



Charcoal Production from Prosopis using Improved Earth Kiln



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Introduction

Charcoal production from wood is one of the major economic activities in drylands of Kenya. In many areas, the practice is not sustainable due to over-exploitation of trees from woodlands. However, in Marigat Sub-county, Baringo County, charcoal production is sustainably undertaken through use of *Prosopis*, a species invasive within the County. Charcoal production in Marigat is carried out by Charcoal Producers Associations.

Initially, *Prosopis* charcoal was produced using traditional earth kiln. However, this type of kiln has a low charcoal recovery rate of between 10-20% and emits a lot of smoke. To improve charcoal production efficiency, Kenya Forestry Research Institute (KEFRI) introduced and trained groups in Marigat on use of improved earth kiln. Due to inclusion of chimneys, improved kiln provide better carbonization (conversion of wood to charcoal).

Tools for *Prosopis* charcoal production

Tools required for *Prosopis* charcoal production using improved earth kiln include;

- Power saw
- Spade
- Axe
- Metallic air inlet
- Panga (machete)
- Chimneys
- Jembe (hoe)
- Sacks

Steps in Prosopis charcoal production

1. Identify an area with Prosopis trees suitable for charcoal production.
2. Clear bushes and fell the Prosopis trees (Plate 1).



Plate 1. Harvesting Prosopis trees using a power saw

3. Cut the felled trees into pieces of 1-1.5 m long.
4. Lay Prosopis poles on a cleared levelled ground to act as a base (Plate 2).



Plate 2. Prosopis poles laid on ground to form kiln base

5. Arrange the cut pieces of wood across the poles, starting with the largest to make a stack (Plate 3).

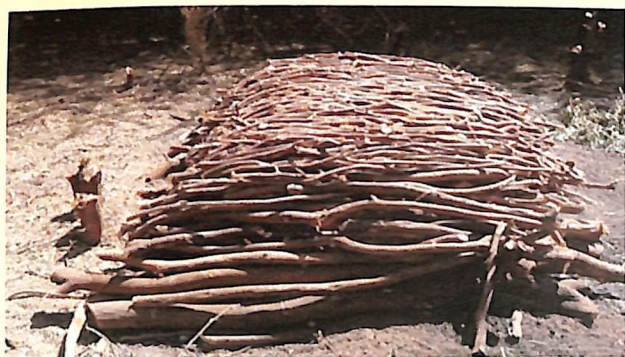


Plate 3. A stack of Prosopis wood

6. Place two metallic air inlet pipes between the poles on either end of the stack of wood.
7. Fit the chimneys firmly in the stack of wood.
8. Place grass evenly on the stack to completely cover the wood.
9. Cover the grass with soil to a depth of about 20 cm leaving an open space for lighting fire.
10. Light fire through the open space (lighting point).
11. Close the open space (lighting point) with soil.

After 3-4 days, blue smoke will appear through the chimney (Plate 4) indicating that the wood has been converted to charcoal.



Plate 4. Improved earth kiln emitting smoke through the chimney

12. Put off the fire by sealing the chimneys and any other open space.
13. Allow the kiln to cool while ensuring it is air-tight so that the charcoal does not burn.
14. Remove soil covering the kiln to leave exposed charcoal (Plate 5).
15. Pack the air-cooled charcoal into sacks (Plate 6).



Plate 5. Charcoal from the kiln

Benefits

- Prosopis invasiveness is reduced.
- Land previously under Prosopis is reclaimed and being used for pasture and crop production.
- Increased income for communities from sale of charcoal.
- Employment opportunities for community members.

Why use improved earth kiln

- Minimizes air pollution as there is less smoke emission during charcoal making.
- Higher recovery rate of 26-30%, compared to traditional earth kiln of 10-20%.
- Produces high quality charcoal.



Plate 6. Packaged charcoal ready for sale

This publication was compiled using information collected from LOKASACHA Charcoal Producers Association of Lobo Location, Marigat Sub-county.

CADEP-SFM documented this information to enhance knowledge sharing in Africa. CADEP-SFM therefore acknowledges all institutions involved in development and promotion of this good practice.

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