The Future of Food: Potential of Indigenous Crops – A Lifetime's Experience

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Food for the global population

- Must provide food for & feed 9 billion people.
- Food must be grown, harvested, processed, & distributed.
- But poor have little purchasing power.
- Mass produced cereal and vegetables - provide:
  - basic diet of carbohydrates, fats, proteins & nutrients
  - from a limited number of crop species (± 30 species)
  - Carbohydrates dominate human consumption
  - only 3 related cereal species (wheat, rice, and maize)

What happens IF disease break-out destroys these crops?

Or IF climate change prevents their mass production?

Highly Risky Global situation threatening Food Security

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Alternatives = underutilized crops

- More than 50,000 species have been eaten by humans
  - So better broaden the diet again by using

Neglected or underutilized or indigenous crops:

- Also called *minor, orphan or neglected or indigenized, ancient crop species, & exist as minor or niche* crops.
- Mostly used:
  - To help the poor for subsistence and income,
  - To reduce risk of over-reliance on limited numbers of major crops;
  - To increase sustainability of agriculture through a reduction in inputs,
  - To contribute to food quality and nutrition;
  - To preserve and celebrate cultural and dietary diversity

- Wide range of edible species exist & need to be explored




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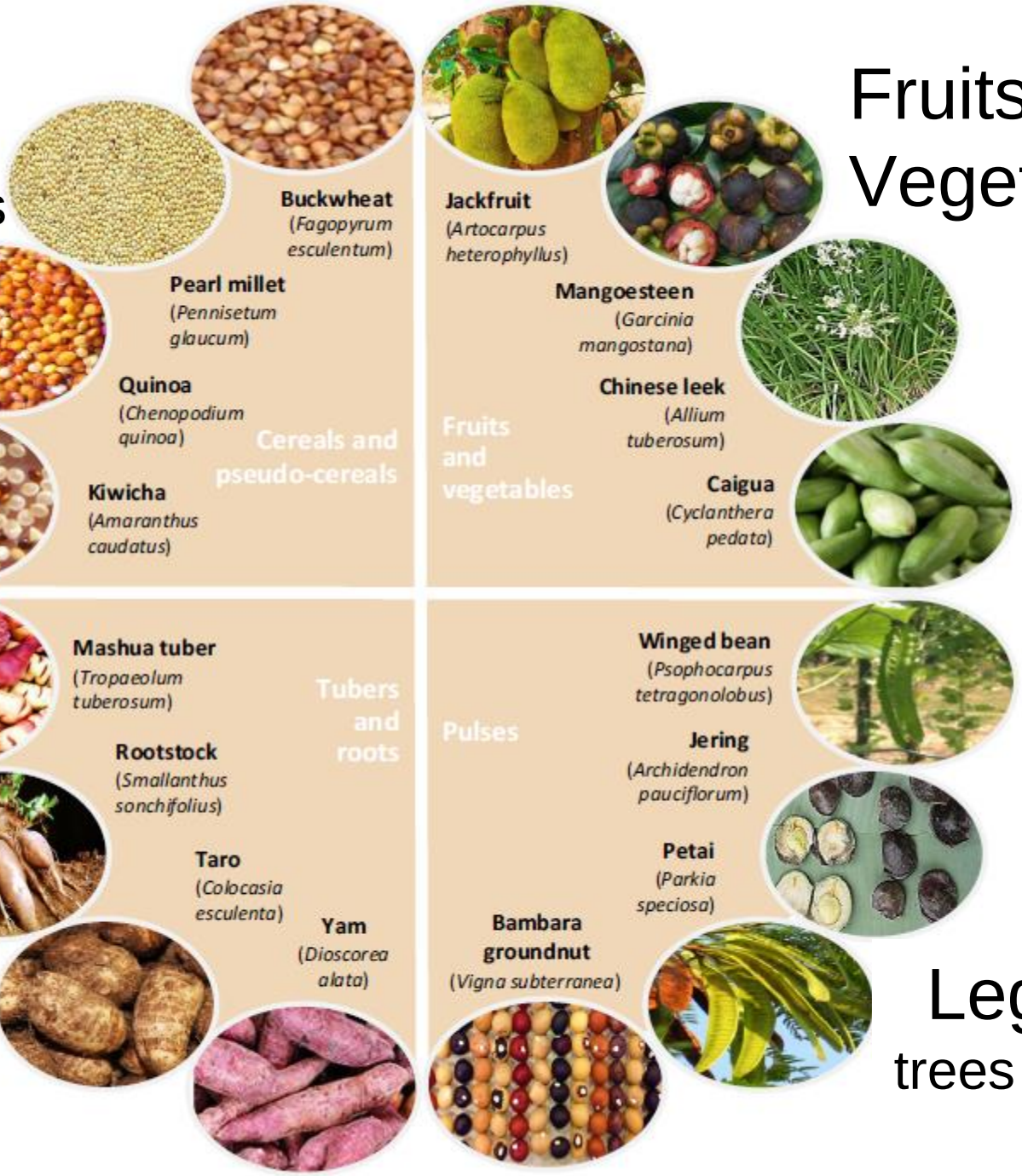
Cereals & pseudo-cereals



Fruits & Vegetables

Roots & Tubers

Legumes
trees & bushes

My Experience with Indigenous crops

I was born at Mariannhill Hospital, KZN

- Founded in 1882 by Trappist missionary
- Established *farms,* schools, clinics, crafts, printing press & workshops.

