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Eugene Baraka

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REJECTION OF AFRICAN INDIGENOUS FOOD: THE CASE OF RWANDA

Eugene Baraka



Figure 1. Map of Africa with Rwanda in RED
Source: <http://themapofafrica12.wordpress.com/2012/01/13/21/>



In many countries, European colonization resulted in cultural disintegration and erosion of indigenous knowledge that made citizens lose interest in their own cultural heritage and adopt imperial know-how. During the same time, native biodiversity that was once maintained by the tradition it shaped declined. Alien crops prospered and finally dominated landscapes.³

INTRODUCTION

- Rwanda is a landlocked country in East Africa and the second most densely populated on the continent after Mauritius (Fig 1).
- Germany and later Belgium controlled Rwanda's land and food system from 1899 to 1962.
- Introduced cash crops, e.g., tea, replaced subsistence farming of indigenous crops to appease colonial administrations and today, 17% of food is imported.³
- Rwanda, now in nutrition transition, is moving toward a 'Western-style' diet
- The double burden of malnutrition is increasing; stunting rates in under 5s remain high (33%), adult obesity is increasing (5.8%), and anemia rates are high⁵
- Diversification of diets will improve food security in Rwanda; however, the current plan increases production, but does not emphasize nutrition.
- Use, conservation, and protection of indigenous foods helps achieve biodiversity, plus they are affordable, more nutritious, and more resistant to climate change²
- Almost nothing is known about the status of indigenous crops in Rwanda.

I hypothesized that Kigali's Open-Air Markets (OAMs) would not have many indigenous foods available, hence the aim of this study was to answer the following questions:

- Which WHO food types/categories are available in Kigali's OAMs?
- Which African indigenous foods can be purchased in Kigali's OAM's?
- What is the proportion of African indigenous foods to exotic foods in the sampled markets?

METHODS

- The largest OAMs (Nyabugogo, Kigali City, Kimironko) were inventoried (Fig 2).
- Foods are fresher in OAM's compared to supermarkets or kiosks, shoppers can bargain, and many shoppers, therefore buy food/drinks from OAMs.
- Data collection: walking through markets and recording all consumables for sale (Fig 3).

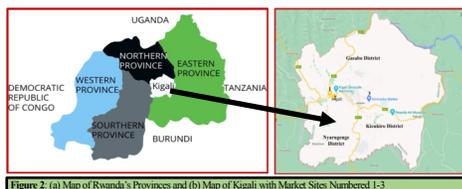


Figure 2: (a) Map of Rwanda's Provinces and (b) Map of Kigali with Market Sites Numbered 1-3



Figure 3: Data Collection in OAM

- Data collected October – December 2020
- Markets visited 2x to ensure the widest number of consumables inventoried
- All data combined in MS Excel
- "FAO/WHO Individual Food Consumption methodology for groups and subgroups" used
- Species indigenous to each continent counted
- Nutritional values compared

RESULTS

- 24% of the total species found in OAM's are indigenous to Africa. By contrast, 76% of consumables are from species indigenous to other continents (Fig 4)
- 7 WHO categories were covered by the foods in Kigali's OAMs, including cereals, fish, fruits, legumes, root crops, meat/dairy, vegetables (Fig 5)
- 62 species from one of these categories could be purchased (Fig 5)

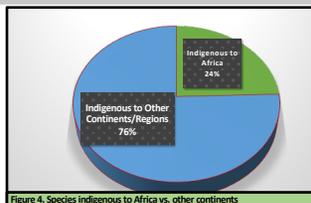


Figure 4. Species indigenous to Africa vs. other continents

| COMMON NAME | SCIENTIFIC NAME |
|----------------------|----------------------------------|
| Cereals | |
| Pearl millet | <i>Pennisetum glaucum</i> |
| Sorghum* | <i>Sorghum bicolor</i> |
| Fish | |
| Kapenta | <i>Limnothrissa miodon</i> |
| Nile tilapia | <i>Oreochromis niloticus</i> |
| African catfish | <i>Clarias gariepinus</i> |
| Haplos | <i>Haplochromis sp.</i> |
| Silver cyprinid | <i>Rastrineobola argentea</i> |
| Marbled lungfish | <i>Protopterus aethiopicus</i> |
| Ningu | <i>Labeo victorinus</i> |
| Tanganyika killifish | <i>Lamprichthys tanganicicus</i> |
| Fruits | |
| African eggplant | <i>Solanum macrocarpon</i> |
| Watermelon | <i>Citrullus lanatus</i> |
| Meat/Dairy | |
| Sanga cattle | <i>Bos taurus africanus</i> |
| Rabbit | <i>Lepus spp.</i> |
| Vegetables | |
| Lettuce | <i>Lactuca sativa</i> |
| Mushrooms | <i>Termitomyces microcarpus</i> |

Table 1. Foods Indigenous to Africa

- Consumables indigenous to 4 continents were found: Africa, the Americas, Asia, Europe (Tables 1-4)
- Most of the indigenous African species in Kigali's markets were fish, obtained in local streams and lakes (Table 1).
- Fruits were mostly from the Americas or Asia (Tables 2-3).
- Africa's indigenous fruits, watermelon and African eggplant, make up just 10% of the fruits available in OAM's (Table 1).
- Most vegetables were indigenous to the Americas or Europe (Table 2, Table 4); however, African indigenous vegetables, lettuce and mushrooms, are only 14% of those available in OAM's (Table 1).
- There were no legumes from Africa in the sampled OAM's.
- Only 2 African cereals were available for sale; however, the grains most often found in OAM's were maize and rice, from the Americas and Asia, respectively.

