# Indigenous African Leafy Vegetables (ALV) for Enhancing Livelihood Security of Smallholder Farmers in Kenya



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### **Introduction to ALV Emphasis**

Our shovel ready project was designed to allow enhanced production, utilization and marketing of ALVs in Western Kenya by AMPATH clients. This was accomplished through evaluation of improved germplasm of ALV species including: spider plant (*Cleome gynandra*), African nightshades (*Solanum scabrum/S. villosum/S. americanum/S. tarderomotum*) and amaranths (*Amaranthus blitum/A. dubius/A. hybridus /A. spinosus*). Indigenous ALVs were targeted because they contain higher levels of nutrients than commonly grown exotic species like Swiss chard, kale and cabbage, are rich in proteins (17.4-38.3% of dry matter), carbohydrates, vitamins and minerals and have medicinal properties. These vegetables are popular in Kenyan cultural diets and there is excellent potential for increased production and use in areas of traditional culture, however, constraints to greater production and marketing exist.

### Activities

- Household and market survey on ALV production and marketing
- Germplasm evaluation
- Agronomic training
- Farmer field days
- Farmer planting and cultivar evaluation
- Seed handling training
- End of program evaluation survey



## Household and Market Survey for ALVs of 120 Households and 62 Market Vendors

- 70% of households are female headed and 87% of vendors were female.
- Key findings:

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![](_page_0_Picture_19.jpeg)

**Seed Training** 

![](_page_0_Picture_21.jpeg)

Training farmers in proper seed collection, processing and storage

# **Program Evaluation Survey**

- Survey done after our interventions
- Farmers very satisfied with ALV program and introduction of new and improved

#### Spiderplant

African Nightshade Amaranthus

![](_page_0_Picture_28.jpeg)

![](_page_0_Picture_29.jpeg)

# Goal

Establish a base of information and experience for greater production and use of indigenous vegetables to provide a source of food for economic security, improved health and nutrition for Kenyans, especially women farmers, children and those afflicted with HIV/AIDs.

# **Project Objectives**

- Assess genetic resources of ALVs for Kenya
- Improve ALV seed system availability to Kenyan stakeholders
- Develop and disseminate improved horticultural practices and postharvest technologies for ALVs

- 89% had major income from farming
- 47% grew nightshade, 11% grew amaranth, 7% grew spider plant and 33% grew all 3 ALVs
- ALV income pays for food, household supplies and school fees.
- ALV seed is obtained from local sources (39%), saved seed (43%), AMPATH donated (7%) and from friends or other sources (10%)
- ALVs help supply food for the immediate family and excess ALVs are sold on farm to neighbors or at local markets
- Local market improvements
  - better display facilities and special areas for ALV sales
  - better access to price information

### **Germplasm Evaluation**

New, previously unavailable ALV germplasm (33 cultivars) of African nightshade, Amaranthus and spider plant from AVRDC and 5 local varieties were tested on research farms (Moi University and KARI) for agro-ecological suitability.

# Training

- Emphasis in farmer training was designed to empower individuals and groups in:
  - agronomic practices
  - agribusiness skills
  - group dynamics and management
  - group integrated saving and empowerment (GISE).

#### **ALV Village Training at Khunyangu**

![](_page_0_Picture_54.jpeg)

- germplasm
- Most striking result:
  - Prior to our program, only 43% were growing ALVs but after intervention this increased to 90%

#### Impacts

- **Farmer numbers affected**
- Individual farmers (12) and farmer groups (10) trained in ALV production and handling
- Individual Farmers: Eldoret 5, Burnt Forest 7, Farmer groups: Busia 4; Khunyangu – 3; Chulaimbo – 3; with a total direct impact on 285 farmers.
- Improved seed varieties for farmers
  - Improved plant productivity
  - Better yield and quality
- Improved flavor of new AVRDC cultivars compared to local varieties
- Most farmers had no knowledge improved varieties of ALVs existed
- Production practices
  - New planting techniques: use of beds, planting in rows, appropriate seeding rates, fertilizer timing, sequence planting, thinning and transplanting
- Food and Nutrition Security
  - Increased awareness among communities on nutritional and potential economic benefits of ALVs
- Institutional Collaboration
- Avenues for collaboration between AMPATH, Moi, KARI and U.S. partners
- Indirect spillover of ALV cultivar improvements and agronomic training with neighbors and communities
- ALV farmers gained new customers and increased community respect

#### **HORT CRSP Farmer Cooperators**

![](_page_0_Picture_76.jpeg)

Ngarua

![](_page_0_Picture_78.jpeg)

![](_page_0_Picture_79.jpeg)

- Develop marketing strategies for ALVs
- Promote educational programs on ALV's for farmers and other community groups

# AMPATH clinic sites – 2007

![](_page_0_Figure_83.jpeg)

ALV sites: Eldoret and Burnt Forest - 13 individual farmers; Khunyangu - 4 groups (80 farmers); Busia - 3 groups (133 farmers); Chulaimbo - 3 groups (53 farmers)

# **Farmer Field Days**

- Farmers evaluated all germplasm at Moi University and KARI for agronomic suitability and taste characteristics
- The best cultivars were provided to farmers for on-farm testing

#### **Farmers Evaluating ALVs**

![](_page_0_Picture_89.jpeg)

# Farmer Taste Testing ALVs

![](_page_0_Picture_91.jpeg)

# **Farmer Planting and Cultivar Evaluation**

- Selected ALV cvs. were provided to farmers for on-farm evaluation. Cultivars were:
- African nightshade: Ex-Hai, SS 04.2, SS 49, SS 52, BG 16,TZMN 55-3
- Amaranth: AH-NL, AC-NL, Ex Zim, Ex Mwanga, AC 38, UG AM 40, AM Kungei
- Spider plant : UG SF 14, IP 3, UG SF 12, ML SF 3, ML 5F 13
- Ongoing agronomic farmer training occurred at all locations

# **Next Steps**

- Seed quality determined from farm saved seed
- **On-farm variety performance feedback from additional surveys**
- **Continued training and follow-up on adoption of improved production practices**
- Post-harvest handling technology introductions
- Women empowerment activities for on-farm production and marketing
- **Continued creation of awareness on nutritional and economic benefits of ALVs**

### **Questions to Ponder**

- How to sustain ALV culture by small holders when funding support disappears?
- How best can small holders enter the commercial market and compete?
- Can smallholders grow and save their own seed and maintain quality?
- What is the long-term impact of ALVs on economics of farmers, especially those afflicted with HIV/AIDS?