I Learnt to Eat and Grow:

- Amadumbe (taro) tuber eaten to replace potatoes
- Grown in the wetlands
- Perennial plant but grown as annual crop

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Travel across Africa

= many indigenous foods

- Teff = cereal from Ethiopia
  - Gluten free
  - For Njera as staple

- Baobab tree
  - Use fruit pulp in powder form & oil

»rich in Vit C, antioxidants &

»minerals K, Mg, Fe, Zn, Calcium,

»To balance blood sugar & reduce inflammation & for weight loss, & digestive health & antifungal & antibacterial & antiviral

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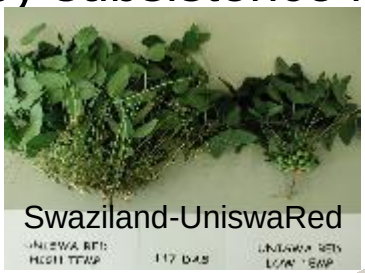
Travel across Africa

= many indigenous foods

- Bambara groundnut
  - Protein-rich legume grown by subsistence farmers
  - Landraces
  - Drought tolerant



- Amaranthus
  - Seeds hi Ca Fe Zn K P
  - Green leaves as vegetable

Travel to South America

Quinoa - From Andean mountains

- a pseudo-cereal or ancient grain
- Became ‘Queen of Superfoods’, in western countries
  - an ideal food - gluten-free but protein rich
  - > 20% RDA of Mg, P, Mn and folate
  - Anti-inflammatory, lowers cholesterol, aid digestion,
  - All 9 amino acids essential for human diet

Adaptable - grown under wide range of climatic conditions

- => highly sustainable crop

To North America

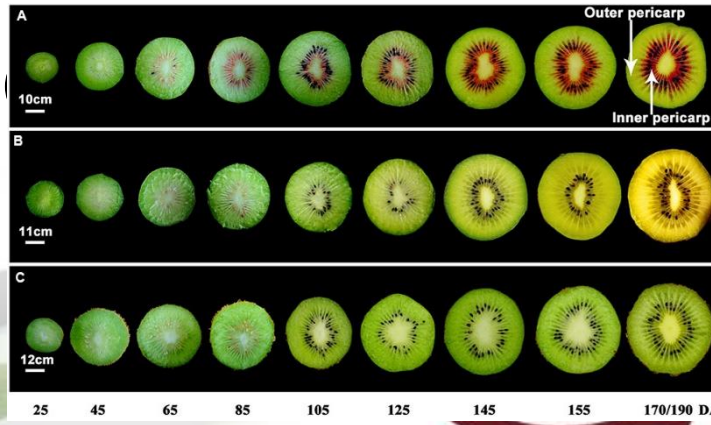
- Mexican food
  - Maize & bean daily
  - Staple native foods - maize, beans, squash, amaranth, chia, avocados, tomatoes, tomatillos, cacao, vanilla, agave, turkey, spirulina, sweet potato, cactus, & chili pepper.

- Canadian Maple Syrup
  - majestic red, black and sugar maple forests
  - mix of cold spring nights & warm daytime temperatures
  - to produce clear-coloured sap used to make maple syrup.
  - 35 and 55 litres of sap a season per tree to produce 1 litre syrup

To New Zealand

- Kiwi fruit
  - Originally Chinese gooseberry
  - Grown in NZ since 1904
  - June 1959 – Turner called it “Kiwi fruit”

Marketing success - under the brand-name ‘Zespri’
  - Backed by agricultural research &
  - Breeding programmes – red, gold, green & mini
  - Need honey bees for pollination
  - Carbohydrates (15%), negligible protein & fat (



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To South East Asia

A selection of unknown fruits and vegetables commonly used by locals

Rich agro-diversity

Contain essential nutrients

Kedondong

Pulasan

Belimbing Buluh

Sapodilla

Anonna

Yam Bean

Native Goosberry

Wild Ginger

Kacang Telang

Terung Pipit

Antioxidant properties

Resilient to climate change

To South East Asia

Many fruits like Lychee

- Rambutan
- Longan
- Mangosteen

Similarities

- All 3 have white flesh
- All 3 have a big seed in the middle
- All 3 grow on trees
- All 3 can be eaten straight off a tree branch
- All 3 taste alike when mixed with alcohol

Differences

- **Lychee -** smaller, red outer rough skin, white flesh similar texture to rambutan but taste not rich or creamy, but crisper, not as sweet

  Rambutan - larger size of a golf ball, red outer skin with soft yellowish & neon green prickly pokers all around. flesh is white & sweet creamy rich flowery refreshing taste.
- **Longan** - small with light brown smooth outer skin white flesh & black seed, more tart and distinctive flavour.

