

## TECHNICAL ADVISORY

TAN – 853 ILRI



**Enhancing Livelihoods of Poor Livestock Keepers through Increased Use of Fodder (FAP):  
Planted forage as an entry point for catalysing stakeholder action on broader livestock value chain issues – experiences from Ethiopia.**

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## Enhancing Livelihoods of Poor Livestock Keepers through Increased Use of Fodder (FAP): Planted forage as an entry point for catalysing stakeholder action on broader livestock value chain issues – experiences from Ethiopia.

### ABSTRACT

#### Introduction

Feed supply is a major constraint to livestock production in Ethiopia. The conventional approach to dealing with feed scarcity has focused on introducing improved forage technologies into the farming system through linear technology transfer approaches. We experimented with an alternative approach which combined introduction of forage technologies at farm level with establishment and facilitation of local stakeholder forums to allow broader value chain constraints to be addressed. This yielded mixed success. In a site closer to urban markets with good infrastructure and diverse stakeholder composition, the forum thrived and addressed issues well beyond feed supply including breeding practices and milk marketing arrangements. In a food insecure site, the forum tended to be

dominated by public sector actors and although we saw uptake of forage technologies we saw less evidence of changes in actor behaviour that would lead to sustained change in on-farm practices. We conclude that the self-reinforcing dynamics of technological inputs, entrepreneurship, infrastructure, markets, actor linkages and supportive institutions are necessary to facilitate the uptake of technologies and to transform subsistence livestock production into a business oriented enterprise. Establishment of local stakeholder forums coupled with technology introduction is a promising approach to value chain upgrading.

#### Conditions for uptake

The approach we describe is more likely to facilitate innovation in the livestock sector in contexts which have good market access and infrastructure and where there is a diversity of actors including farmer entrepreneurs, public, private and civil society sectors. Livestock production in Ethiopia is largely based on subsistence production. Even in this context we saw some success in the use of local stakeholder forums to bring about change. In more market-oriented systems we anticipate that such approaches would be even more useful.

#### Existing linkages with other IFAD initiatives:

The lessons derived from this work would be useful for IFAD's many programmes on smallholder market enhancement and value chain development. In Ethiopia relevant projects include:

- Community-based Integrated Natural Resources Management Project (2010-2017)
- Participatory Small-scale Irrigation Development Programme (2008 - 2015)

## PROGRAMME IMPLEMENTATION

### The innovation

This Technical Advisory Note does not follow the conventional pattern of describing a new technology with potential for uptake by IFAD projects. Rather it describes our experience of a process for ensuring that appropriate technologies are adopted in a sustainable fashion. We describe a component of the project that was implemented in Ethiopia.

The Fodder Adoption Project (FAP) started with the premise that promotion and dissemination of fodder technologies to smallholder livestock keepers has yielded limited success and that a new approach is needed. From the outset we adopted a participatory approach paying close attention to building stakeholder engagement in livestock development rather than solely focusing testing and promoting specific technologies. We did, however, maintain a focus on new planted forage technologies but mainly to catalyze interest of local stakeholders and wider change. The work thus combined working with farmers to test and adapt existing forage options on the one hand, and the establishment of local stakeholder forums to identify and deal with broader institutional constraints related to the livestock value chain on the other. We found that this marriage of technology and institutional focus was fruitful in bringing about change in farmer practice and also higher level changes involving non-farm actors involved in input supply and marketing.

