The diversity of indigenous African Leafy Vegetables that are Produced, consumed and sold in various households in Vihiga district, Western Kenya

Sylvester Aura

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What are these African Leafy Vegetables (ALVs)?

(1) Indigenous Leafy Vegetables

Those vegetables that have their natural habitat in Sub-Saharan Africa (SSA)

(2) Traditional Leafy Vegetables

Those vegetables that were introduced over a century ago and owing to long use, have become part of the food culture in the sub-continent.

Parameters under study

-Production

-Consumption

-Marketing

Why is Cultivation of ALVs encouraged?

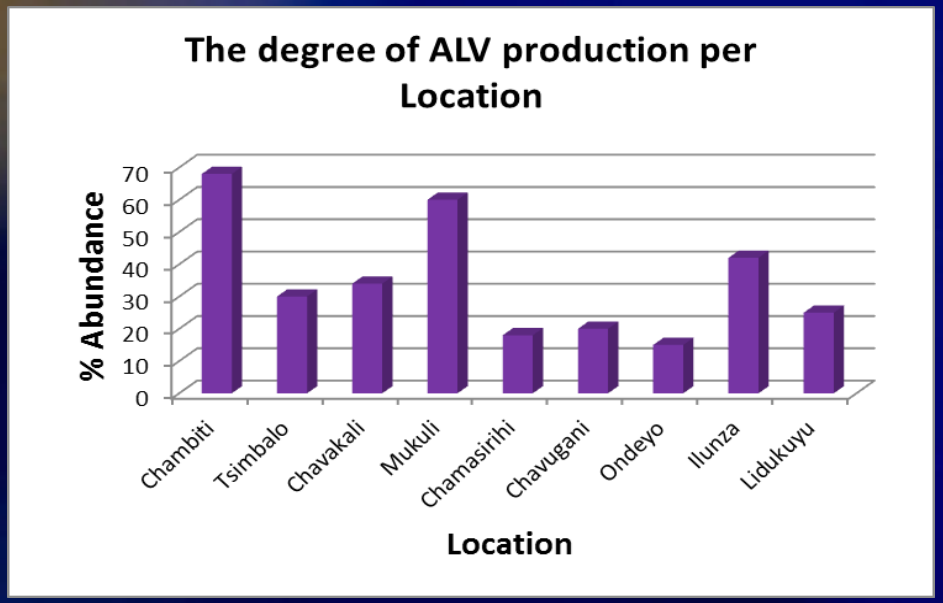
- ❖ Nutrition-health value
- Ability to tolerate biotic and abiotic factors
- Short growth periods
- Ability to produce seeds under tropical conditions
- Ready response to organic fertilizer

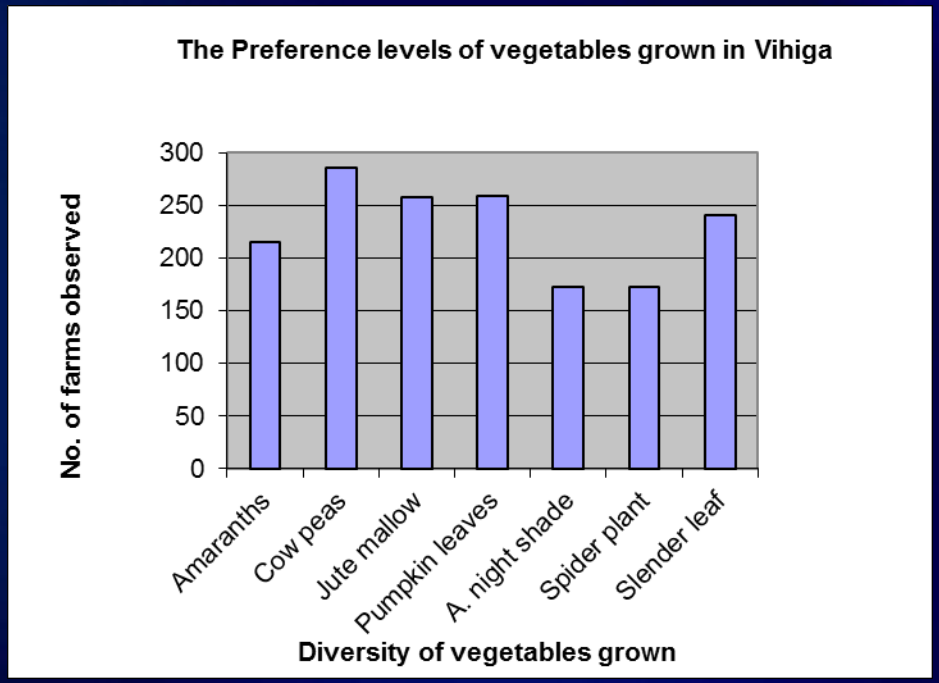
Production

The main priority indigenous vegetables grown in Vihiga.

