



# The Journal of Agricultural Education and Extension

## Competence for Rural Innovation and Transformation

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/raee20>

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To cite this article: Selam Hailemichael & Ruth Haug (2020) The use and abuse of the 'model farmer' approach in agricultural extension in Ethiopia, The Journal of Agricultural Education and Extension, 26:5, 465-484, DOI: [10.1080/1389224X.2020.1757475](https://doi.org/10.1080/1389224X.2020.1757475)

To link to this article: <https://doi.org/10.1080/1389224X.2020.1757475>



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Published online: 06 May 2020.



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# The use and abuse of the ‘model farmer’ approach in agricultural extension in Ethiopia

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## ABSTRACT

**Purpose:** The article examines the implementation and effects of the model farmer-based approach of farmer-to-farmer extension delivery that is in use in Ethiopia.

**Methodology:** The study used mixed methods, combining focus group discussions, key informant interviews, and a household survey.

**Findings:** The model farmer approach has increased extension coverage, improved the possibility for information and technology dissemination, and enabled the inclusion of virtually all farming households in extension and advisory networks. Simultaneously, the approach has become a mechanism for the top-down control of farmers, for the identification and favouritism of better-off farmers, and those with political commitments.

**Practical implications:** The findings show that there is a need to critically reflect on who model farmers are, how they are selected, what their historical and current roles and impact have been, as well as follower farmers’ feedback on the approach in order to avoid perpetuating the misuse of the approach.

**Theoretical implications:** The article argues that the Ethiopian context that rewards rapid increase in production and productivity, modernisation of agriculture, competitive commercialisation, and a context that allows the continued entanglement of extension delivery with politics have enabled such misuse of the approach to proliferate. The article questions the extent of applicability of the core farmer-to-farmer extension principles that relate to social ties, reciprocity, collaboration, and minimal social hierarchies in such a context.

**Originality/value:** The study generates important insights about the effects of model farmer-based extension approach, its political dimensions, and the importance of context for successful farmer-to-farmer extension.

## ARTICLE HISTORY

Received 1 September 2019

Accepted 14 April 2020

## KEYWORDS

Extension and advisory services; farmer-to-farmer extension; model farmers; Ethiopia

## Introduction

Over the past century, the focus, approach, and channels of delivery of extension and advisory services (EAS) have evolved through different stages (Rivera 2011; Faure, Desjeux, and Gasselin 2012; Davis, Franzel, and Spielman 2016). These changes were driven by a changing context in resource availability; climate change; new developments in

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information, communication, and production technologies; the entry of new actors; and increasingly globalised and vertically integrated agri-food systems (Birner et al. 2009; Rivera 2011; Saravanan et al. 2015). There is a renewed interest in exploring different EAS delivery models to better serve the changing agricultural development context (Davis and Rasheed 2016). This renewed interest is accompanied by a desire to revive community-based approaches of extension delivery, with farmer-to-farmer extension (F2FE) now constituting the dominant approach in many African countries (Simpson et al. 2015; Davis, Franzel, and Spielman 2016). Scarborough et al. (1997) define F2FE as the provision of training by farmers to farmers, often through the creation of a structure of farmer promoters and farmer trainers.

In Ethiopia, the use of model farmers (MFs) has been a core approach of F2FE since developing a strategy for participatory extension system in the 2000s (MoANR and ATA 2014). In this context, MFs are understood to be farmers that display a higher level of productivity due to their 'best practices', which they are expected to disseminate to other farmers through peer-to-peer learning in farmer networks (FDRE 2016; MoANR and ATA 2017). This strategy is expected to increase EAS coverage and improve technology use (MoANR and ATA 2017). Similarly, as agriculture becomes more commercialised, MFs are expected to play a strategic role in organising farmers and in serving as role models on ways to produce for the market (Davis et al. 2010).

There is extensive research exploring the implications of community-based EAS for expanding extension coverage, cost efficiency, reaching marginalised groups, and sustainability (Scarborough et al. 1997; Haug 1999; Franzel et al. 2015; Khaila et al. 2015; Simpson et al. 2015; Davis, Franzel, and Spielman 2016). However, there is still a need to evaluate the transformation of different forms of F2FE implementation beyond the perceived weaknesses of the Training and Visit (T&V) extension approach that dominated the 1970s and 80s (Anderson and Feder 2007; Swanson 2008; Rivera 2011). In this regard, the purpose of this article is to explore F2FE which is being implemented through the MF approach in the public EAS system in Ethiopia using qualitative and quantitative methods, in order to answer two overarching research questions. The first research question asks what are the benefits of the MF approach; what rationale, procedures and criteria are used in its implementation, and what is farmers' feedback regarding the approach? This research question was answered drawing on qualitative approaches. The political aspects of F2FE, and more specifically the MF approach, are an underexplored area (Taylor and Bhasme 2018), although some have discussed related aspects regarding the politicisation of extension delivery in the Ethiopian context (e.g. Adem 2012; Lefort 2012; Fantini 2013; Berhanu and Poulton 2014). Thus, the overlap of the MF approach with political objectives is explored under this research question. Using data from a household survey, the second research question asks in what ways MFs are different from other farmers, and what variables contribute to the selection of farmers as MFs? The quantitative analysis investigates the extent of the 'bridge-ability' of the differences between MFs and other farmers. Based on the findings, the article reflects on the use and continued relevance of the MF approach.

### **Theoretical basis of F2FE and the model farmer approach**

As one specific approach of extension, farmer-to-farmer extension (F2FE) – or the provision of training by farmers to farmers – is said to have started back in the 1920s

(Selener et al. 1997). The popularity of F2FE soared in the 1980s and 90s in response to the limited willingness of donors to invest in public EAS systems (Davis, Franzel, and Spielman 2016). The popularity of more recent F2FE approaches was similarly motivated by the weaknesses identified in earlier approaches, such as the use of contact farmers in T&V mode of extension, which was extensively promoted in many developing countries starting from the 1950s (Benor and Harrison 1977; De Janvry, Macours, and Sadoulet 2017). However, T&V extension has been criticised for being top-down, hierarchical, costly, dependent upon donor funding, and failing to recognise the needs of farmers (Anderson and Feder 2007; Swanson 2008).

