

**Home Gardens:**

**Cultivating Staple Crops for the Future**

# Home Gardens

A Global Agricultural Resource



Home Garden Guantánamo  
Province - Cuba



Home Garden - Cuba

# Home Gardens for Food Security

# Home Gardens for Preserving Agrobiodiversity

# **Home Gardens and Wild Food Plants for Health**

**Why?**

**!Micronutrients!**



Traditional diets have been replaced by highly-refined, Western fast/convenience foods

Causing an epidemic of dietary-  
related non-communicable  
diseases

# Iodine deficiency

- Goiter, Cretinism,
- Mental Retardation
- > Poor School Performance

# Vitamin A deficiency

--> Infant and childhood blindness

Vitamins and minerals can be added back into contemporary diets through the use of micronutrient-rich NUS

by transplanting them  
from their wild habitats  
into home gardens

This will offset malnutrition in the family and also provide a source of income through selling them in local markets

The next crucial Crops for the  
Future research task is  
compositional analysis of NUS to  
identify candidate species for  
breeding trials and domestication





# **MANAGING PLANT GENETIC DIVERSITY**

Edited by  
J.M.M. Engels, V. Ramanatha Rao,  
A.H.D. Brown and M.T. Jackson

*Abutilon avicennae*, Gaertn.  
Seeds



Protein = 17.4%

# *Agave parryi*, Engelm.



Arizona Pima core eaten

# *Amaranthus viridis*, L.



Leaf protein/amino acids =  
WHO standard  
High in EFAs

Niger

# *Atractylodes lanceata* (Thunb.) DC



Very high value  
for Vitamin A

China

*Atriplex lentiformis*, (Torr.) Wats.



Arizona Pima  
Seeds eaten

*Atriplex lentiformis*, (Torr.) Wats.



Seed protein may = ca.  
16%

# *Bambusa* spp.



Seeds have high value for lysine; and high net protein utilization and growth promoting effect = that of milk

Thailand



*Boscia senegalensis*, Hochst.  
ex Walp; Pers; Lam. ex Poir.



Sudan

# ***Boscia senegalensis***

## **Fruit**



Seed protein =  
250g per kg

# ***Bromelia laciniosa*, Matt. ex Schult.f**



**Calcium =  
15X milk in  
bulbs**

**Brazil**

# ***Capsella bursa-pastoris*, Moench.**



**High values for  
arginine, aspartic  
acid cysteine and  
ascorbic acid in  
leaves & seeds**

**China**

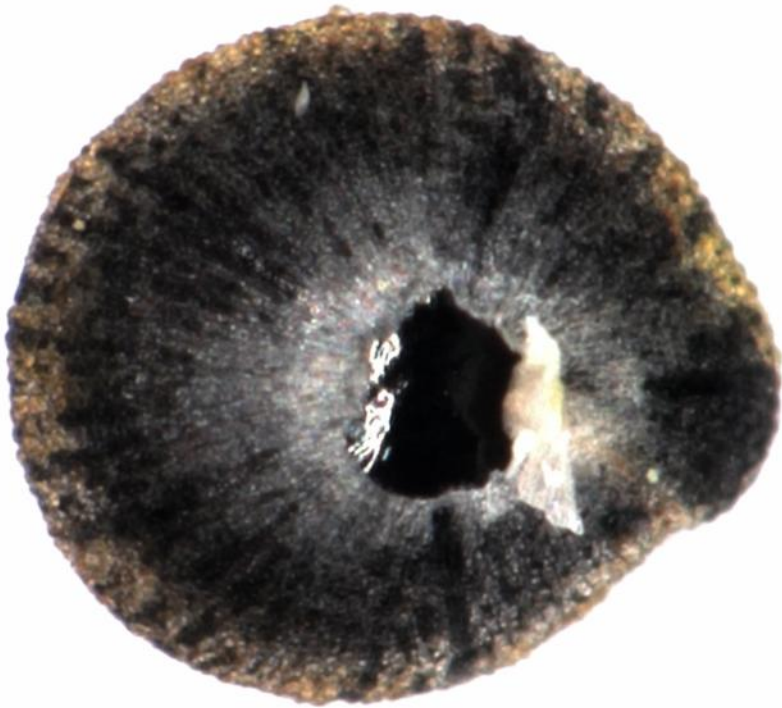
# *Chenopodium album*, L.



