

Moringa oleifera – an underutilised tree with amazing versatility

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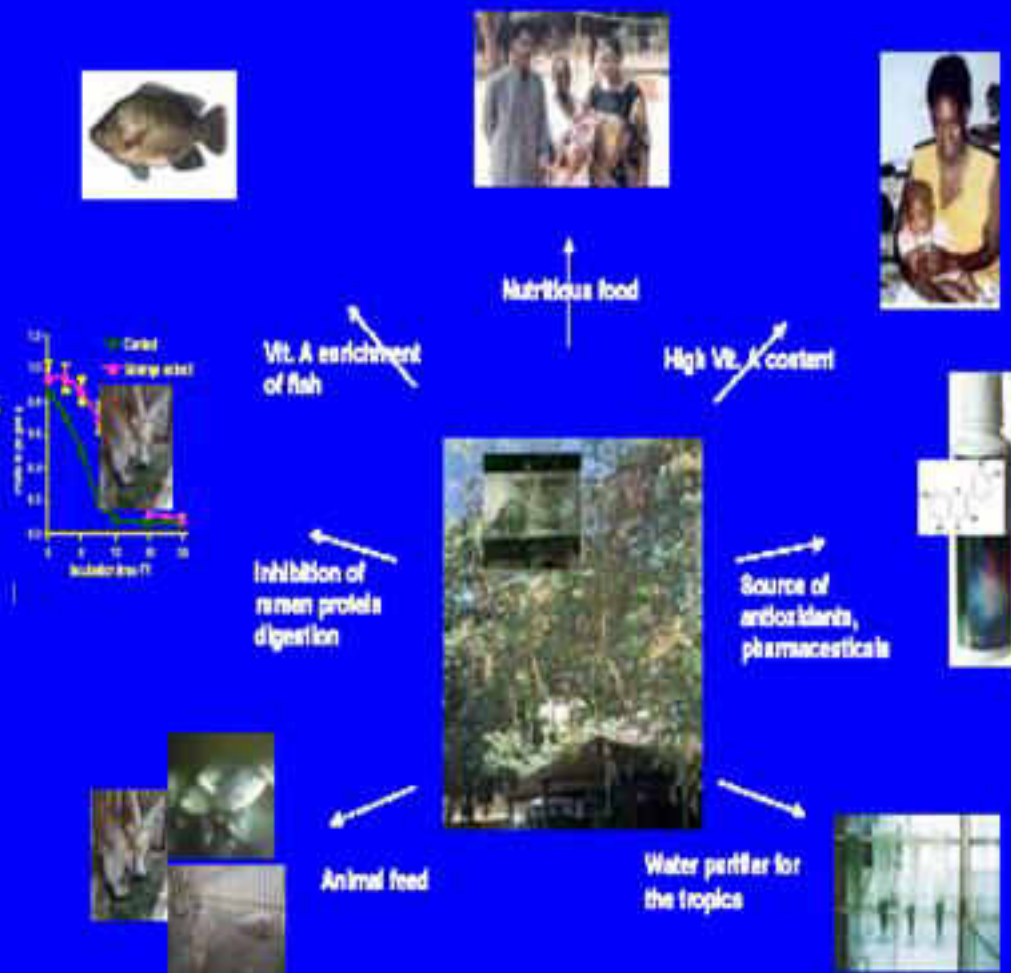
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Moringa tree – general information