Currently, F2FE is the predominant approach of EAS in sub-Saharan Africa (SSA) (Simpson et al. 2015). Under F2FE, EAS personnel work mainly with a selected group of farmers, who in turn are expected to train and share information with other farmers. While ‘farmer trainer/ promoters’ is the generic term used to refer to the farmers involved in F2FE, other terms such as lead, innovative, volunteer, master, model, or community knowledge worker are also used, which at times may imply slightly varied roles (Franzel et al. 2015; Simpson et al. 2015). For example, when farmer trainer/promoters are selected on the basis of expertise, they are commonly referred to as ‘model’, ‘master’ or ‘lead’ farmers (Khaila et al. 2015; Davis, Franzel, and Spielman 2016). In the Ethiopian context, ‘model farmers’ (MFs) is the term most commonly used in policy documents (e.g. in FDRE 2010; FDRE 2016; MoANR and ATA 2017); thus, this article refers to farmer promoters as ‘model farmers’ from this point onwards.

F2FE is believed to be an effective tool for extension delivery, especially when its core principles are adhered to (Franzel et al. 2015). These principles include: voluntarism; MFs being selected in consultation with community members; being accountable to the farmers they serve; being ‘of the community’ in terms of sensitivity to local culture and farmers’ needs; and demonstrating an interest in sharing skills and information (Franzel et al. 2015; Simpson et al. 2015). Research has shown F2FE to be more effective where there is high social capital, limited social hierarchies, high community trust, collaborative values, and where farmers are organised in groups (Selener et al. 1997; Franzel et al. 2015; Davis, Franzel, and Spielman 2016). Literature associates the benefits of F2FE with low costs, ability to reach large areas and a high number of farmers – including marginalised groups, possibility to increase the levels of technology adoption, better sustainability, and improving accountability (Franzel et al. 2015; Simpson et al. 2015; Davis, Franzel, and Spielman 2016). MFs associate the benefits of being models with improved social status, self-fulfilment, and opportunity to receive various material benefits (Franzel et al. 2011; Simpson et al. 2015; Davis, Franzel, and Spielman 2016).

F2FE – through the MF approach – has been shown to be ineffective when MFs are selected based only on expertise, without considering their ability to communicate and disseminate their knowledge (Franzel et al. 2011). In some cases, follower farmers fail to readily copy MFs, with the technology remaining exclusionary, or the benefit being captured by the early adopters (Feder, Just, and Zilberman 1985; Anandajayasekeram et al. 2008), thus fuelling resentment from follower farmers (Anandajayasekeram et al. 2008; Brown, Nuberg, and Llewellyn 2019). Generally, inappropriate procedures in selecting MFs, gender imbalance, and a lack of widespread support for the approach reduce the effectiveness of F2FE (Franzel et al. 2011; Franzel et al. 2015; Simpson et al. 2015; Davis, Franzel, and Spielman 2016). Similarly, the continued dominance of the technology

transfer paradigm in EAS systems contributes to the ineffectiveness of F2FE (Faure, Desjeux, and Gasselin 2012; Davis and Rasheed 2016; De Janvry, Macours, and Sadoulet 2017).

With increased decentralisation, market orientation, and privatisation of EAS, it is important to explore the continued relevance of the F2FE approach. Literature sources have shown that decentralisation brings with it the fragmentation of advisory services, a reduction of information exchange between farmers, a preference for linear technology transfer models, and a bias towards better-off farmers (Christoplos 2010; Faure, Desjeux, and Gasselin 2012). Similarly, with the commercialisation of agriculture, increasing competition and differentiation tend to increase social inequality (Byres 1996; Bernstein 2010; Wiggins et al. 2011; van der Ploeg 2018), thus weakening possibilities for collaboration and reciprocity, which are the basis of effective F2FE (Selener et al. 1997; Franzel et al. 2015; Davis, Franzel, and Spielman 2016). Privatised EAS also tend to marginalise resource poor smallholders (Haug 1999; Swanson 2008; Christoplos 2010; World Bank 2012), further compromising F2FE's potential for inclusive development.

### Historical and contemporary use of model farmers in Ethiopia

The Government of Ethiopia (GoE) has been commended for investing consistently and heavily in the agricultural sector (Berhanu and Poulton 2014). A core part of this investment is the EAS system, which is said to be one of the largest in Africa with over 70,000 development agents (DAs) serving about 16 million farming households (Berhane et al. 2018). Currently, EAS is delivered through three approaches: through DAs, farmer training centres (FTCs), and F2FE by means of MFs organised in farmer networks (MoANR and ATA 2017).

MFs have been in use in the agricultural sector since the 1960s during the imperial regime (Stommes and Sisaye 1979; Belay 2003; Gebremedhin, Hoekstra, and Tegegne 2006). At that time, MFs were the most accessible and wealthier farmers using green revolution technologies; and able to demonstrate the benefit of these technologies (Stommes and Sisaye 1979; Belay 2002). MFs were selected by DAs after being nominated by community members, based on criteria that included diligence and cooperativeness (Stommes and Sisaye 1979). However, the MF approach failed to deliver the desired results due to MFs' disinterest in disseminating innovations, the bias of the EAS delivery towards them, and because they were not representative of the average farmer in terms of different capabilities (*ibid.*).

