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Forest and Nature for Society

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FONASO

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- Swedish University of Agricultural Sciences
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Joint research with leading research and industry organisations in Africa, Asia, Australia, Europe and North America

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Call 2014 - open

FONASO call for applications 2014 is now open.

Application deadline is 1 November 2013

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ERASMUS MUNDUS

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FONASO ASSOCIATE PARTNERS



- **Cambodia Development Resource Institute, Cambodia**
- **Centre for International Forestry Research, CIFOR (Indonesia, Mexico and Ethiopia)**
- **Dalhoff Larsen & Hornemann A/S, DLH**
- **Forest Resource Studies and Action Team, ForestAction, Nepal**
- **James Cook University, Australia**
- **Tribhuvan University, Institute of Forestry, Nepal**
- **Universidade Nacional de Asuncion, Paraguay**
- **University of British Columbia, Canada**
- **University of Kordofan, Sudan**
- **World Agroforestry Centre (Kenya, Costa Rica and Bangladesh)**
- **Bahir Dar University, College of Agriculture and Environmental Science, Ethiopia**
- **Hawassa University, Wondo Genet College of Forestry and Natural Resources, Ethiopia**
- **Tribal Research and Training Centre, India**
- **Makerere University, College of Agriculture and Environmental Sciences, School of Agricultural Sciences, Uganda**
- **University of Antananarivo, School of Agronomy, Madagascar**
- **The Wildlife and We Protection Foundation, India**
- **University of Chittagong, Institute of Forestry & Environmental Sciences, Consultative and Research Center on Natural Resource Management, Vietnam**

Conservation of *Mangifera sylvatica*: a Wild Forest Fruit Species for Health and Livelihood



Sayma Akhter



Distribution...



(a) *Mangifera indica*

(Orwa et al. 2009)



(b) *Mangifera sylvatica*

World distribution of (a) *M. indica* (b) *M. sylvatica*

Uses of Wild Mango species

- 1) Pickles
- 2) Vegetables
- 3) Fodder
- 4) Indigenous Medicine
- 5) Plywood
- 6) Furniture
- 7) Carbon storage



Figure 6a (Left) Collection of wild mango from forest; 6b (Right) Wildlife in *M. sylvatica*

Towards Conservation of Wild Mango Species

- Wild fruit species are good source of nutrition, healthy diet, medicine and many other by products.
- *M. Sylvatica* is now threatened in Bangladesh and need urgent conservation attention.
- Phenolic fingerprinting can be used as a conservation tool to popularize this wild mango species.



Fruit of *Mangifera sylvatica*

Other Local Names

- Chuchi-am
- Jangli-am
- Ban-Am
- Uriam
- Nepal Mango
- Lakhi aam
- Himalayan Mango
- Pickling Mango
- Banana mango



Why Phenolic Fingerprinting?

- To Profiling Phenolic compounds of Wild Mango (*M. sylvatica*)
- To Check the similarity and dissimilarity of phenolic compounds with Domesticated Mango (*M. indica*)
- To find the attractive features in Wild Mango for Human Health (**Antioxidative, Anticarcinogen, Cholesterol-lowering etc.**)