### The context

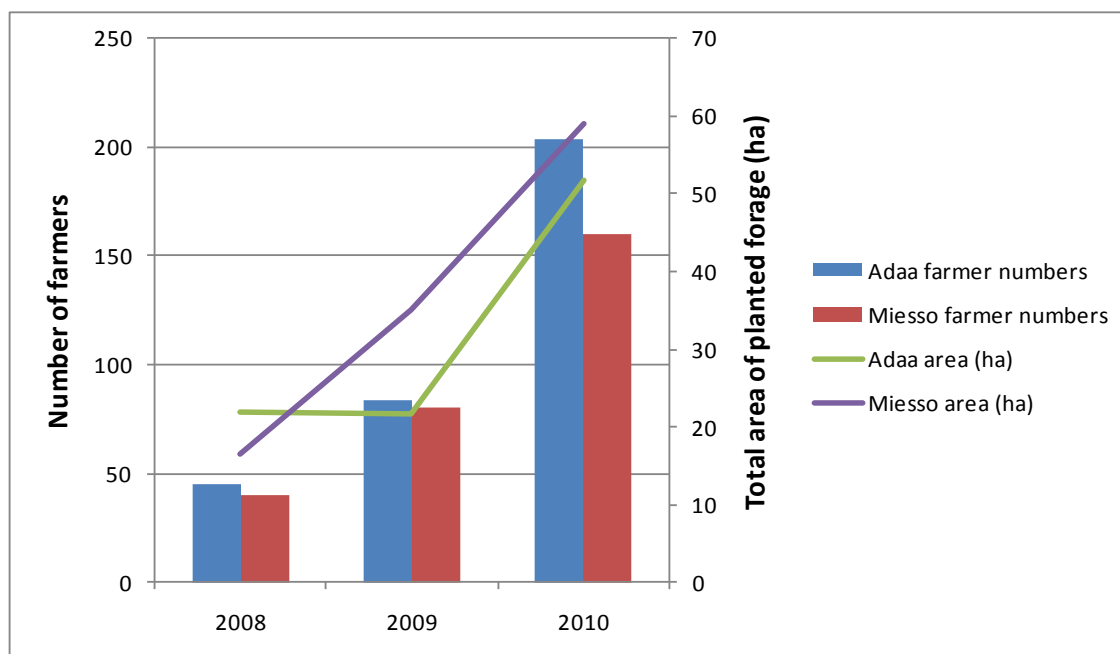
In Ethiopia the project was implemented in a series of learning sites across the country. We took as our unit of action, the Ethiopian administrative district known as the *woreda* which typically includes about 25000 households. Decentralized governance in Ethiopia means that *woreda* local government offices have considerable decision-making power and are relatively autonomous in implementing Federal and Regional policies at local level. The sites that we have selected as case studies for the present discussion are Ada'a and Mieso since these provide useful contrasts to highlight some of the key issues in building stakeholder engagement for enhanced innovation. Mieso is an agro-pastoral system, while Ada'a is a mixed crop livestock system and is quite intensively cropped. A brief description of learning sites is given in Table 1.

Table 1. Key characteristics of study sites

<i>Woreda</i>	<i>Ada'a</i>	<i>Mieso</i>
<b>Region</b>	Oromiya	Oromiya
<b>Nearest urban center and distance</b>	Addis Ababa: 47 km Adama: 51 km	Adama: 204 km Harar: 224 km Dire Dawa: 213 km
<b>Human population density (number per km<sup>2</sup>)</b>	203	50
<b>Altitude</b>	1592 - 2937 m	1107-3106 m
<b>Rainy seasons</b>	Belg (short) – March-April Meher – June-Sept	Main rain: Mid June-September
<b>Average rainfall (mm)</b>	854-1130 (avg. 920)	635-949 (avg. 759)
<b>Mean annual temp (°C)</b>	13-20 (avg. 18.7)	17 – 25 (avg. 22.2)
<b>Population (CSA, 2007)</b>	131,273	130,458
<b>Major crops</b>	Teff, wheat, chickpea, horticulture	Sorghum, maize, teff, sesame, haricot bean
<b>Source of irrigation</b>	Rivers and crater lakes	Very limited irrigation from rivers
<b>Livestock species</b>	cattle, sheep, goats, equines and poultry	cattle, goats, camel and sheep
<b>Cattle population (CSA, 2003)</b>	160,697	92,411



Figure 1. Number of adopting farmers and total area of forage planted during the project lifetime



