CGIAR SUSTAINABLE FARMING

Integrated Crop Residue and Manure Management for circular nutrient flows

October, 2026

Progress Report



CGIAR SUSTAINABLE FARMING

CGIAR Sustainable Farming Science Program Report

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Acknowledgements

The CGIAR Sustainable Science Program forms a part of CGIAR's new Research Portfolio, addressing key challenges in agri-food systems by fostering efficient production of nutritious foods and safeguarding the environment to create fair employment opportunities, as we simultaneously tackle climate change, soil degradation, pests, diseases, and desertification. Its research is being implemented by CGIAR researchers from 13 CGIAR Research Centers, in close partnership with partners.

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About CGIAR Sustainable Science Program Report

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Introduction

Mixed crop–livestock farming systems are central to agricultural livelihoods and food production in Ethiopia, where crop production and livestock rearing are closely interconnected (Powell et al., 2004; Herrero et al., 2010). In these systems, crop residues are important livestock feed resources, while manure contributes to soil fertility and nutrient recycling (Rufino et al., 2007; Valbuena et al., 2012). However, crop residues serve multiple purposes, including livestock feeding, soil mulching, soil and water conservation, and household energy, creating trade-offs among competing uses (Jaleta et al., 2015; Keno et al., 2021; Valbuena et al., 2015). Similarly, the effective recycling of nutrients through crop residues and manure depends on how resources are allocated and managed within farm systems (Rufino et al., 2007; Tittonell et al., 2010). Improving the integration of crop residue and manure management is therefore important for enhancing resource-use efficiency, strengthening nutrient cycling, improving livestock productivity and soil health, and promoting the sustainability of mixed crop–livestock farming systems (Powell et al., 2004; Duncan et al., 2016).

Despite their complementary roles, crop residues and manure are not always managed in ways that maximize their combined benefits. Research in Ethiopia has shown that crop residue allocation is influenced by livestock ownership, residue availability, farm characteristics, agroecological conditions, and farmers' access to information and extension services (Jaleta et al., 2015; Keno et al., 2021). Furthermore, differences in the allocation of resources between crop and livestock enterprises can influence nutrient inputs, nutrient-use efficiency, and the extent of nutrient recycling within farms (Tadesse et al., 2019; Rufino et al., 2007). Smallholder farmers often face difficult decisions regarding the use of limited biomass resources, balancing immediate livestock feed requirements with longer-term soil fertility objectives (Valbuena et al., 2012; Duncan et al., 2016). These findings highlight the need for locally relevant evidence on resource availability, utilization patterns, nutrient flows, and the socioeconomic and institutional factors shaping farmers' management decisions (Tittonell et al., 2010; Herrero et al., 2010). Such evidence is essential for developing practical recommendations that account for differences in farming systems, farm resources, and household production objectives.

To address this need, the International Livestock Research Institute (ILRI) conducted a household survey in three regions of Ethiopia Amhara, Central Ethiopia, and Oromia representing wheat/barley-based, enset-based, and maize-based mixed crop–livestock farming systems, respectively. The study covered six districts, with two districts selected from each region, and involved 450 farming households. The survey targeted households owning both cropland and livestock to capture the interactions between crop and livestock enterprises and their implications for crop residue utilization, manure management, and farm-level resource flows. Attention was given to the representation of women-headed households to better understand their experiences, management practices, decision-making roles, and challenges related to crop residue and manure management. Understanding gender-differentiated access to resources and decision-making is important because resource allocation within mixed farming systems is often shaped by household socioeconomic conditions and labor availability (Meinzen-Dick et al., 2014; Galiè et al., 2015).

