



PRODUCTION AND POSTHARVEST HANDLING OF COWPEA LEAVES

Prepared by

Ombaka Joshua Owade

Anne Wanjiru Miano

Dr. George Ooko Abong'

Prof. Michael Wandayi Okoth

Prof. Agnes Wakesho Mwang'ombe

Fruits and Vegetables for All Season Project

University of Nairobi

A brochure prepared for dissemination of production and postharvest handling practices
for cowpea leaves

For any clarification, please

contact: +254726307968/0700073386; Email:

owadehjm@gmail.com/ooko.george@uonbi.ac.ke



GEORG-AUGUST-UNIVERSITÄT
CÖTTINGEN

FHE
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ERBURG UNIVERSITY
OF APPLIED SCIENCES

University of
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1.1 Introduction

- Cowpea (*Vigna unguiculata*) is a herbaceous leguminous crop that belongs to the Fabaceae family.
- The crop is a short-term crop that is produced in both mono and inter-cropping systems ¹.
- The crop is utilized for its leaves as vegetables and grains amongst several communities in sub-Saharan Africa (SSA).
- Due to its drought tolerance properties the crop is common in the arid and semi-arid lands in Africa.
- For its production, western Africa accounted for 85% of the total production area, with eastern Africa at 7.8% being second in SSA ².
- In Kenya, the vegetable is the most produced African Leafy vegetable with the arid and semi-arid lands of the eastern and coastal regions being among the highest producers ³.
- The vegetable is rich in micronutrients including beta-carotene, iron, zinc and calcium, dietary fibre and other phytochemical and anti-oxidants which have health promoting attributes.
- In the wider utilization of the vegetables, there are the dual-purpose varieties (producing grains and vegetables) and the varieties grown for the vegetables.

Local Names: Kunde (Swahili, Kipsigis), Mathoroko (Kikuyu), Likhuvi (Luhya), alot-bo (Luo), Nthooko (Kamba), Egesare (Kisii), Kiyindiru (Luganda).

Cowpea leaves varieties (Kenya):

- Katumani 80 (K80),
- Kitui black eye, Kunde 1,
- Kunde Mboga (Figure 1),
- KVV 27-1, 419,
- Machakos 66;
- Numerous landrace varieties

1.1.1 Challenges in the cowpea leaves value chain

1. High postharvest losses resulting in loss of economic returns among farmers
2. Limited value addition hence low prices.
3. Poor postharvest handling practices due to limited equipment.
4. Limited policy focus given to the crop.
5. Marketing challenges thus majority of the households produce for subsistence
6. Production challenges including pest and disease which result in on-farm losses.



Figure 1: A: Cowpea leaves seed (Kunde mboga variety), B: Cowpea leaves growing

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1.2 Cowpea leaves production

- Cowpea leaves are cultivated either in a mono or inter-cropping systems.
- In mono-cropping systems (Figure 2), the crops are grown without mixing with other crops.
- In the inter-cropping can be done with crops such as maize, sorghum and millet.
- The crop has good shade-tolerance making it thrive in inter-cropping system.



Figure 2: (A) Monocropping and (B) Intercropping cowpea leaves with maize. Source (Kamara ⁴).

Major pests: Aphid, Blister Beetle, Thrips, Pod Borer, Root-knot Nematodes

Major diseases: Fusarium Wilt; b. Powdery Mildew; Cowpea Mosaic Virus; Damping-off; Cercospora Leaf Spot.

1.2.1 Ecological requirements

Altitude: The crop can be grown in areas of altitudes of 0-2000metres above sea level, depending on the variety.

Rainfall: Cowpeas are relatively drought tolerant and can give reasonable yields with minimal annual rainfall of between 300-700mm. Too much rain or long dry spells are reduce yields. Excessive rainfall during flowering causes flower abortion while dry weather conditions are important during harvesting.

Temperature: cowpeas perform best in warm conditions. An optimum temperature of between 20-35°C is fit for their growth. Extreme temperatures affect crop growth and development.

Soils; cowpeas can be grown on a wide range of soils. However, well drained fertile soils with an optimum PH of 5.5-6.5 promote better production.

1.2.2 Harvesting of cowpea leaves

- The harvesting of cowpea leaves is started from as early as two weeks after emergence for those using the plucking the leaves technique until flowering (10-12 weeks after emergence).
- Those harvesting by uprooting the whole plant harvest the vegetables at 6-8 weeks after emergence which is the optimal maturity stage.

- Cowpea leaves yield up to 2400kg per acre.



Figure 3: Harvested cowpea leaves you could add another photo to balance

During harvesting of cowpea leaves, the following are done to improve quality:

- Harvesting is done early in the morning or late in the evening
- Harvested vegetables are kept under a shade or sprinkled with water to remove the field heat that would otherwise result in shriveling of the produce.
- Avoid storing harvested vegetables immediately in a sack.

1.3 Good agricultural practices

- Soil preparation before planting of the crop
- Selection of good quality seeds. Majority of farmers prefer the landraces however the improved varieties such as Kunde Mboga give higher yields.
- Proper application of fertilizer would also help improve the crop yields.
- Timely weeding of the farm is also necessary
- Proper storage and handling of harvested produce to minimize postharvest losses.

1.4 Postharvest handling and storage

- Post-harvest technologies and treatments have been a major challenge in developing countries especially Kenya
- Lack of this and having inadequate treatments have been a contributing factor to post-harvest losses of the vegetables.
- Improper storage of the vegetables i.e. in ambient or high temperature occasion shriveling and degradation (Figure 4).
- Harvested vegetables should be kept at low temperatures to prevent shriveling, but extremely low temperature (<10°C) results in chilling injury.
- Harvested leaves can keep for 2-3 days before spoilage. Modified Atmosphere Packaging, MAP (Figure 5) improve the keeping of fresh vegetables up to 7 days.



Figure 4: Cowpea leaves deteriorating due to storage under ambient, cold and extreme temperatures



Figure 5: Modified Atmosphere Packaging (MAP) of cowpea leaves

1.5 References

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