At the Ada'a learning site our first step was to work with farmers to test forage options on their fields at meaningful scale. We avoided the use of small demonstration plots since previous experience had shown that unless farmers plant, manage and use forages themselves then they are rarely convinced about their benefits. In our first year 45 farmers planted a range of forages at Ada'a (Figure 1). These included Oats (*Avena sativa*), Vetch (*Vicia dasycarpa*), Lablab (*Lablab purpureus*), Pigeon pea (*Cajanus cajan*), Sesbania (*Sesbania sesban*), Napier grass (*Pennisetum purpureum*) and Alfalfa (*Medicago sativa*). These forage introductions were carried out in close collaboration with the local extension and research actors, who also provided practical training on forage establishment, management and utilization. These early introductions of planted forages generated considerable interest among farmers and other stakeholders including government line departments, research institutions and input suppliers. They immediately noted the benefits of planted forages in terms of improved livestock productivity.

We capitalized on this interest by establishing local stakeholder forums with a view to enhancing knowledge exchange and spurring joint action to build on our small early efforts. These forums brought together farmer representatives, extension agents, researchers, NGO representatives, private sector actors, local co-operatives and a range of other actors. The commitment of stakeholders to forums was strengthened by the accounts farmers gave of the successes of forage introductions. In the second year, the forage introduction activities were increasingly managed by the local extension department

with backstopping from FAP staff. At the height of the growing season we arranged a stakeholder forum meeting in farmer fields and held informal discussions. At the meeting in Ada'a, farmers were able to raise various issues such as the need for improvements to milk marketing arrangements, the need for improved dairy cows and the need for better veterinary services to support more intensive production. These were issues that were subsequently taken up and acted upon by the stakeholder forum. A timeline of some key events and changes in actor behaviour is shown in Figure 2.

During the second year of the project the agenda of the stakeholder forum in Ada'a had begun to extend beyond forage introductions to broader issues involving milk marketing and input supply services in the Ada'a learning site. Once farmers were growing improved forages which resulted in improved milk production they began to seek and source higher quality cross-bred animals. The stakeholder forum was a useful instrument for connecting farmers with potential suppliers of cross-bred cows. Later in the project the issue of the failure of artificial insemination (AI) and veterinary service provision was raised and discussed at the stakeholder forum. The issue of connecting farmers to milk buyers was also a strong theme in stakeholder discussions and the forum was able to broker discussions between local farmers and the local milk co-operative and other potential milk buyers. These negotiations were repeated at intervals during the project ultimately leading to the agreement of new arrangements for milk transport and marketing initially with Ada'a Dairy Cooperative and subsequently with a private milk processor.

In the third year of the project we noted increasing

independence and self-sustaining impetus of the stakeholder forum (Figure 2). The agenda continued to evolve and hosting and leadership of meetings increasingly passed to the local extension office. We continued to see a diverse set of stakeholders coming together to deal with a broad range of livestock value chain issues. At the same time as the stakeholder forum was consolidating we continued to see increased uptake of forage technologies by farmers in Ada'a reaching around two hundred by the final year of the project. The experience in Mieso, another of our sites, was different. A timeline of key events and changes in actor behaviour is shown in Figure 3.

Mieso is a food insecure area with relatively few actors other than government line departments. A number of relief NGO's were present in Mieso but development NGO's were essentially absent. Private sector input suppliers also lacked prominence. In Mieso, we adopted a similar approach as in Ada'a, starting with forage introductions in collaboration with government research and extension organizations. The forage options that were selected through focus group discussions in Mieso woreda were different mainly because of the agro-ecological and social conditions. In Mieso, farmers chose drought resistant food-feed crops. These provide nutritious forage for livestock but also produce food grains and thus do not compete for land and labour with staple cereals such as sorghum which predominate in this area. Thus in Mieso, forage options included Cow pea (*Vigna unguiculata*), Lablab (*Lablab purpureus*), Alfalfa (*Medicago sativa*), Napier grass (*Pennisetum purpureum*) and Pigeon pea (*Cajanus cajan*). By the end of the project cowpea had emerged as the preferred option. Again we used local successes with introduced forages to catalyse establishment of a local stakeholder forum. In the case of Mieso the forum was dominated by different government line departments including the office of extension and the local cooperative promotion office. Other stakeholders included farmer representatives and the local women's dairy group. In Mieso, we saw significant adoption of forage options (Figure 1) but wider value chain issues did not emerge in the stakeholder forum to the same extent as in Ada'a (Figure 3). Forage introductions in years 2 and 3 were strongly orchestrated by the local extension office and there were questions over sustainability, engagement of non-government actors and so on. We are uncertain as to whether the local stakeholder group in Mieso will continue beyond the project. Part of the reason for this relates to the lack of diversity of group members leading to a lack of dynamism of the stakeholder group. A further factor is the food insecure status of this learning site. Years of government intervention have led to a degree of dependency among stakeholders in Mieso which limits self-sustaining and independent action.

