

Establishing a comprehensive national livestock identification and registration system for Ethiopia

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Background

Animal identification is a process that gives animals unique and lifetime identification numbers. The number serves as the official identity of the animal throughout its life, both within the country of birth or origin and internationally. Each animal is given a distinct identification number that is never shared by any other animal regardless of species (ICAR 2014; ICPALD 2014). On the other hand, animal registration is the systematic recording of animals and their associated identification, pedigree, and performance information in a centralized national database for different purposes. Establishing a comprehensive national recording and registration platform involves setting up a robust database, linking it to secure digital servers with sufficient capacity, and developing diverse data capture tools, including application programming interfaces (APIs) to enable seamless integration of the data with other relevant data platforms, and the server.

Training at different levels is conducted to ensure proficiency in using the data systems and effective data capture using the various tools. This enables a seamless flow of information including pedigree and performance data, production costs, health records, and breeding services into the centralized database. The information that is collected can also include geographic location, household characteristics, animal movements via sensor-based devices, farm environment and

Key messages:

- Animal identification involves assigning a unique distinctive lifetime identification number to every animal.
- Animal identification and registration are crucial for effective farm management; genetic improvement; diseased control; for securing bank loans; animal, and animal product traceability; making informed policy decisions and monitoring policy implementation.
- Implementing animal identification requires government policy support along with regulations and infrastructure for data storage, data capture and provision of related resources.

resources, and other animal attributes. To enhance the robustness and versatility of the database to serve several actors along the value chain, such as producers, private sector, public institutions and policy makers, additional socio-economic parameters are also captured at household levels. All the captured parameters can then be stored, summarized, and the results generated routinely shared through agile analytics and visualization tools.

In Ethiopia, animal identification using ear tags was exercised by public universities, research, and large-scale commercial herds, following the introduction of artificial insemination services and import of dairy animals. However, the existing identification systems in Ethiopia, apart from the one used by the African and Asian Dairy Genetic Gains (AADGG) program, which is led by the International Livestock Research Institute (ILRI) and the Finish Natural Resource Institute (Luke), and the community-based breeding program for small ruminants by the International Center for Agricultural Research in the Dry Areas (ICARDA), lack harmonization and standardization, resulting in limited uniqueness of the ear tag numbers within individual farms and hence do not conform to the International standards.

Establishing an accurate and reliable animal and animal products traceability system is a prerequisite for meeting the requirements of countries that import meat and live animals, staying in current international markets and accessing new markets. The Ethiopian government has established an identification and registration system for export animals in primary markets. However, if the animal identification and registration system were to include performance data capture, it would enhance the animal traceability system in the country up to the farm and herd levels. This integration would also provide valuable insight and information into herd dynamics and productivity of the whole national livestock population. Currently, such information is obtained through sampling procedures and reported by the Central Statistical Agency, leading to potential sampling biases and reduced accuracy of data collected on subsets of the national herds/flocks. By implementing a national animal identification and registration system, these challenges can be overcome, and comprehensive animal data can be collected and consolidated at the national level.

This policy brief makes the case for a harmonized national animal identification and registration system in Ethiopia and recommends ways for its implementation at the national level.

Why is animal identification and registration important?

Verify ownership and access to credit or financial services: Unique identification and registration of livestock enables details such as ownership, place of birth, breed type, ownership changes, subsequent movements, and related information to be documented and centrally curated.

Animal identification offers livestock producers the opportunity to seek credit from financial institutions by using the uniquely identified animal as collateral based on their market value. Certified animals, with verified performance data, are particularly valuable in this regard as insurers and financial institutions can objectively assess their true worth when presented as collateral. This enables lenders to determine the creditworthiness of the animal owners. Additionally,

animal identification aids in assessing risks and influences insurance premium calculations when insuring livestock.

Disease control and traceability of animals and animal products: Animal identification and registration supports disease surveillance and control and traceability of animals and animal products. By implementing a reliable identification system both within and across borders, surveillance for animal disease is enhanced thereby improving regional and international trade and ensuring access to safe animal-source food. A certification system that allows for the control and tracing of animal movement from farm to farm or from farm to markets within a country as either part of herd replacement, marketing or other forms of social exchanges, is essential in preventing the spread of livestock and zoonotic diseases. Developing countries often face challenges in accessing more lucrative foreign export markets for live animals and animal products due to lack of confidence by buyers in the sources of the products and their disease status. Traceability aims to track the origin of animals from birth to market, including points of slaughter, processing, and packaging of branded products for food safety, food quality, and veterinary concerns. The absence of animal traceability systems and the prevalence of endemic diseases in developing countries hinder their access to lucrative markets. Animals that are systematically and uniquely identified are easier to trace back to the key production, marketing and slaughter points, enabling the documentation of their products, health status, and genetic makeup to be objectively assessed.

