Final Evaluation Report

Your Details	
Full Name	Jorge Martin Requena Serra
Project Title	Spatial Variability of Water Table and Salt Dynamics Associated with Forest Remnants in Agricultural Landscapes of Dry Chaco Plains
Application ID	27754-1
Date of this Report	28/09/2022

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
We will study key indicators of water fluxes to determine hydrological changes: infiltration, hydraulic conductivity, evapotranspiration, soil water content and water table level.			■	Samples of these indicators were taken along the transition zones between remnants of forest and crops. This provided us with information about the function of the remnants in maintaining the functioning and regulation of the ecosystem, mitigating the influence of the surrounding land use.
Salt dynamics will be described, evaluating concentration, depth of ion chloride washing in the soil profile and recharge rate of the water table.			■	Samples of these indicators were taken along the transition zones between remnants of forest and crops. This provided us with information about the function of the remnants in maintaining the functioning and regulation of the ecosystem, mitigating the influence of the surrounding land use.
Evaluation of Land-use changes likely possess temporal and spatial decoupling between actions and effects, and for this reason, changes in groundwater depth and soil salinisation are not considered by decision makers.		■		Some farmers were interviewed through the Likert survey method. With the aim of filling these critical knowledge gaps about the value of forest ecosystem services to farmers. Unfortunately, due to the pandemic, it was not possible to continue the interviews, for example: management preferences, worldviews and perspectives of producers and decision makers in general. Interrupted by the pandemic.

2. Describe the three most important outcomes of your project.

a) Valuable information on the variations of the water table in native forests and crops.

b) The distribution of salts and carbon in the soil profile.

c) Information on the value that farmers and decision makers have on the ecosystem services of forest remnants.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

There were really many unforeseen events, but the main ones were that the laboratory that was going to analyse the soil samples (moisture, carbon, salinity, etc.) was not available, so I had to personally carry out all the laboratory analyses in the soil science department from the National University of Tucumán, which took too much time and extra resources. Later the pandemic came, and I could not go out to the field to take more samples or meet with farmers, so my work was somewhat interrupted. In any case, the objectives were achieved.

4. Describe the involvement of local communities and how they have benefitted from the project.

Exposing and sharing the results of the investigations helped local farmers and producers to understand the contribution of the remnants of forests to the regulation of water and saline in the soil.

5. Are there any plans to continue this work?

Not for the moment.

6. How do you plan to share the results of your work with others?

A poster was published at the Argentine Ecology Meeting held in 2021. Name of the work: Water dynamics in the forest-crop transition zone in the Dry Chaco. Which won the contest for best work on Anthropocene issues. Now, the paper is in the process of being written.

7. Looking ahead, what do you feel are the important next steps?

I would like to complete the publication of the paper and continue with the doctoral studies on these topics.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, the Rufford Foundation logo was always used, both the publication in congresses and my presentations to the public.

9. Provide a full list of all the members of your team and their role in the project.

During fieldwork I received help from **José Tisone**, a technician from National Research Council (CONICET) and field assistant. José is a park ranger and has got plenty of experience in Dry Chaco fieldwork.
For the laboratory work I received the help of the personal laboratory of the Instituto de Investigación Animal Del Chaco Semiárido - Instituto Nacional de Tecnología Agropecuaria (IIACS - INTA) located in Leales - Tucumán commanded for **Dra.**

Natalia Banegas. For the specific laboratory work I received help from **Enrique Oviedo**, who belongs to INTA, is a laboratory technique and has a lot of experience in soil analysis.

For the analyses and interpretation of the results, I received help from academics and field biologists of my institution who have been working in the Chaco during the last decade:

Dr. Roxana Aragón. Skills: Ecohydrology, Remote Sensing, Community Ecology. Instituto de Ecología Regional (IER) – Tucumán, Argentina.

Dr. Raul Giménez. Skills: Ecohydrology, Soil Science, Salts Dynamics, Remote Sensing. Instituto de Matemática Aplicada de San Luis – IMASL and Universidad de Buenos Aires – UBA.

Dr. Cecilia Díaz. Skills: Biostatistics and crop analysis. Universidad Nacional de Tucumán.

M.Sc. Agustin Sanzano. Skills: Soil Science, Cartography, Fieldwork Techniques. Director of Soil Science Department - Estación Experimental Obispo Colombres (EEAOC) and Professor at Soil Science cathedra in the Universidad Nacional de Tucumán.

10. Any other comments?

I hope to be able to publish the paper early next year, when I finish analysing the producer interviews.

I am very grateful to The Rufford Foundation for all the support, it was very helpful to be able to advance in the search for knowledge on these topics. Thank you very much.