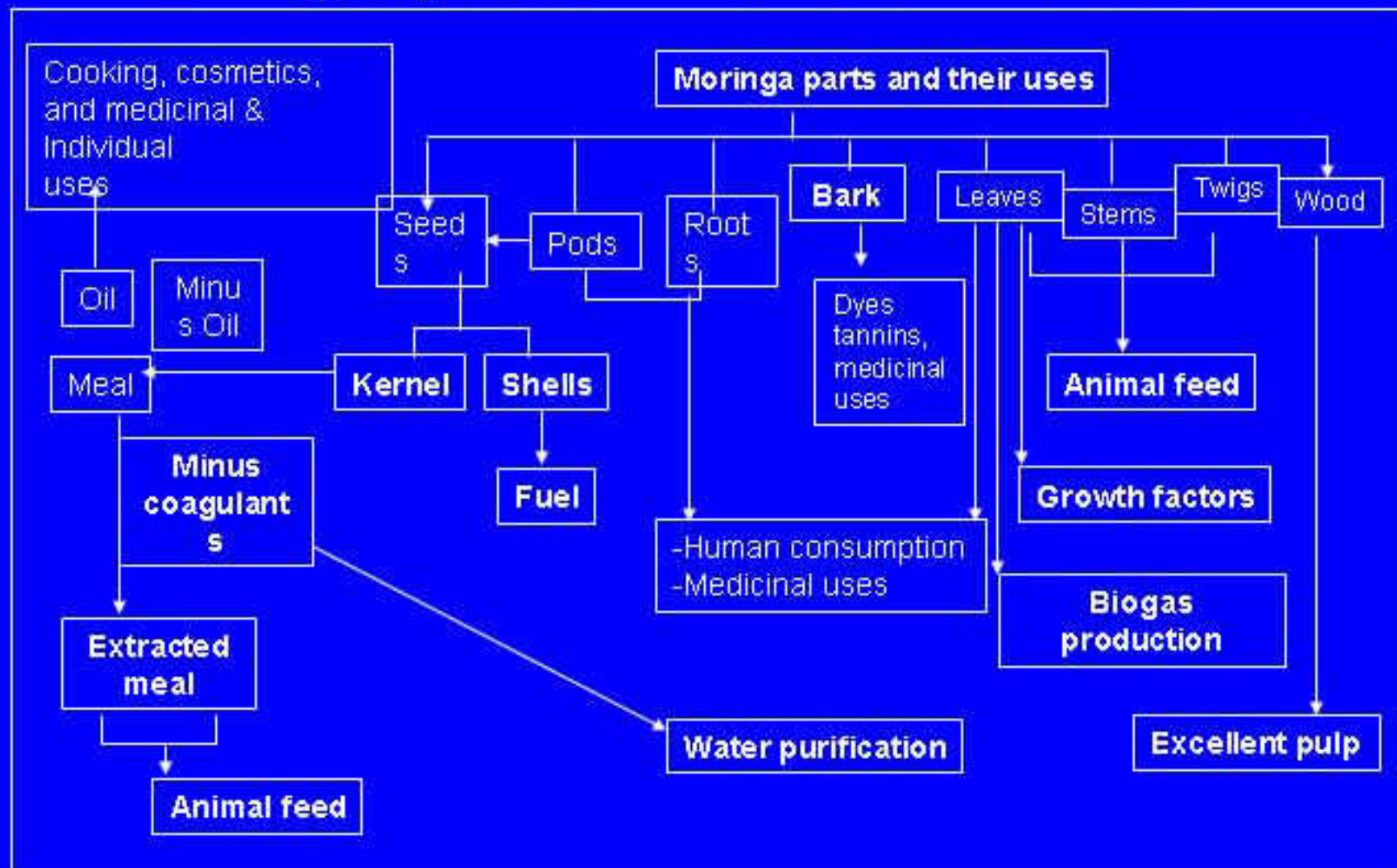
- • Family
 - Moringaceae
- • Genus
 - Moringa
- • Common names
 - horseradish tree, drumstick tree, West India Ben
- • Number of species
 - 14
- • Most important
 - Moringa oleifera, M. stenopetala
- • Origin
 - Sub-Himalayan tracts of the Indian subcontinent
- • Occurrence, cultivation
 - all over the tropics
- • Growth and Size
 - fast growing perennial tree, grows to 7-12m height

Multiple uses of Moringa

- Human food
- Water purification
- Pharmaceutical products
- Animal and fish feed
- Green manure
- Plant growth hormone



Moringa parts and their uses



Moringa in Ghana

Currently Moringa can be found in every part of Africa including Ghana

- In the Volta region of Ghana, it is called Yevu-ti (The white man's tree). It is believed to have been introduced by the Germans during the second world war. It is currently being used mainly as live fence.
- In the Ashanti region of Ghana, it is reported that the royal clan brought it on their return from the Seychelles Island*. It is known by the name "Buid"
- In the Upper West region of Ghana, it is one of the traditional foods of the Dagatis where it is known as "Onwukowo" (chew and drink water).