Photo copyright Henriette Kress  
<http://www.henriettesherbal.com>

China

***Chenopodium album*, L**  
**Seeds**



Protein value = 16%

# ***Citrullus lanatus* (Thunb.) Matsum. & Nakai**



Sudan

# *Citrullus lanatus* Seeds



Protein = 23%  
high value for  
methionine



# *Coix lachryma-jobi*, L.



China

# ***Coix lachryma-jobi*, L.**

## **Seeds**



18.7% Protein

# *Cynara cardunculus*, L.

31% seed protein  
with **high values**  
**for phenylalanine**  
**and valine in leaf**  
**ribs & flowers**



**Tunisia**

***Dactyloctenium aegyptium***  
**(L.) Beauv. Willd.**



Protein = 13.1%

Sudan

# ***Dobera roxburghii*, Planch.**



Seed protein = 19%

Sudan

# *Indigofera cordifolia*, Heyne ex Roth.



Seed protein =  
24-35%

India

***Indigofera glandulosa*, J.C. Wendl.**



India

*Indigofera glandulosa*  
Seeds



**Protein = 26.1%**  
**High values for**  
**lysine and**  
**arginine**



# *Ipomoea aquatica*, Forsk



Leaf protein = 14.2%

India, Sudan

# *Perilla frutescens*, (L.) Britton.



China

# *Perilla frutescens* Seeds



Seed protein =  
21.5%

*Prosopis glandulosa*, Torr.



# *Prosopis glandulosa*, Torr.



Seed protein = 31%

*Xanthium strumarium*, L.



High values for  
Glutamic Acid  
and Phenylalanine  
in seeds

China

*Ziziphus mauritania*, Lam.



Niger

# *Ziziphus mauritania*

## Leaves



High values for  
linoleic acid,  
iron, Calcium and  
magnesium



# *Xanthium strumarium*, L.



High values for  
Glutamic Acid  
and Phenylalanine  
in seeds

China

# ***Ziziphus mauritania*, Lam.**



Niger

# *Ziziphus mauritania*

## Leaves



High values for  
linoleic acid,  
iron, Calcium and  
magnesium

Scientists must standardize methods and techniques for compositional analysis to guarantee consistent, reliable results

# Food composition data

**PRODUCTION,  
MANAGEMENT  
AND USE**

H. Greenfield and  
D.A.T. Southgate

*Second edition*





Original Article

The nutritional composition of African wild food plants:  
from compilation to utilization<sup>☆</sup>

Rory P.H. McBurney<sup>a,\*</sup>, Caroline Griffin<sup>b</sup>, Alison A. Paul<sup>c</sup>, David C. Greenberg<sup>c</sup>

<sup>a</sup>Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, UK

<sup>b</sup>Nutrition Business Unit, Nestlé UK Ltd., St George's House, Croydon CR9 1NR, UK

<sup>c</sup>MRC Human Nutrition Research, Elsie Widdowson Laboratory, Fulbourn Road, Cambridge CB1 9NL, UK

Received 3 September 2003; received in revised form 18 February 2004; accepted 5 March 2004

**Abstract**

The nutritional value of wild food plants is of interest to ethnobotanists, clinicians, chemists, nutritionists and anthropologists. There is no definitive resource available containing this information for African wild food plants. The aim of the study was to develop a methodology for compiling quantitative information from the literature. Taxonomy and nomenclature for 20 species of interest were checked using the recent Flora treatments and the International Plant Names Index (IPNI). Boolean strings incorporating accepted scientific name, scientific synonyms and available English vernacular names were used to search citation indices. Titles, keywords and abstracts were scanned by eye and articles relevant to nutrition selected. Citations with sufficient information for inclusion into a nutrient database were prepared for data entry. There were over 120 scientific names for the 20 species selected. Of 17 700 citations downloaded only 540 of these pertained to nutrition. Ninety-four references were prepared for inclusion into the database. Inaccurate data compilation (recycling) was found for the species *Moringa oleifera* Lam. Twenty-one different bases for expressing nutritional values were found in papers for final inspection. It is recommended that the literature be reviewed fully prior to any investigation into the nutritional value of an African wild food plant. Data recycling, if incorrect, can have major implications on research and operations. The multidisciplinary nature of investigating wild food plants should be taken into consideration when undertaking this type of work and all nutritional information should be in a standardized format.

© 2004 Elsevier Ltd. All rights reserved.

**Keywords:** Methodology; Botany; Famine food; Ethiopia; Food composition

<sup>☆</sup>This research was funded by the Nestlé UK Charitable Trust.

\*Corresponding author. Tel.: +44-20-8332-5773; fax: +44-20-8332-5768.

E-mail address: r.mcburney@rbgkew.org.uk (R.P.H. McBurney).