| COMMON NAME | SCIENTIFIC NAME |
|----------------------|---------------------------------|
| Cereals | |
| Rice* | <i>Oryza sativa</i> |
| Sugarcane | <i>Saccharum officinarum</i> |
| Fruits | |
| Apple | <i>Malus pumila</i> |
| Banana | <i>Musa acuminata</i> |
| Cucumber | <i>Cucumis sativus</i> |
| Eggplant | <i>Solanum melongena</i> |
| Lemons | <i>Citrus limon</i> |
| Mandarin Orange | <i>C. Reticulata</i> |
| Mango | <i>Mangifera indica</i> |
| Papaya | <i>Carica papaya</i> |
| Plantains | <i>Musa × paradisiaca</i> |
| Legumes | |
| Soybeans | <i>Glycine max</i> |
| Meat/Dairy | |
| Chicken | <i>Gallus gallus domesticus</i> |
| Root Crops | |
| Taro | <i>Colocasia esculenta</i> |
| Vegetables | |
| Onions | <i>Allium cepa</i> |
| Leek | <i>A. Porrum</i> |
| Garlic | <i>A. Sativum</i> |
| Miscellaneous | |
| Eggs | <i>Gallus gallus domesticus</i> |

Table 3. Foods indigenous to Asia

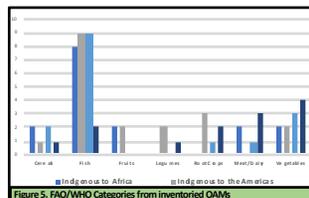


Figure 5. FAO/WHO Categories from inventoried OAMs

| COMMON NAME | SCIENTIFIC NAME |
|-------------------|----------------------------|
| Cereals | |
| Maize* | <i>Zea mays</i> |
| Fruits | |
| Avocado | <i>Persea americana</i> |
| Guava | <i>Psidium guajava</i> |
| Passion fruit | <i>Passiflora edulis</i> |
| Pineapple | <i>Ananas comosus</i> |
| Pumpkin | <i>Cucurbita spp.</i> |
| Pepper | <i>Capiscium spp.</i> |
| Strawberries | <i>Fragaria × ananassa</i> |
| Tamarillo | <i>Solanum betaceum</i> |
| Tomato | <i>S. Lycopersicon</i> |
| Legumes | |
| Beans* | <i>Phaseolus spp.</i> |
| Peas* | <i>Arachis hypogaea</i> |
| Root Crops | |
| Cassava* | <i>Manihot esculenta</i> |
| Potato* | <i>Solanum tuberosum</i> |
| Sweet potato* | <i>Ipomoea batatas</i> |
| Vegetables | |
| Green beans | <i>Phaseolus vulgaris</i> |
| Cassava leaves | <i>Manihot esculenta</i> |
| Amaranth leaves | <i>Amaranthus spp.</i> |
| Chayote | <i>Sechium edule</i> |

Table 2. Foods indigenous to the Americas

| COMMON NAME | SCIENTIFIC NAME |
|-------------------|--|
| Cereals | |
| Wheat* | <i>Triticum aestivum</i> |
| Fish | |
| Common carp | <i>Cyprinus carpio</i> |
| Sardines | <i>Sardina pilchardus</i> |
| Legumes | |
| Peas | <i>Pisum sativum</i> |
| Meat/Dairy | |
| Cow | <i>Bos taurus</i> |
| Cow's milk | <i>Bos taurus</i> |
| Goat | <i>Capra hircus</i> |
| Pork | <i>Sus scrofa domesticus</i> |
| Root Crops | |
| Carrots | <i>Daucus carota</i> |
| Beets | <i>Beta vulgaris</i> |
| Vegetables | |
| Celery | <i>Apium graveolens</i> |
| Cauliflower | <i>Brassica oleracea var. botrytis</i> |
| Cabbage | <i>B. oleracea var. capitata</i> |
| Chard | <i>Beta vulgaris</i> |

Table 4. Foods indigenous to Europe/Mediterranean.

DISCUSSION

- Rwanda, now in a nutrition transition, needs to diversify diets to halt the double burden of malnutrition throughout the country.
- Indigenous millet species such as finger millet were not present in any of the markets, despite their high nutritional value. Finger millet is rich in methionine, an amino acid lacking in many diets
- The indigenous pearl millet has 3x as much iron and more protein than maize; however, it was only available in flour form.
- Millet and sorghum, as indigenous African species are more drought and heat resistant than either rice, wheat, or maize.
- African indigenous legumes, e.g., cowpeas and pigeon peas, were not found in the sampled OAM's, although they have higher folic acid and vitamin A levels, respectively.
- In sum, indigenous foods are often more nutritious than exotic ones and are also more resilient to drought and heat stress and high altitude. Ironically, species indigenous to Africa are seldom available in OAMs and most are near extinction.³

Limitations:

- OAM's were inventoried during the COVID-19 pandemic, consequently some sellers may not have brought goods to Kigali markets.
- The researchers only made inventories of OAM's in the largest city in Rwanda, Kigali, thus the resulting inventories may not be representative of available foods in other provinces.
- Some indigenous foods are seasonal and may not have been available during the data collection period.

Conclusions:

- Adoption of global food systems inevitable
- However, conservation of traditional food, crops, indigenous knowledge vital
- Use and appreciation of indigenous food essential to improving nutritional status

RECOMMENDATIONS

- Comprehensive education for all ages in nutrition & agriculture
- Research investment on nutrition of indigenous crops
- Focus on a more nutrition-sensitive agriculture
- Conserve indigenous food resources and practices
- Strengthen programs that already exist to encourage use of indigenous foods

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