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The Soil-Water-Plant-Human Nexus: A Call for Photographic Review Articles

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Soil and water supply us with the essentials of life, including clean water, healthy edible foods, feed, fiber, shelter, and fuel. Soil also serves as a repository for soil and water are both central components of human culture. The close interactions between soil, water, plants and humans are very important for human health and well-being. This is a call for the submission of original manuscripts on this nexus that uses photographs to communicate how the nexus functions and its importance to humanity. This approach is based on a more photos, less words paradigm to create narrative photographic studies. More studies are needed that focus on different aspects of the soil-water-plant-human (SWPH) nexus. Any combination of the components of the SWPH nexus that includes the human component (e.g., soil-water-human, soil-plant-human, etc.) is welcome as part of this special section. The ultimate goal of these articles is to add to knowledge of the SWPH nexus in a way that incorporates art and culture into our scientific understanding of some of today's major global challenges.

Keywords: Soil and culture; Soil and art; Pollution, Food security;

1. A call for papers

This is a call for the submission of photographic articles that review some of the ways the soil-water-plant-human nexus is important in addressing major challenges that face modern humanity. We know there are many such photographs out there. We see them on posters and in presentations at professional conferences, in teaching materials developed for our students, and other less formal venues, but we see very few of them in the peer-reviewed literature. We began publishing a series of pictorial articles, mainly review articles (El-Ramady et al. 2022a, b), earlier this year. These articles depend heavily on the photographs within them with firm belief in the adage "a picture is worth 1000 words". The special issue will include many photos with explanations of how the show the myriad interactions between the components of the nexus and their impact on our environment and world cultures. **Figures 1-10** are examples that show important interactions between soil, water, plants and humans. Brief explanations are

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provided in the figure captions, but we also allow these photographs to speak for themselves and provide more details about this nexus and how it is important or valuable to humans.

During the last years, our journal "Environment, Biodiversity and Soil Security" (EBSS) has a distinguished strategy. This strategy is changing year by year for more progress. Last year the journal of EBSS opened different calls to receive several short communications in different topics, mainly the hot spots, such as the potential of nanotechnology in environment and agriculture, which included using nano-fertilizers for fruit cracking (El-Ramady et al. 2021a), nano-management in horticulture (El-Ramady et al. 2021b; Seliem et al. 2021; El-Mahrouk et al. 2021), nano-silicon for plant biotic stress (Bayoumi et al. 2021), molecular plant nano-nutrition (Youssef et al. 2021),

Fig. 1. Soil and water are linked to a huge number of human activities. These include the placement of recreational facilities, parks, and gardens. The photos show the flower clock in Vienna (Austria) (upper left), Cleopatra's Pool or Spring of Juba (Siwa, Egypt) (upper right), the water canals and railway transportation in Vienna (Austria) (middle right and left, respectively), Fatnas Island in Siwa Oasis (Egypt) (lower photos). Photos by El-Ramady.

