



Profiles of innovators in a semi-arid smallholder agricultural environment in south west Zimbabwe



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ABSTRACT

Innovations are regarded as critical to improving the efficiency, productivity and effectiveness of African agriculture. However, few efforts have been directed at understanding 'agricultural innovators', especially among smallholder farmers in sub-Saharan Africa who face low agricultural productivity and widespread food insecurity. This paper investigates the profile of innovators from a local perspective in a semi-arid smallholder farming area in south-west Zimbabwe. The paper is based on data collected from key informant interviews and a household questionnaire survey administered to 239 households from Gwanda and Insiza districts between 2013 and 2014. Qualities or attributes of an innovator (which constitute the profile of an innovator) identified by key informants included: resource endowment; social networks; education; and enthusiasm (passionate and hardworking). The attributes were used in a logit regression model to estimate the probability of the 239 households exhibiting the attributes of an innovator. Social networks and resource endowment, as depicted by amount of land cultivated, were found to significantly influence the probability of an individual being an innovator. Interestingly, the common attributes of education or belonging to an innovation platform used by extension and development agents, were found not to influence the probability of one being an innovator. The paper concludes that understanding local perceptions of innovators, which is based on appreciation of the socio-economic and biophysical circumstances, should be used to identify a 'basket' of context specific innovations that have potential to address the diverse needs of rural households farming households.

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1. Introduction

The general consensus among researchers and development practitioners is that achieving sustainable livelihoods based on agriculture and natural resources depends on understanding the people who manage these resources, including their needs, capacities and motivations (Carry et al., 2002; Cody, 2004; Emtage et al., 2007). Considerable research has been devoted to developing socio-economic indicators of capacity to 'adopt' sustainable agricultural practices (Taylor et al., 2000; Lockie et al., 2002; Webb et al., 2004; Emtage et al., 2007). Few efforts, however, have been directed at understanding the capacity to 'innovate', especially among smallholder farmers in sub-Saharan Africa who face low agricultural productivity and widespread food insecurity (Dyer et al., 2013). This is a significant oversight given the importance of

innovations in African agriculture (Tenywa et al., 2011; Amankwah et al., 2015).

Participatory research and learning approaches can be said to be the closest efforts directed at understanding the people involved in the management of agricultural resources. Robert Chambers (1994) is widely recognized as one of the pioneers of this campaign. There are more than 30 terms¹ associated with this approach, with some more widely used than others (Jules, 1995). Despite the different terms and contexts in which they are used, there are common important principles uniting them such as multiple perspectives to a given challenge and encouraging group learning (Chambers,

¹ A selection of these terms include: Farmer Participatory Research; Farming Systems Research; Participatory Analysis and Learning Methods (PALM); Participatory Action Research (PAR); Participatory Research Methodology; Participatory Rural Appraisal (PRA); Participatory Rural Appraisal and Planning (PRAP); Rapid Appraisal (RA); Rapid Assessment of Agricultural Knowledge Systems (RAAKS); Rapid Rural Appraisal (RRA); Participatory Learning and Action (PLA); Rapid Appraisal of Agricultural Innovation Systems (RAAIS); and Learning Alliances (LA).

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1994; Jules, 1995; Chambers, 2007; Gwandu et al., 2013). The approach emphasizes participation of farmers (or rural people in general) so that they are empowered. Ironically, critiques of this approach point to the fact that the approach has been misused by reinforcing or concealing the inequality and injustices which it claims to overcome (Pettit, 2012). It has also been criticized for producing homogenous 'local' viewpoints where none previously existed, of privileging certain voices whilst suppressing others, and of being insufficiently sensitive to different forms of knowledge (Cooke and Kothari, 2001; Williams et al., 2003).

In recent years in Zimbabwe, participatory research and learning approaches in smallholder farming systems have focused on promoting innovation platforms (Gwandu et al., 2013; Mashavave et al., 2013) as a means to improving agricultural production (Amankwah et al., 2015). Innovation platforms are understood to be a forum or space for sharing and creating new knowledge and identifying knowledge gaps that are relevant for planning explicit systematic innovation development strategies (Tenywa et al., 2011). Cullen et al. (2014), however assert that innovation platforms give the illusion of participation, and may replicate and reinforce existing dynamics rather than enable innovative solutions.

In this paper we want to make a contribution to the debate of agricultural innovators by asking the question: who is an innovator? Or better still, what are the attributes of an innovator? Understanding attributes of innovators or the profile of innovators can assist in achieving the envisaged increased efficiency, productivity, competitiveness of African agriculture, which can contribute to secure agriculture-based rural livelihoods (Bessant et al., 2005; World Bank, 2006; Bareghen et al., 2009). Since the concept of innovation has a long history in industry (World Bank, 2006), this paper derives some useful lessons therefrom. In industry the concept draws attention to the importance of incorporating a diverse array of actors, emphasizes the issue of context specific interventions and the utility obtained from implementing new technologies (World Bank, 2006; Poole and Buckley, 2006; Anandajayasekeram, 2011; Menary, 2015).