After coming to power in 1975, the Derg regime ceased the individualistic MF approach, opting instead for the collectivisation of farmers and aiming mainly at achieving equity between farmers in terms of land holding and income (Stommes and Sisaye 1980). Peasant associations were formed in which DAs interacted with farmers as a group to avoid granting exclusive benefits to only a few farmers (*ibid.*). These peasant associations were intended to be a mechanism to decentralise extension delivery and decision-making (Stommes and Sisaye 1980; Rahmato 2008). However, the peasant associations and the grouping of farmers soon became a mechanism for political control instead of for empowerment (Clapham 2002; Rahmato 2008). Towards the end of the Derg regime, the model farmer approach was resumed through T&V EAS, which continued to be used by the

succeeding regime (Belay 2003; Gebremedhin, Hoekstra, and Tegegne 2006; Berhane et al. 2018).

The Ethiopian People's Revolutionary Democratic Front (EPRDF) regime started utilising MFs as one of the core approaches of EAS delivery since the turn of the century (MoANR and ATA 2017). The desire to unleash the 'private initiative of farmers' to support the diversification and commercialisation of agriculture (MoFED 2006, 46) resulted in the division of farmers into two incongruent groups – a few upper groups of smallholders were recruited as MFs, and the rest as followers (Lefort 2012). Policy documents (e.g. FDRE 2010; FDRE 2016; MoANR and ATA 2017) widely use this categorisation of farmers today, framing the main difference between the two groups as 'gaps' in agricultural practices and productivity. Thus, the MF approach is used extensively in the Ethiopian agricultural sector, with the expectation that it will enable the tailoring and expanding of EAS coverage, and bridge the productivity gap between model and follower farmers by allowing the dissemination of MFs' 'best practices' (Ayele 2016; FDRE 2016; Berhane et al. 2018).

Studies that have been carried out on the MF approach document some positive outcomes. Considering that DAs are overburdened and multitasked, the utilisation of MFs is expected to ease this overload (Berhane et al. 2018). While not discussing the MF approach directly, Rahmato (2008, 322), views the benefits of farmer stratification and support to the most resourceful farmers as enabling the emergence of 'yeomen', thus furthering the development of agriculture. Tessema et al. (2016) found F2F exchanges to be more important in farmers' adoption of conservation tillage than formal extension and argue for the continued use of MFs in technology dissemination. From the perspective of business and value chains development, Benincasa (2019) reports MFs as having superior performance in contract farming and recommends that they continue to be used in the commercialisation of agriculture.

In contrast, other studies have uncovered some controversies surrounding the use of MFs. Elias et al. (2013) found EAS delivery to be biased towards MFs, which according to their estimate, causes considerable reduction in farm productivity. Ayele (2016) found that MFs are unrepresentative of the farmer population in terms of diversity of capabilities, thus hindering technology and information transfer. In a six-country case study (which includes Ethiopia), Brown, Nuberg, and Llewellyn (2019) found that MFs often fail to pass information on to fellow farmers; favouritism exists in EAS towards MFs; and follower farmers are often resentful of the exclusive privileges that MFs enjoy. Various studies have likewise documented the entanglement of EAS with politics, and the concomitant role of MFs in this (e.g. Adem 2012; Lefort 2012; Fantini 2013; de Waal 2015; Leta et al. 2017).

## Methodology

The study was conducted in eight districts located in two regions of Ethiopia: Oromia (Adami Tulu, Bako Tibe, Dugda, Gobu Seyo, Shalla), and SNNP (Hawassa Zuria, Misrak Badawacho, Meskan).<sup>1</sup> The specific methodology and type of data that were used were selected to address the objective of the research in the best possible way (Berriet-Sollic, Labarthe, and Laurent 2014; Faure et al. 2016). The mixed methods design made it possible to move back and forth between induction and deduction. The various assumptions of F2FE/MFs as outlined in the theoretical section were used as a



basis for the development of interview guidelines in order to examine their empirical validity in the study sites. Through an inductive approach, the results obtained were used to identify prevalent assumptions that were further assessed through a deductive process of inquiry. Each of the qualitative and quantitative processes and the link between them is further explained below.

In the first part of the study, which was aimed at exploring how the MF approach is designed and implemented, as well as its benefits and results, data was generated through qualitative approaches. Extensive semi-structured interviews and focus group discussions (FGDs) were carried out with farmers and relevant EAS personnel (staff at district Offices of Agriculture and Rural Development (OoARD) and DAs). The qualitative phase assesses the perceptions of the different stakeholders regarding the purpose and benefits of the MF approach; criteria and procedures used in the selection of MFs; the platforms through which farmers interact; and the effects of the approach. These themes were selected in order to assess the extent to which the local conceptualisation and operationalisation adheres to the theory underlying the approach.

Farmer informants were purposively selected<sup>2</sup> based on their currently serving as a model farmer or being a follower farmer<sup>3</sup> in farmer networks set up by EAS personnel. Informants from district OoARDs and DAs were selected based on their being involved in EAS delivery in the district, being knowledgeable on the MF approach, and being involved in its implementation in the specific community under study. In total, over a hundred farmers and 45 EAS personnel participated in the qualitative phase of the study (Table 1).

The qualitative data was analysed by categorising the information into different themes and sub-themes and reviewing these in order to identify emerging patterns. From these analyses, two core assumptions emerged regarding model farmers – they are better custodians of natural resources and better users of technology; and the difference between them and follower farmers is not considerable – or in other words, there are no fundamental gaps preventing follower farmers from emulating model farmers. Thus, the interviews were followed by a survey in order to examine these assumptions by posing questions about the use of technologies, agronomic practices, production, access to services, and different household characteristics. Survey respondents were randomly selected in the same study communities. During the survey, respondents were asked to self-identify as model or follower. The quantitative data was analysed using t-tests and probit regression in order to compare MFs to other farmers and to determine the various characteristics associated with being a model farmer. In total, 658 respondents, of the targeted 800, participated in the survey yielding a response rate of 82 per cent (Table 1).

