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Manure Management to Improve Soil Structure & Food Security and Mitigate Greenhouse Gas Emissions

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Abstract

Manure is considered as a waste in some countries and is therefore poorly valued. However, if well managed, manure is a great asset, especially to smallholder farmers due to its richness of nutrients to potentially improve soil structure, crop yield and farmer livelihoods while also reducing detrimental environmental effects. This study is one of the initiatives of the climate and clean air coalition (CCAC), aiming at reducing emissions from short lived climate pollutants in the livestock sector.

In the first phase, the manure policy from 12 sub-Saharan African countries was summarised through a network of local researchers. The results indicate that most countries a) don't have a stand-alone manure management policy, b) have shared responsibility for manure management between different ministries which are often incoherent, leading to abnegation of these responsibilities c) take very limited action to promote good manure management practices.

Secondly, in depth interviews were conducted on livestock farmers from two of these countries (Ethiopia and Malawi) to assess current manure management systems and identify opportunities for improvement. It was found that Ethiopia and Malawi have similar challenges in manure management. All visited farms stored manure uncovered and without floors, exposing it to gaseous nitrogen losses and nutrient leaching.

The major cause for this poor management is lack of information by farmers; although non-coherence in policies between ministries additional drives poor management in Ethiopia. This led to the third phase, where we have partnered with the Governments of Ethiopia and Malawi in changing policies, disseminating information and encouraging practices that promote Integrated Manure Management (IMM). IMM involves the collection, treatment (e.g. to biogas or compost), storage and application of manure in ways that improve the value of the manure. Bio-slurry which is one of the end products in biogas production is a rich fertiliser with much higher concentrations of nitrogen, phosphorus and potassium compared with fresh manure.

Farmers using bio-slurry or well managed manure experienced improved crop yields confirming other findings which show that manure does not only provide nutrients to crops, but also improves soil quality, promotes carbon sequestration and can be used to restore eroded soils.

Keywords: Emissions, manure management, policies, soil structure, sub-Saharan Africa