The study hypothesized that there were a variety of agricultural innovators in the rural agricultural landscape in south west Zimbabwe but these tended to be overlooked by outside intervenors who tended to have a narrow conception of innovators. The aim of the study was to document and understand 'local innovators' as defined by stakeholders in the study area who included farmers, state extension agencies and Non-Governmental Organizations (NGOs). In this endeavor, the complexities involved were not underestimated: farmer interests and needs are different; farming conditions are heterogeneous (due to socio-economic and biophysical realities); there is institutional proliferation (Nyamwanza et al., 2011); and macro-economic conditions change (De Bruin et al., 2011; Gupta, 2012).

2. Conceptual and analytical framework

2.1. A synopsis of innovators from industry and agriculture

In order to profile innovators in the study area, a synopsis of innovators from industry and agriculture was assessed. In literature the following categories of innovators in industry can be identified: 'inventors', 'knowledge integrators', 'lead users' and 'social connectors', while in agriculture 'early adopters', 'lead farmers', and 'master farmers' are used (Table 1). In agriculture, it is the usual practice that extension and development agents choose farmers to work with when implementing various programmes. Such farmers, who are selected to lead farmer-to-farmer extension, are often called by different names – the different names imply different

roles (Franzel et al., 2014). Examples of such names include, 'expert', 'master', 'model', 'contact' or 'lead' farmers. These farmers are trained to manage pilot sites and train other farmers on improved agricultural practices and innovations (Franzel et al., 2011). In Zimbabwe 'master farmers' are trained by government extension officers and given master farmer certificates upon completion (Hagmann et al., 1999; Hanyani-Mlambo, 2002). 'Lead farmers' which are more or less the same as contact or model farmers are often associated with NGO trained farmers.

In industry "lead users" is often used because they frequently play a role in the development of new products, and the needs of the user directly contribute to the innovation process (Ochieng, 2007). Shaw (1985) estimates that in the medical equipment industry, medical practitioners (e.g. nurses and doctors) have been responsible for 53% of new products developed. In the entertainment, recreation, and food industries, Shah (2000) estimates that it was the end users first who invented the first versions of basic equipment for a variety of goods. As we shall see below, end users in agriculture by and large have not been credited with innovations.

One of the most influential model that has attempted to profile innovators in agriculture has been that of Rogers (2004), first published in 1962 and now in its fifth edition. Rogers (2004) argued that diffusion was a general process, not bound by the type of innovation studied, but by who the adopters were, or by the place and culture, making it a kind of universal micro-process for social change. The diffusion model presented innovation as a linear sequential progression and identified *innovators* or *earliest adopters* (enterprising, intelligent, willing and able to take risks), followed by *early adopters* (respected by peers, well educated, socially integrated and adopting innovations as a way of moving up), *the late majority* (more cautious, less financially flexible, followers, and in the case of the late majority, skeptics), and finally *the laggards* (averse to change socially isolated, precarious economic position) (Van der Veen, 2010). It is widely acknowledged that such stereotypical labels ignore the complexity of local agricultural contexts and do little to help our understanding of innovators. Failure to adopt an innovation does not warrant a farmer being labeled a 'laggard' as diffusion theory would have it (MacVaugh and Schiavone, 2010). Non-adoption might mean the farmer preferred a different type of innovation that better suited his/her needs and resources at his/her disposal. The other limitation of diffusion theory is the bias accorded to researchers and vested interests of funding agencies. The agenda setting role of these actors have too often stymied local innovators and innovations.

The common feature that characterizes 'innovators' in agriculture, as represented in the mainstream literature, is that they receive some form of training or capacity building from the promoters of the innovation unlike in industry. The mindset of most extension and development practitioners in the agricultural sector continues to be centered on the notion that researchers come up with innovations, and extension agents and development practitioners promote them through trainings so that farmers can adopt them. This mindset prevails despite claims of incorporating farmers in the innovation process (Chambers, 2009). The reason behind this is that the role of users remains suppressed compared to industry, which has always been practically oriented.

If innovation is about doing something "new" by using existing or novel information in new ways (Davis et al., 2007), it is important to determine whether end users in agriculture, in this case farmers (including so called 'laggards'), also innovate. Development agents, particularly NGOs, often preach that smallholder farmers have this capacity as reflected in the participation element in the project design. However, as mentioned earlier, in practice this is often not applied, which is general criticism of participatory approaches (Jules, 1995; Chambers, 2007, 2013).

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