SMALL-SCALE AGRICULTURAL PROJECTS THAT ADDRESS THE CHALLENGES OF CLIMATE CHANGE AND HELP SMALLHOLDER FARMERS INCREASE THEIR YIELDS AND BECOME INDEPENDENT OF ARTIFICIAL FERTILISERS

KOLPING INTERNATIONAL CONVENTION

Introduction

- Small-scale agricultural project is a set of agricultural or farming activities on a small piece of land on which farmers grow subsistence crops relying on family labor with simple technologies and get low returns.
- Smallholder farmers play an important role in household food security, so we need to significantly empower them through sustainable agriculture with improved inputs i.e. seeds, organic fertilizers etc,…
- The climate change has catastrophic impacts on agriculture and animal husbandly productivity.
- Organic farming system is only the low cost and reliable way of constantly increasing crop production, without relying on artificial fertilizers and pesticides.

THE COUNTRY OF RWANDA

- Rwanda is a small landlocked country in Africa with a total land area of 26.338 km2.
- Population of 14,094,683. An increase of 2.31% from 2022, showed a rapid growth of the citizens.
- Rwanda has 4 provinces and the city of Kigali, with different climate characteristics in each.
- Majority of the Rwandan population depends directly on agriculture.
- Rwanda is currently classified as a low- income country working towards achieving SDGs where agriculture has a great contribution mainly to the first two United Nations' SDGs of eliminating poverty, and Zero Hunger by 2030.

Agriculture in Rwanda

- Rwanda has bimodal rain seasons. The first rain season, extends from September to December which is the longest rain season. The second one, starts in March and ends in May.
- Rain-fed agriculture practiced by smallholder farmers, accounts for the vast majority of the planted area, in Rwanda.
- The climate-related risks to agriculture vary in each province and its impacts on crop production vary depending on adaptive capabilities of each community to manage and respond to climate risks.
- Important subsistence crops includes roots and tubers like cassava, sweet potatoes, Irish potatoes, cereals: maize, wheat and sorghum, legumes: beans, soybeans, peas and groundnuts. There is also banana , sugarcane, and other various fruits.

PICTURES ILLUSTRATING VARIOUS PLANTS IN RWANDA

IRISH POTATOES FROM PLANTLETS TO MINI TUBERS

FROM MINI-TUBERS TO BIG TUBERS

IRISH POTATOES MINI TUBERS

BIG IRISH POTATOES TUBERS

CASSAVA PLANTATION

CEREALS

Maize

Wheat

LEGUMES

Beans

Soybeans

FRUITS

Avocado tree

Passion fruits

BANANA PLANTATION AND BANCHES OF BANANA

SUGARCANE PLANATATION

Challenges facing Rwandan Agricultural sector

- Rwandan Agricultural sector is greatly exposed to climate change and weather-related risks, mainly Heavy rain, Floods and Prolonged droughts.
- Irregular and unpredictable rainfall patterns, negatively affect crop production.
- Pests and diseases significantly affect crops initiating yield loss.
- Decline in soil fertility.

Key environmental challenges facing Rwanda

- **Land scarcity.** There is a problem of land cutting in Rwanda due to the growth of the population, where parents have to inherit their children.
- **Land misuse** i.e. a large portion of the arable land is being used for habitation and other developmental activities due to rapid population growth.
- **Soil degradation:** Rwandan soils are naturally fragile and erosive with a large share of soils depleted due to its over exploitation.
- **Deforestation**: Rwanda's deforestation is largely due to cutting down of trees for fuel, additional agricultural land, grazes and new infrastructure.
- **Climate changes**: Rwanda is vulnerable to climate changes due to water and air pollution as a result of deforestation.

Reasons why Rwanda is threatened by climate changes

- The Rwandan agriculture is mainly rain-fed, so any significant change in precipitation directly affects agricultural productivity.
- Rwandan geographical relief. i.e hilly and mountainous, volcanic region with fragile soils make it highly affected by floods, landslides and soil erosion and prolonged droughts as well.
- Agriculture over-dependency makes Rwanda vulnerable to environment-related shocks such as droughts, heavy rain, landslides and floods.

SOME SMALL- SCALE AGRICULTURAL GENERATING PROJECTS IN RWANDAN KOLPING FAMILIES

Besides agrarian activities in Rwanda, KOLPING members started to deal with small generating projects in order to fight against poverty and hunger.

The following are some of the small generating projects set by the members

SOME SMALL GENERATING PROJECTS

- The very first agricultural project is cultivating the subsistence such as: Sweet potatoes, Irish potatoes, beans, cassava, banana and Sorghum, maize, wheat, vegetables and fruits.
- Seed multiplication, for example production of pre-basic seeds in the green house, basic and certified Irish potatoes seeds.
- Crops value addition, this is modifying, enhancing or processing raw agricultural products and change them into other products with a higher market value and a longer shelf life. Example: Blending of juice and wine from sugarcane and rosella flowers.
- Buying and selling of extra yields
- Buying and selling animal products such as cheese, meat, milk, fish, chickens and eggs, etc.

Key climate change adaptation measures for agriculture in Rwanda

- The main adaptation measure is promoting organic farming techniques, which include:
- Afforestation
- Introduction of agroforestry practices, progressive and radical terraces where necessary, which is sustainable to fight against erosion, landslides and floods.
- Improve farming technologies including irrigation systems
- Provide weather-beaten tolerant fast-growing crops and empower farmers with climate change information and adaptation measures.
- Integrate soil fertility management, and climate change adaptation measures into agricultural sector.

Proposed solution to address climate change challenges

- One of the ways to tackle climate change harms is to seek sustainable measures that strengthen farmers 'resilience to climate change challenges .
- The sustainable soil management minimizes soil degradation, avoids pollution, and help improve soil health “If we can look after our soils, then soils will look after our crops”.
- Kolping Rwanda has introduced an effective approach on sustainable agricultural practices including soil management and fertility improvement, minimization of artificial fertilizers and pesticides by promoting organic compost and animal manure, through provision of educative trainings to farmers which increase productivity and enhanced farmers’ resilience to climate change challenges.

HEAP OF ORGANIC MANURE

The way forward

To conclude we are happy for the achievements and steps we have made so far, but we still need more steps to take in order to move ahead for sustainable development in future.

- Nowadays the world is facing severe climate change crisis, there is a need for integrated techniques for environmental protection .
- The farmers are experiencing reduction in yields due to small and/or no longer productive arable land, therefore there is a need of advancing agricultural technologies which will help farmers to produce enough on small scale without depending on artificial fertilizers.

There will be a need of post harvest technologies in the future as there is an expectation of getting high agricultural production if the climate is stable.

THANK YOU VERY MUCH FOR YOUR KIND ATTENTION