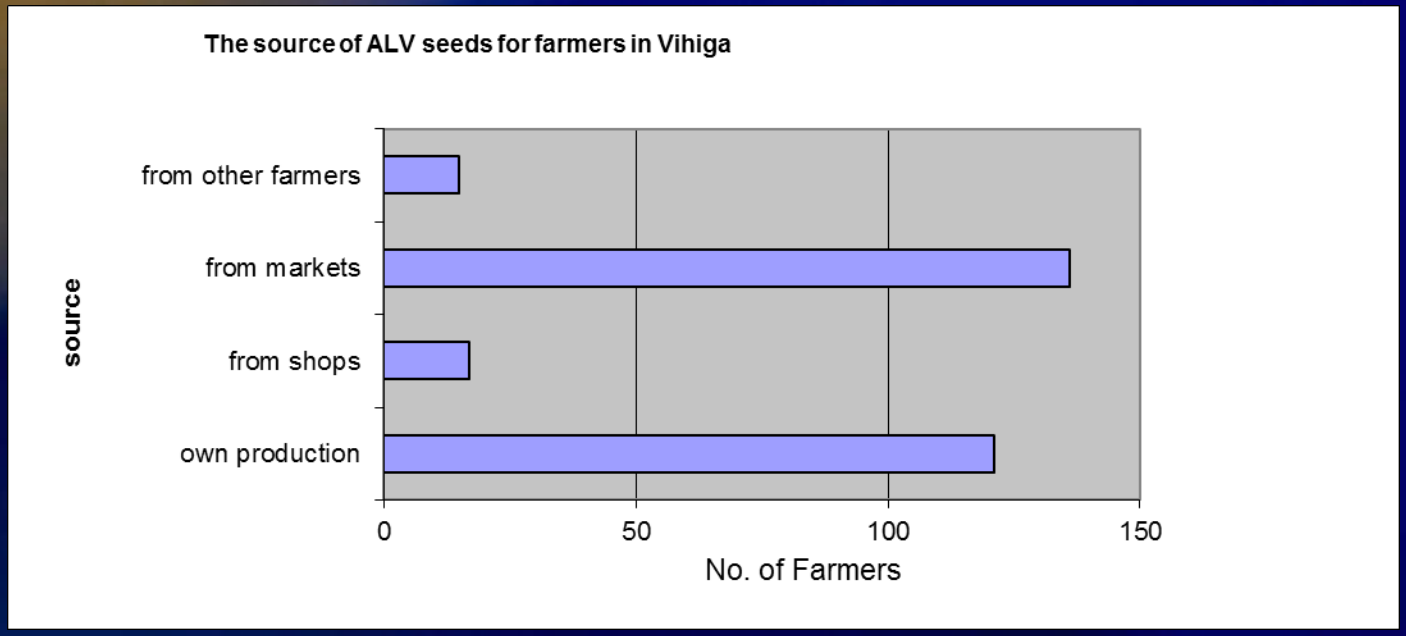
No.	Local name	Swahili name	Common English name	Scientific name	%
1	Likhubi	Kunde	Cowpea leaves	*Vigna unguiculata*	100
2	Lisebebe	Malenge	Pumpkin Leaves	*Cucurbita moschata*	100
3	Emiroo	Marejea	Slenderleaf	*Crotalaria ochroleuca*	100
4	Omurere	Mlenda	Jute Mallow	*Corchorus olitorius*	100
5	Lisutsa	Mnavu	African nightshade	*Solanum villosum*	80
6	Tsisaka	Mgagani	Spiderplant	*Cleome gynandra*	90
7	Libokoi	Mchicha	Vegetable amaranths	*Amaranthus blitum*	80

