Agrifood; a new Multi-Criteria Decision Analysis tool to examine trade-offs in programme decisions for nutrition sensitive agriculture

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Agriculture/Nutrition interventions often focus on promoting the production and/or consumption of particular foods or food combinations.






The AGRIFOOD Tool supports decision-making about the **selection of foods or food combinations** to promote for **production and/or consumption.**

Decisions and Decision-Makers supported

What is the best combination of local foods to promote in BCC messages?

Which specific **varieties** of a crop should be promoted for production?

Which foods could we encourage people to produce alongside a priority commodity?

Which local foods should we suggest people consume alongside priority crops/commodities?

Which foods should be promoted for production/included in our project?

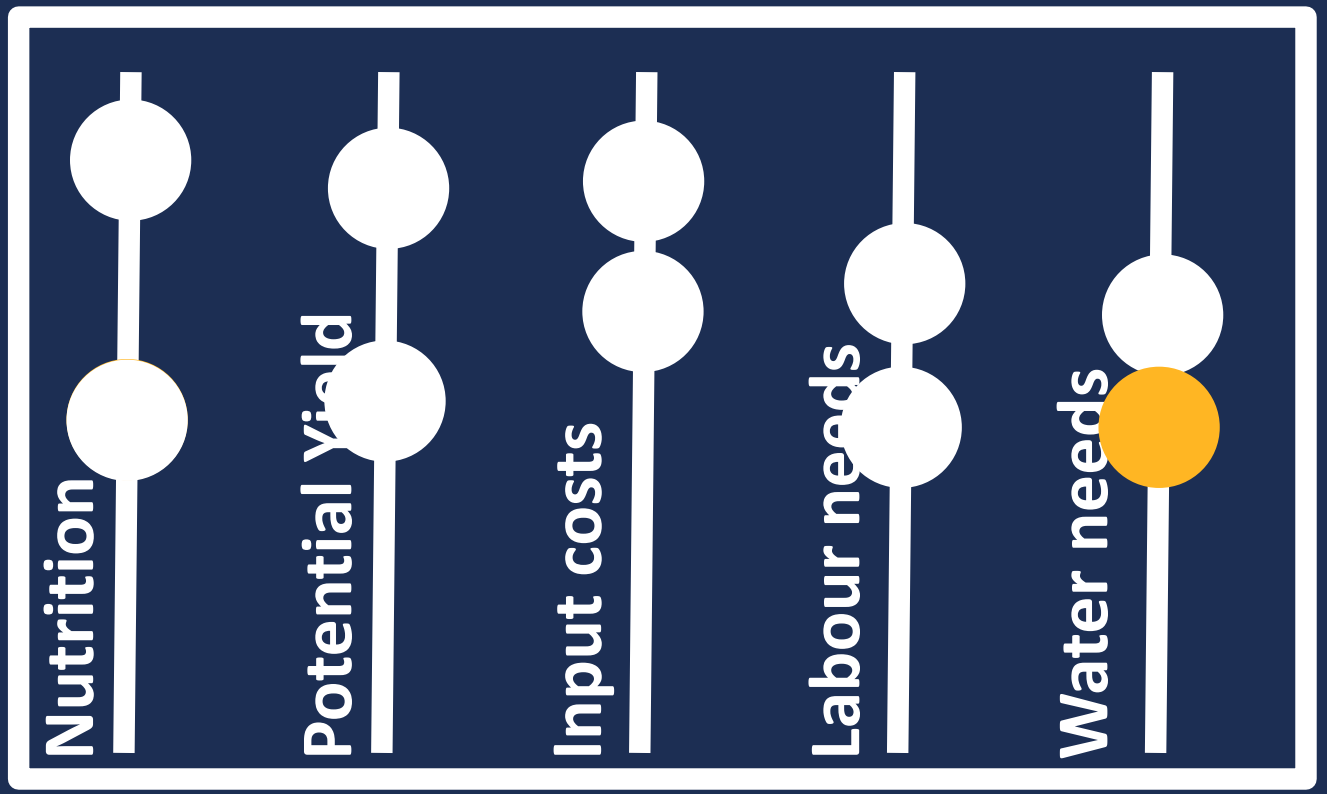
What is the best combination of foods to grow in the local area?

Nutrition Programmers

Agriculture Programmers

Smallholder Groups

Examining trade-offs when selecting food combinations to promote



Findings from literature & qualitative research to identify decision-makers, criteria and how decisions are made:

Nutrition Programmers

Smallholders

Agriculture Programmers

- Guides exist but no tools to **consider trade-offs.**
- **Systematic processes rarely** used.
- **Interest** in **rapid, transparent, simple** tools that encourage **participatory process.**

Criteria areas identified:

- Nutritional adequacy
- Acceptability
- Seasonality
- Possible yield
- Income potential
- Input access and availability
- Labour and time needed
- Suitability for local area
- Resistance to shocks
- Implications for women's income & empowerment
- Environmental Impact
- Sustainability
- Biodiversity
- Food Safety

Flexible Shortlist of 25 Criteria

Maximum 10 per analysis

Multi-Criteria Decision Analysis (MCDA)

