Distribution and Conservation Status of *Prunus africana* in Ethiopia: opportunities and constraints

Gemedo Dalle (PhD)

gemedod@ yahoo.com
Introduction

- *Prunus africana* is native to the montane tropical forests of Sub-Saharan Africa and Madagascar
  - is a geographically widespread tree in mainland Africa and outlying islands.
Prunus africana (Hook.f.) Kalkam

- Family name: Rosaceae
- Common (vernacular) names
  - Red ivory, iron wood, red stinkwood (Eng), Gurayu (Or), Tikur inchet (Amh), Aqoma (Amh.), Arara (Had), Hoomii, Sukkee, Mukaraajaa (Or.), Micikko (Sid)
Characteristics

- Evergreen tree to 40 m with dark-brown to grey longitudinally fissured or scaly bark.
- Bole slim, cylindrical, normally very straight and clean.
- Slash pale pink to red broom, turning darker.
Uses of *Prunus africana*

- Multi-purpose tree in Ethiopia
- The heartwood is dark, hard and heavy and is used for:
  - bridge decking (local)
  - heavy construction work, poles and is also very suitable for making furniture.
- Mortars and other utensils are made from the very durable wood (Fichtl & Admasu, 1994).
- *P. africana* also makes excellent firewood and valuable pollen and nectar source (bee forage).
- Also used for fuelwood, charcoal, traditional medicines (leaves, bark etc.), shade, ornamental, windbreaks, mulch, green manure, etc.
In traditional medicine, the stem bark provides a popular medicine against urinary disorders (Fichtl & Admasu, 1994).

Traditional healers also use the bark in treatment of stomachache, wound dressing, infusion of leaves to improve appetite, treatment of both bacterial and non-bacterial chronic prostatitis and genital infection.
Uses (contd)

- The active ingredients in *Prunus africana* are effective treatment for benign Prostatic Hyperplasia and Prostate gland Hypertrophy (enlarged prostate gland), ailments that affect about 60% of men over the age of 50, especially in Europe and USA.

- Because of the overexploitation for its medicinal value (high market demand), the species is under threat in many African countries.
Unsustainable harvesting & poor regeneration
(Source: Emfveh Mii, 2007)
Trade in *Prunus africana* products is regulated under Appendix II of the Convention on International Trade in Endangered Species of wild fauna and flora (CITES) – imposing strict regulations on its harvest and trade (Cunningham *et al.*, 1997).

Prunus seized in Oku, Cameroon
Source: FAO
Geographic distribution and habitat

- *Prunus africana* is widespread in montane and riverine forests of Haraghe, Kefa, Ilu Ababor, Sidamo, Arsi, Wolega, Gojam, Gonder and Shewa regions (Dawit Abebe and Ahedu Ayehu, 1993).

- Its habitat is moist evergreen forest of mountain, mist belt areas/ montane tropical forest; often in riverine vegetation or on forest margins and in remnant patches (Cunningham and Mbenkum, 1993).
Natural Distribution Range

- Afro-alpine and subafroalpine vegetation,
- Dry evergreen mountane forest,
- Moist evergreen forest.
  - Intermediat and upper storey tree in semi-humid lower highland forest.
  - Climate: Rainfall regime(s): 1000-2000 mm per year.
  - In montane or riverine forest: 1700-2500m.
  - Afromontane forest from 1550-3100m.
  - Occasionally, it is the dominant tree in dry afromontane forest and is often left as an isolated tree in grassland and farmland.
Methods

- Data Collection
  - Vegetation inventory using 50 m X 10 m sample plots and 50 m drop in altitude

- Data Analysis
  - Density
  - Frequency
  - IVI
Result: Current status

- *Prunus africana* was found in 22 high forests (that is out of the 36 forests surveyed)
- Not found in high forest where it was supposed to occur in abundant density and frequency.
Distribution of *Prunus africana* in Ethiopia
<table>
<thead>
<tr>
<th>Forest Name</th>
<th>Density/ha</th>
<th>Regeneration</th>
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<tbody>
<tr>
<td>Ades</td>
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<tr>
<td>Angetu</td>
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<tr>
<td>Belete-Gera</td>
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<td>Boginda</td>
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<td>Bonga</td>
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<td>Denkoro</td>
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<tr>
<td>Dindin</td>
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<tr>
<td>Jemjem</td>
<td>10.9</td>
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<tr>
<td>Jibat</td>
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<td>No</td>
</tr>
<tr>
<td>Location</td>
<td>Value</td>
<td>Available?</td>
</tr>
<tr>
<td>-------------------</td>
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<tr>
<td>Kedo</td>
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<td>Sigo</td>
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<td>Tara Gedam</td>
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<td>Tiro-boterbecho</td>
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<td>Wef washa</td>
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<td>No</td>
</tr>
<tr>
<td>Yayu</td>
<td>18.4</td>
<td></td>
</tr>
</tbody>
</table>
Current status of Prunus africana

- Importance Value Index was low compared to the dominant species in each forest:
  - 3.6 vs 72.6 in Ades
  - 6.8 vs 27.1 in Belete Gera
  - 1.2 vs 80.9 in Dindin
  - 0.7 vs 26 in Masha
Inventory data showed that *Prunus africana* is one of the highly endangered tree species in the country.
Major factor

- Unlike other African countries
  - Not threat from international market for its medicinal value!
- Habitat destruction and fragmentation (Agricultural expansion) – major factor
  - Dry and moist afromontane forest ecosystems severely threatened in Ethiopia
- Because of its quality timber, *Prunus africana* has been logged heavily and selectively, causing fragmentation of the species.
Seed storage behavior

- Recalcitrant (? Intermediate)
  - Limits *ex situ* seed storage.
  - Can not tolerate desiccation
  - Deforestation - ground exposure to direct sun light - reduced regeneration of the species
  - Recommendable option for conservation
    - *in situ* conservation/and or field gene banks
**Potential**

- *Prunus africana* is a species of great commercial significance due to the proliferation of bark products used for an increasing demand for treatment of “Benign Prostatic Hypertrophy”.
- Seedlings can be raised easily or tissue culture can be used.
- So far germination rate of the locally collected seeds has been very good.
Potential

- Local communities can benefit from the conservation and sustainable utilization
  - Integrated approach from conservation to international market needed
Challenges

• Agricultural expansion - Most of the ideal sites for conservation of the species have been encroached.
• Lack of alternative livelihood for the farmers
• Lack of financial sources for establishing conservation sites linked to sustainable international market
Recommendation

- There is an urgent need to develop conservation and sustainable utilization strategy for this plant in close partnership with all relevant stakeholders.

- Nursery sites establishment and
  - distribution of the seedlings to farmers and
  - planting in the field gene banks (to be established).
Recommendations (contd)

- Strengthen in situ conservation (Awareness)
  - on farmers field (Agroforestry tree)
  - Natural forest areas

- Reforestation and forest enrichment with *P. africana* could offer an ideal combination of conservation and sustainability
Looking for

- Partners for conservation and sustainable utilization of this multipurpose tree

- Activities to be accomplished include:
  - Seed collection, Nursery sites establishment and seedling raising to be:
    - distributed to farmers for agroforestry and
    - Planted in field gene banks

- Establish sustainable market for the product
Thank you very much