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Integrated agricultural research for development (IAR4D) from a theory of change perspective

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ABSTRACT

It is now more than a decade since integrated agricultural research for development (IAR4D) was proposed as a "new approach" or "set of good practices" for organising research to address complex problems of agricultural development, food security and poverty in sub-Saharan Africa.
Since then, there have been efforts to investigate its impact in comparison to traditional research and development approaches. Although a growing number of publications are testifying to positive impacts of IAR4D and related agricultural research for development (AR4D) approaches, there has been limited explicit attention on its underpinning Theories of Change – the mechanisms or pathways by which it brings about impact. With the aim of contributing to a more robust grounding of the theory of change of IAR4D, this paper uses a comprehensive review of literature on IAR4D and related work experience of the authors in East and West Africa to critically engage with the implicit and explicit explanations and pathways for how and why IAR4D helps to achieve impact. This paper finds four emerging impact pathways focused on (1) market linkage, (2) social capital, (3) institutional change or (4) innovation capacity as critical mediating factors. Acknowledging articulation of each of these mediating pathways as encouraging progress, the article suggests putting these together in an integrated theory of change that also draws on established theories such as Multi-Level Perspective (Geels, 2005) and theory of adaptive change (Holling et al., 2002) to provide clear guidance and tools for designing and implementing effective AR4D interventions.

1. Introduction

It is now more than a decade since Integrated Agricultural Research for Development (IAR4D) as a version of agricultural innovation systems was first proposed as a "new approach", "set of good practices" or "new model" for organising research and facilitating innovation to address complex problems of agricultural development, food security and poverty in sub-Saharan Africa (Forum for Agricultural Research in Africa, 2003). This approach was developed in response to the stagnation of agricultural productivity growth and increase in poverty rates in sub-Saharan African countries that had occurred in the preceding two decades, and to the low impact of multiple previous waves of agricultural research and development interventions in the region (Adekunle et al., 2014; von Kaufmann, 2007). It was also premised on the understanding that in Africa, as in Asia, the development of the agricultural sector holds the potential to generate a faster rate of poverty reduction than any other sector (Alene and Coulibaly, 2009; Thirtle et al., 2003).

The IAR4D concept has been presented as a radically different alternative to conventional linear transfer of technology approaches (Adekunle and Fatunbi, 2014). The latter has a narrow focus on supply-driven research by scientists and its transfer to farmers through extension agents (Ayanwale et al., 2011; Oluwatobi et al., 2014). The focus on linear technology transfer is argued to have been a central cause of the stagnation of agricultural productivity growth and development in sub-Saharan Africa (Adekunle and Fatunbi, 2014). By contrast, several authors have proposed that IAR4D succeeds in achieving impact through implementing innovation platforms that engage multiple actors along the commodity value chain in seeking to innovate solutions to technological, institutional and infrastructural constraints in the agricultural system (Adekunle and Fatunbi, 2013; Ayanwale et al., 2011; Olarinde et al., 2013).

The main and unique feature of IAR4D is integration across: (i) perspectives, knowledge and actions of different stakeholders around a

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common theme; (ii) analysis, action and change across the different environmental, social and economic "dimensions" of development; and (iii) analysis, action and change at different levels of spatial, economic and social organization (Adekunle and Fatunbi, 2014; Hawkins et al., 2009). A more pragmatic interpretation of the concept of integration in IAR4D is across productivity, natural resource management, markets and policy (Lynam et al., 2011), to which FARA and sub-Saharan Africa Africa Challenge Program (2011) add product development and gender considerations.

We understand that caricaturing and blaming past research and development approaches is a common practice to create a space to articulate difference and to communicate the novelty and improvement that the new approach brings. It is equally problematic to claim that IAR4D's focus on integration across value chain stakeholders and perspectives will easily overcome the many non-technological factors that have contributed to the failure of agricultural development in sub-Saharan Africa, as documented by Easterly (2006) and Bates and Block (2013). It is also problematic to assume that IAR4D is free of any biases or consequences of power dynamics (Swaans et al., 2013a), and thus truly free to explore all dimensions of some hypothetical agricultural innovation space. In practice, the initiation of innovation platforms is facilitated by particular individuals or organisations, most often researchers or non-governmental organisations (NGOs) supported by funding from international development agencies, and thus at least implicitly predicated on a problem- or solution-focused "entry point" chosen by the facilitating or funding institution (Cullen et al., 2014).

The IAR4D approach underpinned the Consultative Group for International Agricultural Research (CGIAR) sub-Saharan Africa Challenge Program, which started in 2005. However, IAR4D has been subject to relatively limited comparative testing aimed at understanding the mechanisms by which innovation platforms might achieve impact, thereby building theoretical underpinning for IAR4D. To evaluate and compare IAR4D's impact with previous agricultural research and development approaches, the sub-Saharan Africa Challenge Program addressed three specific questions:

(i) Does the IAR4D concept work and can it generate international and regional public goods to end-users?
(ii) Does the IAR4D framework deliver more benefits to end-users than conventional approaches (assuming conventional research, development and extension approaches have access to the same resources)?
(iii) How sustainable and usable is the IAR4D approach outside its test environment, i.e. can it be scaled out effectively for broader impact?