** Mrs Alice Kunadu Acheampong, 2004 Kumasi.*

Methods of Moringa culture

- Traditionally cultivated as a backyard plant
- It can also be grown as a hedge

- Trials in Nicaragua have shown that it is ideally suited also for more intensive production



Production of nutrients from intensive *M. oleifera* cultivation in Nicaragua

Nutrient/Component	Yield (tons/ha/yr)	Concentration (% DM)
Dry matter	126	
Protein	21.4	17.0
Sugar	12.6	10.0
Starch	10.0	7.9
Lipid	4.4	3.5
NDF	30.2	24.0
NSP, Ash, Others	47.4	37.6

Source: N. Foidl, NSP-non-starch polysaccharides

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Moringa – a highly valued food in the tropics

- Traditionally used as a vegetable that can be grown in the backyard
- Parts used - Green pods, tender leaves, flowers and oil from seeds traditionally used as human food





Nutritional and energy content of Moringa leaves from three regions (% in dry matter)

	CP	CL	Ash	NDF	ADF	ADL	GE
India	33.0	5.7	11.8	31.4	15.1	5.4	18.9
Nicaragua	26.2	5.2	8.9	23.2	12.1	2.1	20.1
Niger	28.5	9.6	9.4	28.7	13.1	2.8	19.7

CP-crude protein, CL-crude lipid, NDF-neutral detergent fibre, ADF-acid detergent fibre, ADL-acid detergent lignin, GE-gross energy (MJ/kg)

Mineral Composition of *M. oleifera* leaves from different origins

	India	Nicaragua	Niger
Macroelements (g/kg DM)			
Potassium	21.7	19.1	18.4
Calcium	26.4	17.5	13.9
Magnesium	0.11	0.11	0.11
Sodium	2.73	1.16	2.61
Phosphorus	1.36	1.16	1.22
Microelements (mg/kg DM)			
Copper	7.1	11.2	10.6
Manganese	51.8	47.1	113.9
Zinc	13.7	13.5	24.2
Iron	175	582	347

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Essential amino acid composition of *M. oleifera* leaves from different regions (g/16gN)

Amino acid	India	Nicaragua	Niger	FAO/WHO ref.
Cystine	1.2	1.0	1.0	2.5 ^a
Methionine	1.2	1.3	1.1	
Valine	4.4	3.9	4.2	3.5
Isoleucine	3.8	3.6	3.7	2.8
Leucine	7.5	7.2	7.0	6.6
Tyrosine	2.9	2.6	2.7	6.3 ^b
Phenylalanine	5.8	4.1	4.9	
Histidine	3.1	2.5	2.6	1.9
Lysine	4.8	4.7	4.3	5.8
Threonine	3.5	3.1	3.2	3.4
Tryptophan	2.3	1.9	2.7	1.1

FAO/WHO (1990) reference pattern suggested for pre-school children (2-5 years old);
acystine+ methionine; btyrosine+ phenylalanine

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Intensive moringa leaf production

- Moringa can be grown intensively with yields of up to 650 metric tons of green matter per hectare.
- This compares very well to other green manure crops such as Lablab beans, which yield up to 110 tons/hectare of green matter in pure stands.
- The green matter is harvested when plants reach a height of 50cm or more (every 35-40 days), cut at a distance of 15-20cm above the ground.
- Although losses of seedlings may be 20-30% in the first year, the vigorous re-growth of the remaining seedlings will produce 3 or 5 new shoots after each cutting. Up to nine harvest can be obtained annually.

Young Moringa Shoots

about 3 weeks old



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Moringa Shoots Ready for first Harvest



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