Production


The degree of ALV production per Location
% Abundance
70
60
50
40
30
20
10
0
Chambiti
Tsimbalo
Chavakali
Mukuli
Chamasirihi
Chavugani
Ondeyo
Ilunza
Lidukuyu
Location


The Preference levels of vegetables grown in Vihiga
No. of farms observed
300
250
200
150
100
50
0
Amaranths
Cow peas
Jute mallow
Pumpkin leaves
A. night shade
Spider plant
Slender leaf
Diversity of vegetables grown

Seed Availability



- Farmers are reluctant to sell seeds to other farmers for fear of rivalry
- Certified seeds in agrovet shops are expensive
- Open air markets offer seeds at affordable prices, although they are of low quality
- Those who engage in own production lack proper storage facilities

Seed Preservation(Seed Bank)

- Seeds are preserved traditionally
- Dried in direct sunlight
- Mixed with ash (insecticide)
- Stored in gourds and plastic bags





A traditional seed bank run by R.O.P

Notable trends in production

- Planting is either by drilling in rows or broadcasting
- 95% of farmers use farm manure as a source of macro and micro nutrients
- 75% of farmers grow vegetables in seasons
- 25% of farmers grow vegetables all year round, have drilled boreholes to supply water for irrigation during dry spells.
- 90% of farmers cited a ready market for cowpeas, hence its popularity.
- 60% of farmers intercrop traditional vegetables with other crops, mostly cereals and grains e.g. maize, millet and sorghum



Alternate furrows of African nightshade, spider plant & amaranths



A field of spider plant broadcasted randomly

Major challenges in ALV production

- Lack of good quality seeds
- Pests and diseases
- Limited access to financial credit
- Poor selling mechanisms
- Lack of uniformity on documented guidelines on production and processing procedures

  -numerous sources give descriptions of same products in different languages

Consumption of ALVs

Cultural sensitivities affecting consumption of ALVs

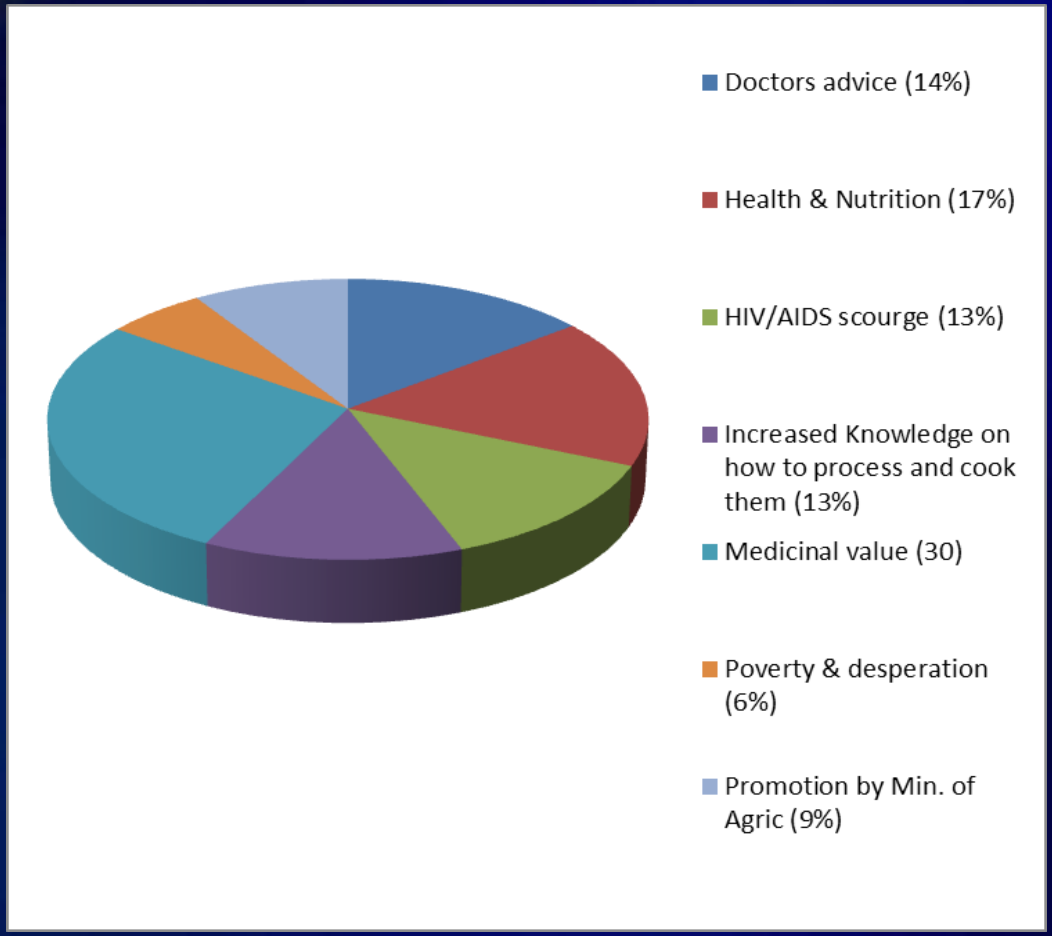
- Gender
  -Women encouraged to eat plenty of amaranths as it has a high % of iron