Data was collected through structured, face-to-face household interviews using a digital questionnaire. The instrument captured information on household socioeconomic characteristics, farm resources, crop and livestock production, crop residue production and utilization, manure production and management, the allocation and movement of resources within farms, labor and input use, and farmers' perceptions of existing management practices. Such integrated farm-level assessments are widely recognized as effective approaches for understanding resource flows, interactions among farm enterprises, and opportunities for improving system performance (Rufino et al., 2009; Tittonell et al., 2010). The survey was

implemented following ethical approval, informed consent, questionnaire pretesting, and enumerator training. Conducting interviews at farmers' homesteads and farms also enabled direct observation of farm resources and management practices, helping to contextualize respondents' information and strengthen data quality.

This report documents the survey implementation process and the preparation of the resulting dataset for analysis and advisory tool development. It describes the study site and household selection procedures, survey instrument development, data collection approaches, implementation challenges, and priority actions for data validation and analysis. The collected data are being cleaned, validated, and prepared for descriptive and multivariate analyses to characterize crop residue and manure management practices, examine resource flows within mixed crop–livestock systems, and identify the factors influencing farmers' management decisions. Similar analytical approaches have been successfully used to identify farm typologies, characterize nutrient flows, and support the design of context-specific management recommendations in smallholder farming systems (Rufino et al., 2009; Tittonell et al., 2010). As the data has not yet been fully analyzed, this report primarily presents the survey methodology and progress made rather than definitive empirical findings.

The longer-term objective is to translate the survey evidence into an interactive dashboard and farm-level advisory and decision-support tools that provide context-specific recommendations for integrated crop residue and manure management. The planned development process will include identifying farm typologies and recommendation domains, assessing trade-offs among competing uses of crop residues and manure, and formulating practical management options suited to different farm resources and production objectives. This approach is consistent with evidence that targeted resource allocation, improved nutrient recycling, and farm-specific recommendations can enhance the performance and resource-use efficiency of mixed crop–livestock farms (Tadesse et al., 2019; Tittonell et al., 2010). Decision-support tools have increasingly been recognized as valuable mechanisms for translating scientific evidence into actionable recommendations for farmers, extension agents, and development practitioners (Herrero et al., 2014; Thornton and Herrero, 2015). Subsequent validation with stakeholders, expert review, and field testing will help ensure that the tools are scientifically robust, relevant to farmers' needs, and practical for use by extension personnel and development practitioners. Ultimately, these efforts aim to promote circular nutrient flows, improve farm resource-use efficiency, enhance livestock productivity and soil health, and strengthen the resilience and sustainability of Ethiopia's mixed crop–livestock farming systems (Powell et al., 2004; Herrero et al., 2010).

