HOW 'LIMITED SPACE' GROWING CAN ALLEVIATE FOOD INSECURITY AMONG DISPLACED PEOPLE GROUPS IN SUB-SAHARAN EAST AFRICA

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Introduction

The UN's second Sustainable Development Goal (SDG), Zero Hunger, targets ending hunger and improving nutrition and has identified challenges of: hidden hunger amongst refugees who are denied access to land and rely on limited-space growing for beneficial household food.



Method

In response, this study examines limited-space growing techniques, such as Multi-Storey Gardens (MSG's) utilising sacks to grow edible plants in sub-Saharan refugee camps and other resource-poor populations. It uses a case-study approach with secondary sources to look at:

- How displaced peoples in various settings apply horticultural techniques
- The strengths and nutrition-improving outcomes of these methods
 The potential impact on improving local cultivation practices to alleviate hunger and achieve food security.

SDG^{1.} outcomes:

1 NO POVERTY

2 ZERO HUNGER



• Increased household food security

enriching foods, flour; soap

• Number of harvests increased

Increased dietary diversity



• Nutritional education

- Reduced levels of anaemia
- nal education

Aims	To improve – Household food security and livelihoods				
Reduce - Dietary micronutrient deficiencies					
Case Study	l. Kibera, Kenya	2. Kenya	3.Ethiopia	4. Uganda	5.Iraq and Jordan
Situation	Urban	Rural Refugee Camps	Rural Refugee Camps	Rural refugee Camps and Urban Garden	Rural Refugee Camps
Methods	Multi-storey Gardens	Multi-storey Gardens	Multi-storey Gardens	Multi-storey Gardens Key-Hole and urban Gardens	Multi-storey Gardens Demonstration gardens Hydroponics







Solidarities: 'Gardening in Sacks' handbook shows sack construction with central stone column and soil.^{2.}

Main identified challenges



- Improved children's diet
- Gardens improved social cohesion and trauma recovery

• Increased understanding of nutritious foods and use of AIV's



- Produced a sense of empowerment; dignity and well-being (majority of gardeners were women)
- Recognition of urban poor assets (labour, skills, initiative, friends, family, resources)

• Produced income enabling purchasing of: other vegetables including AIV's, diet

Income generation





- Contribution towards financial security and access to savings and credit systems
 Sustainable MSG's ongoing and integrated into community post project
- Provided training and new skills
- Income generating (co-operatives providing garden starter kits)

11 SUSTAINABLE CITIES AND COMMUNITIES



- Contributed to greening the urban settlement
- Increased group and neighbourhood collaboration
- Increased spatial sense of ownership

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

- Minimal food losses
- Sustainable food sovereignty

of decisions, and identifying locally adapted best practices.

and embedded within Humanitarian Standards in rural and urban settings.

13 CLIMATE ACTION



• Strengthen household resilience and self-reliance

Space	Physical and legally limited access to land and space to grow	 Learning outcomes and recommendations (contd.): PLANTS – To SELECT PLANTS that are culturally appropriate and highly nutritious, maximizing the benefit to household health and development; to advance the availability and knowledge of AIV's, their significance in addressing micronutrient deficiencies, and the best practices for growing and cooking, for which quality seed availability is required. 		
Soil	Access to fertile and unpolluted soils or growing media Knowledge of soil management and composting of resources available			
Water	Access to water			
	Greywater resource not fully utilised and managed (seen a potential hazard) Use of water saving and rainwater harvesting techniques			
Plant Selection	Limited supply of plant material seed available for context Limited knowledge and access to nutritious plants i.e. African Indigenous Vegetables	Amaranthus: Leaves rich in protein and vitamins; fast growing, high yield. Amaranthus: Leaves rich in protein and vitamins; fast growing, high yield. Cowpea: High in vitamin E, Beta Carotene and iron. Reported as droug! tolerant.		
	(AIV'S) Plant nurseries in few locations	Examples of AIV's grown in African case studies ^{4.}		
Knowledge	Sufficient training and technical advice	Learning initiatives and aspirations:		



Keyhole garden construction^{3.}

African Indigenous Vegetables grown in the African Case Studies



- Abelmoschus esculentus Amaranthus spp
- Basella alba
 Solanum melongena
- Solanum scabrum
 Vegetable
- Vigna uncuicalata

Discussion This study identifies the household benefits of growing in limited spaces, it particularly highlights traditional, though underutilised, **AFRICAN INDIGENOUS VEGETABLES** and discusses their nutrition and health benefits, and their potential to provide food resilience in a way that is both culturally and geographically appropriate.

The study reflects critically on the data available and recommends further research into technical areas including: growing media, water supply, waste and greywater management, hydroponic options, as well as suitable plant selection and availability alongside humanitarian standards. This research could lead to a best practice model and 'kits' for growing in a variety of challenging areas, helping reduce micronutrient

To recognise the knowledge, resources and abilities amongst communities, placing people at the centre

• To further explore the impact and the opportunities so techniques can be established as best practice

• To further research and extend HYDROPONICS, used successfully with Syrian refugees, that reduced

Chart showing percentage of case studies growing AIV's

Results and outcomes

The outcomes of this study also have implications for additional Sustainable Development Goals and provide learning outcomes.

Learning outcomes and recommendations:

- SPACE Enabling the use of land and/or limited SPACE can assist use of resources available to create healthier households and communities.
- **SOIL -** The need to source fertile unpolluted **SOIL** or alternative **GROWING MEDIA**, and to escalate the understanding of soil management and composting of available resources.
- **WATER MANAGEMENT** required to efficiently use water available safely within standards, including the ability to safely use grey water and maximise rainwater harvesting.
- **KNOWLEDGE and TRAINING** to provide ongoing support and knowledge sharing; also demonstration gardens; and to **DEMONSTRATE BEST PRACTICE.**

deficiencies, enabling the world's most needy, and bringing us towards the Zero Hunger Goal.

Conclusion and future plan

the need for soil and amount of water.

In summary the study suggests that, through the combination of limited-space growing methods and the use of African Indigenous Vegetables, those in desperate situations can be given the opportunity to contribute towards their local food security.

Further research is recommended for growing techniques and plant selection.

References

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