

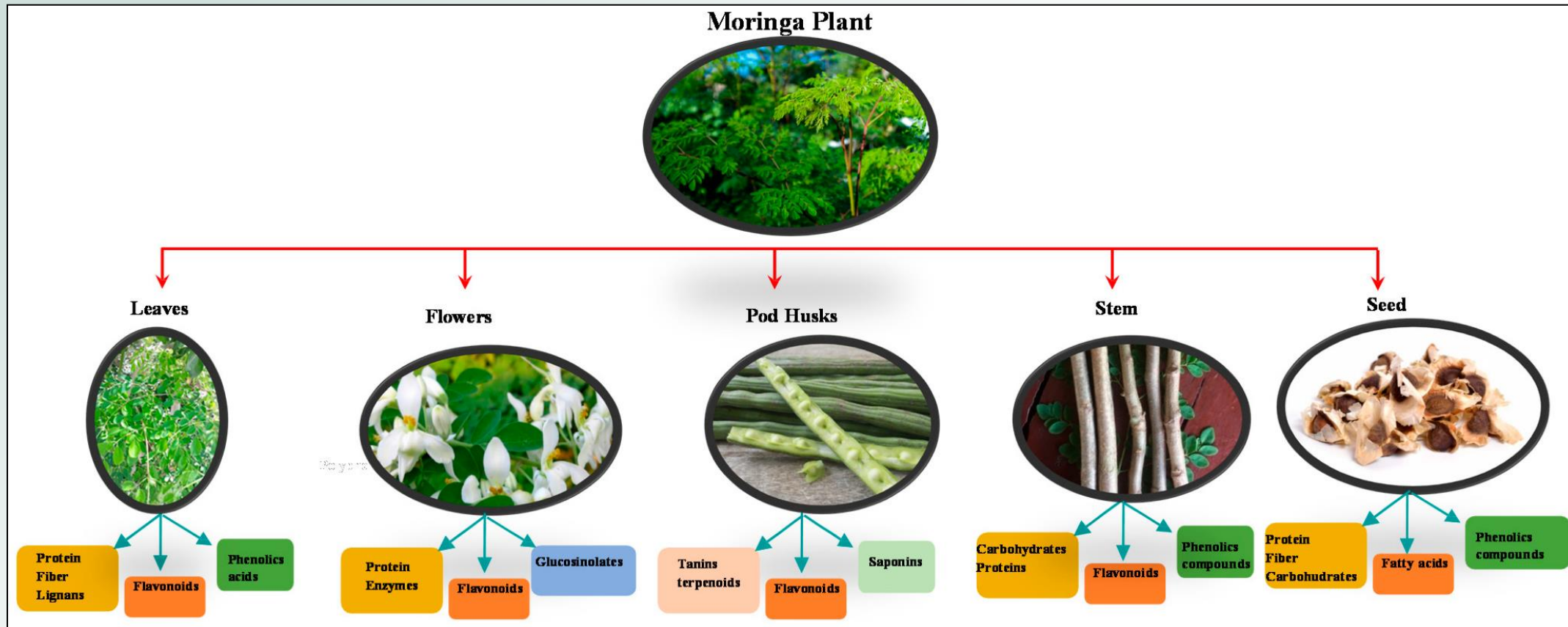
Analyzing food, energy, and water uses of a multifunctional tree: A case of Moringa

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Agricultural Research Council – Natural Resources and Engineering



Moringa oleifera multi-purpose uses



- High nutritional and medicinal properties

Research Question No 1

What are the implications of different management practices on Moringa water use?



