Growing Onions and Leafy Vegetables in Arid and Semi- Arid Lands

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### What are Semi Arid and Arid Lands? (ASALS)

- The annual rainfall in arid areas ranges between 150 mm and 550 mm and semiarid areas between 550 mm and 850 mm per year.
- ASALs are home to about 36% of the population, 70% of the national livestock and 90% of wildlife.
- Temperatures are high throughout the year, with high rates of evapotranspiration.



## The Production Problem

- ASALs are low potential areas and focus has mainly been on livestock.
- Green leafy vegetables and high value crops are not generally considered.
- Farmers are still planting Maize and other crops that are heavy feeders ( require copious amounts of rain).
- Indigenous foods that are resilient are "neglected."



# Growing Leafy Vegetables in Dry lands

#### Focus on indigenous African Vegetables:

- Pumpkin leaves
- Nderema (Malaba Spinach)
- Tsaga (Spider plant),
- Mitoo (Slender leaf)
- Kunde (Cow peas)
- Managu (Black Night Shade)
- Terere (Amaranth)
- Mrenda (Jute Mallow)
- Kanzira/ Kaguru (Indigenous Collard/ Sukuma wiki)
- Moringa Tree Leaves



### Nutritional Value of African Leafy Vegetables

Traditional African leafy vegetables have been selected due to their good nutritional value. Have high values of:

- Iron
- Protein,
- Dietary Fibre
- ▶ Folate
- Potassium
- Magnesium
- Phosphorus
- Calcium
- ► Folic acid
- ▶ Vitamins A, B, C, and K
- Antioxidants such as beta carotene and lutein which contribute to good vision.



## Soil Management

#### Zai Pits



#### Fertility Trenches



### Growing Seasonal African Leafy Vegetables

#### Long Rains/ Wet Season

- Managu
- Terere
- Sukuma Wiki
- Tsaga
- Mitoo
- Mrenda

#### Short Rains/ Dry Season

- Pumpkin Leaves
- Nderema
- ▶ Wide Leaf Terere
- Kunde
- Moringa Tree Leaves



# Managing Pests and Diseases









# Integrated Pest Management





### Growing Onions in ASALS

- Onions are one of the most common vegetables consumed globally.
- They are healthy and full of anti oxidants, source of Vit B6 and C, folate, iron and Potassium.
- High value crop that are in demand all year round.
- Grow well in ASALS (ideal temp range between 13-35 degrees centigrade)



# Soil Testing

- Only 8% of Kenyan farmers test their soils
- Soil tests measures the nutrients in your soil
- Tells you which nutrients are lacking or are in excess
- Helps you determine the most favourable inputs so as to increase or maintain yields for the following year.



# I found that my soils were Sodic!

Sodicity in soil is the presence of a high proportion of sodium ions relative to other cations. Soils are often considered sodic when the amount of sodium impacts soil structure and PH is generally above 8.

Characteristics of Sodic soils:

- Susceptible to waterlogging
- Poor drainage
- Increased erosion risk
- Poor trafficability when wet
- Adversely impact soil structure, making plant growth difficult.
- Sodic soils are nearly exclusive to arid and semi-arid areas



## Soil Health

#### Green Manuring and Fertility Trench



### **Agricultural Gypsum**



## Nursery Establishment and Companion Planting

- Establish your onion nursery in a well composted bed
- Transplant after 8 weeks in the nursery
- Harden onions 1 week before transplanting and cut off tips when planting
- In my experience carrots are the best companion for onions



## **Red Vs Yellow Sweet Bulb Onions**



#### **Red Onion**

- Mature in 4 months
- Are more susceptible to Thrip infestation
- Taste is strong and pungent
- Do not do well in sodic soils due to soil compaction
- Are common in the market

#### Yellow Sweet Onion

- Mature in 3 months
- Are a bit tolerant to sodic soils
- Taste is sweet and mild
- Thrip infestation is low and get good size bulb
- Mainly found in specialty markets

# **Spring Onions**

- Easy to establish
- Have few pests and diseases
- Need lots of water to establish and keep green
- Are perennial
- Ideal for kitchen gardens
- Are very tasty and indigenous to Kenya



#### Thrips

- Thrips are the No 1 enemy
  for onion famers in ASALS
- They are resistant to almost all synthetic inputs
- The only way to manage
   Thrips is PREVENTION
- Ensure your soils are healthy and plants are not stressed.
- Use Neem oil and deep sky blue sticky traps to prevent infestation in the nursery as well as soon after transplanting,
- Weed your onion field every 3 weeks



# Drying and Curing Onions



- Onions should be harvested when most of the tops have fallen over and begun to dry. Carefully pull or dig the bulbs with the tops attached
- After harvesting, dry or cure the onions in a warm, dry, well-ventilated location, such as a shed
- Spread out the onions in a single layer on a clean, dry surface. Cure the onions for two to three weeks until the onion tops and necks are thoroughly dry and the outer bulb scales begin to rustle.
- Place the cured onions in a mesh bag, old nylon stocking, wire basket or crate.

# Feed yourself first!

- Make it a point to have a kitchen garden to provide for your family's nutritional needs all year round
- Start small so as to learn how to grow your greens and onions using sustainable farming practices.
- Go commercial when you have identified a market and can supply consistently.



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