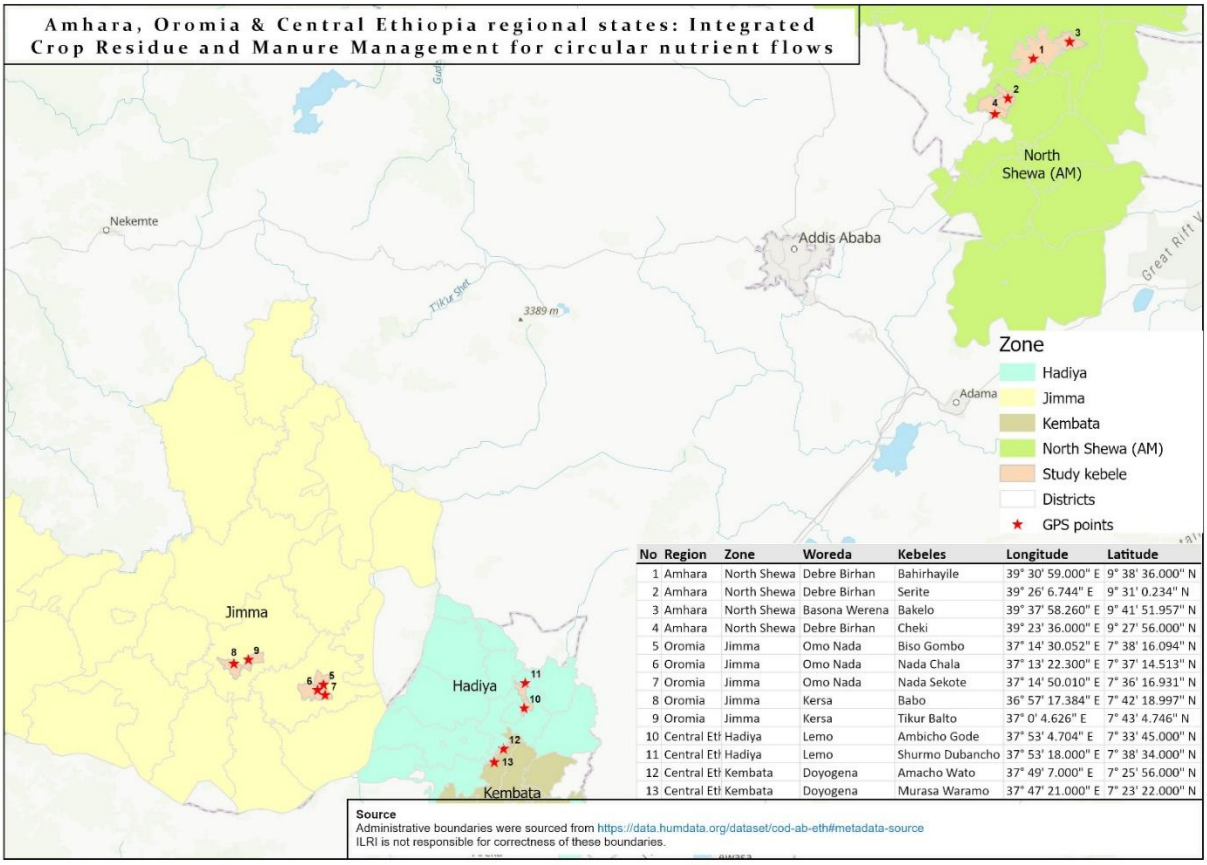
Objectives

To collect, validate, and prepare farm-level data on crop residue and manure management in Ethiopia's mixed crop–livestock farming systems, thereby informing the development of context-specific advisory and decision-support tools for integrated resource management and circular nutrient flows.

Approaches/ methodologies employed

The study was conducted implemented using a systematic multistage approach. Representative study sites were selected to capture the diversity of mixed crop-livestock production systems and crop residue and manure management practices across the target areas (Figure 1). A multistage sampling procedure was then employed to select 450 farm households, ensuring adequate representation across the study districts and providing sufficient statistical power for descriptive and multivariate analyses. A structured household

questionnaire was developed to collect comprehensive information on household characteristics, crop and livestock production, crop residue production and utilization, manure management, farm resources, and technology adoption.



No	Region	Zone	Woreda	Kebeles	Longitude	Latitude
1	Amhara	North Shewa	Debre Birhan	Bahirhayile	39° 30' 59.000" E	9° 38' 36.000" N
2	Amhara	North Shewa	Debre Birhan	Serite	39° 26' 6.744" E	9° 31' 0.234" N
3	Amhara	North Shewa	Basona Werena	Bakelo	39° 37' 58.260" E	9° 41' 51.957" N
4	Amhara	North Shewa	Debre Birhan	Cheki	39° 23' 36.000" E	9° 27' 56.000" N
5	Oromia	Jimma	Omo Nada	Biso Gombo	37° 14' 30.052" E	7° 38' 16.094" N
6	Oromia	Jimma	Omo Nada	Nada Chala	37° 13' 22.300" E	7° 37' 14.513" N
7	Oromia	Jimma	Omo Nada	Nada Sekote	37° 14' 50.010" E	7° 36' 16.931" N
8	Oromia	Jimma	Kersa	Babo	36° 57' 17.384" E	7° 42' 18.997" N
9	Oromia	Jimma	Kersa	Tikur Balto	37° 0' 4.626" E	7° 43' 4.746" N
10	Central Eth	Hadiya	Lemo	Ambicho Gode	37° 53' 4.704" E	7° 33' 45.000" N
11	Central Eth	Hadiya	Lemo	Shurmo Dubancho	37° 53' 18.000" E	7° 38' 34.000" N
12	Central Eth	Kembata	Doyogena	Amacho Wato	37° 49' 7.000" E	7° 25' 56.000" N
13	Central Eth	Kembata	Doyogena	Murasa Waramo	37° 47' 21.000" E	7° 23' 22.000" N

Figure 1. Map of the study areas in three Ethiopian regions.