These two case studies demonstrate the importance of local context in influencing the success of using local stakeholder forums to bring about value chain improvements. Some

simple principles emerge:

- Local stakeholder forums required some practical action on the ground to stimulate interest and enhance credibility – in our case the “engine of change” was planted forage but other practical entry points could work equally well.
- Diversity of actors seems to be a key element of successful stakeholder forums.
- Enhancing productivity at farm level is a good first step but needs to be quickly accompanied by actions to deal with other value chain constraints such as input provision and marketing arrangements.
- In food insecure environments the use of local stakeholder forums for value chain development can be challenging. In such cases a different thematic focus such as food-security, capacity building or improving livelihoods might be more appropriate; this may also require a different set of actors including social welfare and health actors.
- Establishing a coherent livestock innovation system requires experimentation, learning from mistakes and careful adaptation. During the pilot phase some external resources may be required to cover the costs of workshops and meetings, training and other support and to underwrite new interventions that carry some risk until proven.

## Beneficiaries

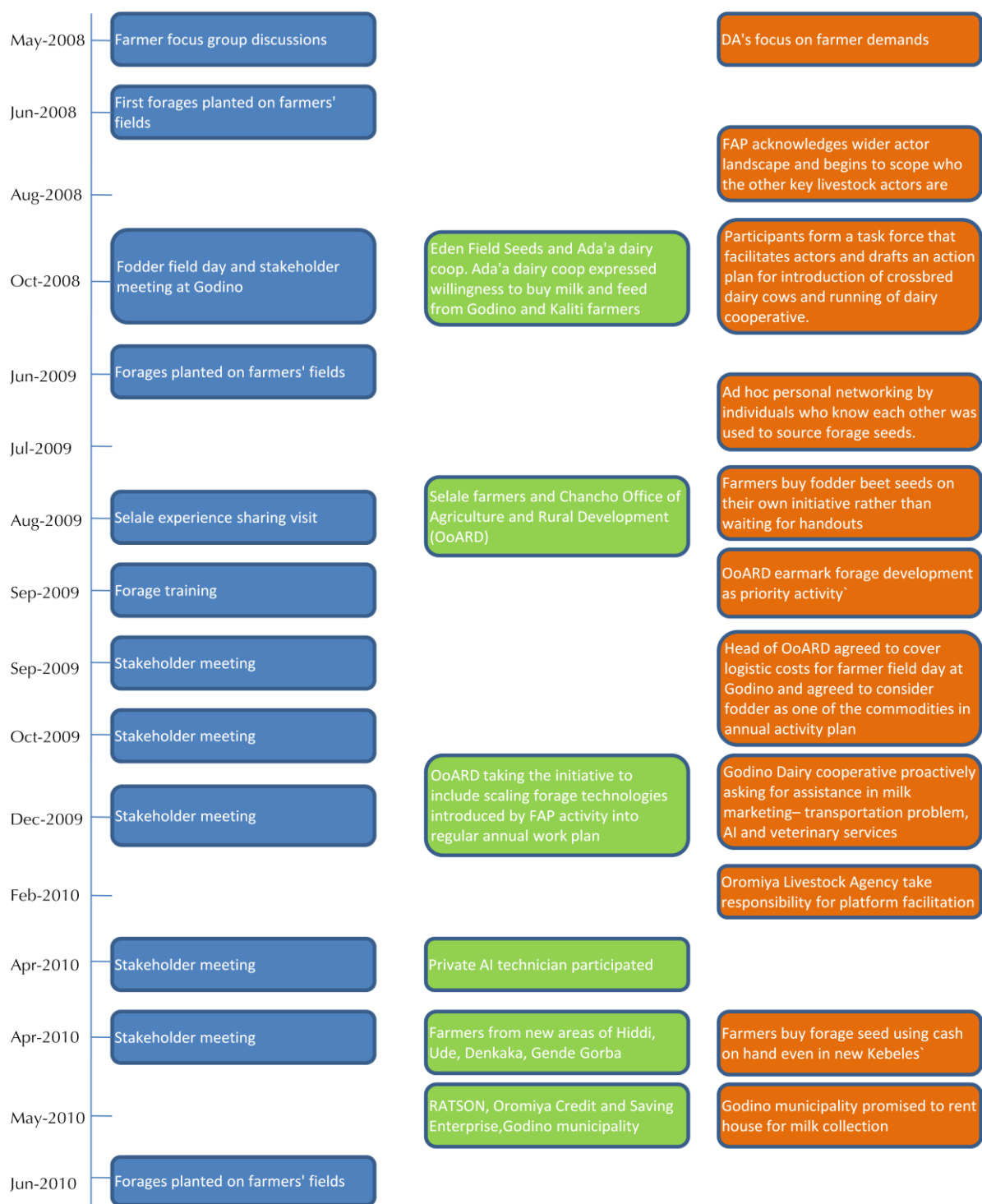
The final beneficiaries of this work were smallholder farmers with whom we worked. The numbers of beneficiaries were admittedly relatively modest (hundreds rather than thousands of farmers). This was largely because our focus was on building sustained capacity among local actors to continue to foster innovation into the future.

