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Storing cattle feed can improve milk and meat yields: why African farmers aren't doing it

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Africa's cattle feed production is a boom-and-bust cycle. Most of the continent's grazing lands are lush and green in the rainy season, only to wither into dry scrublands in the dry season.

Source: Alexas_Fotos via Pixabay

For instance, while Burkina Faso produces an excess of six million tons of forage a year, its Sahel livestock producing regions have a deficit of two million tons annually.

The quantity of food for cattle isn't the only issue: another is its quality. Studies have shown that in Tanzania the quality of forage from pasturelands declines by a fifth during the dry season. In Ethiopia it declines by 28%. The result is a 40% decrease in milk yield.

Across many other countries in Africa, for example Sudan, Algeria, and South Africa, studies have shown that quality livestock feed swings from excess during rainy seasons to abrupt declines, with subsequent reduction in meat and milk and even mass death of cattle.

This cycle poses the question of why African herders are not preserving forage for dry season use.

To find an answer, we reviewed studies and sought expert opinion about livestock feed preservation across sub-Saharan Africa. Fifteen experts representing all regions in sub-Saharan Africa participated and reviewed a total of 161 studies.

Our findings indicate that smallholder farmers rarely adopt forage preservation or practise it adequately. Most farmers on the continent are smallholder farmers.

Excess forage for cattle is often poorly stored, leading to waste. And forage production is lacking in the dry season.

There are a number of reasons for this. They include limited resources, knowledge, skills, labour, land and suitable forage.

Improving the diets of livestock would improve nutrition for people too. Using forage resources more efficiently could also help prevent problems like desertification and human conflict.

We make a number of recommendations. Firstly, that there should be major investments to increase awareness of the benefits of growing and conserving better forage, and how to do it. Secondly, that livestock production should shift from keeping large numbers of unproductive animals to smaller numbers of well-fed and highly productive animals. And lastly, that better markets for feeds, animals and livestock products would create an environment for better livestock feeding practices.

Hay, silage and crop residue

Hay made from fresh grass is the most common type of preserved forage across Africa. Yet many technical and management problems result in low quality. Grass is often harvested after maturity instead of at the recommended time before the grass blooms. Harvesting too late greatly reduces the quality of hay.

Storing hay the wrong way causes the loss of nutrients and can also be physically wasteful. For example, a study in Ethiopia found that up to 70% of the protein content of grass was lost through poor outdoor storage. This can be improved using raised platforms, for example, and mixing grass with legumes.

Why we should all take silage seriously

Gerhard Diedericks 2 Oct 2019

Silage is a useful way to store cattle feed. It's made by chopping grass or other plants and storing it in airtight containers to enable fermentation and preservation. Additives such as molasses enhance quality and fermentability. But this practice is rare among African farmers. The silage made tends to be low quality and prone to spoilage and moulding.

Most ruminant livestock (cattle, sheep and goats) in Africa are mainly fed crop residues (stalks and leaves, for example), which are of very low quality. Various treatments – physical (chopping, densification, pelleting), chemical (urea treatment) and biological (micro-organism cultures) – can improve the quality and digestibility of crop residues. These techniques are critical in improving meat and milk output. Yet the additives are often expensive and techniques too complex for smallholders.

Techniques to improve cattle feed

African farmers rarely use the techniques that can improve their cattle feed.

Studies in Kenya indicate that even with concerted efforts by government and donor agencies, only 0.5% to 5.1% of farmers have ever practised silage making.

We identified several reasons.

The first was a lack of awareness about how well-preserved forages could increase livestock productivity and profit. Smallholder farmers also lacked the knowledge and skills to grow the forages.

Studies from Kenya, Zimbabwe and Uganda showed that farmers did not conserve forage because they did not know how to do it effectively. In turn, that was because of isolated and often ineffective livestock extension services across many African countries.

Secondly, efforts to find solutions were hampered where farmers were not involved in research and development. For example, a forage chopper introduced in Tanzania created more labour for women and the community rejected it until it was revised to account for their needs. Systemic limitations such as finances, lack of land tenure security and lack of markets hinder investment by smallholders in various technologies.

Thirdly, forage cultivation is uncommon. Most forage is sourced from vast areas of pasture and rangelands, with low to moderate quality, that are directly grazed by cattle.

Improving farming practices

To address these problems, there is a need to increase awareness, knowledge and skills of forage cultivation, processing and preservation, and of crop residue management. New smallholder-friendly inputs could include silage additives, chemical and biological crop residue treatments, affordable and effective silos, forage harvesters, choppers and compacters.

A general shift in livestock production in Africa is warranted, from herding of too many poorly fed cattle towards smaller numbers of well-fed cattle. This approach is climate smart as livestock fed poorer quality diets emit relatively more greenhouse gases than those fed higher quality diets.

With such improvements to their feed, livestock in Africa could play a greater role in reducing hunger across the continent.

This article was prepared in collaboration with Jim W. Harper, communications manager, University of Florida, and Adegbola Adesogan, director, Feed the Future Innovation Lab for Livestock Systems, University of Florida.

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