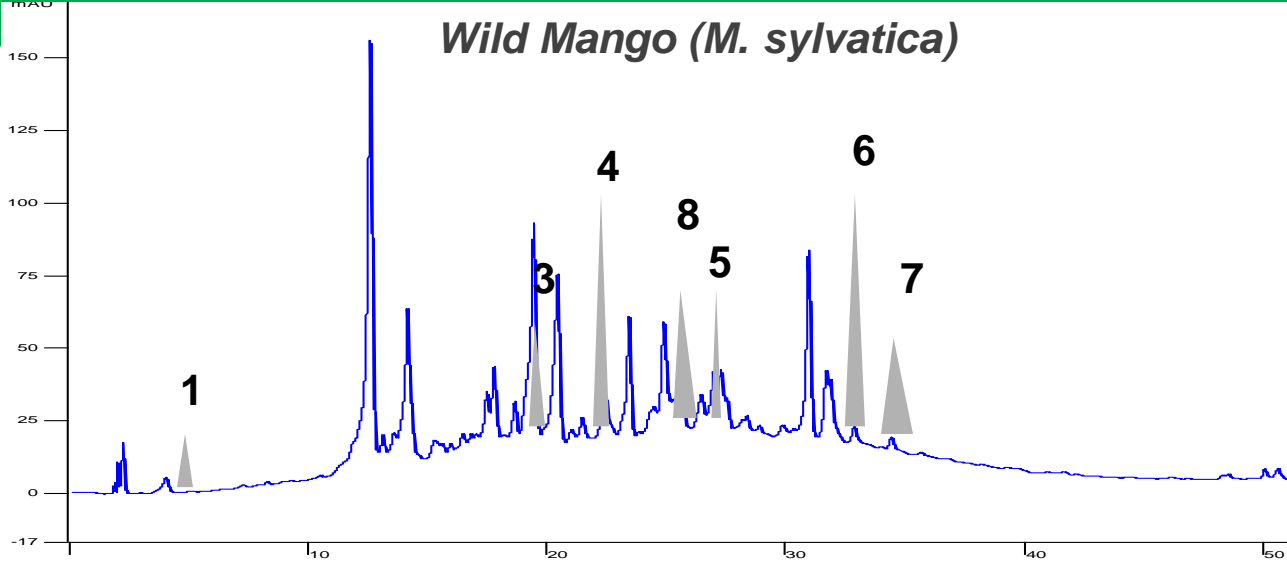


Mangifera indica

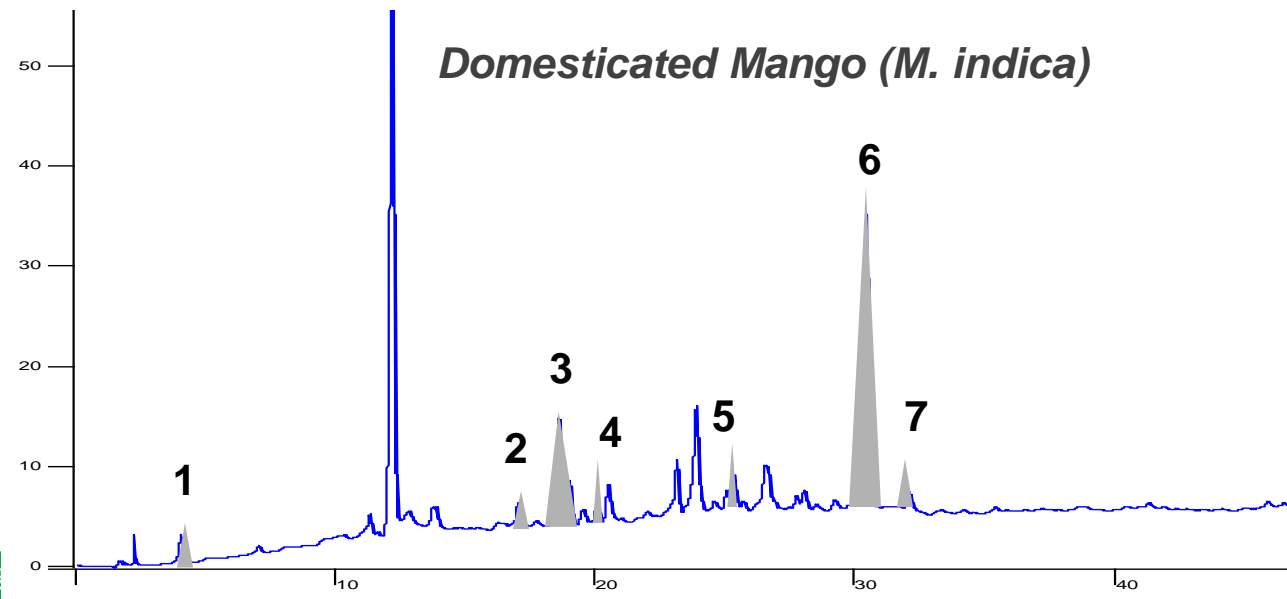


Mangifera sylvatica

Phenolic fingerprint of Mango Juices

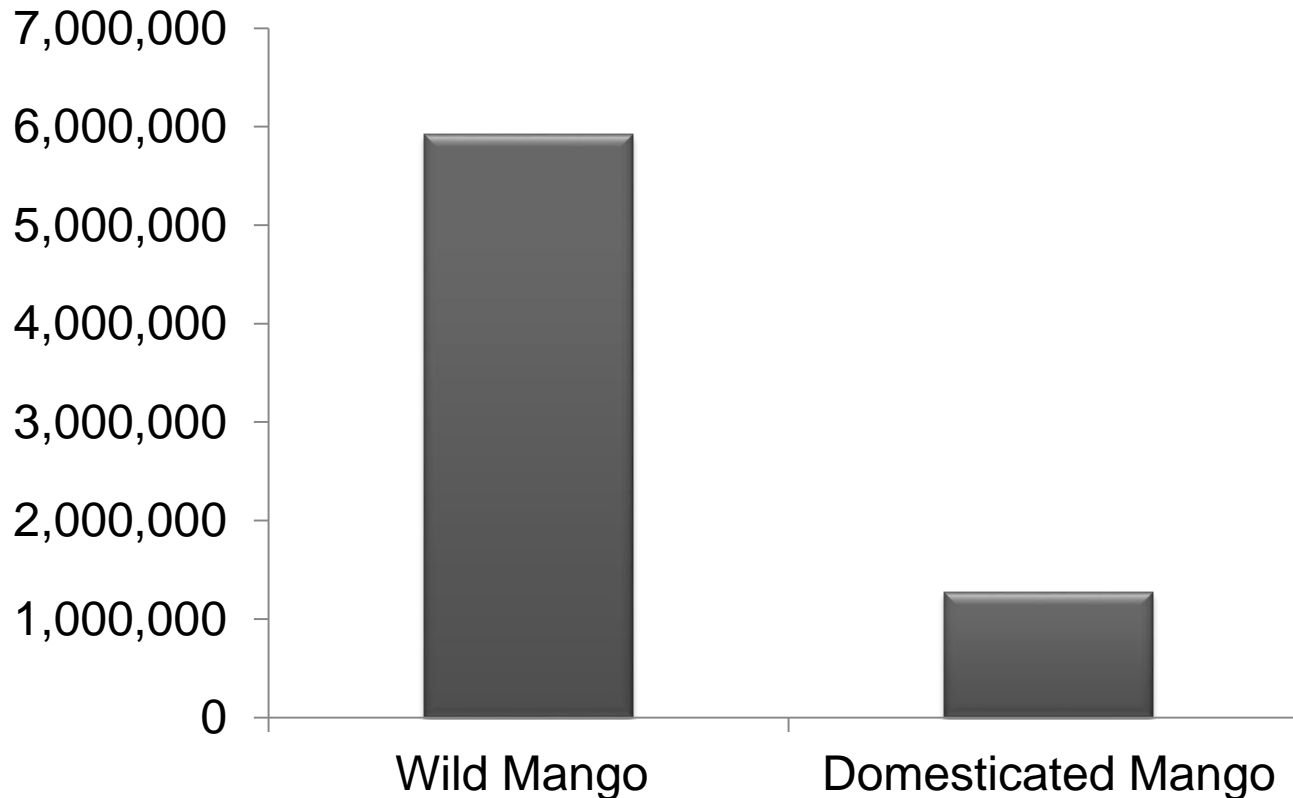


- 1. Gallic Acid
- 2. Syringic Acid
- 3. Mangiferin
- 4. P-Coumaric Acid
- 5. Benzoic Acid
- 6. Quercetin
- 7. Cinnamic Acid
- 8. Ellagic Acid



Total Phenolics in Mango

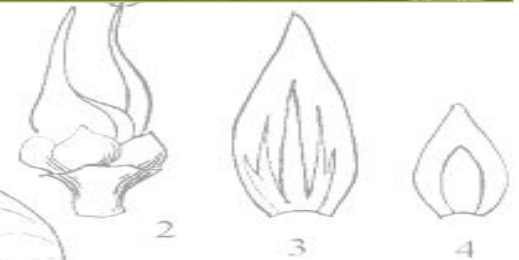
Total Phenolics (mAU)