## Outputs and impact:

The main impacts of the work so far have been at two levels. Firstly, we have seen changes in farm practice with farmers growing substantial areas of improved forages (see Figure 1) and feeding these mainly to dairy cattle. We have also seen the increasing introduction of cross-bred cows in Ada'a to make better use of improved forage. Perhaps more importantly we have seen changes in the networking culture of local stakeholders especially in Ada'a. Interactions that were facilitated through local stakeholder forums have led to better connections between key stakeholders. For example farmers have been able to articulate their needs more effectively and government line departments have become more responsive to farmer needs. Linkages have been created between local extension offices and private sector players such as forage seed and feed suppliers. These enhanced connections between different stakeholder groups have led to increased responsiveness of stakeholders to emerging needs of farmers.

Figure 2. Timeline of key events, involvement of new actors, linkages emerging between actors, and changes in behaviour, attitude and skills of actors in the Ada'a learning site.

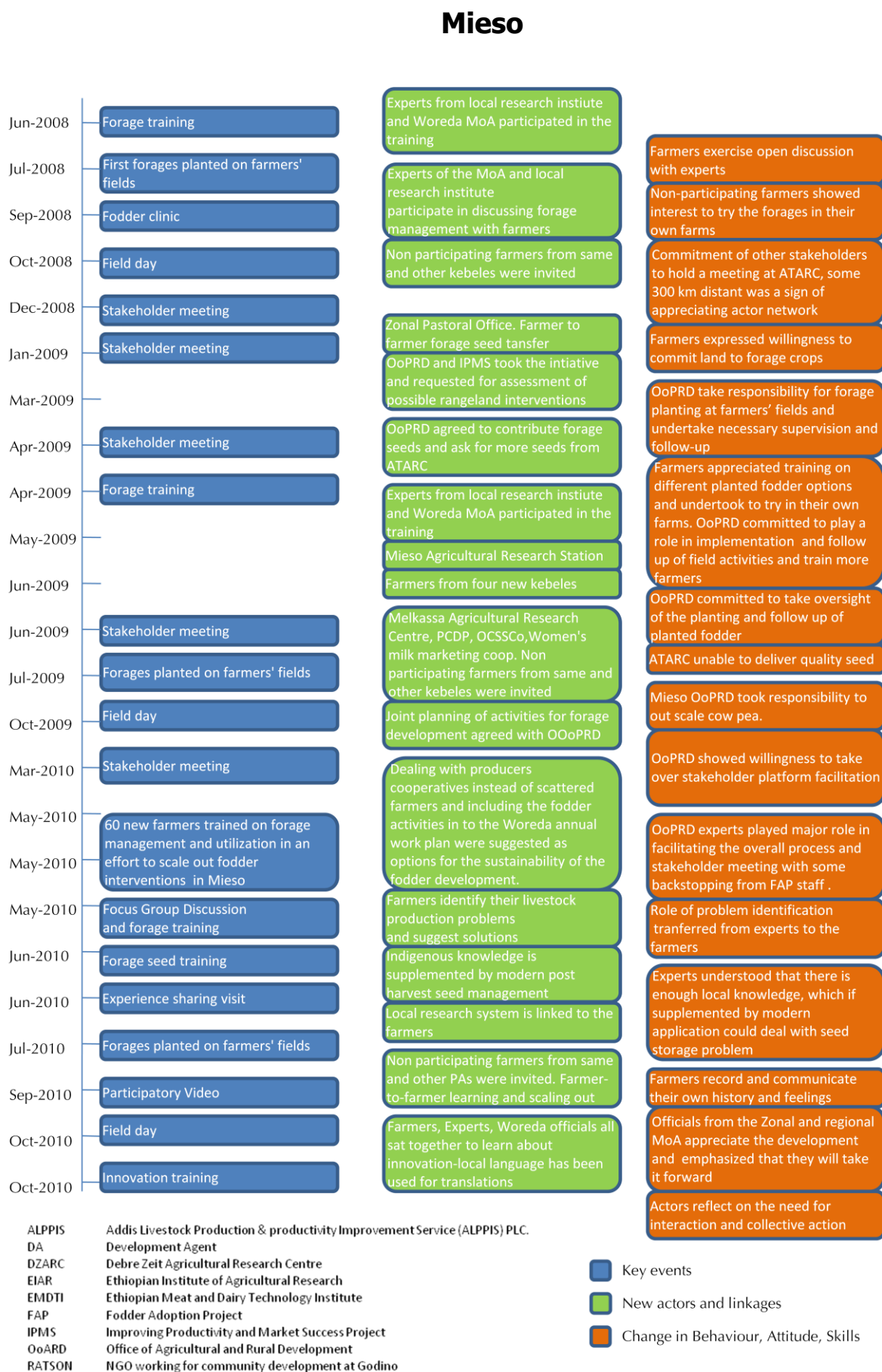
## Ada'a



- Key events
- New actors and linkages
- Change in Behaviour, Attitude, Skills

ALPPIS Addis Livestock Production & productivity Improvement Service (ALPPIS) PLC.  
 DA Development Agent  
 DZARC Debre Zeit Agricultural Research Centre  
 EIAR Ethiopian Institute of Agricultural Research  
 EMDTI Ethiopian Meat and Dairy Technology Institute  
 FAP Fodder Adoption Project  
 IPMS Improving Productivity and Market Success Project  
 OoARD Office of Agricultural and Rural Development  
 RATSON NGO working for community development at Godino

Figure 3. Timeline of key events, involvement of new actors, linkages emerging between actors, and changes in behaviour, attitude and skills of actors in the Mieso learning site.





## Dissemination pathways

Our dissemination efforts included two different dimensions. Firstly we were involved in dissemination of technical knowledge about establishment, management and utilization of planted forage varieties. This involved a series of practical trainings and participatory evaluation of planted forage, jointly delivered with national research and extension colleagues. The trainings were aimed at local extension agents and farmers. We also developed various fact sheets in local languages to spread technical knowledge about forages. The second area involved raising awareness of the usefulness of stakeholder forums as catalysts of change. To a large extent this was achieved in a “learning by doing” mode. As the project progressed, key actors at local level came to appreciate the benefits of collaborative action. We also established a national “Fodder Roundtable” involving a range of national livestock actors. One purpose of the Roundtable was to take site-level experiences to a wider group of actors for discussion and comment. We also used a range of social media mechanisms including a blog and a wiki site to share experiences with a more global audience.