Production systems



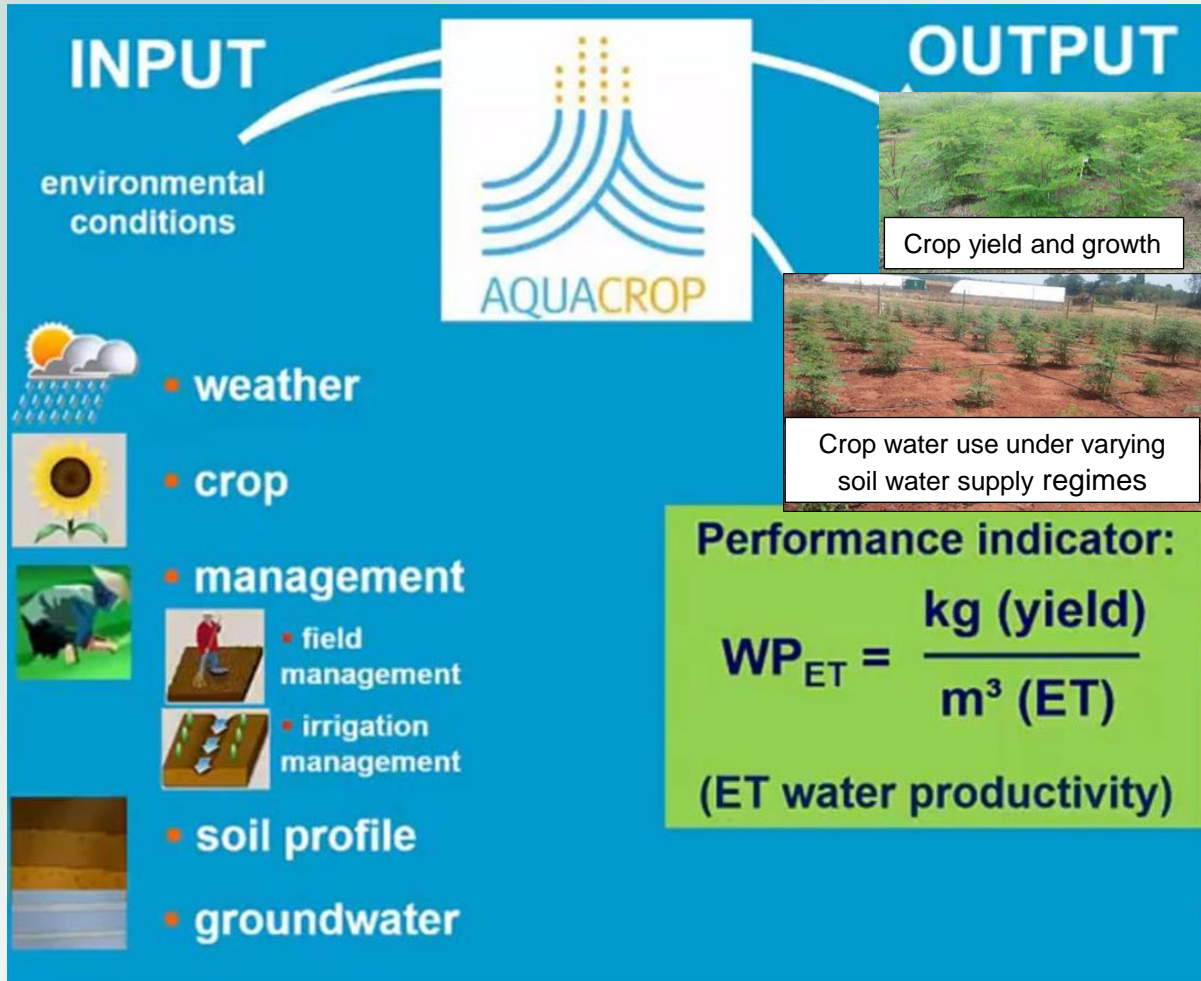
Leaf harvest strategies



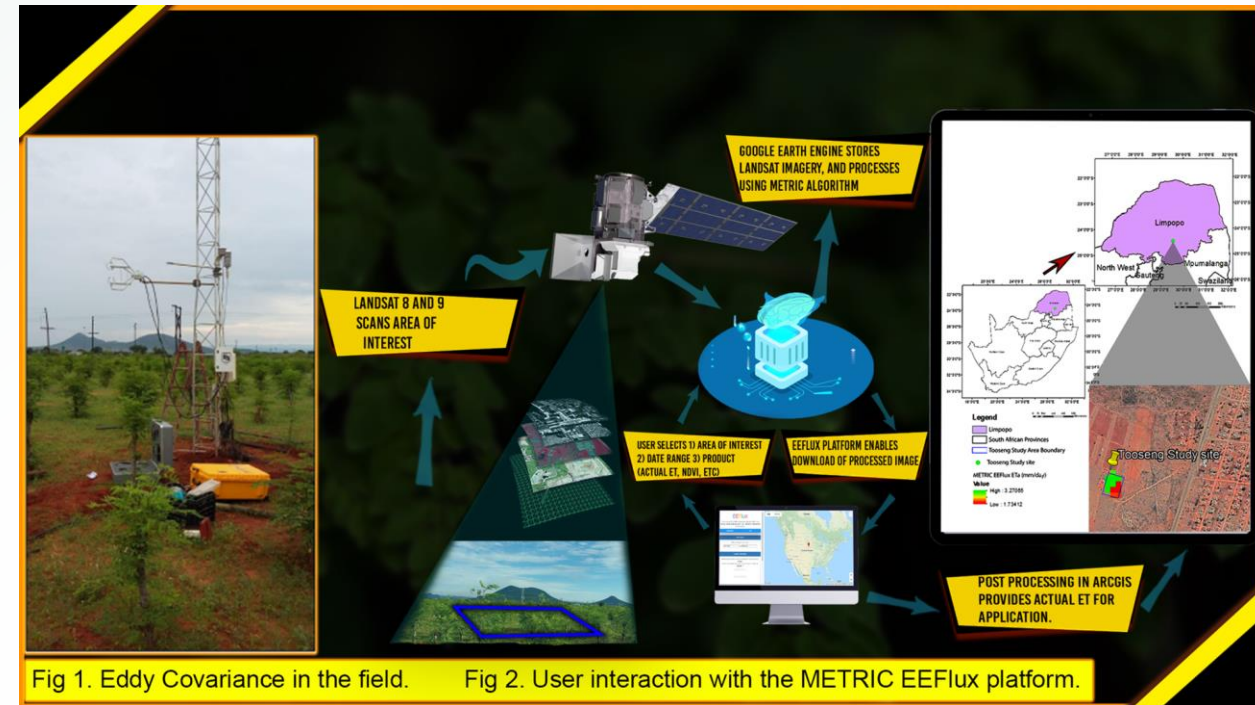
Soil & water conservation

Crop Modelling

Soil Water Balance Model



Remote Sensing Model



Conclusions and Recommendations

- Moringa fresh and dry yield were the highest at 60% depletion from FC. Seasonal ET on the other hand remained practically unchanged across the various water supply regimes investigated;
- This resulted in the highest water productivity under low irrigation;
- Moringa was sensitive to severe drought imposed under rainfed conditions;
- The nutritional content of the crop was generally not affected by deficit irrigation. This confirms the drought tolerance of the crop;
- There were unnoticeable differences in crop water use between narrow (1.0m x 1.0m) and wide (1.0m x 1.5m) tree spacing. However, tree yield was noticeably higher under wider spacing;
- Leaf stripping every 60 days proved the most beneficial to attain maximum yield of Moringa. This leaf harvest strategy also resulted in the least amount of water used by the crop;
- The AquaCrop model was successfully calibrated and validated to predict Moringa crop productivity and water consumption under varying water supply regimes. This tool can help Moringa growers manage their irrigation scheduling in order to attain maximum productivity with limited water supply.

Acknowledgements



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