

Adapting to the Changing Climate through Climate Smart Farming Practices

Agriculture contributes about half of the global emissions and these are the two of the most potent non-carbon dioxide greenhouse gases: nitrous oxide and methane (World Bank, 2008). This therefore places agriculture responsible for 15% of the total greenhouse gas emissions worldwide.

Several social, Environmental and economic constraints that threaten the resource base that

agriculture depends on and the marginalization of smallholder farmers rights, practices and knowledge are highly hindering sustainable food production systems thereby widening vulnerability levels amongst local communities.

Moreover, agricultural systems have a stronger potential to avoid climate change through reducing emissions and mitigating climate change through carbon sequestration.

A shift towards having climate smart techniques is seen as a system that could enable food sustainability and provide a set of farmer friendly productive solutions hence resulting to climate resilience.

For a period of 6years, community farmer groups in North East Kano Location in Kisumu County have been fully empowered by CREP-Program which is agriculture and environmental conservation based Kenyan NGO. The farmer groups are now realizing economic gains through significant improvements in safe crop production systems, food security, family nutrition, health and education within their households.

The farmer groups have been implementing a series of production practices that optimizes nutrients and energy flows and minimizes production risks.



Appropriate farming technologies and practices have been considered very key as they enhance biological diversity within the whole system, build complexity into the system to provide vital ecosystem services, increases soil organic matter and ensure good soil structure. Thereby, increasing soil biological activity and maintaining long-term soil fertility. Thus minimizing the use of nonrenewable resources. These practices have provided farmers with a wide range of options to spread risks during adverse and extreme weather events

Use of organic manures

Minimal use of external farm inputs such as synthetic fertilizers and pesticides has to be considered when it comes to the implementation of climate smart farming practices. Restricting the use of external farm inputs will therefore to a level curb CO₂ and nitrous oxide emissions which relates to about 10% of direct global agricultural emissions.

The farmer groups have therefore put into practice the use of organic manures and bio-fertilizers which have enabled them enhance on the waste management systems and minimize emissions of green house gases through composting. Increased crop yields under small plot units have been realized by the community farmer groups through the

application of cured manures from integrated livestock production, composting of on farm wastes and diversification.

Much emphasis needs to be put on the use of organic manure as it improves soil quality and efficient water use which in turn helps to improve farm resilience against the adverse impacts of climate change and strengthen farms' adaptive capacity.

Crop diversification and livestock integration

The use of assorted crops species enhances the agro-ecosystem resilience to risks and external shocks such as extreme weather. This farming system also requires farmers to use safe seeds and encourage genetic diversity in their production.

There is a greater need for most community farmers to be empowered on crop diversification as the system makes more efficient use of available nutrients with improved farm productivity and economic performance which are of high importance in times of limited nutrients and other resources



necessary in the production system.

Crop diversification within the groups has enabled them produce sufficient cash and subsistence crops for household consumption. This has also reduced the farmers' vulnerability to volatile food prices and expenses within their households and has become self reliant.

The groups' most outstanding adaptation strategy is the integration of crops with dairy goats' given the changing climate. They find dairy goat farming to be feasible, low cost and affordable. It is also socially acceptable, locally adapted and environmentally sound.



Madam Joyce one of the groups' leader reiterates that dairy goats have been like a saving to her, as the sale of livestock provides immediate cash to deal with significant or unexpected expenditures such as school fees. She has been using the integration system as insurance in case they experience crop failure. Furthermore, dairy goats have also contributed to improved livelihoods by providing cash income through sale of animals or milk, meat and other products.

Even though climate affects livestock in different direct and indirect ways and which are capable of influencing their growth rate, milk production and reproduction, the groups have been able to adapt to the current situations simply by early production, preparation and preservation of foders such as silage and hay.

Manure produced by these livestock are then cured to reduce N2O emissions and supplied in the farms to enable crops thrive.

