Towards improved water use and management within the framework of climate-smart agriculture: prospect for smallholder farmers

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Water resource

- Water availability & use in agriculture
  - Water is very essential resource for agricultural production
  - Agriculture is the current most user of fresh water
    - In South Africa, agriculture uses almost 60% of available water
    - Globally, approx. 70% of available water is used for agriculture
  - Availability of water for agriculture is however getting limited
This is due to:

- increasing water consumption,
- low levels of water resources replenishment and the
- impact of external factors (i.e. climate change)

Global water demand: Baseline scenario, 2000 and 2050 (OECD 2012)
External factors....

- Climate change
  - Undeniable impacts on water cycle for agriculture:
    - Direct effect - precipitation and evaporation cycle
    - Indirect effect - migration and changing patterns of consumption

Source: FAO, 2013
### Moving forward.....

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<tr>
<th>Practicing climate-smart agriculture is essential (i.e. AWM Technologies)</th>
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<td>o Reducing vulnerability to climate change through addressing water drivers</td>
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<td>✓ <em>Water use efficiency, conservation, waste prevention and less water-intensive crop option</em></td>
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<td>o Framework for smallholder farmers is being developed</td>
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<th>Why Smallholder Farmers?</th>
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<td>o Vulnerability</td>
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<tr>
<td>✓ Already climatically stressed - They dwell at semi-arid region - approximately 450 mm annual mean rainfall</td>
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<td>✓ Rely on rain-fed production system</td>
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<td>o Potential and opportunities</td>
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<td>✓ Gradually moving into irrigation agriculture through Land and water reform</td>
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<td>✓ According to policy, there are commercial farmers of tomorrow</td>
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Identified water smart technologies applicable at farm level

- Efficient irrigation technologies to reduce evaporation losses
- On-farm water storage
- Deficit and supplementary irrigation
- Crop varieties - drought resistance
The adaptability of smallholder farmers to cope with water shortage in semi-arid zones is possible, but it requires that certain barriers or limitations be overcome. Scaling-up still a challenge.
Conclusion

- Given the fact that major impact of climate change on agriculture results from its effect on water cycle;
  
  ✓ It is essential that potential responses to climate change that integrate crop and water management practices be in the forefront of adaptation approach for smallholder farmers in semi-arid.

  ✓ However, there has been very little work systematically evaluating the effectiveness, impacts, costs and benefits of these programs.
THANK YOU