasting change. In a time when agriculture faces challenges from climate change to labor injustice, PAR offers a hopeful path rooted in collaboration, grounded in community, and aimed toward justice.

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