Tapping the nutritional power of vegetables

Marco Wopereis DG World Vegetable Center (WorldVeg) The Crawford Fund 2018 Annual Conference Canberra, Australia, 14 August 2018

Nutritional power

- Diversity of vegetables
- Rural consumers
- Urban consumers

Vegetable production in Asia: big business



Source: FAO, 2017



Traditional vegetables



African eggplant



Ethiopian mustard



Amaranth



Jute mallow



Leafy Roselle



African nightshade

Traditional vegetables: robust and rich in nutrients

Micronutrient content of common and traditional vegetables



	Ranges	Cabbage	Moringa	Amaranth	Aibika	Sweet potato leaf
β-Carotene,mg	0.0 - 22	0.00	15.28	9.23	5.11	6.82
Vit C, mg	1.1 - 353	22	459	113	82	81
Vit E, mg	0.0 - 71	0.05	25.25	3.44	4.51	4.69
Iron, mg	0.2 – 26	0.30	10.09	5.54	1.40	1.88
Folates, μg	2.8 - 175	ND	93	78	177	39
Antioxidant activity, TE	0.6 - 82,000	496	2858	394	560	870

Source: WorldVeg Nutrition Lab



The world's largest collection of vegetable germplasm: World Vegetable Center Genebank

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60,000 accessions; only 5% traditional vegetables HIII

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Consumption patterns of different income groups in rural and urban areas in Africa



Global Dietary Database; Global Panel on Agriculture and Food Systems for Nutrition. 2016. Food systems and diets: Facing the challenges of the 21st century. London, UK.



Impact Pathway



Household Gardens – NW Cambodia 2016/17



Exploratory analysis - income calculation



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Tackling malnutrition through urban gardens in slums?

Proven household garden technologies in rural areas may be adapted to urban slum settings, e.g.:

- Sack gardens, container gardens (require less land and water per unit yield)
- Raised bed gardens, community (group) gardens (rotating scare labor)
- With or without low cost drip irrigation (USD 20 per set)







Youth vegetable business hubs in East Africa: linking with high end markets

- Link young farmers with markets – build trust
- Improve availability of high quality seeds
- Improve young farmer vegetable production skills
- Increase youth's access to finance, inputs and markets
- Improve collaboration among young farmers



Australian Government

Australian Centre for International Agricultural Research





Packhouse Operations (example from Cambodia)







Simple packhouse facility with 'tuktukbot' for direct marketing of Khum Khnart Samakey Roung Rouerng Agricultural Cooperative (KKSRRAC), Khnart, Pourk, Siem Reap, linking farms (55 members) and markets and as a hub for technical and business development services to harmonize production and marketing.

Impact of training in off-season tomato production on income and pesticide use Bangladesh, 2014

Outcome indicator	Average treatment effect	Significance	% increase	
Total income (USD/capita)	85.9	p<0.05	50.5	
Pesticide use (kg/ha)	2.0	p<0.05	58.4	

Notes: Based on propensity score matching, n=245 (94 trained, 151 control). Evaluation conducted 2 years after the training.

IPM can reduce pesticide use, but farmers have often no access and no incentive

Amaranth (red roots) and choko tips (rolled in leaves) sold at a local market in Lae 2018

Photo Courtesy: Maarten van Zonneveld- WorldVeg

Thank you