Newsletter

No. 2, August 2010

CGIAR Systemwide Livestock Programme — Developing feed...Feeding development

In this Newsletter:

This is an update of the surveys. Also, we would like to start a discussion on the project structure and the sampling method (hh survey). We also introduce the members of each team.

Surveys and models

Village survey: **SAs** has almost finished the surveys. **SAf** is waiting for the hh survey to finish all surveys. **EA** has been in the field in Ethiopia. **WA** will select the villages soon and carry out the survey after the rainy season.

Census lists: **SAs** has almost finished the census list of their 8 villages (Annex 1) and they are now entering the data in Excel. For the data collection, they selected a sufficiently educated person from the village (school leaver, college student or a teacher). For each household, they paid 5 Rupees (0.11 US).

Spatial data: **EA** is using Google Earth images in the village survey to gather information (e.g. land use and soils) that is often lacking at a village level, but that can help to understand better the diversity of farmers' decisions.

Modelling: We are still exploring the use of crop, livestock and economic models that run with minimum datasets to simulate the consequences of CR alternatives in livelihood and environment (e.g. Tradeoff Analsys and FIELD).

Project structure

Thinking about how to make the project a bit clearer and to facilitate discussions (among ourselves, but also of the outputs of the project), we have developed **four main methodological ideas** we would like to share with you (Annex 2):

- Organisational levels in the system
- Conceptual models of the system
- Indicators and surveys
- Farmers and farms

Please let us know your comments or suggestions on these ideas. We would be very interested in discussing them and modifying them if necessary. This means that these ideas are still flexible. However, to make best use of the time and thinking about the general meeting in October, we will keep developing the **Conceptual Models,** and identifying the different **Indicators**, prioritising them and finding ways to measure them.

We hope that these ideas will enrich our work and facilitate our understanding, analysis and comparison of crop residue management.

Household survey: a new round!

The objective of the household survey is to characterise the diversity within the village in regards to: allocation of crop residues; crop management practices and feed strategies; and farm evolution/trajectories.

Sampling method (the survey structure still needs to wait)
According to the project:

Scale	No. households
Village	20
Site	160
Region	480
Total	1920

Nevertheless, Nils Teufel raised some relevant issues:

- How much of the sampling has to be the same in all hubs?
- What is the total sample size per hub?
- Do we select a sample proportionate to village size?
- Do exclude certain households?
- Do we stratify the sample?
- How do we determine the number of selected hh/class?
- How do we select randomly within class?

Based on his ideas, we have developed a proposal of the sampling procedure (Annex 3).

Additional news:

- The **SPSS form** to fill in the village survey data is **ready. SAs** and **SAf** are already using it!
- **Oktoberfeest!?** Bruno will plan a meeting for a general discussion on the project (structure, surveys, etc).
- **Coming soon**… discussion on how to analyse the data of the village surveys!
- **EA** team is going to the field in Kenya, Diego is joining.
- **SAf** team is holding a meeting with the partners in Mozambique.
- **SAs** team will carry out the last village survey. **CO** and Lieven (CIP-Nairobi) will visit India in September
- **WA** team has been busy with the (local) partners.

Teams

Central office (CO) & Co.

Bruno Gérard – Programme Coordinator

Wubalem Dejene – Assistant to the Program Coordinator

Diego Valbuena – Postdoc with ILRI, helping with the coordination of the SLP project, specifically the system analysis.

Mariana Rufino – System Analyst, involved with FARMSIM and recently joined ILRI-Nairobi.

Olaf Erenstein – Working at CIMMYT-Addis and helping as a Socio Economist backstopping in SLP.

Lieven Claessens – Working at CIP-Nairobi, involved with the Trade-Off Analysis.

Mark van Wijk – System analyst, involved with FARMSIM and working at Wageningen University.