Prior to field implementation, the survey protocol, participant information sheet, and informed consent form were reviewed and approved by the ILRI Institutional Research Ethics Committee (IREC)- (Annex). Enumerators received comprehensive training on study objectives, interview techniques, research ethics, and the use of digital data collection tools before conducting face-to-face interviews with farmers at their farms (Photo 1). The questionnaire was pre-tested (Photo 2) and refined to improve its clarity, relevance, and consistency. The individual farm level interview was conducted on-site and enabled direct observation of farm resources and management practices, thereby enhancing the accuracy and reliability of the information collected (Photo 3).



Photos 1. Enumerators training in Jimma University, Ethiopia, 2026.


Photo 2. Questionnaire pretesting with a woman farmer and in Babo, Kersa district, Jimma zone, 2026.

Following data collection, the survey data were cleaned, validated, and subjected to rigorous quality assurance procedures to produce a comprehensive dataset on crop residue and manure production, management, utilization, resource flows, and farm-level decision-making. The finalized dataset is expected to provide robust evidence base for descriptive and multivariate analyses and support the development of an interactive dashboard and farm-level advisory tools to improve integrated crop residue and manure management, enhance resource-use efficiency, and promote more sustainable mixed crop–livestock farming systems.

Processes of data collection and compilation

Site and farmers selection

The study was conducted in three regions of Ethiopia—Amhara, Central Ethiopia, and Oromia—and covered six districts, with two districts selected from each of the Amhara, Central

Ethiopia and Oromia regions (Figure 1). The selected districts represent three major mixed crop–livestock farming systems in the country. The districts in Central Ethiopia are characterized by enset-based crop–livestock systems, those in Oromia by maize-based crop-livestock systems, and those in Amhara by wheat/barley-based crop-livestock systems.

A total of 450 farming households participated in the survey, comprising 150 households from each region and 75 households from each district in Amhara, Central Ethiopia and Oromia regions. Households were selected from representative kebeles within each district. A kebele is the lowest administrative unit in the Ethiopian federal administrative system.

The survey targeted households that own both cropland and livestock because the study focuses on the integrated management and utilization of crop residues and manure to improve farm productivity, nutrient recycling, and the sustainability of mixed crop-livestock farming systems. Farmers were identified in close collaboration with local government extension agents and community-level facilitators to ensure that the selected households were relevant to the study objectives and representative of the dominant farming systems in each district.



Photos 3a, b, c, and d. Enumerators conducting household surveys on crop residue and manure management and utilization in Tikur Balto Kebele, Kersa District (a); Nada Chala Kebele, Omo Nada District (b); Shurmo Kebele, Lemo District (c); and Cheki Kebele, Angolela Tera Woreda (d), Ethiopia, in 2026.

ILRI site coordinators in the respective regions supervised and monitored the household selection process to ensure transparency and compliance with the sampling criteria. Households were selected using a random sampling approach after confirming that they met the eligibility criteria, particularly ownership of both cropland and livestock. The sampling

process also ensured adequate representation of mixed crop-livestock farming households across the three farming systems.

Special attention was given to including women-headed households that owned both cropland and livestock. The sampling and data collection processes were closely monitored to achieve appropriate representation of these households. This approach enabled the study to capture women's experiences, management practices, decision-making roles, and challenges related to crop residue and manure management, thereby generating more inclusive and gender-responsive evidence.

