

# Delivering diversified diets year-round with customised food tree portfolios

Research on Agroecology: Current strengths and innovative futures for sustainable food systems

| 27 October 2021

Stepha McMullin | Barbara Stadlmayr | Erick Ngethe |  
Agnes Gachuri | Roeland Kindt | Ramni Jamnadass



# Challenges in local food systems

- Narrow focus on a few crops that are nutritionally limited – undermines human health and degrades ecosystems
- Availability of micronutrient-rich crops like fruits and vegetables are often lacking and highly season-dependent
- Local food systems need to change – towards delivering healthy diets - increasingly recognized in int. frameworks and reports
- Local, contextually relevant solutions are needed



Kitui, Kenya. Source A.Karanja



Kitui, Kenya. Source A.Karanja

# Nutritious Food Portfolios – Promoting diversity

Carefully designed **portfolios** combining food trees - those that supply fruits, nuts, leaves, etc. - with vegetable, pulse and staple crops to address seasonal gaps and micronutrient deficits

→ Co – developed with communities based on food production diversity, local diets and priorities

→ Enhance seasonal availability of nutritious foods in local food systems



McMullin et al. 2019. Fruit tree portfolios that link agriculture more effectively with nutrition and health: a new approach for providing year-round micronutrients to smallholder farmers. *Food Security*



RESEARCH  
PROGRAM ON  
Forests, Trees and  
Agroforestry



Global  
Landscapes  
Forum



Resilient  
Landscapes

# Co-developing local solutions

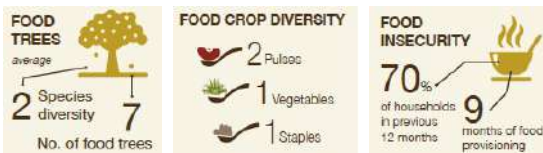
## Step 1. Food Production Diversity

Use of agricultural and wild biodiversity

→ Food/fodder production diversity

\*Indigenous (underutilised)

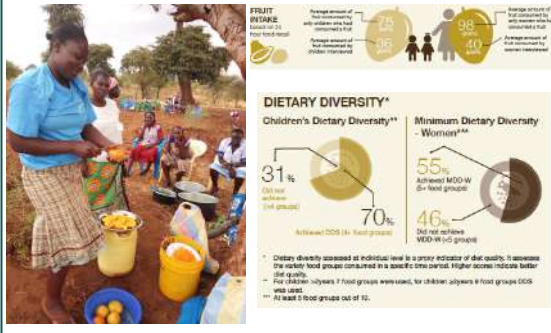
→ Food security



## Step 2. Food Consumption Diversity

Food consumption, diet diversity

- Dietary recalls
- Dietary Diversity Score
- Micronutrient intake

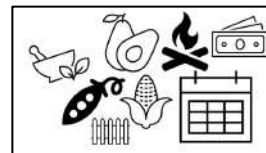


## Step 3. Priority Setting

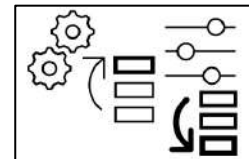
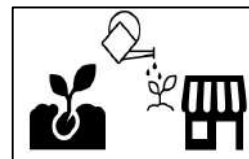
Prioritise agricultural and wild biodiversity for food, income; seasonal food harvest calendars



### i. Species Diversity ii. Functional Uses



### iii. Opps. & Challenges iv. Ranking



Example data from Kitui in Kenya (EC/IFAD Food Trees Project)