**Table 1.** Breakdown of the sample

		Method of data collection	Number of individuals	
			Oromia	SNNP
Qualitative phase	Model farmers	14 individual interviews	8	6
		5 FGDs (3-4 in each group)	10	7
	Follower farmers	18 individual interviews	12	6
		9 FGDs (6-8 in each group)	35	22
	EAS personnel	16 individual interviews	10	6
		8 FGDs (3-5 in each group)	15	14
Quantitative phase	Model farmers	Household questionnaire	55	26
	Follower farmers	Household questionnaire	353	224

## Findings

### *Benefits of the MF approach*

The literature associates the benefits of F2FE with increasing extension coverage at a low cost; suitability to reach marginalised groups; sustainability; and enabling better accountability and feedback from farmers towards research and extension (Franzel et al. 2015; Simpson et al. 2015; Davis, Franzel, and Spielman 2016). Descriptions of the benefits of the MF approach by interviewed EAS personnel show some similarities, but also important divergences from those outlined above.

EAS personnel related the primary benefit of the MF approach to increasing production and productivity, which they identified as the overriding objective of the government. In this regard, they mentioned the need to differentiate between hierarchical groups of farmers in terms of their use of modern agricultural innovations. They identified the 'top tier' – which according to them is the ideal group – as those farmers who immediately adopted agricultural innovations beneficial for increasing production and productivity. According to EAS staff, such farmers – who constitute less than one third of farmers in the villages – could be used to model the 'ideal' characteristics to other farmers, including the immediate adoption of modern technologies, willingness to take risks, and hard work. Model farmers are also expected to model good behaviour, loyalty and obedience, as discussed further below.

Another benefit EAS staff identified was in relation to the future of farming. They saw the inevitability of the modernisation and commercialisation of smallholder agriculture, and that those adopting modern practices are those who have a future in farming. Some of the factors mentioned which would force farmers to adopt the practices of MFs in order to survive were: degrading soil requiring the use of increased amount of fertilizers, and rain variability forcing farmers to use irrigation. Furthermore, EAS personnel pointed out the need to adopt MF characteristics in order to benefit from emerging opportunities as policy priorities shift. One example given was the commercialisation clusters the government was setting up in nearly all the study districts in order to link smallholders to the market. To be selected for such opportunities, farmers need to have a proven record of practising farming the 'right way' and 'being diligent in following instructions'.

A further benefit was related to increasing extension coverage and easing the work burden of EAS personnel. EAS staff claimed to be over-burdened with various agricultural and non-agricultural tasks, and being under resourced – for example, in terms of transportation to cover large geographical areas. To overcome this, farming households have been put in 1-to-5 networks in which four follower farmer households are led by one MF who serves as the main contact person between the network and EAS personnel. MFs are expected to convey information to the follower farmers in their network and share with them the different skills acquired from the EAS. As virtually all farming households are organised in 1-to-5 networks, the plan is to achieve near complete extension coverage through well-functioning networks making Ethiopia lead not only in terms of DA-to-farmers ratio (which currently stands at 1–476 (MoANR and ATA 2014)), but also in terms of F2FE delivery.

Grouping farmers as models and followers was reported to have the added advantage of being economical. According to EAS staff, MFs are serious and receptive farmers requiring less time and effort to be convinced about new practices. As a result, they saw their



concentration on working with MFs as being appropriate and a better use of resources. Follower farmers were reported either to be sceptical towards new practices – preferring to see concrete benefits first; or to refuse to adopt innovations altogether for different reasons. Due to the amount of time needed to convince such farmers, leaving them to learn from the practices of MFs was viewed as a better strategy. When discussing follower farmers, EAS personnel often presented them in a negative light, referring to them as ‘stubborn farmers that stick to their old style of farming’, ‘disobedient’, ‘lazy’, ‘farmers that are averse to hard work and taking risks’, or ‘those seeking shortcuts to gain income’.

Two additional benefits of working with MFs – reluctantly admitted by EAS personnel – concerned personal career development objectives, and the use of the approach towards political ends. EAS personnel admitted to being under immense pressure from their superiors to increase farmers’ uptake of green revolution technologies – in particular, fertilizers – as these are seen as the remedy for low agricultural production. Performance assessment is closely intertwined with the amount of fertilizer and improved seeds EAS personnel manage to disseminate as the following quote made by a DA in a group discussion setting demonstrates.

Every district is expected to use specific quota of agricultural inputs based on total cultivation area, not on whether the farmers have interest or capacity to use it. We are thus pressured to push farmers to use more inputs, especially fertilizers. This is important for our promotion. DAs’ base salary is very low, starting at 928 birr.<sup>4</sup> It barely sustains us for a month. Every two years our performance in distributing inputs is assessed then we get promoted. But the price of fertilizers is increasing and only few farmers afford it. So, we have to work closely with those farmers using the inputs to motivate the others.

Therefore, MFs, who are almost always better resourced farmers, are instrumental in meeting career development objectives providing EAS personnel with an additional reason for preferring to work with them.

Furthermore, EAS personnel consider MFs to be farmers who are more loyal to the ruling party. As such, MFs are counted upon to mobilise the constituencies in their networks to vote for the ruling party in election years, as well as to monitor anyone with divergent political opinions. The 1-to-5 networks have become a particularly powerful mechanism for community policing and for ensuring compliance. A DA in a group discussion clarifies:

The members of the 1-to-5 groups are encouraged to keep an eye on each other, to identify those that oppose the ruling party and to shun them, to not go to their house, or be seen talking to them in public so that other people would not think that they too have started to support the opposition.

Thus, the networks are not only a platform for the dissemination of MFs ‘best practices’, but also an arena for nurturing politically controlled and compliant citizens.

### *Procedures and criteria for selecting MFs*

EAS staff were asked to describe the procedures and criteria for selecting MFs. According to them, the selection begins with the development of criteria by the district OoARD. These criteria are often related to the practices and personal characteristics of the farmer, as well as the state of his/her household. An MF would be one who implements ‘full package’ activities – which include maintaining an orderly home, owning a private

latrine, sending children to school, implementing good agronomic practices, and using agricultural technologies. The criteria that relate to the personal characteristics of the farmer include being a hard worker, capable of thinking innovatively, complying with instructions, and displaying 'good behaviour'.