A **simple** method for **complex** decisions

Compares options across **conflicting** criteria

Considers **stakeholder** values for different criteria

Provides ranked list of options

Examination of impact of **value weights** and **criteria scores** on this ranked list

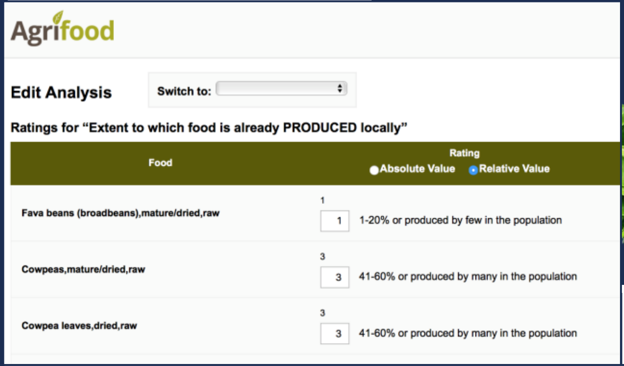
Comparison of the trade-offs across decision criteria between different options

1. Determine the decision context and identify Stakeholders

2. Define decision objectives and select criteria to compare options

3. Apply Stakeholder weights to each criterion

4. Identify options that could achieve decision objectives

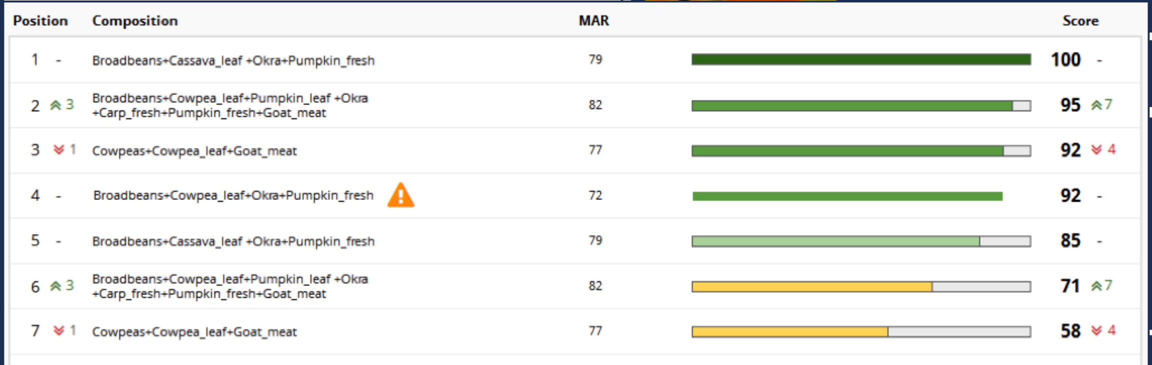

Agrifood

Edit Analysis   Switch to:

Ratings for "Extent to which food is already PRODUCED locally"

Food	Rating (Absolute Value / Relative Value)
Fava beans (broadbeans),mature/dried,raw	1 — 1 — 1-20% or produced by few in the population
Cowpeas,mature/dried,raw	3 — 3 — 41-60% or produced by many in the population
Cowpea leaves,dried,raw	3 — 3 — 41-60% or produced by many in the population

5. ... t ... cores


Position		Composition	MAR	Score	
1	-	Broadbeans+Cassava_leaf +Okra+Pumpkin_fresh	79	100	-
2	⩓ 3	Broadbeans+Cowpea_leaf+Pumpkin_leaf +Okra +Carp_fresh+Pumpkin_fresh+Goat_meat	82	95	⩓ 7
3	⩔ 1	Cowpeas+Cowpea_leaf+Goat_meat	77	92	⩔ 4
4	-	Broadbeans+Cowpea_leaf+Okra+Pumpkin_fresh ⚠	72	92	-
5	-	Broadbeans+Cassava_leaf +Okra+Pumpkin_fresh	79	85	-
6	⩓ 3	Broadbeans+Cowpea_leaf+Pumpkin_leaf +Okra +Carp_fresh+Pumpkin_fresh+Goat_meat	82	71	⩓ 7
7	⩔ 1	Cowpeas+Cowpea_leaf+Goat_meat	77	58	⩔ 4

HOLE DIET

9. Apply results to inform decision-making

My new analysis

2 April 2019 | Kenya | Rift Valley | Nandi | Pregnant women first trimester adult 19-50 years

55 | 1.2

Results

Save | Export as CSV | Snapshot 1 | Snapshot 2 | Snapshot 3

Snapshot 1 compared to Snapshot 3

Position	Composition	MAR	Score
1 -	Broadbeans+Cassava_leaf +Okra+Pumpkin_fresh	79	100 -
2 ⇈3	Broadbeans+Cowpea_leaf+Pumpkin_leaf +Okra +Carp_fresh+Pumpkin_fresh+Goat_meat	82	95 ⇈7
3 ⇊1	Cowpeas+Cowpea_leaf+Goat_meat	77	92 ⇊4
4 -	Broadbeans+Cowpea_leaf+Okra+Pumpkin_fresh ⚠	72	92 -
5 -	Broadbeans+Cassava_leaf +Okra+Pumpkin_fresh	79	85 -
6 ⇈3	Broadbeans+Cowpea_leaf+Pumpkin_leaf +Okra +Carp_fresh+Pumpkin_fresh+Goat_meat	82	71 ⇈7
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4 -	Broadbeans+Cowpea_leaf+Okra+Pumpkin_fresh ⚠	72	92 -