# Promoting the transplanting of micronutrient rich NUS

A workshop for rural women  
agriculturalists/homemakers

The workshop has 3 topics



1. Nutrition education: explaining why micronutrients are important

Resources FAO Improving Nutrition Through Home Gardening & Healthy Harvest

# Improving nutrition through home gardening

A training package for preparing food workers in Southeast Asia



International Center for Research on Women  
1900 M Street, N.W.  
Washington, D.C. 20036  
U.S.A.  
Tel: (202) 336-5000  
Fax: (202) 336-5001  
E-mail: [info@icrw.org](mailto:info@icrw.org)

# Healthy Harvest

A training manual for community workers  
in good nutrition and the growing,  
preparing, and processing of  
healthy food






2. Guidelines for establishing small businesses to sell micronutrient rich NUS in local markets with a focus on recordkeeping

Resource: Eligia Murcia  
Record Keeping for Small  
Rural Businesses

Handbook on Small Enterprises for  
Hill Tribe People in Thailand



 Credit Union League of Thailand Limited  
And  
 Micro Economic Development Project  
Support by  
 Food and Agriculture Organization of the  
United Nations  
2003

### 3. Possible sources for funding these new businesses

Resource:

Premchander & Polman  
Promoting Rural Women's  
Cooperative Businesses in  
Thailand & Handbook on Small  
Enterprises for Hill Tribe People  
in Thailand

# Promoting rural women's cooperative businesses in Thailand

*A training kit*



**TECHNICAL  
NOTE NO.  
26**



# **RECORD KEEPING FOR SMALL RURAL BUSINESSES**

Eligia Murcia

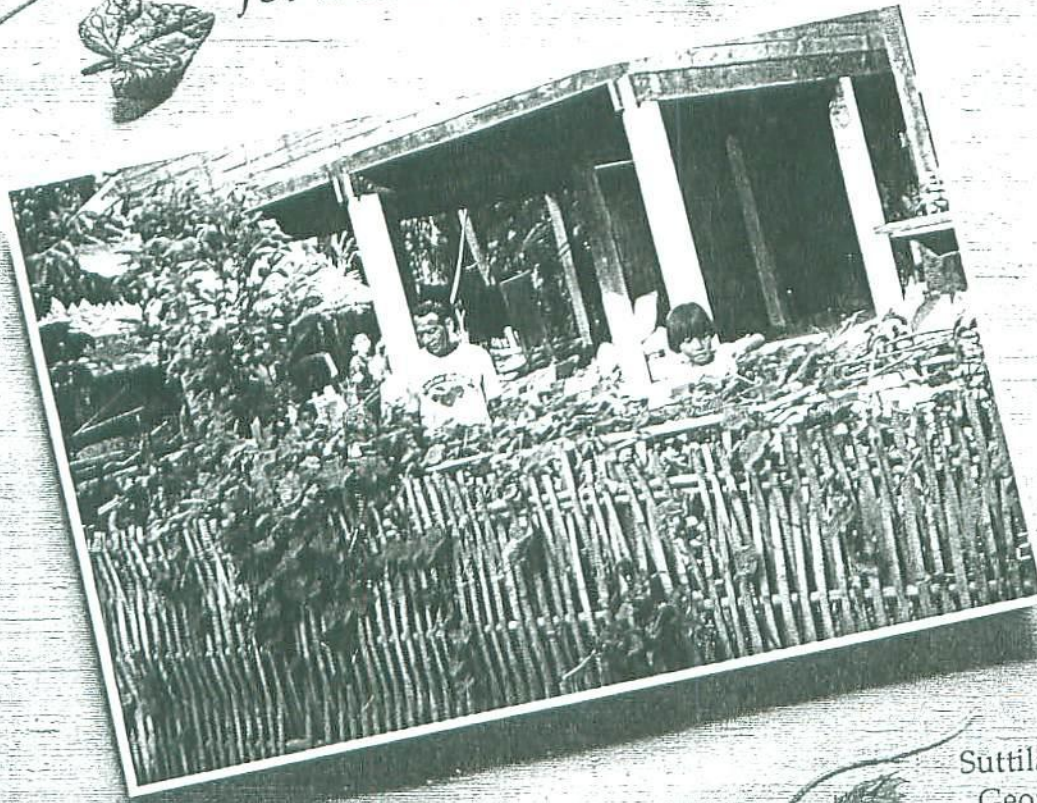


Successfully implementing the  
practice of transplanting and  
cultivating micronutrient rich NUS  
requires a proven model

Such a model has been developed  
by two of Thailand's most  
distinguished scientists Aree  
Valyasevi, M.D. and  
Sutilak Smitasiri, Ph.D.

# VITAMIN A-RICH FOODS IN THAILAND

*A Model Nutrition Communication  
for Behavior Change Process*



Suttalak Smitasiri  
George A. Attig  
Aree Valyasevi  
Sakorn Dhanamitta  
Kraisid Tontisirin