Using these as the overarching criteria, DAs together with community leaders, such as *kebele*<sup>5</sup> managers, identify farmers that fit the criteria in order to serve as MFs. Each *kebele* keeps registers of all households living there. In these registers, households are ranked according to wealth as rich, medium, and poor – based mostly on their ownership of land, livestock, and other household assets. Using the overview provided by the registers, EAS personnel described selecting MFs from among those with better resources, as they believe that it is the better-off who implement most of the practices in the full package.

As a final stage in the selection of MFs, a 'background check' is done on prospective MFs on their allegiance to the ruling party and to ensure that they are not supporters of opposition groups. In explaining what the background check involves, EAS personnel stated that this involve asking community members or discussing the political outlooks of the farmer under consideration with the *kebele* manager. Once the MF has been identified, the non-model households that live in his/her immediate vicinity are recruited as follower farmers to be included in the 1-to-5 network. EAS personnel further pointed out the importance of the continued political allegiance of the MF, which they endeavour to ensure by 'keeping a close eye' on MFs.

In addition, EAS personnel described the process of selecting the most outstanding among the MFs for the annual award ceremony that takes place at the national level. The award ceremony started by the late Prime Minister of Ethiopia, Meles Zenawi, and covered by the state media, popularises such farmers as 'farmers that have managed to change their lives and to have become millionaires through farming' (Berhanu and Amde-work 2011; Gella 2013). Being selected as a 'millionaire' MF is a source of pride to both their *kebele*, as well as to the EAS personnel working there. EAS personnel view this level of acknowledgment and award of MFs as one concrete way of motivating follower farmers to follow in the footsteps of MFs. In a group discussion, a DA described the process of selecting the outperforming MFs as follows.

We carry out an inventory of all the assets the MF possesses including trees on his/her farm and homestead and calculate the market price of these. Based on this, the farmer that is revealed to be richer than other MFs is presented as the millionaire of that *kebele* and competes against those selected from other *kebeles*.

However, when probed about the extent to which the narrative about 'millionaire farmers' is true, the same informant admitted that referring to such farmers as 'millionaires' is not accurate, but that 'such narratives were required by the government which was keen to communicate messages of success for political reasons'.

Thus, the selection of farmers as models and followers is implemented by agricultural professionals in a top-down manner, with minimal involvement of community members. Although hard work and implementation of full-package activities were mentioned as criteria in the identification of MFs, the overriding criteria are wealth and political allegiance; criteria, which according to EAS staff, are more straightforward to identify and easier to monitor. Despite the biased way in which they are selected, EAS personnel still insisted

that MFs are better farmers who manage their farms well; hence their recruitment as MFs and ability to access different privileges is justified.

### *Model farmers in their own and other farmers' eyes*

When explaining the reasons for being recruited as model farmers, the MFs consistently related their selection with their ability to follow EAS staff's instructions; being hard-working farmers capable of caring well for their farms; and being better-off and not dependent on various forms of aid. These farmers also spoke about being careful when expressing opinions with potentially political connotations, or which may sound oppositional to the government as epitomised by one MF's response regarding this point:

There really is not much freedom of expression. We fear speaking our mind. We have to carefully choose what we say. The government staff keep a very close eye on those of us they consider to be more educated and more successful in farming.

They feared that appearing oppositional to the government would have them stripped of their title and associated benefits.

Similar to EAS personnel, MFs commonly described follower farmers as displaying 'problematic behaviour', such as being quick to sell their produce right after harvest, wasting their money or spending it all on alcohol. MFs described several benefits of being a model farmer, including being the first to access agricultural inputs when these are being distributed; enjoying more frequent interaction with EAS staff; possessing more skills and awareness on different practices and opportunities; as well as accessing certain experimental inputs free of charge. They also spoke about the respect and acknowledgment they receive from both the government and fellow community members. In general, MFs feel that everything they receive, such as privileged access to resources and information, is justified, claiming that this is due to their hard work, resource management skills, compliance, and superior character.

Follower farmers, on the other hand, have a different understanding of who MFs are, why they are needed, and what the effects of the MF approach have been. Follower farmers generally agreed that MFs are the group that uses agricultural technologies and practices relatively readily, and that they exhibit high production levels. However, they emphasised the ability of MFs to afford agricultural inputs as the reason for MFs being ahead in this regard. In follower farmers' eyes, MFs are those who have additional income coming from government or other employment sources; owned side businesses; received remittance from children that have migrated to the Gulf countries or South Africa; or had 'political connections' that made different opportunities available to them. Follower farmers insisted that MFs are already better-off farmers in their communities, and that it is not necessarily hard work or innovativeness that set them apart. In fact, they posited that follower farmers work the hardest to make ends meet and to 'catch-up' with MFs, although often with limited success.

When discussing the roles played by model farmers, follower farmers shared that they are often invited to visit the farms of MFs to witness the benefits of agronomic practices, such as row-planting or minimum tillage. At the same time, they complained that they often end up with 'just the information', without the capacity to implement what they have learned, due mainly to financial shortages. Thus, although follower farmers see

MFs as an important communication channel for bringing them both agriculture-related and other information from ‘the government’<sup>6</sup>, they added that MFs selectively communicate different information to them, and not always in a timely manner. According to follower farmers, especially when certain opportunities are made available in the community, ‘MFs first make the opportunity known to their family and friends, and those able to give them bribes’. Moreover, follower farmers feel that MFs hardly listen to them, or that their opinions are rarely conveyed back to the EAS personnel, saying that ‘it is those with money that are listened to’.

Furthermore, follower farmers expressed great reluctance to persist in communicating complaints, saying that political labels are easily attached to such behaviour, with consequences ranging from harassment by MFs and EAS personnel, to being imprisoned. Follower farmers are aware of MFs’ fluid mandate that switches between political and developmental objectives as the situation requires. With 2015 (the year of the research) being an election year, follower farmers stated that they had been encouraged to monitor and expose anyone voting for opposition parties, and that they themselves were closely observed by MFs, thus contributing to the weakening of community trust.

