Sustainable Agriculture

1. What is Sustainable Agriculture?

2. The Constraints

3. Strategic Intervention Areas

4. Way Forward

5. Concluding Remarks
Sustainable Agriculture

- Management of a production system where there is a multitude of complex interactions - principally between soil, plants, animals, climate and people.
- Integration of all the above into a solid production system that is ‘environmentally non-degrading, technically appropriate, economically viable and socially acceptable - for present and future generations‘.
THE CONSTRAINTS

- SIDS primarily food importers
- Limited resources – land, labour, water, credit, etc
- Adverse agro-climatic conditions – climate change (extreme weather), pests & diseases
- High cost & Intensive use of chemical inputs
- High costs of feed & lack of fodder
- Low productivity - production from family farms
- Limited access to technology
- Absence of planning of production wrt demand
THE CONSTRAINTS/ Contd

- Limited/no mechanization
- Unstructured/inexistent markets or market dominated by intermediaries; absence of standards
- Cheaper Imports; non-competitiveness
- Inadequate investment in RDI & Capacity Development
- Farmers: aging population, resistant to change, to regroup, to take risks; not well-trained to cope with new challenges
STRATEGIC INTERVENTION AREAS

- Intervention 1: Enhancing Food & Nutritional Security
- Intervention 2: Efficient & Sustainable Production Practices
- Intervention 3: Improve Productivity & Competitiveness
- Intervention 4: Developing Climate Change Resilience
- Intervention 5: Promote Agro-business & Agro-entrepreneurs
- Intervention 6: Creating Enabling Environment
STRATEGIC INTERVENTION AREA 1: ENHANCING FOOD & NUTRITIONAL SECURITY

- Self-sufficiency in most vegetables & fruits
- Near self-sufficiency in certain crops of strategic importance
- Diversification & Import Substitution
- Integrated farming
- Quality food – Growing micronutrient dense, low GI varieties
- Rehabilitation of ‘local’ crops & landraces
-Judicious land use – land reallocation; vertical farming, kitchen gardens, family plots
- Cross border Initiative
STRATEGIC INTERVENTION AREA 2: EFFICIENT & SUSTAINABLE PRODUCTION PRACTICES

- Shift towards sustainable production systems
- Integrated Crop & Livestock Management
- Efficiency in use of natural resources
- Alternatives to agro chemicals
- GAP such as: crop rotation, cover crops, green manuring, zero tillage, mixed varieties & species, etc.
- Bio farming, zero-budget agriculture, protected culture including bioponics, etc.
- Climate Smart Agriculture
- Reduce waste!
- Develop Traditional / Indigenous Knowledge
- Diversify Markets
STRATEGIC INTERVENTION AREA 3:
IMPROVE PRODUCTIVITY & COMPETITIVENESS

- Increase Yields – close gap between ‘actual’ and ‘potential’
- Efficient use of inputs e.g. microdosing
- Introduction & transfer of new and innovative technologies
- Capacity building
- Agricultural extension using modern methods
- Modernization – Mechanization
- Rethinking the Small-holder farmers
- Service providers to the community e.g. spray service providers
STRATEGIC INTERVENTION AREA 4: DEVELOPING CLIMATE CHANGE RESILIENCE

- Development of practices aimed at increasing the resilience of agricultural system to climate change, e.g. better adapted varieties
- Integrated Soil Management - building stronger and healthier soils; zero tillage, permanent soil cover & crop rotation, drip irrigation
- Soil Carbon Sequestration – Nutrient management, manure, improved grazing, etc
- Community-based actions – more sustainable & resilient
- ICT - Efficient Early Warning System
- Crop Insurance
Develop & Support agro-entrepreneurs, principally women & youth

Incentives & Support measures e.g. in food processing, product development, including alternate uses for crops & quality control

Formal award course & training = Valorization of the farmer and his trade.

RPL – Recognition of Prior Learning
STRATEGIC INTERVENTION AREA 6: CREATING ENABLING ENVIRONMENT

- Full-fledged plan to support existing farmers & attract new entrants
- Use of alternative Energy – solar, wind
- Farmers Quality of life: pensions, health insurance, leisure
- Research & Development & CSR (Invest in Science & Technology & Innovations)
- Gender Equality & Empowerment of Women
- PARTNERSHIP (PPP, within & between SIDS, Global, …)
WAY FORWARD

- Each SIDS to carry out a SWOT ANALYSIS
  - Local Experts + International Expert Panel
- Work out a Strategic Plan
  - Medium & Long Term; Prioritization
  - ‘Custom-made’ rather than ‘Ready-to-use’
  - Integrated & holistic approach
- SIDS: Individually & Partnership with each other & with the International Community
  - Many actions similar, so partnership important, e.g. seed harmonization, etc.)
- Willpower of all stakeholders to bring the Strategic Plan to term
CONCLUDING REMARKS