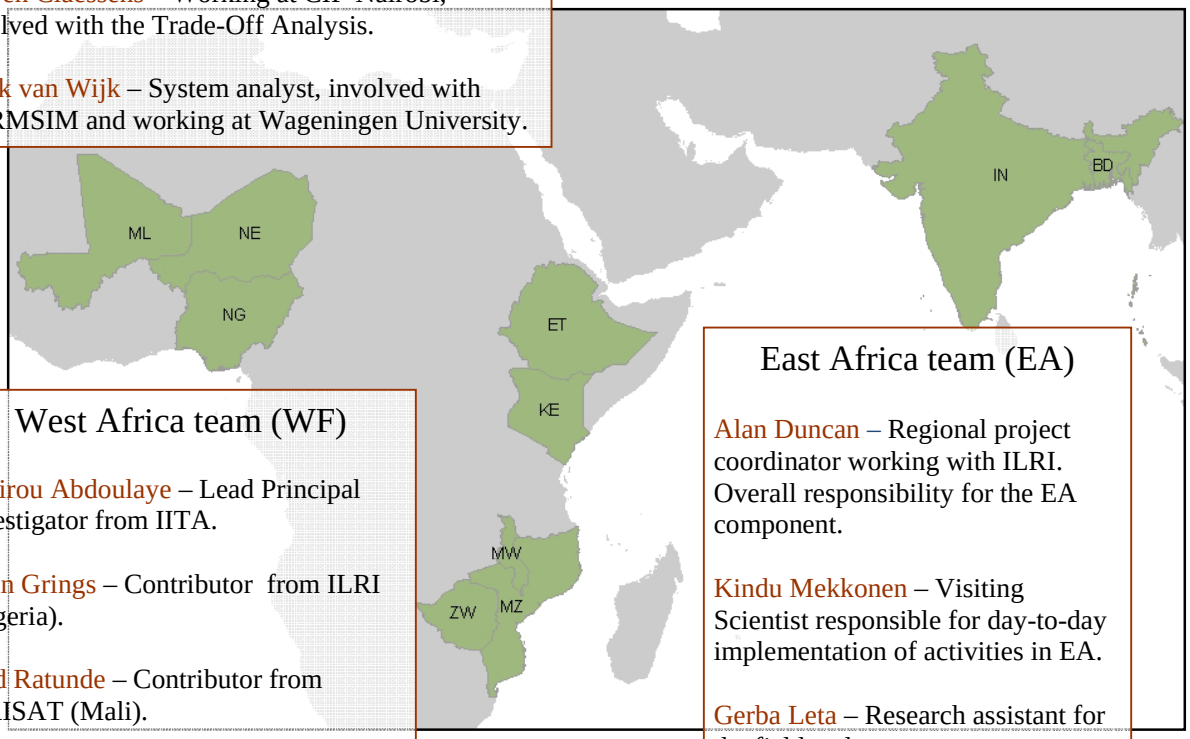
South Asia team (SAs)

Meera Bhatia – Regional project coordinator: Postdoc with CIMMYT, leading the SLP South Asia case study.

Nils Teufel – Contributing scientist: he has also been involved in the previous SLP and he does not like to write…

Arindam Samaddar – Advisor for the SLP South Asia case study because of intensive involvement with previous SLP study in conservation agriculture.

Braja Swain – Research Assistant, based at ILRI Delhi office, specifically for the SLP South Asia case study.



West Africa team (WF)

Tahirou Abdoulaye – Lead Principal Investigator from IITA.

Elain Grings – Contributor from ILRI (Nigeria).

Fred Ratunde – Contributor from ICRISAT (Mali).

Abdou Salla – Visiting Scientist to coordinate data collection and reporting.

East Africa team (EA)

Alan Duncan – Regional project coordinator working with ILRI. Overall responsibility for the EA component.

Kindu Mekkonen – Visiting Scientist responsible for day-to-day implementation of activities in EA.

Gerba Leta – Research assistant for the field and surveys.

South Africa team (SAf)

Sabine Homann – Lead Project Investigator, coordinator in communication, implementation and analysis of SLP in Southern Africa.

André van Rooyen – Researcher, represented ICRISAT in SLP planning processes. Involved in the conceptual development of the project, analysis and way forward.

If you have any comment or suggestions on this Newsletter please send us an e-mail d.valbuena@cgiar.org

Annex 1: Census list format (SAs)

village code	village name	sub-village	state/site	enumerator name & phone no.	Village Census
					SLP_CR