In addition to their formal roles, follower farmers view MFs as their ‘go-to’ source for different forms of support, including loans in cash or in kind, and buying improved seeds and fertilizer. Follower farmers nevertheless complained that MFs often expect them to pay back more than the original loan. When they face various shortages, follower farmers often enter into share-cropping or rental arrangements with MFs – mostly on terms that are more beneficial to the MF than to the follower farmer.

Follower farmers understand that MFs exemplify the characteristics the government desires to see in farmers, such as using a high amount of chemical fertilizers, improved seeds, being self-sufficient, and not dependent on various forms of aid. However, they also mentioned that the MF approach has become a mechanism for exclusion. They resent the discrimination experienced from EAS personnel for not being ideal farmers, as well as from MFs whom they blame for elite capture of the different opportunities coming to their communities. Moreover, they mentioned the erosion of the culture of reciprocity and cooperation in the desire to nurture competitive values among farmers. Follower farmers expressed doubt regarding their ability to catch-up with MFs due to the increasing cost-price squeeze, which forces them to remain living ‘hand-to-mouth’.

### *In what ways are MFs ahead of the rest?*

The quantitative data were analysed to assess the claims made during interviews and group discussions regarding the differences between model and follower farmers. First, a simple mean comparison was conducted to bilaterally compare these two groups across variables that relate to household characteristics, social network, institutional access, agronomic practices, and production and productivity. This was followed by a regression analysis to determine the variables strongly associated with being selected as a MF.

The mean comparisons (Table 2) reveal differences that, for the most part, corroborate claims made during the qualitative phase of the study. In line with MFs being the main

**Table 2.** Bilateral comparison of model farmers and follower farmers

	Model	Follower	Sig.
<b>Farm household characteristics</b>			
Head age	49.15(12.05)	46.08(13.35)	*
Head education (years)	4.01(3.55)	2.84(3.24)	**
Head gender (1-male; 0-otherwise)	0.91	0.91	n.s.
Wealth index	0.90(1.15)	-0.07(0.91)	***
Head in diverse occupation (1-yes; 0-otherwise)	0.06	0.1	n.s.
<b>Labour availability</b>			
Proportion working age members (15-64)	0.60(0.29)	0.51(0.21)	***
Proportion with above elementary education	0.13(0.17)	0.08(0.14)	***
Agricultural labour contribution (man)	53.28(48.78)	47.72(61.74)	n.s.
Agricultural labour contribution (woman)	11.96(14.50)	12.42(19.26)	n.s.
<b>Social and institutional access</b>			
Needed credit	0.41(0.49)	0.63(0.48)	***
Member in farmer groups	0.43(0.50)	0.22(0.41)	***
Frequency of contact with EAS personnel	34.24(41.52)	25.54(36.90)	*
Member in social groups	0.96(0.19)	0.97(0.17)	n.s.
<b>Agronomic practices</b>			
Chemical fertilizer (kg/ha)	152.82(112.93)	96.03(80.16)	***
Agrochemical (lit/ha)	3.18(12.57)	0.51(2.47)	***
Uses improved varieties	0.79	0.72	n.s.
Practises crop rotation	0.85	0.79	n.s.
Practises soil and water conservation	0.44	0.34	n.s.
Practises minimum tillage	0.04	0.06	n.s.
Crop diversity	2.01(2.86)	2.33(5.37)	n.s.
<b>Production and productivity</b>			
Volume of production (kg)	10 719(16 418)	4 593(5 497)	***
Yield/ha	4 180(5 072)	3 011(3 053)	**
Labour productivity	81(109)	66(86)	n.s.
<i>n</i>	81	577	

Notes: Means with standard deviations in parentheses.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

contact persons for extension agents, the quantitative data shows that they do have significantly more frequent contact with EAS personnel. MFs are older, more educated, and richer than follower farmers. The finding that they are richer corroborates the claims of follower farmers that MFs are already better-off. MFs also live in households with a higher proportion of working age members, and members with above elementary education ( $p < 0.001$ ). This indicates that these households have significantly more skilled labour which can potentially engage in alternative income sources. Although this measure indicates only their prospects, it still shows the potential of MF households to pursue diverse employment opportunities, thus somewhat supporting the contention raised by follower farmers in this regard.

MFs are in less need of credit and have a higher membership in farmer groups (which include cooperatives and different producer groups in addition to the 1-to-5 networks) ( $p < 0.001$ ). In terms of agronomic practices, the strongest difference lies in the levels of chemical fertilizer and agrochemicals used ( $p < 0.001$ ), indicating that the 'best practices' that MFs are desired to model to others seem to be primarily the use of inputs that can guarantee increased production and productivity. This finding is in accordance with EAS personnel's claim that they are under pressure to increase the amount of fertilizers used by farmers. As expected, the high input applied has enabled MFs to get higher levels of production and productivity; however, in terms of labour productivity, MFs are not any better than follower farmers.