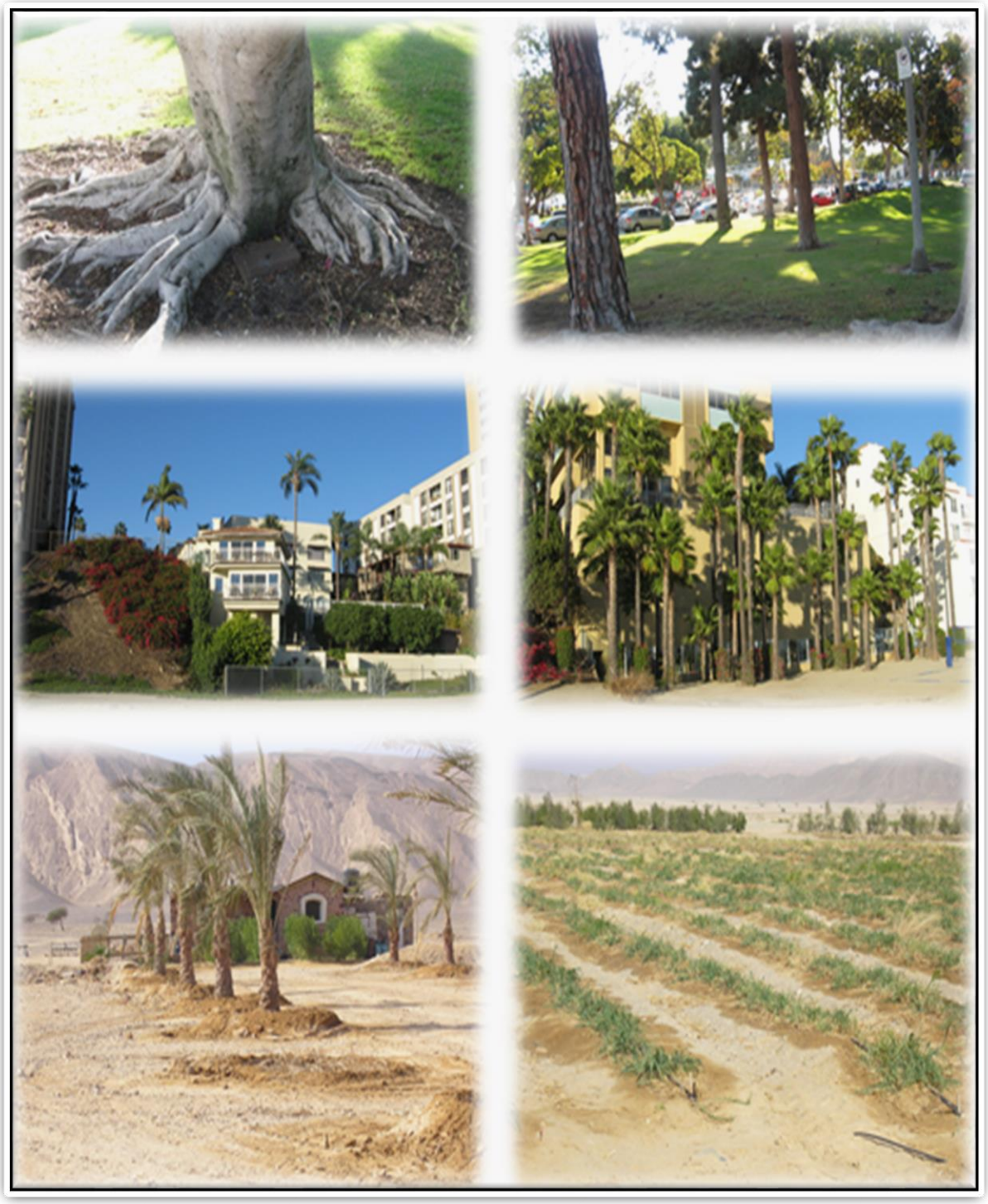

Fig. 2. Soil preserves human culture, as the things we grow in or build on the soil influence its properties and the artifacts preserved in it. Parks (upper photos) and urban development (middle photos) in Long Beach (California, USA). Farm house and crops (lower photos) in Mersa Alam (Red Sea Governorate, Egypt). There is also a clear difference between the cultivated plants in the desert (arid zone) (lower photos) versus the Mediterranean climate of California. Differences in organic matter can be observable in the soil colour and in water content through the differences in plant density. Photos by El-Ramady.

Fig. 3. Plants are one of the main components of an agroecosystem. Plants can be classified in many ways, such as perennial, biennial or annual, grasses, forbs, or woody, medicinal etc. These photos show a variety of plants found in botanical gardens, including medicinal and endangered plants. All rely on soil and water, and most have valuable uses to humans. Photos by El-Ramady from Debrecen, Hungary.

Fig. 4. Sandy soils typically have low fertility and other problems such as low organic matter, high permeability, low soil water retention, low cation exchange capacity, etc. (upper photos and middle right). It is particularly challenging to grow crops in these soils under arid conditions. The cultivation of crops and irrigation can create darker surface colours in the soil due to moisture and the addition of organic matter from crop residues (middle photo left). A major problem when cultivating sandy desert soils is sand blasting of crops by wind, necessitating some type of wind break (lower photos). All photos from the Egyptian desert in Shalateen and Mersa Alam (Red Sea Governorate) by El-Ramady.

Fig. 5. Saline soils represent serious problems for crop production and are common in arid and semi-arid zones. Salinization can be either natural (due to lack of leaching of salts from the soil by rainfall) or anthropogenic due to capillary rise of water and salts following surface irrigation. It is important to irrigate saline soils using surface irrigation and high quality (low salt content) water to leach accumulated salts from the surface soil horizon(s). Flood irrigation must be conducted periodically in these soils. All photos from the Kafrelsheikh University Experimental Farm (Egypt) by El-Ramady.

Fig. 6. Water is essential to life, including the cultivation of plants in soil. The artificial lakes or ponds can also create important habitat for birds like ducks and fish. Photos from Debrecen, Hungary and Vienna, Austria. Photos by El-Ramady.