## Further research needs

Our work generated many questions. We saw some success in the use of stakeholder forums combined with practical interventions. However we had a very limited number of study sites and a wider research effort is needed. In particular it would be useful to investigate how thematic focus influences the effectiveness of innovation forums in bringing about change. Furthermore there is a need to look at the costs and benefits of innovation approaches compared to more conventional technology transfer methodologies. There is also a need to work out how to connect local stakeholder forums down to communities and up to the wider policy sphere.



## Conclusion<sup>1</sup>: USEFUL INFORMATION

### Useful links

[www.fodderadoption.wordpress.com](http://www.fodderadoption.wordpress.com)  
<http://fodder-adoption-project.wikispaces.com/>

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- A. J. Duncan, R. Puskur, and W. W. Stur. Enhancing adoption of fodder technologies: how can an innovation systems perspective help? In: Animal Nutrition. Preparedness to Combat Challenges. Proceedings of Animal Nutrition Association World Conference Feb 14-17 2009. New Delhi, India, edited by A. K. Pattanaik, A. K. Verma, D. N. Kamra, and K. Sharma, New Delhi:Animal Nutrition Association, India, 2009, p. 41-44.

### Acronyms

	Addis Livestock Production & productivity Improvement Service (ALPPIS) PLC.
ALPPIS	
ATARC	Adami Tulu Agricultural Research Centre
CIAT	International Center for Tropical Agriculture
CSA	Central Statistics Agency
DA	Development Agent
DZARC	Debre Zeit Agricultural Research Centre
EIAR	Ethiopian Institute of Agricultural Research
EMDTI	Ethiopian Meat and Dairy Technology Institute
FAP	Fodder Adoption Project
ICARDA	International Center for Agricultural Research in the Dry Areas
IFAD	International Fund for Agricultural Development
IPMS	Improving Productivity and Market Success Project
Kebele	Smallest administrative unit in Ethiopia
MoA	Ministry of Agriculture
NGO	Non-governmental organization
OCSSCo	Oromia Credit and Saving Share Company
OoARD	Office of Agricultural and Rural Development
OoPRD	Office of Pastoral and Rural Development
PCDP	World Bank Pastoral Communities Development Project
RATSON	NGO working for community development at Godino

<sup>1</sup> In view of the informality of the TAN series, this manuscript may not entirely conform with the requirements of formal IFAD publications. The views and interpretations contained therein are those of the authors and should not be attributed to IFAD.

## ANNEX

### **Project Brief: Enhancing livelihoods of poor livestock keepers through increasing use of fodder**

#### *Background*

Livestock are an important pathway out of poverty for the rural poor. Worldwide, 50% of the world's poor own livestock and depend on them for their livelihoods. Livestock are living assets contributing to food security and are an important source of protein and minerals for nutritional security.

There is increasing demand for livestock products worldwide in the form of meat, milk and milk products such as cheese and butter. This presents poor livestock producers with significant opportunities to increase benefits from their livestock and raise income through livestock markets. Access to fodder and water are often identified as major constraints to livestock productivity. This inability to feed livestock adequately remains one of the most widespread global constraints in the livestock sector. Removing it would assist smallholder livestock producers to improve their livelihoods by taking advantage of market opportunities and building assets.