Development and use of survey instruments

The survey instrument was developed through a participatory and iterative process to ensure that it was technically sound, contextually appropriate, and aligned with the realities of mixed crop–livestock farming systems. The draft questionnaire was developed based on the objectives of the study and reviewed with local survey facilitators and extension agents to incorporate local knowledge and ensure relevance to farmers' production practices. The instrument was pretested in selected communities to identify unclear questions, gaps, inconsistencies, and context-specific issues. Feedback from the pretesting exercise was used to refine the questionnaire, improve question sequencing and clarity, and enhance the reliability and practicality of the data collection process.

The survey instrument covered key components related to farm characteristics and resource management, including household socioeconomic characteristics, land use and farm resource endowment, crop production practices, livestock ownership and management, sources and utilization of crop residues, manure production and management practices, allocation and movement of crop residues and manure within the farm system, feed and soil fertility management practices, labor and input use, and farmers' perceptions, challenges, and opportunities related to crop residue and manure utilization (https://hdl.handle.net/10568/186077). These components were designed to capture the interactions between crop and livestock enterprises and understand farm-level resource flows in mixed farming systems. Before field implementation, enumerators and supervisors received comprehensive training on the study objectives, survey content, ethical considerations, interviewing techniques, informed consent procedures, and digital data collection methods. Question-by-question clarification of the survey instrument was provided to ensure a common understanding among the data collection team and minimize inconsistencies. Attention was given to accurately capturing information related to crop production, livestock management, crop residue availability and utilization, manure handling, and farm resource flows.

During data collection, the finalized survey instrument was administered through a digital data collection platform during household interviews. Before each interview, respondents were informed about the purpose of the study, voluntary participation, confidentiality of information, and the collection and storage of GPS coordinates. Interviews were conducted only after obtaining informed consent from respondents.

The data collected has not yet been fully analyzed. However, the planned analysis will focus on characterizing farm-level crop residue and manure management practices, assessing resource flows within mixed crop–livestock systems, identifying factors influencing residue and manure utilization decisions, and generating evidence to support the development of a farm-scale crop residue and manure integrated management and utilization advisory tool. The systematic development, pretesting, and implementation of the survey instrument will

contribute to ensuring that the resulting evidence and advisory outputs are based on reliable and context-specific information from farming communities.

Survey implementation approach

The survey was implemented through face-to-face interviews conducted at respondents' farms to ensure convenience for participants and to enable the research team to directly observe farm resources, management practices, and crop–livestock interactions under actual production conditions. Conducting the interviews at the farm level enhanced the quality and reliability of the collected data by allowing the research team to verify and contextualize farmers' responses based on observed farm conditions and resource management practices.

The research team collaborated with local extension agents who supported the mobilization and coordination of participating farmers and facilitated communication between the survey team and farming communities. Transportation and per diem costs for extension personnel involved in survey facilitation were covered in accordance with ILRI policies and procedures.

Before each interview, enumerators explained the objectives of the study, the expected outcomes, and the procedures involved in data collection. The survey team obtained informed consent from all respondents and informed them that participation was voluntary. Respondents were also informed about the collection and storage of GPS coordinates, the confidentiality of the information provided, and the exclusive use of the data for research purposes. Participants were given opportunities to ask questions and seek clarification before consenting to take part in the survey.

Trained enumerators administered the finalized digital survey instrument through household interviews. The interviews collected information on farm characteristics, crop production practices, livestock management, crop residue utilization, manure management, and farm-level resource flows. Each interview took approximately three hours to complete. To minimize respondent fatigue and maintain engagement during the interview process, the survey team provided a scheduled break during longer sessions. Refreshments and, where appropriate, meals were provided to acknowledge farmers' time and support their participation, while transportation costs related to participation were reimbursed where necessary.

The survey generated a comprehensive dataset on farm-level crop and livestock management practices, including crop residue and manure management. The collected data are currently being prepared for analysis and will be used to characterize farm-level crop residue and manure management practices, understand resource flows within mixed crop–livestock systems, and generate evidence for developing a farm-scale crop residue and manure integrated management and utilization advisory tool.