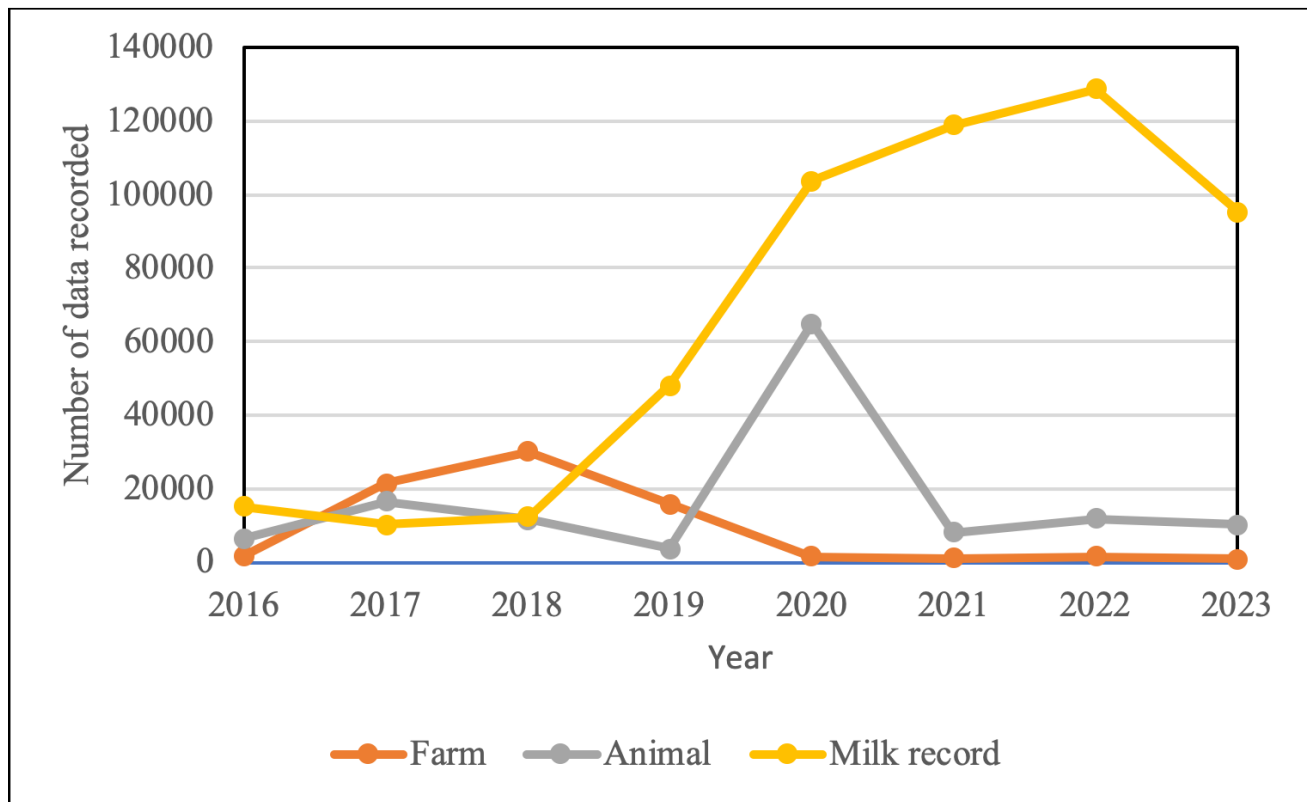
Genetic improvement: In Ethiopia livestock are mostly managed through extensive, communal grazing system where natural mating by uncertified bulls, bucks and rams are common practice thereby resulting in indiscriminate breeding including mating between genetically related animals. This results in inbreeding and its negative consequences. Moreover, even animals produced through artificial insemination (AI) are not properly identified or their pedigrees and performance recorded at birth and at subsequent stages in their lives and the information curated and used to generate their relative genetic worth. In absence of a national identification, registration and performance recording, when such animals reach breeding age, they are bred to uncertified males or inseminated with AI sires without considering their respective dam and sire information or breed proportions. As a result, it becomes challenging to genetically improve livestock herds/flocks as superior animals cannot be identified. Crossbreeding is also suboptimal. Strucken et al. (2017) in their study to determine the dairy breed proportion in dairy cattle managed by smallholder farmers in Ethiopia reported an average of 78% exotic breed proportion which is very high in relation to the management, feeding and health care provided by farmers. Such high-grade animals if not managed properly exhibit poor production and productivity with low survival rates. The costs of rearing such animals are high and profitability low and they also emit higher levels of greenhouse gases per unit of product (Herrero et al. 2013).

