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## The interview: ICARDA's Soil Conservation and Land Management Specialist on why dryland soils matter

Submitted by Ejona Bakalli on December 5, 2016



Crop irrigation in India. Photo credit: Hamish Appleby/IWMI.

Claudio Zucca is Senior Soil Conservation and Land Management Specialist at the International Center for Agricultural Research in the Dry Areas (ICARDA). On the occasion of the World Soil Day we interviewed him about his experience as a soil scientist and about the challenges and importance of preserving soils in drylands.

**Dr. Zucca, after your studies in Environmental Sciences you got a PhD in Soil Sciences and you undertook the career of Soil Scientist. What inspired you to study and work with soil and land?**

I was first inspired to study and work with soil and land by their variability in space and time. The complex ecosystems they shelter and support and the way they evolve under management in different environments make soil and land complex and challenging topics. They require interdisciplinary and multi-scale approaches, and demand capacity to integrate analysis tools and information, and different specialists' perspectives. This is the kind of polyhedral scientific challenges that I am looking for in my work.

**You have more than 12 years of experience as a soil researcher. What is the biggest challenge you encountered in your work?**

The biggest challenge I've found is implementing a (R4) development project that is really sustainable. Moving from "desk" project design to "real-world" implementation is always challenging, particularly in the dryland regions where ICARDA works. Besides coping with scarce resources and vulnerable livelihoods one has to operate with diplomacy among local partners and stakeholders, and their different needs and reliabilities, and deal with political instability and with an overall relatively high uncertainty.

**The 5th of December the World Soil Day is celebrated. Can you tell us why it is important to preserve soil in drylands? How does soil contribute to human wellbeing in drylands?**

Conserving the good health of soil is particularly important in drylands, which are scarce in water resources. Healthy soils best capture and store rain water and make it available to crops, sustaining productivity under rainfed conditions. Crop production is more vulnerable to climate variability on degraded and depleted soils, and far more dependent on expensive inputs, making livelihood difficult. In many cases this contributes to land abandonment and migration.

**What are the major factors that pose a threat to soil functioning in drylands?**

Drylands soils are affected by several constraints. However, during millennia drylands communities developed adaptation strategies that enabled them not only to cope with scarcity of water and natural resources, but to develop flourishing civilizations. Think of the Nabateans in southern Jordan. The recent rapid demographic and socio-economic changes led to intensification processes that were not sustainable, causing extensive soil degradation and undermining the soil capacity to perform its productive and ecological functions, including buffering the impacts of climate variability.

**The theme of the World Soil Day for this year will be "Soils and pulses, a symbiosis for life". How can pulses help alleviating soil-related problems in drylands?**

This is a very welcomed initiative. It is a step in the right direction because if it is true that intensification of agricultural production is unavoidable, it has to be sustainable. These leguminous species can play an important role as part of sustainable intensification strategies, improving soil health thanks to their nitrogen-fixation capacity and enhancing food security thanks to their high nutritional values. A new book titled « Soil and Pulses, Symbiosis for Life » has just been launched in the frame of the Global Soil Partnership, a FAO-led initiative supported by ICARDA.

**What are ICARDA and the CGIAR Research Program on Dryland System doing in relation to the growing pulses to protect soils?**

ICARDA and other CGIAR centers acknowledge that the potential to grow pulses in dryland is important. Thanks to our research, the drought and heat tolerance of pulses species have increased in drylands, along with their productivity in dry environments. We provided scientific evidence that in rotation and intercropping with cereals they can contribute to increase soil fertility, biodiversity and land productivity in drylands while increasing farm income. Research is needed however to

develop specific “technology packages” that are adapted to the complex and highly variable socio-ecological contexts of the dryland regions and that integrate the cropping system with the farming and tillage systems. Our goal is to fill the knowledge gaps in order to protect the future of these regions.

Thank you very much Claudio, and Happy World Soil Day everyone!

**About the author**

Ejona Bakalli is the Science Communications and Knowledge Management intern at the CGIAR Research Program on Dryland Systems.

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