Major challenges faced

Several challenges were encountered during the implementation of the household survey. First, obtaining ethical approval from the Institutional Research Ethics Committee (IREC) took longer than anticipated due to multiple rounds of review and revisions. The back-and-forth communication during the approval process delayed the commencement of field activities.

Second, the survey coincided with the main cropping season, when farmers were heavily engaged in land preparation and other agricultural operations. As a result, scheduling interviews was challenging, as respondents had limited availability and field teams had to make repeated visits to reach farmers at convenient times.

Another major challenge was the digitization of the survey instrument. Several sections of the questionnaire had originally been designed in tabular format to capture integrated and interrelated information efficiently. However, these table-based questions were not compatible with the digital data collection platform and had to be redesigned as individual questions. This restructuring process was time-consuming and required extensive testing to ensure that the digital questionnaire accurately captured the intended information while maintaining logical flow and data quality.

Finally, the household-based nature of the survey presented logistical challenges. Enumerators were required to travel from one household to another, often across dispersed rural communities, to conduct face-to-face interviews. The considerable distances between households, varying accessibility of farms, and travel time increased the duration and operational complexity of the data collection process.

Priority actions and strategic considerations

Priority actions for 2026 are to complete rigorous data cleaning, validation, and quality assurance to ensure the reliability of the household survey dataset. This should be followed by rapid descriptive and inferential analyses to characterize crop residue and manure management practices, identify key constraints and opportunities, and determine the socioeconomic, biophysical, and institutional factors influencing farmers' decisions. Based on these analyses, a synthesis of the preliminary findings will be prepared and reported for wider circulation.

Building on the survey findings, the focus in 2027 will be towards translating the evidence into practical advisory products and decision support tools. This includes identifying farm typologies and recommendation domains, assessing trade-offs in crop residue and manure utilization, and developing context-specific and harmonized recommendations that address the diversity of mixed crop–livestock production systems. Prototype advisory tools should be designed to support farmers, extension agents, and development practitioners in selecting appropriate residue and manure management options based on farm resources, production objectives, and local conditions. The proposed advisories and decision support tools will be validated through stakeholder consultations, expert review, and field testing to ensure their scientific credibility, practical applicability, and user-friendliness before wider dissemination.

Beyond 2027, efforts will focus on continuously refining and scaling the advisory and decision support tools using new research evidence, monitoring data, and user feedback. The tools should evolve into integrated, farm-specific decision support systems that consider crop production, livestock feeding, nutrient recycling, soil fertility, labor availability, profitability, and environmental sustainability. Integration into regional and national extension systems and digital advisory platforms will enhance accessibility and adoption by farmers and extension personnel. Sustained collaboration among research institutions, universities, government agencies, CGIAR centers, and development partners will be essential for validating, updating, and scaling these tools across diverse agroecological zones, thereby supporting more efficient resource utilization, improved livestock productivity, enhanced soil health, and resilient mixed crop–livestock farming systems.

Acknowlagemnt

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References

Duncan, A.J., Valbuena, D., Thorne, P., et al. 2016. Crop residue allocation trade-offs in mixed crop–livestock systems. *Agriculture, Ecosystems and Environment*, 228, 101-110.

Galiè, A., Mulema, A., Benard, M., et al. 2015. Exploring gender perceptions of resource ownership and decision-making in Ethiopian livestock systems. *Journal of Rural Studies*, 41, 108-119.

Herrero, M., Thornton, P.K., Notenbaert, A., et al. 2010. Smart investments in sustainable food production: revisiting mixed crop–livestock systems. *Science*, 327, 822-825.

Herrero, M., Thornton, P.K., Bernués, A., et al. 2014. Exploring future changes in smallholder farming systems through integrated assessment. *Agricultural Systems*, 123, 1-14.