Innovative use of Indigenous Fruit Trees for Health and Livelihoods in an Urbanising World (Kampala, Uganda)



Eefke Mollee



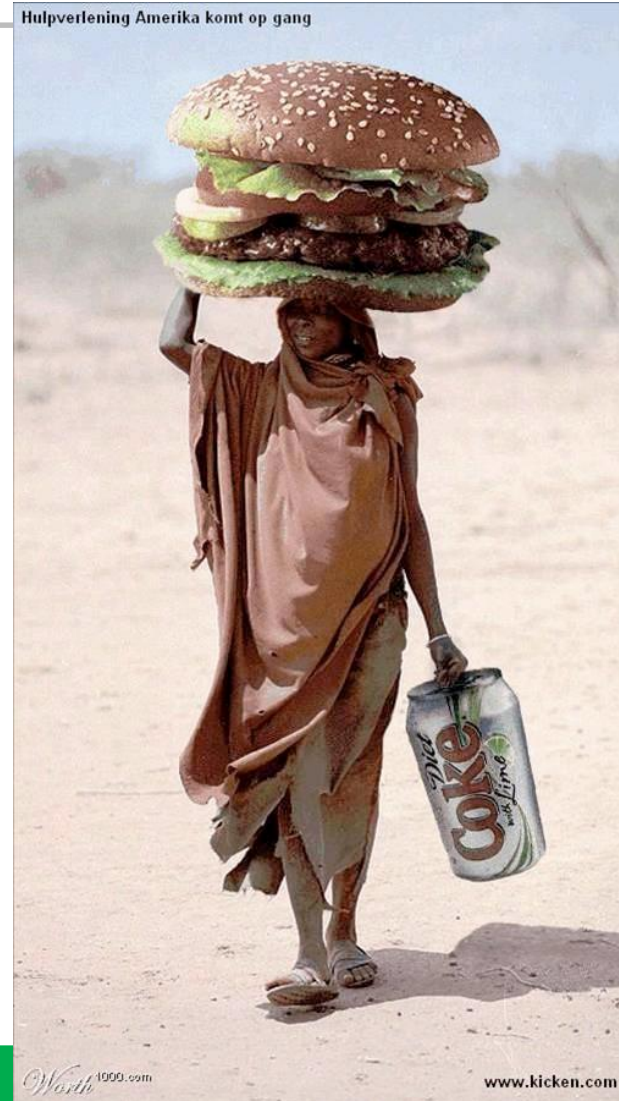
Urban Diets vs Traditional Diets

Higher consumption of:

- Edible oil
- Animal source foods
- Processed foods
(refined carbohydrates)

Reduced intake of:

- Fruits
- Vegetables
- Legumes





Project Background & Justification

- Urbanisation and Diet Shifts
- Malnutrition and Micronutrients
- Employment and Food (in)security

- Resilient and healthy indigenous food sources
 - 3000 species of wild fruit trees in Africa
- Urban farming a “pseudo forest” and farmer innovators

Nutritional contribution of wild fruit

	RDA*	<i>Irvingia wombulu</i> ¹ (kernels) Bush mango	<i>Dacryodes edulis</i> ¹ African plum, Safou
Vitamin C	75 mg/d	9.2 mg/100g	
Vitamin A	700 mg/d	67 g/100g (fruit)	24.5 g/100g (flesh)
Carbohydrate	130 g/d	26-39 g/100g	
Fibre	25 g/d	0.9 g/100g	17.9 g/100g
Fat	20-35 g/d	51-72 g/100g	
Protein	46 g/d	7.4 g/100g	25.9 g/100g

*Recommended Dietary Allowance, from institute of Medicine Dietary Reference Intake, Washington DC 2002

¹Leakey & Tchoundjeu, 2001

Opportunities: Commercialisation

- Commercialisation of wild food sources:
 - Need to develop markets
 - Develop processing
 - Develop marketing infrastructure
 - Adoption of agroforestry practices that utilise these species
 - Appropriate policy environment
 - Commercial interests sympathetic to small-scale production
 - Dialogue between food industry and field scientists
- But this has to be done sustainably, thus species must be cultivated and not unsustainably harvested!