	(1)	(2)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
#	household	household	household	total		land		livestock (female & male, > 6mo)						draft	buying	selling
	head	head	head	household	unit	owned	cultivated	local	xbred	buffalo	goat	sheep	donkey	blk/ox	crop	crop
	name	father's name	gender	members				cattle	cattle					buff	residue	residue
	घर के मुखिया का नाम	मुखिया के पिता का नाम	मुखिया का लिंग	कुल सदस्य	इकाई	निजी जमीन	खेती की गयी जमीन	देशी गाय/बैल	शंकर नस्ल गाय/बैल	भैंसा/ भैंसा	बकरी/ बकरा	भेड़/ भेड़ा	गधा/ गधी	बैल/ भैंसा	फसल अवशेष का क्रय	फसल अवशेष का विक्रय
	পরিবারের প্রধানের নাম	পরিবারের প্রধানের পিতার নাম	পরিবারের প্রধানের লিঙ্গ	পরিবারের সদস্য সংখ্যা	একক	নিজস্ব জমি	চাষ করা জমি	দেশি গরু/বলদ	শংকর গরু মাইলা/ পুরুষ	মোষ মাইলা/ পুরুষ	ছাগল/ পাঁঠা	ভেড়া মাইলা/ পুরুষ	গাধা মাইলা/ পুরুষ	চাষের বলদ মোষ	খড় কেনা হয়?	খড় বিক্রয় হয়?
1			m - f												☐	☐
2			m - f												☐	☐
3			m - f												☐	☐
4			m - f												☐	☐
5			m - f												☐	☐
6			m - f												☐	☐
7			m - f												☐	☐
8			m - f												☐	☐
9			m - f												☐	☐
10			m - f												☐	☐

livestock numbers: male and female, older than 6 months

SLP_CR_VillCensus_v2 (2), 21/05/10	1 acre = _____ (unit)	1 ha = _____ (unit)	date filled _____	page ___ of ___

Annex 2: Methodological ideas

We first list the main research questions (RQ) and methods (M) mentioned in the project proposal. Then, we describe the four methodological ideas we would like to propose.

Research Questions:

The main questions of the project are:

RQ1. What determine decisions on CR, including:

a. Current system
b. Market access
c. Technology and management interventions
d. Diversity of decisions
e. Agro-ecology
f. System intensification
g. CR property rights
h. Temporal scale

RQ2. What is the impact of those decisions on:

a. Livelihoods
b. Environment
c. Potential use of additional CR
d. Intensification = efficient use of CR
e. Interactions livelihoods and environment

RQ3. What are the technology, institutional and policy options to enhance livelihood and environmental benefits?

Methods

The methods of the project include:

M1. Surveys carried out in different countries, regions, villages and households.
M2. Collection of primary and secondary biophysical data
M3. Trend analysis and scenario building at different organisational levels.

1. Organisational Levels

By including different households in different villages, different regions and different countries (M1), this project has a strong multi-level component (Figure 1). As a result of this organisational variability, we could analyse and compare the different systems at different levels—keeping in mind the interactions between levels. For example, the data gathered in the surveys can be used to characterise a region (8 villages), a village (village surveys) and a farm (household surveys).

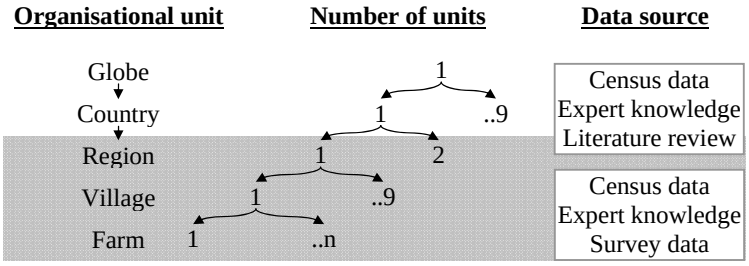


Figure 1. Levels and data sources of the project

2. Conceptual models

Conceptual models can be developed to facilitate the understanding, analysis and comparison of crop residue management between regions, villages and farms (RQ1). Figure 2, 3 and 4 are simple illustrations of conceptual models at different levels developed based on the work of Herrero et al. (2010). By indentifying the components of these conceptual models, we can easily identify and prioritise the data we will need to gather (M1, M2 and M3).

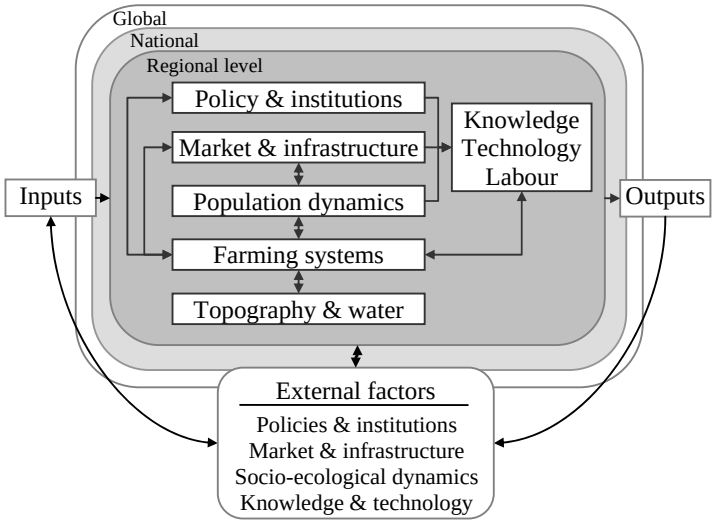


Figure 2. Conceptual model of a Region.