Jaleta, M., Kassie, M., Shiferaw, B., et al. 2015. Crop residue use and management in mixed crop–livestock systems of Ethiopia.

Keno, M.T., Wamatu, J., Alkhtib, A., et al. 2021. Barley straw use for animal feed and soil mulch in Ethiopian highlands mixed crop–livestock systems. *Sustainability*, 13(11), 5879.

Meinzen-Dick, R., Quisumbing, A., Behrman, J., et al. 2014. Engendering agricultural research. *World Development*, 59, 278-291.

Powell, J.M., Pearson, R.A., and Hiernaux, P.H. 2004. Crop–livestock interactions in the West African drylands. *Agronomy Journal*, 96, 469-483.

Rufino, M.C., Tittonell, P., van Wijk, M.T., and Giller, K.E. 2007. Manure as a key resource within smallholder farming systems. *Agriculture, Ecosystems and Environment*, 121, 273-285.

Rufino, M.C., Thornton, P.K., Ng'ang'a, S.K., et al. 2009. Transitions in agroecosystems and nutrient management in mixed crop–livestock systems. *Agricultural Systems*, 102, 1-13.

Tadesse, S.T., Oenema, O., van Beek, C., and Ocho, F.L. 2019. Nitrogen allocation and recycling in mixed crop–livestock farms in Ethiopia. *Nutrient Cycling in Agroecosystems*, 114, 175-192.

Thornton, P.K., and Herrero, M. 2015. Adapting to climate change in mixed crop–livestock systems. *Nature Climate Change*, 5, 830-836.

Tittonell, P., Rufino, M.C., Janssen, B.H., and Giller, K.E. 2010. Carbon and nutrient balances in smallholder farming systems. *Agriculture, Ecosystems and Environment*, 139, 340-352.

Valbuena, D., Erenstein, O., Homann-Kee-Tui, S., and Abdoulaye, T. 2012. Conservation agriculture in mixed crop–livestock systems: Scoping crop residue trade-offs. *Field Crops Research*, 132, 175-184.

Valbuena, D., Tui, S.H.K., Erenstein, O., et al. 2015. Conservation agriculture and mixed crop–livestock systems in Sub-Saharan Africa: Trade-offs and synergies. *Agricultural Systems*, 137, 39-47.

Annex

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23 June 2026

Our Ref: ILRI-IREC2026-17

International Livestock Research Institute
P.O. Box 30709 00100
Nairobi, Kenya.

Dear Kindu Mekonnen Tegegne,

Ref: Integrated crop residues and manure management for circular nutrient flows at smallholder farm level

Thank you for submitting your request for ethical approval to the International Livestock Research Institute (ILRI) Institute Research Ethics Committee (IREC).

ILRI IREC has reviewed and granted ethical approval to your study titled *'Integrated crop residues and manure management for circular nutrient flows at smallholder farm level'* and referenced ILRI-IREC2026-17. The approval period is from 23 June 2026 to 22 June 2027 and is subject to the following conditions:

- Only approved documents (research design, consent forms, survey tools) will be used.
- All changes anticipated or otherwise that may increase the risks or affect the safety and or welfare of study participants and others or affect the integrity of the research must be submitted to ILRI IREC for approval before implementation.
- Death and life-threatening problems, and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ILRI IREC within 72 hours.
- Request for renewal of approval must be submitted to ILRI IREC at least 30 days prior to expiry of the approval period.
- Executive summary report must be submitted to ILRI IREC within 90 days upon completion of the study.

Note that you may be required to obtain additional approvals in Ethiopia prior to commencing this research study. Please contact ILRI IREC on ILRIResearchcompliance@cgiar.org for any further assistance you may need.

Yours Sincerely,

Elise Schieck, PhD
Chair, ILRI Institutional Research Ethics Committee

Patron: Professor Peter C Doherty AC, FAA, FRS

Animal scientist, Nobel Prize Laureate for Physiology or Medicine–1996

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