Past efforts to enhance smallholder livestock production have shown little evidence of widespread adoption of new technological innovations such as new fodder options or new ways of feeding livestock. This has been attributed to a range of factors including poor approaches to introducing technologies, inappropriate technologies and services relative to the needs of the poor, low sustainability of the changes introduced, inadequate local livestock-support organizations and weak linkages to markets. Recent experiences in Nigeria and India focusing on fodder issues have highlighted the importance of understanding and developing partnerships and processes and working in what is known as an "innovation systems framework" to achieve sustainable improvements in poverty reduction. In effect this involves focusing on putting knowledge to achieve desired social/economic outcomes. Such knowledge is held by different "actors" within the system; looking at how these actors interact, their working practices and the policy environment in which they operate can help to remove bottlenecks to development. Recent experiences in Southeast Asia with developing forage technologies with active participation of poor farmers and local extension services have shown that this approach results in high adoption rates at project sites and surrounding areas.

Furthermore, studies by International Agricultural Research Centres (IARCs) and their partners show that when fodder options are linked to markets for meat and milk and when they have direct effects on income generation, fodder options to support livestock production are competitive with other farm enterprises in terms of returns to land and labour. These successful experiences in fodder uptake and significant accumulation of knowledge on preferences for fodder plants, seed systems, fodder management and integration of fodder into feeding systems provide the technical platform for this project.

#### *Project Goals*

The current project seeks to engage with a wide range of stakeholders to strengthen the capacity of poor livestock keepers to:

- select and adopt fodder options
- access market opportunities to enable them to improve their livelihoods.

The project seeks to achieve these goals in ways that will ensure the sustainability of their farming systems. The programme is framed around four overall outputs and associated activities. The project seeks to establish:

- Mechanisms for strengthening and/or establishing consortia of players in the livestock/fodder arena to allow small-scale innovations to spread across systems.
- Options for getting research off the shelf and into practice including innovative communication strategies and strategies for making changes at farm level to sustainably improve fodder supply.

Grant Number 853

- Enhanced capacity of project partners to experiment with and use fodder technologies through effective communication, improved access to technical information and training and a better understanding of the role of diverse players and their interactions in successful fodder development.
- Generic lessons with wide applicability on innovation processes and systems, communication strategies and partnerships that provide a suitable environment for fodder innovations to spread across systems.

#### *Geographical focus*

The project is implemented in Ethiopia, Syria and Vietnam:

- Ethiopia. The project has activities in four pilot learning sites. We are working with the Improving Productivity and Market Success of Ethiopian Farmers (IPMS) project (a Canadian-funded Ethiopian Ministry of Agriculture and Rural Development project, implemented under ILRI's leadership in collaboration with national organizations and other CGIAR centres) in Atsbi, Alamata, Mieso and Ada'a.
- Syria: The project is being implemented at El-Bab, Salameih and Tel-Amri in Aleppo, Hama and Homs provinces respectively. It builds upon previous forage introduction by ICARDA and the Syrian Ministry of Agriculture and Agrarian Reform in El-Bab, and ICARDA and Aga Khan Development Foundation in Salameih.
- Vietnam. The project is working at two learning sites. These are located in Ea Kar district, Daklak and in Ky Anh district, Ha Tinh. In Daklak, the project builds on previous introduction of forages by CIAT and Tay Nguyen University. In Ha Tinh, the project works within the project area of IFAD Loan Project 'Programme for improving market participation of the poor (IMPP)' using the lessons on fodder innovations generated at the Daklak learning site.

#### *Project partners in the implementation of the programme*

The International Livestock Research Institute (ILRI) is the implementing agent on behalf of the System-wide Livestock Programme. SLP provide strategic guidance and provide links with a sister project on Fodder Innovations funded by the UK Department for International Development. The programme is funded by the International Fund for Agricultural Development (IFAD). ILRI coordinates the project in the three countries, and leads activities on the ground in Ethiopia in collaboration with the IPMS project which has an ongoing programme of fodder development research. In Syria activities are led by the International Centre for Agricultural Research in the Dry Areas (ICARDA) with co-operation from the Syrian Ministry of Agriculture and Agrarian Reform and the Aga Khan Foundation. In Vietnam activities are led by the International Centre for Tropical Agriculture (CIAT) with co-operation from the Vietnam National Institute of Animal Science, Tay Nguyen University, district and provincial Departments of Rural Development at the pilot learning sites and the IFAD IMPP project.

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