In the African context, especially for crossbred animal populations, it is prudent to embrace multi-country genetic and genomic approaches for realization of faster genetic gains, considering the limited data sizes for such populations in individual countries. This would also ensure countries benefit from genetic linkages between national herds, given use of same foreign bulls from various developed countries. However, such multi-country genetic

improvements are only feasible when effective animal identification and registration within countries are in place. The ILRI-AADGG project in partnership with the Livestock Development Institute of the Ethiopian Ministry of Agriculture has established a national database, a data capture system and animal identification and

registration. If such endeavors are scaled at national level the data collected in real time and information generated would help decision making at different levels (Figure 1). This can only be realized in a system where national animal identification and registration is in place and functional.

Figure 1. Summary of farms animals and milk recorded in database.



Value addition to animals: Identified animals, particularly those with documented pedigree and verified performance records, can attract higher value in both local and foreign markets. This increased value enhances the bargaining power of animal owners during sales and insurance claims as it boosts the confidence of potential buyers and insurers of such animals. For example, a farmer who wants to buy a milking cow will be more confident to invest their money in an animal that has a reliable record of performance. Similarly, sellers of animals with recorded pedigree and performance have stronger bargaining power compared to those without such documentation.

Support for planning and policymaking: Animal identification and registration plays a vital role in facilitating national planning on various aspects of livestock including investments, budgeting, animal health services, emergency response planning, input projections, and the estimation of annual production and productivity. The annual livestock census conducted by the Ethiopian Central Statistical Agency could greatly benefit from the support of animal identification, registration, and data capture. These measures provide valuable information that enhances the accuracy and quality of data collected enabling more comprehensive and informed decision-

making in livestock related planning at the national level. With well-executed national animal identification, registration and performance recording system, there would be no need for livestock censuses, thus saving on resources. Planning and budgeting for national vaccination programs or any related subsidy by the government or through a public-private arrangements would be easier to undertake and resource, as accurate data would be readily available to inform such activities.

Management of regulated cross-border and illegal animal movements: In communities living near national borders, the cross-border migration of animals in search of pasture and water is a common occurrence. Additionally, there is the challenge of unregulated cross-border livestock trade, which poses a threat to both human and animal health due to the potential spread of disease across borders. Such threats can be minimized through implementation of an animal identification and registration system. By accurately identifying and registering animals, authorities can monitor and control cross-border movements much better, ensuring compliance with regulations and reducing the risk of disease transmission between countries.

Implementation of animal identification: Approaches and infrastructure

Various methods of animal identification methods are currently available, including ear tagging, tattooing, ear-notching, branding, paint marking, radio-frequency identification (RFID) technologies like injectables and boluses, or any combination of these. However, it is important to adopt appropriate methods that are reliable, farmer-friendly, cost effective and easily accessible to farmers in Ethiopia.

To ensure effective implementation, the government should develop policies, and enact and enforce legislations and regulations that support national animal identification and registration. The Implementation modalities should be inclusive, preferably through public-private partnership.

Recommendations

Based on the discussed use-cases and examples, the following recommendations, if adopted, would improve animal identification, registration and tracking in Ethiopia.

- Establish the animal identification and registration system as a national program to ensure it is sustainable and effective in the long term.
- Establish legislation, policy, and regulations, that provide a framework for the coordination and implementation of animal identification. A specific institution or office should oversee and manage the program nationally.

- Encourage active participation of the private sector and farmer organizations/cooperatives in the implementation of the animal identification and registration system. Foster collaboration and engagement to ensure the system meets the needs of stakeholders and benefits from their expertise.
- Integrate and mainstream these aspects in the national agricultural livestock management practices to enhance seamless adoption and implementation of livestock identification, registration, and performance recording.

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