

# Role of AIVs in Climate Smart Agriculture

- **Prof. H. Nderitu**

## Team Members

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# Background

- Crop production, which is vital to global food security, is being affected by climate change all over the world.
- However, the impact is being felt more severely in the more impoverished communities in developing countries.
- It has been predicted that over the next decades, billions of people, especially those living in developing countries, will face shortages of water and food and greater risks to health and life because of climate change.

# Background cont....

- By 2050, it is predicted that the global population will be over 9 billion people, increasing the demand for food and other agricultural products.
- Similarly the world faces challenges such as land and water scarcity, increased urbanization, and climate change and volatility.
- Agricultural production remains the main source of income for most rural communities for their livelihood (World Bank, 2008)

# Possible meaning of climate change to farmers

- Drought and/or floods
- Earlier, or later, rains
- cessation of rains
- New diseases
- New weeds
- New insects, change in populations
- Post harvest storage challenges
- Soil changes, including salinity
- Changes in livestock feed and health



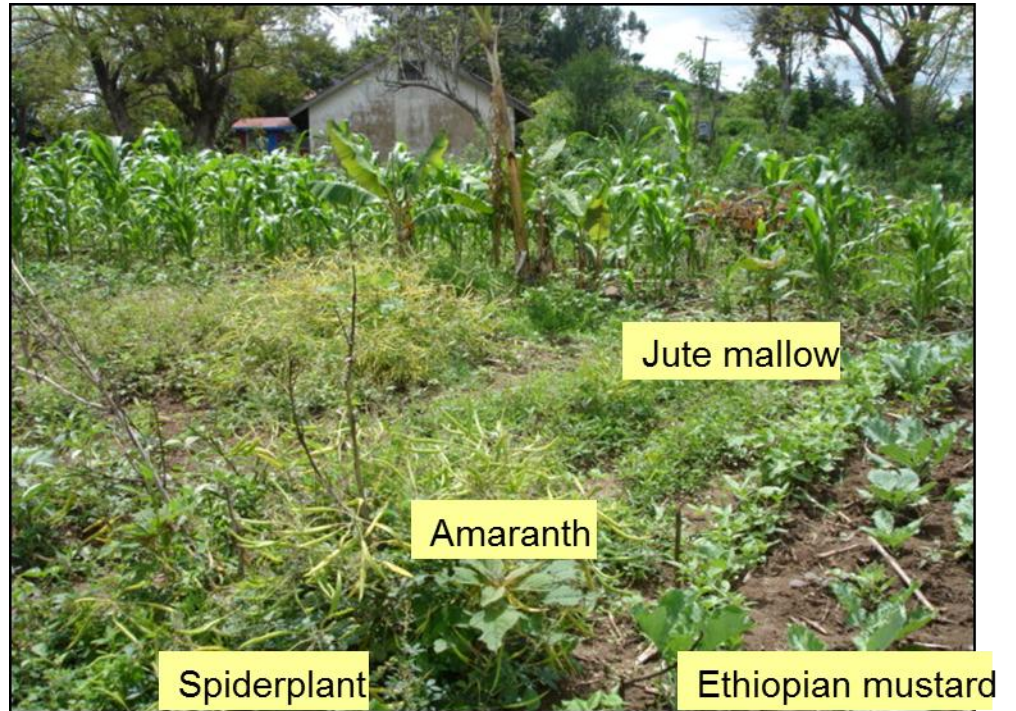
# Justification

- Majority of commercial crops that have been introduced are not adapted to local conditions and require high inputs of agrochemical inputs such as fertilizers, mechanization, and water supply,
- AIVs have the potential of increasing crop diversity, diversifying diets and increasing agricultural resilience to pest, diseases, and changes in harsh weather



# Justification

Studies have shown that traditional food crops, such as *AIVs* are an important source of community resilience in Africa including resilience to climate change and economic turbulence



# Agricultural approaches and practices that contribute to climate change mitigation

- • conservation agriculture;
- • improved farming systems with several crop rotations;
- • crop diversification;
- • promotion of legumes in crop rotations;
- • growing cover crops;
- • mulch cropping;
- • soil management practices that reduce fertilizer use (e.g. urea deep placement);
- • integrated nutrient management;
- • growing nutrient-use efficient crop varieties;
- • agroforestry.

# Climate smart Technologies for Vegetable Value Chain

Factor	Technologies, Innovations and Management Practices (TIMPs) category	Title of TIMPs	Commodity/Value chain	Description	Year Developed	Status	Developer(s)/Authors/Institution	Gender/Youth responsiveness	References/Source	Remarks
<b>Production</b>										
<b>Crop management (Production)</b>	Intercropping with legumes	AIVs and legumes intercropping patterns	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Appropriate patterns that conserve space and resources	2014	Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Integrated pest and diseases management	Pest management in amaranth	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Use of natural organics in pest management	2014	Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.	Safe and environment friendly		
	Crop rotation	AIVs rotation program	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Appropriate AIV rotational procedures		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Organic fertilizers	Organic fertilizers in AIV	Vegetables (Amaranth	Responses of AIV to organic		Practiced by smallholder	MKU JOOUST UoN			



	Raised beds preparation	Raised bed in AIVs production	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Use of raised beds as opposed to flat surface for planting		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Harvesting techniques	Effective harvesting techniques for AIVs	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Prolonged harvesting periods through effective harvesting methods		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			

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<b>Crop management (AIV seed production and handling)</b>	AIVs Crop management for seed production	AIVs Crop management for seed production	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Management of the AIVs during growth period for quality seeds		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Seed harvesting and processing	Processing of AIV seeds	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Processing techniques to ensure clean farmer seed		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Seed packaging and storage	Packaging techniques for AIV seeds	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin)	Appropriate seed packaging for prolonged storage and viability		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Germplasm collection and conservation	Conservation of AIV germplasm for biodiversity	Vegetables (Amaranth, cow pea, night shades,	Conservation of AIV germplasm for future use		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI			

Factor	Technologies, Innovations and Management Practices (TIMPs) category	Title of TIMPs	Commodity/Value chain	Description	Year Developed	Status	Developer(s)/Authors/Institution	Gender/Youth responsiveness	References/Source	Remarks
<b>Production</b>										
Post Harvest handling , value addition, and utilization	Value addition	Products development from AIVs	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin	Development of products from AIVS for diversified utilization		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			
	Solar drying of AIVs	Low cost post harvest technologies for AIVs	Vegetables (Amaranth, cow pea, night shades, spider plant and pumpkin	Post harvest processing of AIVs by solar drying to avoid losses.		Practiced by smallholder farmers	MKU JOOUST UoN Chuka Uni. NMK KIRDI EAN Egerton Uni.			

- **Thank you**