

## AfricaRISING in the Ethiopian Highlands

# Status, Challenges and Opportunities for Sustainable Utilization of Pulse Crop Residues in Ethiopia

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## Background

Although Ethiopia has the largest livestock population in Africa with more than 111 million head, it has the smallest per capita of consumption of food from livestock in Africa. Feed shortage is one of the most important factors that contribute to low livestock productivity. As the acreage of land under legume cultivation gradually increases (to exceed the current 1,922,000 tons per annum), the proportion of legume straws in the ration of livestock is bound to potentially increase. This study collected baseline information on legume straw production, management and perception of Ethiopian farmers on legume straw utilization, challenges and opportunities as livestock feed.

## Materials and Methods

Information on legume straws as feed was gathered using semi-structured questionnaires. The questions focused on production, management and utilization of legume straws as a feed resource. Trends of use and perception of farmers about use, processing, treatments and storage of legume straws before feeding to livestock was captured. 1208 smallholder farmers were surveyed individually in Ethiopian Highlands in selected areas (Bale Highlands, Hadiya, North Shoa and S.Tigray) in 4 Regional States (Amhara, Oromia, SNNPR, Tigray) (Figure 1). Data were analyzed using POC FREQ of SAS 9.

## Results and Discussion

- **System characterization:** Livelihoods in the surveyed communities revolve around mixed crop–livestock systems. Most farmers are above 40 years old with an average of 25 years experience in farming. The dominant legumes cultivated are faba bean, field pea, chickpea and lentil.
- **Legume straw production:** In the months of Nov.-Jan. and Jun-Jul.
- **Storage type:** Home/field heaps are the common way of storage (Figure 2).
- **Legume straws uses:** Predominantly as feed, used as housing material and for mulching in very small amounts. The use as feed has been increasing and use for mulching decreasing in the past 5 years.
- **Processing and pre-treatments:** Chopping is the common way of processing legume straw (practiced by 71% of farmers). Farmers have only heard of chemical treatments from Government extension workers but do not practice it.
- **Legume straws in the feeding strategy:** During wet seasons, livestock depend on grazing (more than 80% of the ration) with small supplements of legume straws. In dry seasons, they depend totally on legume and cereal straws for stall-feeding. 70% of the farmers feed legume straws regardless of the production purpose.
- **Limitations of legume straw use:** Heaps are exposed to weather vagaries leading to decline in nutritive value. Farmers are not aware of that. Labor for production and management of legume straws is a major constraint

## Future Research

- **Evaluation of the effect of agronomical and genotypic factors** on chemical composition and nutritive value of legume straws.
- **Comparing several methods to upgrade the nutritive value of legume straws** with treatments (physical, chemical and biological), without treatments (supplementation, improved storage methods, plant breeding, straw combinations) and determining the more profitable and sustainable methods.
- **Incorporation of novel and promising by-products**, which are plenty in the Ethiopian Highlands, as **supplementation** to enhance the nutritive value of legume straws.

Administrative Regions and Zones of Ethiopia

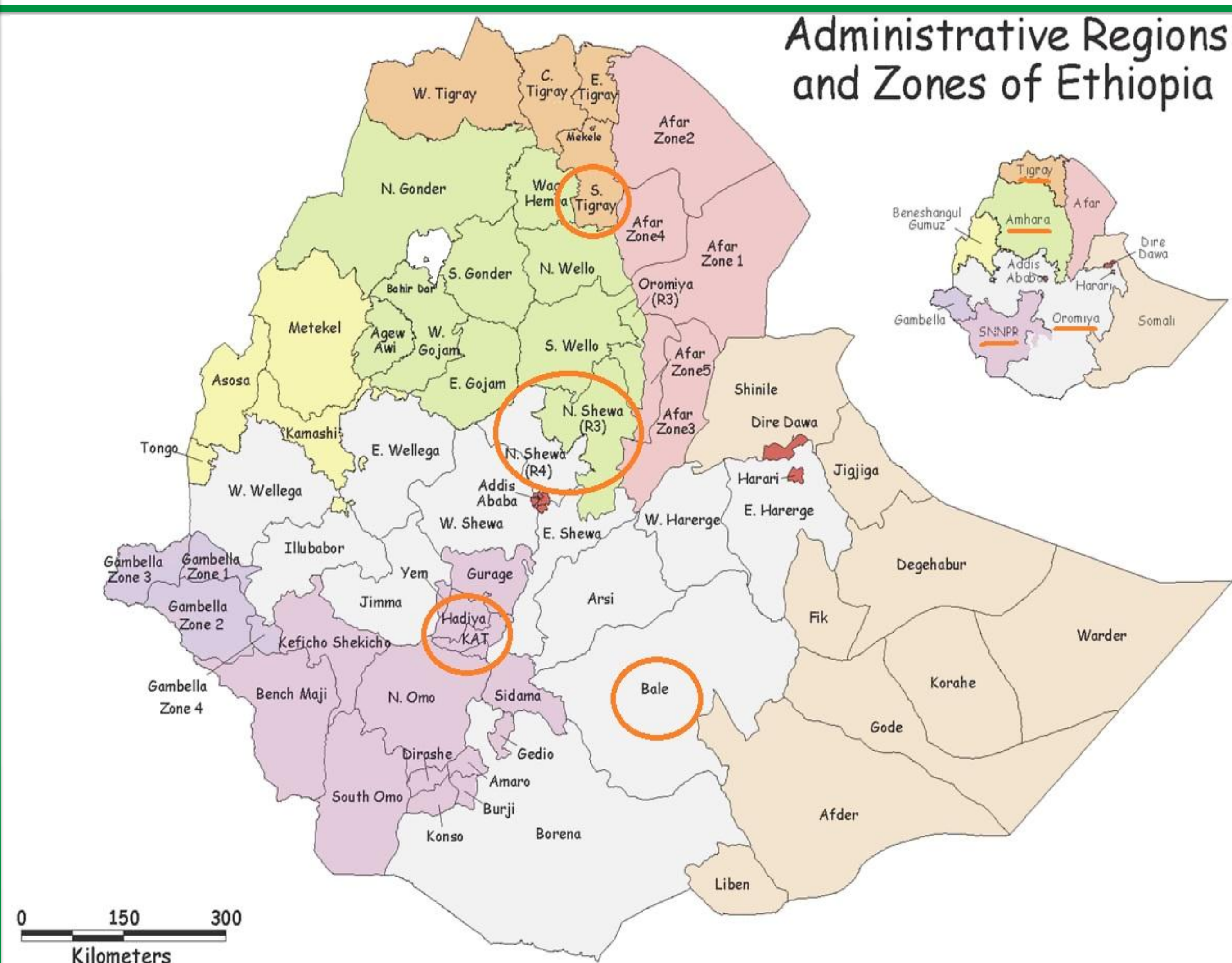


Figure 1: Map of Ethiopia – Study target areas



Figure 2: A typical legume straw heap in Ethiopia

## Acknowledgments