- Sustained political commitment at the highest level
- Policies, Programs & Legal framework in place
- Mobilization of Resources: Human, Financial, etc..
- Capacity building
- Cooperation & Partnership
Increase Crop Production

- Increase production of vegetables & other crops, e.g. potatoes, pulses,
- Grow your own at home – vertical gardening, Roof-top, etc
- Other crops:
  - Rediscover local ‘old’ unused crops
  - Revisit local unexploited crops
  - New crops, e.g. sea weeds, etc
- Alternatives to wheat flour: potato, sweet potato, bread fruit
Increase Fruit Production

- Eat local - Increase production of locally grown fruits
  - Better, shorter, higher yielding
  - Production on marginal, unused lands
  - Hillocks, river banks, etc. production
  - Back yard production
  - More commercial orchards
  - Keep pests at bay
- Introduction of new varieties of fruits
Increase Meat & Milk Production

- Increase pastures & grazing lands, e.g. on marginal & abandoned lands
- Encourage backyard rearing of animals e.g. rabbits, poultry
- Increase large scale production of small animals e.g. goats, pigs
- Increase number of large scale farms e.g. stags, chicken, ducks
- Encourage rearing in the wild e.g. stags, wild boars, hares
- The Extreme!!
  - Giant African snails, frog legs
  - In SS Africa, 246 insect species consumed!!!
Increase Fish & Allied products

- Increase fresh water farming
- Increase Barachois Culture
- Exploit rivers, etc.
- Intensify lagoon fish rearing
- Intensify lagoon /high sea fishing
- Exploit EEZ more effectively
- Fish ponds at home – Grow your own
- Yearly closure of fishing for limited period – e.g. closure of octopus fishing in lagoons for 2 months in Mauritius & Rodrigues every year.
Quality & Healthy Food

• Micro nutrient dense varieties:
  • Potato, sweet potato & maize with higher level of vitamin A
  • Beans with higher level of Fe & Zn
  • Potatoes & rice - lower GI (Glycaemic Index)
Local & Regional Cooperation

- Partnership – Putting Farmers First (PPP, within & between regional SIDS, Global)
- Address short term issues, e.g. ensure availability of food produced in the region; Indian Ocean Commission initiative – Madagascar to grow food for the IOC countries
- Ensure supply at affordable price
- Revisit Trade Agreements/ foster new ones
- Reinforce Cross Border Initiative
Support to Growers & Breeders

- Various schemes & facilities by Government
- Training
- Credit facilities
- Crop Insurance Policy
- Market intelligence & access
  - Local & International markets
  - Fair trade, etc.
- Access to quality seeds
- Access to fertilizers & pesticides
- Fiscal measures, e.g. VAT exemption on equipment
- Vet services & Products readily available for breeders
- Efficient Extension Service
Sustainable agriculture – Integrated Crop & Livestock Management

- Integrated Pest, Disease & Weed Management
- Soil Fertility Management
- Genetic Diversity Management
- Integrated Pasture Management
- Soil & Water Conservation
- Integrated Crop & Livestock Management
PEST, DISEASE & WEED MANAGEMENT

- Resistant varieties
- Physical & Biological Control
- Field Sanitation
- Natural/ bio products for pest & disease control

Push Pull- growing corn around tomato fields

Traps
SOIL FERTILITY MANAGEMENT

- Cover Crop & Green Manuring
- Soil Organic Matter & Composts
- Crop Rotation
- Limited (or Zero) tillage
- Balanced level of plant nutrients & balanced pH
- Soil fertilization

Legume crops fix atmospheric N in the soil (bean, pea, cowpea, groundnut, soybean, pulses)
GENETIC DIVERSITY MANAGEMENT

- Grow a mix of varieties & mix of crop species
- Resistant varieties, also Landraces, unexploited local varieties
- Mixed seed lots
- Facilitate access to genetic resources & equitable sharing of benefits
SOIL & WATER CONSERVATION

- Use of mulch
- Contour Planting
- Water harvesting

Minimum tillage & use of mulch
- Conserve moisture
- Increase infiltration
- Reduce runoff
- Suppress weeds

Contour planting / vegetative barrier/ drains
- Minimize soil erosion &
- Nutrients leaching and runoff
1. Minimum mechanical soil disturbance (the minimum soil disturbance necessary to sow the seed)

2. Permanent organic soil cover (retention of adequate levels of crop residues on the soil surface)

3. Diversified crop rotations including cover crops (to help moderate possible weed, disease and pest problems)
RESIDUE MANAGEMENT & RECYCLING

• Field sanitation
• Recycle farm waste into Compost
THANK YOU FOR YOUR ATTENTION

MUKEISH RUGHOO, Food Security Expert
rmukesh419@gmail.com
Croplife.mtius@gmail.com