



Use of grain legumes residues as livestock feed in the smallholder mixed crop-livestock production systems in Ethiopia: Opportunities to improve feed quality

Sisay Belete, MSc student at Hawassa University, cisbelete@gmail.com

Overview of mixed crop-livestock production system

- Mixed crop-livestock production is predominant farming system in most parts of the country, where cultivation of crops and rearing livestock mixed.
- It covers around 40% of the country's land area and a home for 70-75% of total livestock population.
- Both crop cultivation and livestock rearing are important sources of food and income to smallholder farmers

Interaction between crop and livestock production

- Livestock play important role in crop cultivation (draught power, transportation, organic fertilizer and source of cash for purchase of agricultural inputs)
- While crop residues (straw, stover and haulm) are important sources of feed for livestock

Feed shortage: A challenge for livestock production in mixed farming system

- Livestock productivity is exceptionally lower than the existing potential due to feed problem both in availability and quality.
- Crop residues has become an important source of feed owing to shrinking size of grazing lands due to expansion of cropping.
 - Mainly collected from cereal production
 - Fluctuate in availability and
 - Deficient in most important nutrients like nitrogen, energy and minerals.



Use of grain legumes straw for livestock feeding

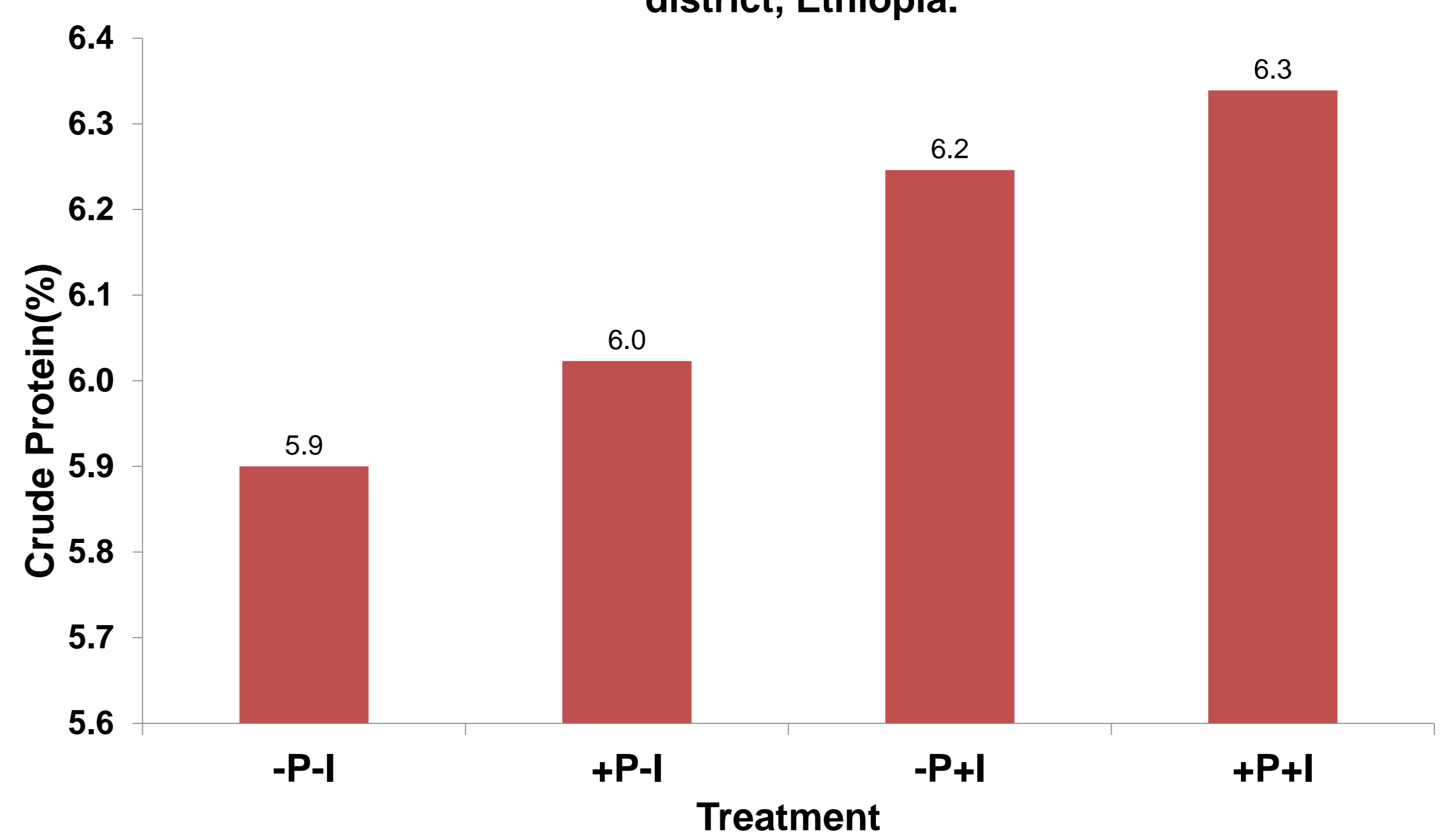
- Grain legumes are the second most produced crop next to cereals in Ethiopia:
 - More than 2.6 million metric tons annual grain production
 - Touching the lives of about 10 million smallholder farmer households and low income urban dwellers.
- Straw of grain legumes used predominantly as feed by smallholder farmers
- Grain legumes straw provides relatively better quality feed in terms of CP, ME, digestibility, but its total DM supply is by far lower than cereals.

Opportunities to boost role of grain legumes straw in fodder supply

- Multiple efforts are underway to benefit smallholder farmers from grain legumes production in Ethiopia, e.g. ILRI N2Africa project
- This will boost annual production of grain legumes with concomitant increase in grain legumes residues, including feed quality.
- Preliminary results shows that combined application of P and I increased crude protein contents reflecting improvements in the feed quality of the residues for livestock feed.



Effect of Phosphorus fertilizer (P) and Inoculation (I) on straw crude protein (CP%) of common bean variety in the 2015/16 cropping season at Shalla district, Ethiopia.



The way forward

- Identifying and promoting improved production technologies (varieties and inputs) that incorporate both grain and straw quality traits.
- Foster farmer's skill on proper harvesting, storage and upgrading of nutritive value (processing and supplementing) of the straws is also crucial.

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Box 5689 Addis Ababa, Ethiopia • +251 11617 2200/25/33/35

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