- Age
  -Spider plant and Africa night shade are not popular among the youth because of their bitter taste.
  -The elderly are advised to eat plenty of jute mallow:- helps in digestion and softens body joints, making their movement flexible

- Ethnicity
  -Some vegetables are not widely grown in some areas, thus not commonly eaten by the residents . e.g. spider plant is rarely grown in central Kenya

- Religion
  -Some indigenous vegetables like vine spinach (*Basella alba*) are planted around shrines in western Kenya, and are thus not eaten by a section of traditional religious leaders

Factors that influenced people to eat ALVs



Processing and utilization of ALVs

- Virtually all ALVs are consumed while still fresh.
- Some are cooked separately while others are mixed. Common mixtures include cowpea leaves & jute mallow, spider plant and A. night shade, amaranths and spider plant.
- Traditional vegetables are rich in vitamins (A and C), minerals iron, calcium, phosphorus and potassium





Women participating in the cooking competition during an open field day in Vihiga, Western Kenya

Processing and Utilization

Common Cooking Procedures.

- Sorting and cleaning the vegetables with clean water
- Boiling (Time depends on the species)
- Removal of cooking water
- Frying in fat
- Addition of milk or cream and mixing different types help mask any bitter taste (especially the spider plant and the nightshades)
- Other ingredients used include tomatoes and onions
- Served with any starch staple- Youths (65%), Ugali from maize flour

  - Elderly(15%), Ugali from sorghum, millet and cassava

  -Others(10%), Rice, sweet/Irish potatoes

Awareness enhancement on the importance of African Leafy Vegetables Mean composition per 100g edible portion of the selected traditional leafy vegetables compared with Cabbage

	Amaranths	Spider plant	African nightshade	Cowpea leaves	Cabbage
Water g	8.4	86.6	87.8	89.8	91.4
Iron mg	8.9	6.0	0.3	0.9	0.7
Protein g	4.6	4.8	3.2	4.1	1.7
Fibre g	1.8	1.4	2.2		1.2
Ascorbic acid (Vit. C) mg	64	13	24	36	54
Calcium mg	410	288	200	63	47
Phosphorous	103	111	54	9	40
B-Carotene µg	5716	10452	3660	5700	100
Riboflavin (Vit. B2)mg	0.42		0.59	0.2	0.1

Source: Kenya Agricultural Research Institute (2009)

Servings in Hotels/Restaurants

- ALVs are mainly supplied by vendors or purchased from the markets

- 80 % of the restaurants began selling ALVs due to demand from customers

- 70% of the customers are men:- Reasons

  -A wide variety of ALVs are available at the same time

  -Wives do not know how to cook some ALVs

  -Specific ALVs are not eaten by some family members

Marketing ALVs

- Marketing Channels-Farmers
  -Supermarkets
  -Open air markets
- Source of ALVs-Farmers
  -Vendors
  -Own cultivation

- Challenges in marketing of ALVs
  -Stiff competition from traders selling exotic vegetables e.g. cabbage and kales

  -Exploitation from supermarkets which buy ALVs from farmers at low prices

  - Lack of storage facilities

Conclusion

- An interest in healthy foods, and a growing taste for diversity is creating a favourable opportunity to protect and revitalize ALVs as a nutritious resource derived from Africa's biological and cultural diversity.