Fig. 7. Waterlogged soil are a common problem in many regions of the world. Waterlogging may be caused by a high-water table such as at Siwa oasis (upper photos) or in soils that have high clay content or otherwise restrict water movement through them as in Kafr El-Sheikh (middle photos). Paddy rice cultivation leads to the anthropogenic creation of a water restrictive soil layer to perch water in the paddy as seen here in Kafr El-Sheikh, (Egypt) (lower photos). Water is a vital component in agricultural production, but water in the right proportions is critical. Too high or too low could constrain the growth of cultivated plants. Photos by El-Ramady.

Fig. 8. The dropping of leaves from deciduous trees in autumn is a common natural phenomenon (upper photos). Falling litter can be collected to produce compost (the middle and lower photos) that can be used in vegetable production for human nutrition or to grow ornamentals to create pleasant settings, also important for human health. Composting to reuse or recycle nutrients is an important aspect of developing sustainable systems. All photos from Debrecen (Hungary) by El-Ramady.

Fig. 9. Both conventional and organic agricultural production has been extensively studied. These photos show organic production of tomato, maize and strawberry in Bari, Italy. Photos by El-Ramady.

Fig. 10. The production of vegetables and fruits under greenhouse conditions (upper photos) can save a massive amount of production space as compared to open field production. Vegetables and fruits production creates fresh foods that are important to human health (lower three rows of photos). All photos from Italy by Zakaria Fawzy.

2. Instructions for the creation and submission of a photographic article

Photographs should be used as the primary conveyors of information in these publications. Authors should have the right to utilize the photos used. Most often this will mean photos taken by the author(s), but it may also include photos that are open access and tell an important soil-water-plant-human nexus story. It is incumbent on the author(s) to insure they have permission for photo use. The photos utilized should be suitable in relation to the text and clearly link soils and humans to at least one other aspect of the soil-water-plant-human nexus, not be ambiguous regarding the nexus. **Fig. 11** has beautiful photos, but they are not suitable when discussing links between soil and humans. Messages may be edited into the photos as shown in **Fig.**

12. Manuscripts can be submitted through the Environment, Biodiversity & Soil Security website at https://jenvbs.journals.ekb.eg/.Additional guidelines for manuscript preparation can also be found there.

Fig. 11. The nexus among humans, soil and water has a very strong link to human activities, which include the siting of recreational facilities. These photos show people enjoying the wonderful beaches in Marsa Matrouh, Egypt (about 300 km south from Alexandria). However, the soil water link in these photos is not clear. Photos by El-Ramady.

The creation in used photos could be achieved when we need to send a message through these photos (**Fig. 12)**. Photo may express or carry an important message from the work like how to save our natural resources including soil, water, and plant for next generations. So,

it could apply some messages by editing some words on used photos. We can notice also that used trees in the photo have not leaves as a symbol of the severe and intensive use these trees by humans without any considerations to conservation of the nature, even this picture was taken during winter, and they are deciduous trees. Photos may be edited with words or other symbols that help convey the intended message, as presented in **Fig. 12**.

