AWARENESS WEEK ON CLIMATE CHANGE

CLIMATE CHANGE ADAPTATION MEASURES FOR MAURITIAN AGRICULTURE: STAKEHOLDERS’ PERSPECTIVE

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- Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN) Mauritius Node/Faculty of Agriculture, University of Mauritius

- Objectives:
  (i) increase awareness about climate change + impact on Mauritian agriculture
  (ii) to propose and discuss stakeholders coping and adaptation strategies
Overview

- Overview of agricultural sector
- Contributors to Climate Change
- Stakeholders’ Perceptions
- Adaptation Measures
- Recommendations/Policy
- Conclusions
- References
- Acknowledgements
Overview of the Agricultural Sector

- **Main cultivated crops:** Sugarcane, tomato, potato, onion...
- **Fruit production:** Banana, pineapple, watermelon and seasonal fruits such as litchi and mangoes
- **Livestock:** Poultry, deer, cattle, pig...
- **Local Fish Production + Aquaculture**
- **Agricultural exports:** Sugarcane, Tuna, Anthurium, Pineapple, Litchi
Contributions to Climate Change

- Greenhouse gases
Contributions to Climate Change

- Deforestation
- Use of chemical fertilizers
- Industrial processes
- Fuel to generate energy
- Transport
Climate Change

- Global warming
  - thermal expansion of sea water
  - melting of glaciers (sea level rise by 0.1 to 0.5m)
- Rise in surface temperature
  (1-3.5°C by 2100)
- Changing rainfall patterns
Global sea level is rising and will very likely continue to rise

Rahmstorf (2007)
OBSERVATIONS IN MAURITIUS
(Meteorological services)

- Average temperature rising by 0.15°C per decade
- Sea level rise of 2.1 mm/year for period 1987-2007 at Port Louis
- Long term time analysis shows a decreasing trend in annual Rainfall
World Attention to Climate Change

- The Intergovernmental Panel on Climate Change (IPCC) predicts that during the next decades, billions of people, particularly those in developing countries, will face changes in rainfall patterns (FAO, 2008).
STAKEHOLDERS’ PERSPECTIVE ON CLIMATE CHANGE IN MAURITIUS
Changes: Sugarcane

- More weeds in fields
- Emergence of pests and diseases
- Increase in soil erosion
- Leaching of fertilizers
- Water logging in several regions
Changes: Sugarcane

- Decrease in the yield of sugar
- Change in rainfall distribution and pattern impacting on extraction
- Some varieties flowering earlier (might be due to climatic or other factors)
Changes: Food crops

- A decrease in the yield of certain crops (tomato)
  - (Jonsson, 2010): 8.2% (SR) and 13.3% (LR) decrease in tomato yield (East) due to temperature rise of 1°C and 10% decrease in precipitation
- A decrease in the germination rate of plants followed by a decrease in crop development
Changes:
Food crops

- An increase in the incidence of pests and diseases
- An increase in weed population
Changes:
Food crops

- Occasional heavy rainfall
- Soil erosion
- Loss of soil OM
- Drier soil
Changes: Livestock

- Heat stress due to high temperature during summer months
  - Reduced feed intake
  - Delayed growth and development
  - Reduced production
  - Possibly leading to mortality rate
Changes Fisheries

- Less fish catch
- Lack of reproductive activity in certain fish species
- Need to go off-lagoon for fishing
- Rise in sea surface temperature leading to coral death causing loss of habitat
ADAPTATION STRATEGIES TO CLIMATE CHANGE BY STAKEHOLDERS
Adaptation Strategies: Sugarcane

- Use of drains
- Additional application of herbicides
- Trash mulching done to increase cane yield
- Trashing against pests
- Use of *chrysopogon zizanioides* (vetiver) (soil and water conservation)
Adaptation Strategies: Food crops

- Better drainage system in agricultural blocks
- Planting of plants vetiver and *convallaria majalis* ‘muguet’ to prevent soil erosion
- Use of wind breaks
- Low and natural external inputs (green manure)
Adaptation Strategies: Food crops

- Introduction of new varieties (tomato varieties ‘calora’)
- Diversifying cropping systems
- Development of sustainable agricultural practices through the use of protected culture
Adaptation Strategies: Food crops

- Irrigation system in case of dry season for rain-fed areas
- Drip Irrigation
Adaptation Strategies: Livestock

- More aeration and ventilation through fans and extractors
- Cooling of animals prior to feeding
- Better hygiene to prevent diseases and pests
Adaptation Strategies: Livestock

- Shading of houses by trees
- Improved fodder nutrition
- Better husbandry practices
Adaptation: Fisheries

- Change in time of fishing
- Diversifying activities
Recommendations to Climate Change Adaptation and Mitigation

- Integrated approach to CC adaptation
- Promotion of clean and sustainable agriculture
- Development of improved varieties/breeds for adaptation and mitigation
Recommendations to Climate Change Adaptation and Mitigation

- Sustainable livestock grazing
  - Improved land management practices (intensive and extensive)
  - Improved pasture management
  - Integrated agro-forestry systems
- Sustainable aquaculture systems maintaining quality of coral reefs
Conclusion

- Vulnerability of the Agricultural sector to Climate Change
- Policies/instruments
  - cost-effective
  - national and prioritised
  - cater for Food Security, biodiversity conservation, sustainable & productive agricultural systems
- Studies on Impact of Climate Change on Agriculture and Fisheries
References:

Acknowledgements

- Faculty of Agriculture, UoM
- FANRPAN Local Node and Secretariat
‘Climate change is real. The science is compelling. And the longer we wait, the harder the problem will be to solve’

(Senator, John Kerry)

Thank you