Sustainable management of salt-affected soils

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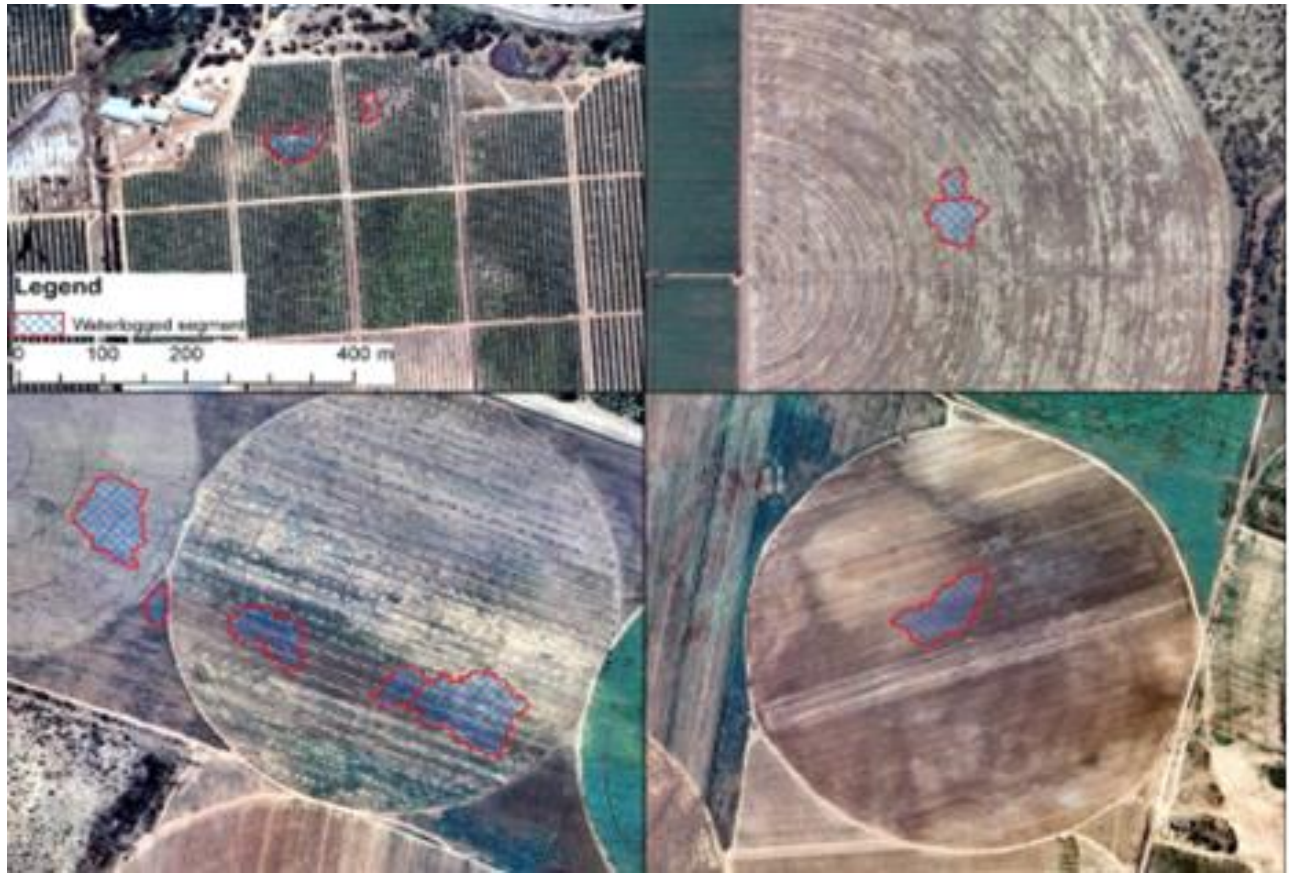
The FAO defines *sustainable* development as "the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations”

The World Summit for Sustainable Development held in Johannesburg in 2002 states that sustainable development is built on three interdependent and mutually re-enforcing pillars (i) economic development, (ii) social development and (iii) environmental protection


SUSTAINABILITY
Sustainable development is development that meets the needs of the present without compromising the needs of future generations to meet their own needs
Brundtland (1987)

Salt-affected soil and waterlogging, along with other degradation processes, have not only caused the collapse of irrigation-based societies in the past, but are indeed threating the viability of irrigation at present



Daniel Hillel, 2012 World Food Prize Laureate "**It is a disconcerting fact that irrigated farming in very many areas falls far short of achieving its potential. Even more disconcerting is the fact that extensive irrigated areas have undergone deterioration to the point where they have already been abandoned or seem destined to be abandoned. Is the problem intrinsic to the principle of irrigation as such, or merely to the inappropriate practice of it? Must irrigation necessarily become self-destructive sooner or later, or can it be sustained in the long run? "**

Irrigation is Sustainable – at a Cost?

Suitable soils are often intricately interwoven with those with severe salinity and sodicity limitations. For this reason, it must be mandatory for soil surveys and suitability assessments to be undertaken prior to the establishment of any irrigation project.

Sustainable management of salt-affected soils in the developing and developed world

- Salt–affected soil is a common problem of the developing world as well as the developed world. However, the pace to reduce salt affected soil is much slower in the developing world.
- The application of short-term approaches with an unsustainable supply of funds are the major reasons of low success. In contrast, the developed world has focused on long-term and sustainable techniques, and considerable funds per unit area have been allocated to reduce salt-affected soil.
- Approaches like engineering and nutrient use were proven to be unsustainable, while limited breeding and biosaline approaches had little success in the developing countries. In contrast, advanced breeding and genetics tools were implemented in the developed countries to improve the salinity tolerance of different crops with more success.

(Shokat & Großkinsky, 2019)

Conclusion

- The problem is age-old: The artificial application of water to the land has *ipso facto* induced the self-destructive twin phenomena of waterlogging and salt-affected soil.
- Use of best management practices in the management of salt-affected areas will be essential in ensuring sustainability and food security without compromising soil and water quality. The key to salt-affected soil management centers on assessing, managing and monitoring, whereby the efficiency of management options is monitored and assessed, and modifications are made consequently.