In an external review of its IAR4D program in 2010, the sub-Saharan Africa Challenge Program was commended as the most ambitious effort to implement and evaluate IAR4D in the sub-Saharan African context and innovation platforms were recognised as innovative organisations for undertaking research for development with participation of stakeholders. The review concluded that with some modification in the randomised control trial (RCT) method and more time for the trial phase, there was a possibility of answering the first two questions – whether IAR4D has a positive impact on food security and poverty reduction, and if this impact is greater than from previous modes of agricultural research and development (Lynam et al., 2011).

Since the sub-Saharan Africa Challenge Program review there has been a growing number of publications testifying that IAR4D works and has positive impacts on productivity, income, food security and poverty reduction (Ayanwale et al., 2013; Binam et al., 2011; Ngaboyisonga et al., 2014; Nkonya et al., 2013; Nyikahadzoi et al., 2013; Siziba et al., 2013), as well as on social capital (van Rijn et al., 2015). While the results of these case studies have been encouraging, efficiently replicating their success in other places still requires understanding how and why IAR4D works. In particular, the sub-Saharan Africa Challenge Program review panel noted the inability of that program's RCT design to answer the third question, pertaining to rolling out IAR4D beyond the pilot learning sites (Lynam et al., 2011). Subsequent sub-Saharan Africa Challenge Program publications have reiterated the need for a more process-informed understanding of the mechanisms by which IAR4D works (FARA and sub-Saharan Africa Challenge Program, 2011; Nederlof et al., 2011; Swaans et al., 2013a).

The inability of RCT to determine the mechanisms by which approaches including IAR4D produce results has long been a crucial point of discourse in the field of project evaluation. This has triggered a shift from method-based to theory-based evaluation of impacts of interventions (e.g. Weiss, 1972, 1997). A method-based evaluation, in this case the application of RCT, has been criticised as a black-box approach to determining the utility of an approach or intervention in other contexts. This is because while determining whether an intervention works is essential, it does not tell us how and why the intervention works. This knowledge is crucial for scaling out beyond test locations. The response to this criticism has been theory-based evaluation, which demands an assessment informed by an articulated theory of change. The rationale for theory-based evaluation is that it enables a move towards understanding not only just what works, but how, why and for whom it works (Chen and Rossi, 1983; Connell and Kubisch, 1998; Pawson and Tilley, 1997; Rogers et al., 2000). Theory of change is currently being mainstreamed in IAR4D interventions not only as an evaluation tool, but also to guide their design and implementation.

The search for a theory of change for IAR4D is illuminated by the findings of other approaches that are also grounded in Agricultural Innovation Systems thinking but differ from IAR4D in some ways. For example, in an effort to develop a framework for assessing the performance of innovation platforms, a number of authors have developed an impact pathway that focuses on products for markets and value chains (e.g. Cadilhon, 2013; Swaans et al., 2013b). The most advanced proposal in terms of multiple pathways is that put forward by the Convergence of Sciences-Strengthening Agricultural Innovation Systems (CoS-SIS) program (http://www.cos-sis.org/open/ShowPage.aspx?PageId=5). It identifies market-propelled innovation and institutional development as theories of change (referred to as "pathways to science") or, perhaps as more appropriately, "ideologies" of change, given the lack of theoretical grounding and empirical evidence.

Building on this initial lead from CoS-SIS (Röling, 2009), we believe that articulation of a coherent and grounded theory of change for IAR4D is crucial for its translation into practice, as well as its prospect for expanded use in different contexts. In a systematic search of the literature on IAR4D and other AR4D approaches informed by Agricultural Innovation Systems, we found only 13 articles that directly hypothesize how or why IAR4D and/or innovation platforms may work. The hypotheses can be grouped into four high-level potential impact pathways mediated through:

1. A focus on market linkage that enhances access to markets, collective action in production for markets, and promotion of collective marketing, (Adewale et al., 2013; Anandajayasekeram and Gebremedhin, 2009; Nyikahadzoi et al., 2011; Triomphe et al., 2014).
2. Social capital generated by interactions and social learning in innovation platforms (Nyikahadzoi et al., 2011; Pamuk, 2014; Pamuk and van Rijn, 2015; Triomphe et al., 2014; van Rijn et al., 2012; van Rijn et al., 2015).
3. Institutional change, because institutional constraints at different scales are often critical challenges to development of smallholder productivity (Hounkonnou et al., 2012; Röling, 2009). Institutional innovation within innovation platforms means that groups can increase the efficiency of leveraging advantage from supportive policies at higher political levels and can influence future policy development and implementation (Sanyang et al., 2012; Tenywa et al., 2011).

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