**Table 3.** Factors associated with selection as a model farmer

Variables	Coefficient	z-value
Cons.	-1.69*	-2.19
Head age	0.02**	2.76
Head education (years)	0.02	0.51
Head gender (1-male; 0-otherwise)	-0.11	-0.33
Wealth index	0.23*	2.00
Head in diverse occupation (1-yes; 0-otherwise)	-0.56	-1.45
Proportion working aged members (15-64)	0.64	1.68
Proportion with above elementary education	0.88	1.19
Labour contribution (man)	-0.0003	-0.16
Labour contribution (woman)	-0.03***	-3.91
Chemical fertilizer (kg/ha)	0.01***	4.12
Agrochemical (lit/ha)	0.11**	2.71
Uses improved varieties	0.17	0.77
Practises crop rotation	0.37	1.45
Practises soil and water conservation	0.15	0.84
Practises minimum tillage	-0.35	-0.79
Crop diversity	0.15**	2.99
Volume of production (kg)	0.0001***	4.10
Yield/ha	-0.0002**	-3.40
Labour productivity	-0.004*	-2.08
Needed credit	-0.37*	-1.98
Member in farmer groups	0.24	1.26
Frequency of contact with EAS personnel	0.002	0.97
Member in social groups	-1.64**	-3.37
Chi squared statistics	123.37***	
Pseudo R2	0.3616	

Notes: Controls for location (districts) included but not reported

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$

Age, wealth, use of chemical inputs, running a farm with more crop diversity, and volume of production are found to be strongly and positively associated with being a MF (Table 3). On the other hand, women's labour contribution, yield, labour productivity, being in need of credit, and membership in social groups are negatively associated. MF households engage relatively less female labour on their farms. Despite literature sources claiming that a strong social network is important for F2FE to be effective (Davis, Franzel, and Spielman 2016), those being recruited as MFs are not greatly involved in social groups. Moreover, efficiency – in terms of obtaining higher yield per hectare or labour input – does not seem to factor in being a MF.

Bringing the mean comparison and the regression results together, it is obvious that there are important differences between model and follower farmers – some of which are not easily bridgeable. The expectation that follower farmers will follow in the footsteps of MFs seems unrealistic, given the factors which set them apart, such as wealth, skilled labour availability, and access to large cultivation areas. Thus, what sets MFs ahead is far beyond being a diligent farmer with good agronomic practices. Similarly, it is important to note that some differences emphasised during qualitative discussions – in particular in relation to natural resource management – were not that important in the quantitative data. Being a 'responsible farmer who cares well for his/her farm' seems to relate more to intensive input use, rather than practices that can rehabilitate the soil without too much dependence on inorganic inputs. Another important point to note is that the centrality of politics to the MF approach was hardly captured by the quantitative data, while it was one of the central issues during qualitative discussions.



## The use and abuse of the MF approach and its continued relevance

The use of the MF approach in the public EAS system in Ethiopia has a long history. In the 1960s, the intent behind using MFs was mainly to demonstrate the benefits of green revolution technologies (Belay 2002). In 2010, the EAS strategy was revised to be more participatory through a structured use of MFs in order to promote F2FE (MoANR and ATA 2017; Berhane et al. 2018). Being ‘role models’ in characteristics that extend well beyond farming, MFs are expected to lead farmers organised in networks. The use of the approach in the study communities has yielded some of the benefits of F2FE outlined in the theoretical section of this article. The MF approach has widened extension coverage and has allowed an unparalleled number of farmers to be reached by the EAS system. Since MFs are not paid for their role, it has kept financial costs low for the public EAS. With EAS personnel working closely with MFs, and MFs in turn working with follower farmers, the system has ensured the inclusion of virtually all farmers at some level and has improved information flow to a certain degree. MFs reported feeling more empowered in their role due to the various opportunities they are able to access. In addition, the fact that MFs are linked up with specific network of follower farmers facilitates the evaluation of the approach’s effectiveness.

Nevertheless, considering the core principles that F2FE is expected to adhere to (Franzel et al. 2015), the study reveals considerable ‘abuse’ of the MF approach – both by EAS personnel and MFs. The overriding preoccupation with increasing production and productivity has meant that the MFs’ use of related technologies factors heavily in their selection. MFs are selected in a top-down manner with minimal community participation. Although both EAS staff and MFs insisted that MFs demonstrate better agronomic practices, MFs are ahead primarily in terms of intensive input use, thus making it difficult to substantiate the claim about their agronomic practices being ‘better’. Rather, with the government being under pressure to increase production and productivity levels, and EAS personnel being under pressure to meet technology diffusion quotas, the MF approach has become a convenient mechanism for identifying financially solvent farmers who are instrumental in achieving those objectives.

For their part, MFs tend to discriminate in the information they communicate to follower farmers, and there were instances of them ‘capturing’ various opportunities that had been targeted at poorer farmers. Moreover, from the perspective of information and technology dissemination, it seems ideal and in line with recommendations (e.g. Swanson and Rajalahti 2010; Franzel et al. 2015; Davis, Franzel, and Spielman 2016), that almost all farmers in the study communities are incorporated in networks. However, the oscillating function of these networks between technical and political objectives has meant that they have become a widespread apparatus for surveillance and community policing, with MFs playing a central role in this setup. This overlap with the political has compromised the approach’s power to garner feedback from the community, as farmers’ compliance and docility are the prized traits rather than their assertiveness. It has also contributed to the weakening of community trust. Thus, this study posits that the MF approach has become an arm of the top-down, politically charged EAS system. Such misuse of the MF approach is not unique to Ethiopia. For example, Taylor and Bhasme (2018) have documented similar findings regarding the benefits and challenges of the MF approach in south India. They found that the very characteristics that makes MFs attractive to

EAS agencies as the ‘ideal’ model, the over-emphasis on rapid adoption of agricultural technologies, and the limited prospect for farmers’ participation perpetuates the transfer of power hierarchies and dependencies. However, the Ethiopian case in addition illustrates how the pre-eminence given to MFs’ role in sustaining state politics contributes to compromising the approach’s effectiveness.

Clearly, the gap that exists between model and follower farmers is not easily bridgeable as the differences lie beyond best practices and productivity. Still, widespread individual-blame bias is reflected in the prevalent tendency to associate follower farmers’ inability to catch up with MFs, with laziness and the aversion of hard work and risk. The fact that MFs’ function spans social, health, and family responsibilities – and that they are expected to be exemplary citizens and show political loyalty – confirms Fantini’s (2013) contention that the MF approach, beyond simple F2FE, signifies an ambition on the part of the GoE to create ‘the new ideal farmer’. Indeed, in the study communities, unaccounted-for societal and environmental costs are hidden by the supposed ‘low cost’ of F2FE due to the exclusive manner in which the MF approach is being implemented, its predominant focus on inorganic inputs, and it being instrumental in controlling the behaviour of farmers.