# Customising *Portfolios*



Example from Kitui County, Kenya

→ 17 location-specific *portfolios* in East Africa developed



← food harvest mapped against months of food insecurity

Food Name* Scientific Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	IRON	VITAMIN A*	FOURTE	VITAMIN C
<b>FRUITS</b>																
PAWPAW/PAPAYA <i>Carica papaya</i> **,**																
BANANA <i>Musa</i> spp.																
GREYIA/MALLOW RAISIN <i>Greyia</i> spp.																
TAMARIND <i>Tamarindus indica</i>																
DESERT DATE, fresh <i>Balanites aegyptiaca</i>																
DESERT DATE, dried <i>Balanites aegyptiaca</i>																
WHITE SAPOTE <i>Casimiroa edulis</i>																
AVOCADO <i>Persea americana</i>																
COMMON WILD MEDLAR <i>Margarita madagascariensis</i>																
MANGO <i>Mangifera indica</i> **,**																
ORANGE <i>Citrus sinensis</i> **,**																
LEMON <i>Citrus limon</i>																
GUAVA <i>Psidium guajava</i>																
JAVA-PLUM <i>Syzygium cumini</i>																
KITHAALA/KITHAALWA <i>Linnæa sphenoloba</i>																
<b>VEGETABLES</b>																
PUMPKIN, leaves <i>Cucurbita maxima</i>																
AMARANTH, leaves <i>Amaranthus</i> spp.																
CORPEA, leaves <i>Vigna unguiculata</i>																
PODICE <i>Ipomoea batatas</i>																
MAIZE <i>Zea mays</i> **																
MILLET <i>Pennisetum glaucum</i>																
SORGHUM <i>Sorghum bicolor</i>																
<b>PULSES</b>																
COWPEA <i>Vigna unguiculata</i> **																
PIGEON PEA <i>Cajanus cajan</i> **,**																
BEAN <i>Phaseolus vulgaris</i> **																
GREEN GRAM/MUNG BEAN <i>Vigna radiata</i> **																
GROUNDNUT <i>Arachis hypogaea</i>																

← addressing nutrient gaps, matched with nutritional value (Vits. A & C, iron, folate)

← Selected based on community priorities

← supply of diverse foods/nutrients (direct) & income - surplus \ high value crops (indirect)



<http://www.worldagroforestry.org/project/foodtrees/publications>



RESEARCH PROGRAM ON Forests, Trees and Agroforestry



Global Landscapes Forum



Resilient Landscapes

# Portfolios: an agroecological approach

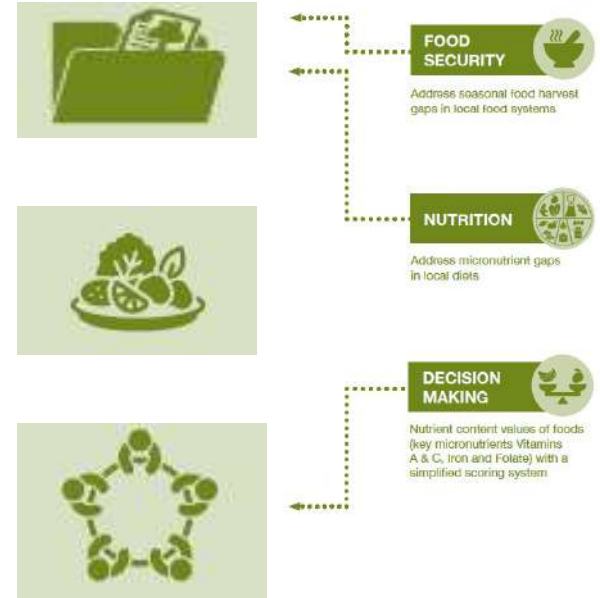
## The *Portfolios*

→ contextually relevant → greater diversity of species on farms, enhance seasonal food resilience, diversify diets locally

Indigenous & underutilised species should not be overlooked → nutritional value, resilience, culture and tradition

Co-developed with communities → empower communities by using their own knowledge, centred around their participation, social values and diets, priorities for economic diversification, +++ other AE principles

The *portfolio* approach can be expanded and adapted to different regions and contexts



# Thank you

For more information & collaboration contact  
[s.mcmullin@cgiar.org](mailto:s.mcmullin@cgiar.org)

For more information visit  
<http://apps.worldagroforestry.org/projects1/timeline-nutri-scapes/>

[cifor.org](http://cifor.org) | [worldagroforestry.org](http://worldagroforestry.org)

[foreststreesagroforestry.org](http://foreststreesagroforestry.org) | [globallandscapesforum.org](http://globallandscapesforum.org) | [resilientlandscapes.org](http://resilientlandscapes.org)

The Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF) envision a more equitable world where forestry and landscapes enhance the environment and well-being for all. CIFOR-ICRAF are CGIAR Research Centers.