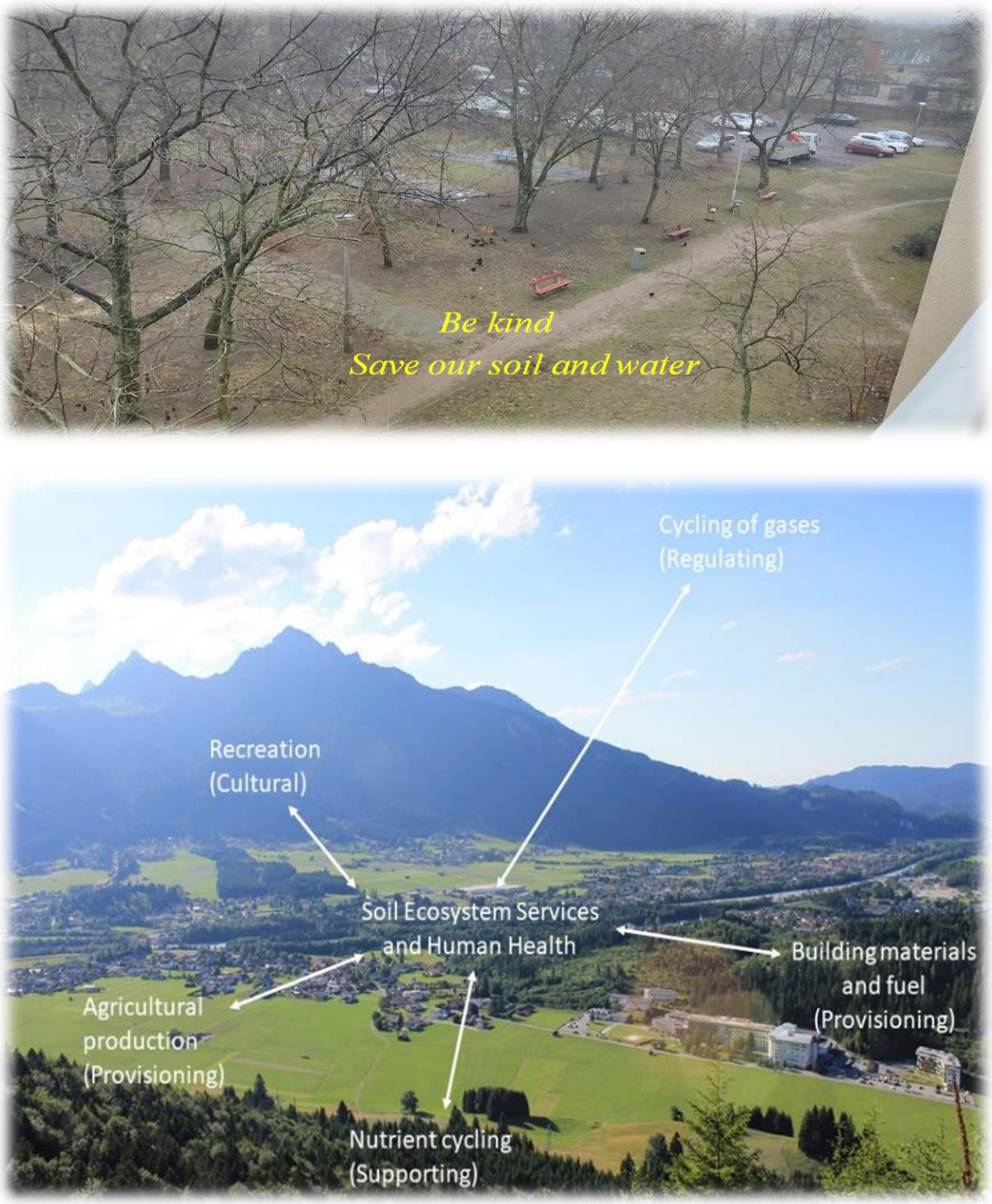

Fig. 12. Photos may be edited with words or other symbols that help convey the intended message. Top photo by Abdou El-Ramady, bottom photo by Brevik.

3. Areas of study

The nexus among soil, water, plants and humans has virtually unlimited possibilities. Several directions of study are possible, such as but not limited to:

1- Environmental pollution and the interaction between soil, water, plants, and human health (e.g., Calderón et al. 2022; Zhang et al. 2022; Ahmad et al. 2022).

2- The distribution of nutrients or other materials within the water-soil-plant system and their impacts on human health, such as selenium (e.g., Lyu et al. 2022), radioactive materials (e.g., Ahmed et al. 2022), and arsenic (e.g., Singh et al. 2022).

3- Links between human culture and the soil-water-plant system (e.g., Patzel et al. 2022).

4- Ecological studies on the naturally occurring elements that may be present in toxic forms and their distribution in agroecosystems or other settings that may impact humans (e.g., Milena et al. 2022).

5- Environmental safety and human health concerns due to pollution of the water-soil-forage-livestock agroecosystem (e.g., Ghazzal et al. 2022).

6- Studies on the impacts of natural crises on the soil-water-plant-human nexus such as flood risks (e.g., Boldrin et al. 2022).

7- The role of global soil science education in address the soil – water – climate change nexus (Koriem et al. 2022).

These are just a few examples. Studies on all aspects of the soil-water-plant-human nexus are welcomed and the journal editorial board looks forward to seeing the ideas put forth by our readers.

4. Conclusions

There are many methods available to present the results of scientific research. These include peer-reviewed journal articles and book chapters that rely heavily on test, tables, and figures (which may be photographic or other forms). With the enormous progress in modern knowledge, it is difficult for humans to take in everything around us. Photos can summarize information for us such that one photo is worth 1000 words, or even more. This is a call for readers to submit manuscripts using photos from their personal collections to investigate and communicate the crucial nexus among soil, water, plants and humans. There is no human life without soil, water, and plants!

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