  Mangosteen – larger, white fruit with segments & hard shell..

Why do we only know Lychees?

Many Alternative Crops

- Knowledge on most indigenous crops is scares
- ➢ Need to organize agricultural knowledge for practical use by farmer & agribusiness

Where is more info available?

CropBase – global knowledge system for underutilized crops

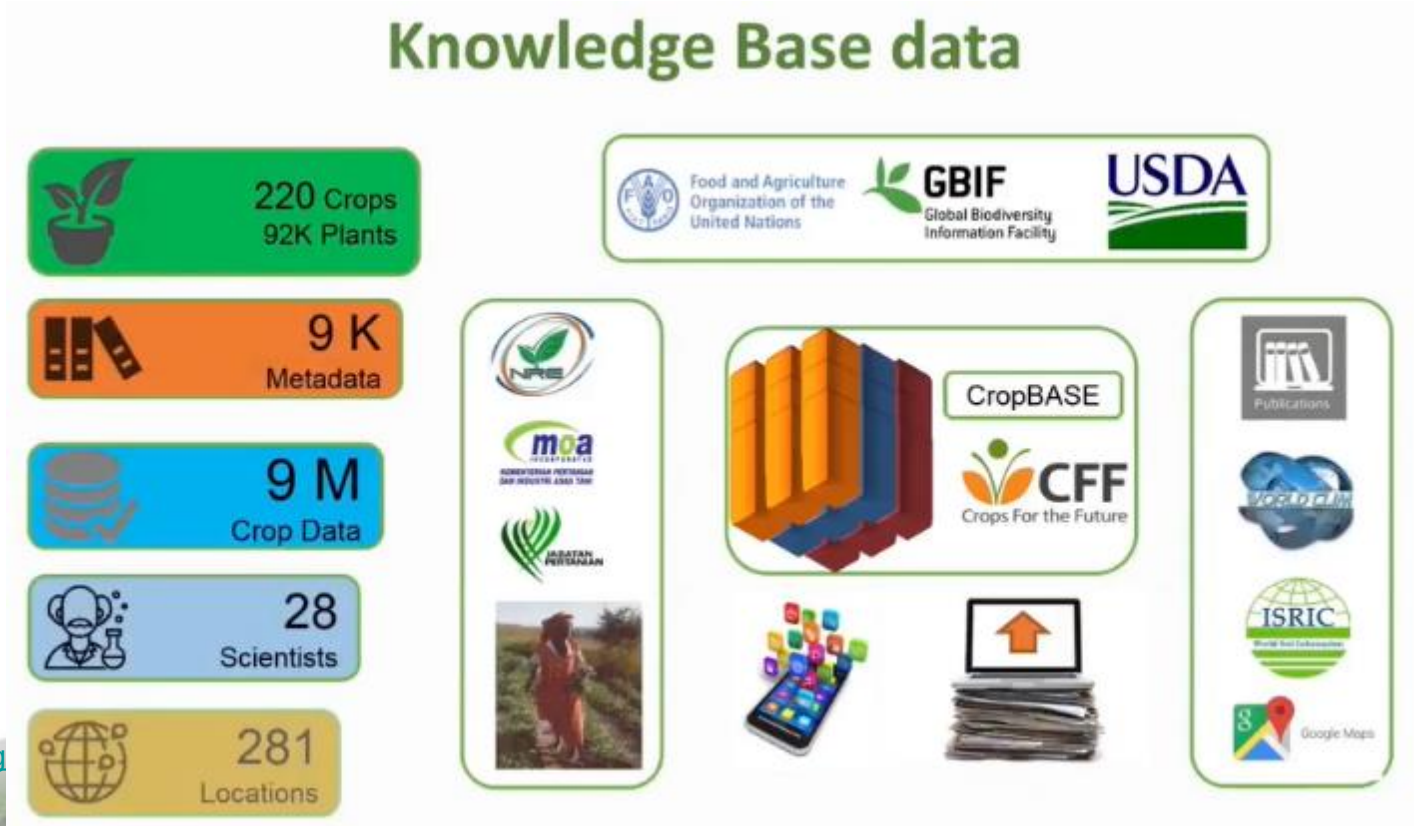
- Use environmental, climate & soil data
- With peoples indigenous knowledge.

“Select Crop”

- Enter location
- Search

Provide

- estimate yield
- & farmer income



https://cropbase.co.uk/src/homepag

To Secure Food for Future

Need Research and Development of:

- Food products from indigenous crops;
- Marketing and promoting nutritional value;
- Crop environmental requirements & crop suitability;
- Breeding of underutilized indigenous crops for drought & heat tolerant varieties;
- Modeling of potential yields & determination of boundaries for crop suitable locations;
- Advisories for indigenous / underutilized crop production.

Let’s start eating indigenous crops everyday





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