In line with the desire to make EAS delivery ‘best fit’ a country’s context and development priorities (Birner et al. 2009), the Ethiopian EAS strategy has recently been revised to render it more pluralistic, demand-driven, and market-oriented (MoANR and ATA 2017). Opening up the public dominated EAS system for private sector involvement may reduce its entanglement with politics. At the same time, privatisation of EAS will not be a panacea for exclusion and inequality, as it in fact further propels the bias towards better-off farmers as seen in countries such as Mali, Pakistan, Germany, Venezuela, France, Uganda; and Kenya (Rivera and Alex 2004; Muyanga and Jayne 2008; Labarthe and Laurent 2013; Tur-yahikayo and Kamagara 2016).

The revised strategy intends to continue the use of farmer networks led by MFs and introduce different incentives to compensate MFs for the ‘time and energy they use in supporting other farmers’ (MoANR and ATA 2017, 11). The same strategy also mentions a plan to ‘strengthen model farmers with gradual shift to the use of village promoters’ (*ibid*, 14). Nevertheless, the findings of this research show that the formulation of such policies and their practical application need to be grounded in contextually-suited critical analyses of the historical and current role (including political roles) of MFs, who they are, how they are selected, what their impact has been, as well as feedback from follower farmers in order to avoid perpetuating misuse of the approach.

More importantly, there is a need to critically reflect on the extent to which F2FE – with inclusion, collaboration, reciprocity, strong social ties and equality as its central ethos (Selener et al. 1997; Davis, Franzel, and Spielman 2016) – is genuinely possible, or even relevant in a setting in which the overarching objective is transforming agriculture in the direction of productivism and competitive commercialism. Market-driven extension system brings with it the need to identify and work with innovative farmers willing and able to exploit emerging marketing opportunities (Swanson and Rajalahti 2010). As such interaction with the market increases, competition and differentiation among farmers will be the overriding principles, rather than collaboration (Byres 1996; Bernstein 2010; Tilzey 2017; van der Ploeg 2018). Similarly, agricultural transformation undergirded by competitive commercialisation expects market forces to set farmers apart based on their ‘efficiency’ – enabling resource concentration by ‘efficient’ farmers while eventually

forcing 'inefficient' farmers out of agriculture (Borras 2003; World Bank 2007; Wiggins et al. 2011; Fan et al. 2013). Thus, further careful analysis is required to understand if and how the values underlying a productivist and commercialised agriculture can be made compatible with F2FE/MF approaches. Without such stocktaking, F2FE/the MF approach will continue to be a mechanism merely for copping out by adopting the jargons of community empowerment, participation and inclusion, while in actuality, allowing market and political forces to 'sift through' farmers in order to identify and work with the few who already have better prospects.

## Conclusion

This paper assessed the ways in which model farmer-based farmer-to-farmer extension are being implemented in selected communities in Ethiopia. It examined the characteristics of MFs, procedures for their selection, differences between them and follower farmers, farmers' views on the MF approach, and its implications. The study found that MFs are selected with minimal participation of community members and based not only on their ability to use green revolution technologies, but also their political allegiance; and that once selected, these MFs are accorded privileged access to information, technology, and new skills. Despite these weaknesses, the MF approach has increased EAS coverage, improved possibilities for information and technology dissemination, and brought about the inclusion of virtually all farming households in EAS networks. Nevertheless, the faulty procedure and criteria used in MF selection and the overlap with politics have led to considerable misuse of the approach. It has become a mechanism for top-down EAS implementation, for the identification of and favouritism towards better-off farmers and those supporting the government, to the exclusion of other farmers. It has also become an instrument of control and for ensuring compliance with desired traits. These aspects demonstrate that although official documents refer to the MF approach as a promising mechanism for putting in place a farmer-owned, participatory and collaborative EAS system, the way it is being implemented does not reflect the philosophy behind F2FE. It fails to be accountable to the farmers it serves; it relies on unrepresentative group of MFs; technologies and information are not shared in a way that empowers all farmers; and it lacks mechanisms for two-way communication, showing that the criticisms raised against the T&V extension of the 1970s and 1980s continue to be valid in the F2FE approach used in the study communities today. In line with the government's aim to pursue pluralist EAS provision, increasing the private sector's involvement may, to some extent, lessen the system's entanglement with politics and it's being supply driven. Simultaneously, as long as rapid increases in production and productivity, modernisation of agriculture, and competitive commercialism are the overriding ambitions – with less emphasis being put on equity, justice, and rights for all types of farmers – the implementation of F2FE that is true to its principles will continue to be problematic.

## Notes

1. The selection of these districts is the result of the affiliation of one of the authors to a CIMMYT project being implemented in the same districts during her PhD study. Contrasting the two regions is not an aim in this study; rather the focus is on drawing general trends.

However, in the quantitative analysis, district dummies were included in order to control for any influence of location variations. While this study is extensive in terms of the diversity of actors interviewed and the districts covered, it is neither possible nor the intention of the study to yield generalisations beyond the study communities. Therefore, the findings should be read with the understanding that they do not refer to the whole of rural Ethiopia.

2. Owing to the GoE's intention to utilise MFs as one of its core means of EAS delivery, farmers across the country are grouped as MFs and followers. Each *kebele* has a list of model and follower farmers in the area. Farmer informants were selected from this list.
3. 'Follower farmer' is a farmer that is currently identified as such by EAS personnel due to his/her lower levels of agricultural technology use and productivity. Such a farmer is linked to a specific model farmer through farmers' network in order to learn from and emulate the practices of the latter.
4. Ethiopian Birr (1 USD ~ 16.11 birr on average during the study period)
5. A *kebele* is the lowest administration unit in Ethiopia.
6. Farmers normally referred to EAS personnel as such.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

## Funding

This work was supported by Norges Forskningsråd: [Grant Number 244957/H30].

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