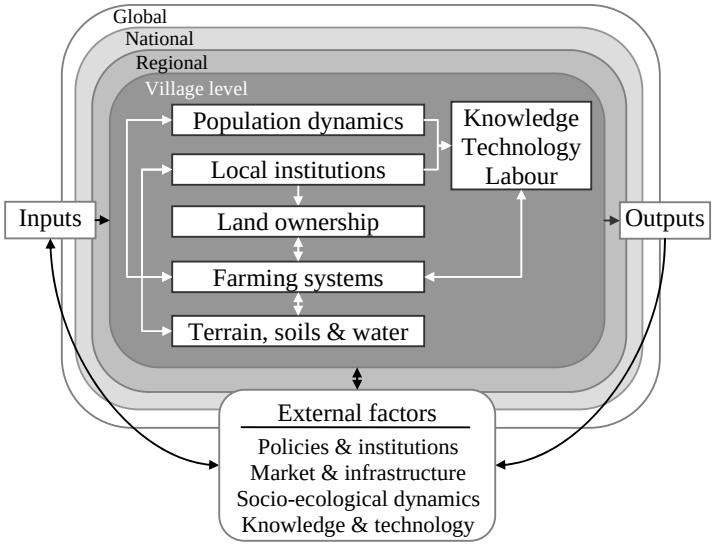


Figure 3. Conceptual model of a Village.

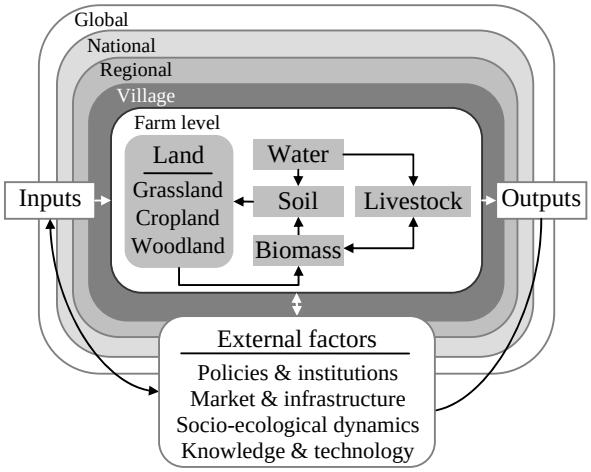


Figure 4. Conceptual model of a Farm.

For example in the conceptual model at a farm level and related to CR residue production and management (Figure 4), a farming system can be represented by different interrelated components. Table 1 is an example of the components of the system at a farm level, including their interaction with other components at the same level and at other organisational levels. In Ethiopia, for example, farmers in K'obo seem to have good soils, but water shortages limit the productivity of biomass at a farm level. On the other hand, farmers in Nekempte have better access to water, but soil nutrients are limiting factors (knowledge, labour and capital at farm level are not explicitly represented because they can be use in all the arrows).

Table 1. Different components of farming systems with examples of their interaction with other components and other organisational levels.

Component	Examples	Interaction with other components	Interaction with other levels
Knowledge*	Experience, education	How to organise Labour	Social networks (Village)
Labour*	Household structure	Planting, weeding crops	Hiring labour (Village, Region)
Capital*	Assets, remittances	Use plough	Prices (Region and Country)
Land	Farm size and slope	Amount of Biomass	Land tenure policies (Country)
Soil	Soil characteristics	Nutrients for crops	Input markets (fertiliser) (Region)
Water	Water quality, quantity	Irrigation of crops	Rainfall (Region and Globe)
Biomass (CR)	Yield	Feed for livestock	Output market (Region, Country)
Livestock	No. cattle	Manure for soils	Input market (Region, Country)

* Not explicitly represented because they can be part of all the interactions (arrows)

3. Indicators and Surveys

While conceptual models can help us to understand and compare processes, indicators can help us to characterise and quantify the state of a system, including the consequences of CR management on livelihood and the environment (RQ2). These indicators can be economic (e.g. labour), social (e.g. local institutions) and ecological indicators (e.g. water quality). Different indicators might be needed to characterise different organisational levels (Table 2).