Nutrient	Value	Unit
Food energy	371	kcal/100g
Protein	13.56	g/100g
Water	11.29	mg/100g
Fat	7.02	mg/100g
Carbohydrate	65.25	mg/100g
Calcium	159	mg/100g
Iron	7.61	mg/100g
Zinc	2.87	mg/100g
Vitamin C	4.2	ug/dietary folate equivalents/100g
Thiamin	0.116	ug/100g
Riboflavin	0.2	ug/Retinol Equivalents/100g
Niacin	0.923	ug/Retinol Activity Equivalents/100g
Vitamin B-6	0.591	mg/100g
Folate	82	mg/day
Vitamin B-12	0	mg/100g
Vitamin A RE	0.76	mg/100g
Vitamin A RAE	0.42	mg/100g

Atributes unweighted	Score
Extent to which food is already PRODUCED locally	2.01818333468
Availability of Quality and improved inputs needed to produce this food	5.6
Household access to necessary inputs	3.2
Could production of this food contribute to women's empowerment: Income?	0.794881080615
Estimated length of time to harvest or maturity	1.50149769347
Relative estimated income potential from this crop (if sold)	4.38862725333
Suitability of product to local water supply and infrastructure	3.6
Degree to which commodity is susceptible to climate shocks DROUGHT	5.87490377877
Proportion of the year for which this food (or a food with a similar nutrient and agricultural profile?) could be produced and/or available for consumption	3.52895832992

Atributes weighted	Score
Extent to which food is already PRODUCED locally	2.378
Availability of Quality and improved inputs needed to produce this food	5.2
Household access to necessary inputs	3.2
Could production of this food contribute to women's empowerment: Income?	0.794881080615
Estimated length of time to harvest or maturity	1.557
Relative estimated income potential from this crop (if sold)	4.278454
Suitability of product to local water supply and infrastructure	3.6
Degree to which commodity is susceptible to climate shocks DROUGHT	5.87490377877
Proportion of the year for which this food (or a food with a similar nutrient and agricultural profile?) could be produced and/or available for consumption	3.52895832992

Examination of Trade-Offs

Rank	Food Option	MAR	LOCAL ACCEPT-ANCE	ACCESS TO INPUTS	WOMEN'S INCOME POTENTIAL	YIELD POTENTIAL	PEST RESILENCE	DROUGHT TOLERANCE
1	Tomato+Okra+Spinach+Amaranth+Lentil							
2	Tomato+Okra+Carrot+Spinach+Lentil							
3	Okra+Carrot+Spinach+Amaranth+Lentil							
4	Banana+Tomato+Okra+Spinach+Amaranth+Lentil							
5=	Banana+Tomato+Gourd+Spinach+Amaranth+Lentil							
5=	Tomato+Egg+Okra+Spinach+Amaranth+Lentil							
7	Tomato+Gourd+Egg+Spinach+Amaranth+Lentil							
8=	Tomato+Okra+Egg+Spinach+Amaranth+Lentil							
8=	Banana+Carrot+Okra+Spinach+Amaranth+Lentil							

Participatory process for applying *Agrifood*

1. Identify decision objectives, criteria and stakeholders

2. Individual Workshops

- Agriculture Programmers
- Nutrition Programmers
- Smallholders

3. Larger Workshops

Sensitivity analysis of universal/individual weightings and identification of trade-offs

4. Contribute results and experience to decision-making and programme planning

Important points to remember:

- D**ecision-support**, not **decision-making.**
- Concerned (for now) with selection of **foods** or **food combinations** to promote for **production and/or consumption.**
- Use when there are **multiple, conflicting criteria** for a decision, when working across **stakeholders/ sectors** and when **participatory approach** needed.

Next Steps (this year):

Software Finalisation

Pilot and refinement of process

Open-access launch of software and resources

Agrifood

A Multi-Criteria Decision Analysis (MCDA) tool to support the selection of food combinations to promote for production and/or consumption in Agriculture and Nutrition programmes.

Developed by the London School of Hygiene and Tropical Medicine and Maldaba Ltd.

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Summary:

Agrifood is a new software tool to support decisions about which foods or food combinations to promote for consumption and/or production in nutrition-sensitive agriculture or nutrition behaviour change activities. Agrifood weighs-up tradeoffs between conflicting agriculture, nutrition, environment and gender priorities when comparing different

Agrifood provides a relatively rapid and simple method for simultaneously considering a user-selected set of agriculture and nutrition criteria and taking local context and stakeholder priorities into account to inform the selection of foods to promote.

What is the need?

Nutrition-sensitive agriculture programmes

Acknowledgements


Thank you