Table 2. Examples of indicators at different levels (after Zhen and Routray 2003).

Type	Organisational level	Example
Social	Farm	Food self sufficiency
	Village	hh without food sufficiency
Economic	Farm	Crop productivity
	Village	Equality in hh income
Ecological	Farm	Soil nutrients content
	Region	Depth groundwater table

Additionally, when looking at future alternatives (RQ3) we can use some of these indicators to compare the current with a potential future state of the system. Finally, the selection and use of indicators can be used as a basis to develop the different surveys (M1), specifically the household survey. So besides complementing the village survey (whose data can be used to calculate indicators at a village level), we should use the household survey to target the data that we really need to gather from farmers. Still, surveys are not the only source to obtain information on the indicators and/or the whole system (e.g. census data, GIS).

4. Farmers and Farms

Looking at the time that farmers are spending to fill in the different surveys and to the fact that our central research point are farmers and farming systems, I would prefer to focus a bit more on farmers' perceptions, limitations and expectations (including their view on the future of their farming systems; RQ3 and M3), while still including the socio-economic structure of the farm itself. With this, we could address more directly their views and limitations (RQ1), while asking them for information that they might find interesting or 'useful'.

Annex 3: Household survey– sampling

Niels Teufel (**NT**) has raised very relevant issues on the sampling strategy for the household survey, we have given our point of view (**CO** – central office).

NT : The most important issue is to: **"Decide how much of the sampling procedure should be the same over all hubs and how much can be adapted to local conditions so major variations are captured well".**

CO: In general, the sampling needs to include most of the variability within CR management strategies in the study areas. A stratified sampling would allow us to include this variability. We could use the same variables to stratify the famer population in all the villages (e.g. farm size and herd size), but the thresholds of this stratification would vary according to the region.

NT: Additional points "which have usually been important during the definition of the selection process: **What is the total sample size per hub?** In the project document this is listed as 480hh (i.e. on average 20 hh/village as we have surveyed 12 villages/district(site) and three districts(sites).

CO: It should proportional to the village size.

NT: Do we select a village sample proportionate to village size or stick to 20hh/village? Equal village sample sizes leads to an overrepresentation of small villages. This can be compensated through weighting in most statistical procedures (SPSS can't weight in cluster analysis).

CO: It should be proportional to village size, but we should set up a minimum and maximum for those villages that are either very small or very big. Maybe 20hh could be the minimum, whereas 50hh the maximum? It would also depend on the census lists (population distributions).

NT: Do exclude certain households (not growing crops, not using residues etc.)? This is usually useful, in order to improve the efficiency of analysis.

CO: We should exclude households that are not involved with producing or making use of crop residues, but maybe in many of the study regions almost everybody is involved.

NT: Do we stratify the sample? For instance classifying into large, small farmers and landless livestock keepers would make sense in South Asia but perhaps not in southern Africa.

CO: The sample should be stratified based on the data of the census list (population distributions), using also the farm characteristics that are closer to our objectives. In this case, these characteristics are land and livestock (e.g. large farms and large herd; large farms and small herd; small farm and large herd; and small farm and small herd). The definition of large and small would depend on the site. This would complicate the comparison between sites and regions, but it would consider the socio-economic conditions of each site.

NT: How do we determine the number of selected hh/class? Do we calculate proportions from the village census or do we take equal proportions to ensure sufficiently large groups for proper statistical analysis? The decision depends on what the emphasis in analysis will be. If we are more interested in accurate means we would take a proportional approach. If we rather want to compare groups, we would take equal group sizes. Sometimes mixed approaches are

advocated. However, I have difficulty following that reasoning, because it just mean that weighting is still required while statistical comparisons are made more difficult.

CO: A proportionate sample would give us a better overview on the diversity of crop residue management. Again, a minimum and a maximum should be determined: minimum 5 hh/class and maximum 20hh/class?

NT: How do we select randomly within class? We have sorted farmers by farm size and then taken the sample by appropriate steps, the randomisation coming from the starting point. This gives a good distribution when only selecting few households. Landless households were selected by attaching a random number. But these could also be sorted by herd size."

CO: Nils' approach is fine.