Soil Fertility in Jericho and Al-Auja

Fact Sheet

1. Introduction

Soil Fertility is defined as the quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants or crops (Hartemink, 2006). According to (PCBS, 2010) the Palestinian soil in general is exposed to many of the human agriculture and industrial activities, which have negative effects on the fertility of soil and land.

2. Land Degradation in Jericho and Al-Auja:

The total amount of soil under active ongoing land degradation for the period (2000-2010) was 38% of Jericho area (23 km^2) and only 7% of Al Auja area (7 km^2) (Urban & Rural Physical Planning Department, 2013).

Soils are degraded in Jericho and Al-Auja as a result of many factors, including soil erosion and salinization. Two categories of soil deterioration process are in Jericho and Al Auja; these are displacement of soil material (e.g., soil erosion by water and wind), and in-situ soil deterioration, covering chemical and physical soil degradation. These causes can be divided into anthropogenic (man-made) and non-anthropogenic (natural causes). The natural causes include climatic change (rainfall and temperature); it is necessary to mention here that the amount of land under the effect of aridity on the vegetation density for the period (2000-2010) was 32% of Jericho area (19 km^2) and 31% of Al-Auja area (33 km^2) (Urban & Rural Physical Planning Department, 2013).

Incorrect agriculture management, such as scarcity of water, uncontrolled domestic and industrial dumping sites, and the heavy usage of fertilizers are the main in-situ soil deterioration causes in the Jericho and Al-Auja.

In general the most prominent issues facing soil in Palestine is the extensive use of fertilizers and pesticides. Because of the large increase in population and the narrow of agriculture area, people have to use fertilizers and pesticides to increase the productivity of agriculture land; in the West Bank the annual rate of use agriculture fertilizers reached 30,000 tons of chemical fertilizers and manures, and the annual rate of use of pesticides reached to 502.7 tons, consisting of about 123 types; 14 of them are internationally banned for health reasons (PCBS, 2010). Also, it is necessary to mention here that in the Agriculture Season (2007/2008) in Jericho and Al-Aghwar the total costs of fertilizers was 4,569 (1000 USD$), and for pesticides was 2,997 (1000 USD$), which represents 28% and 18.5% from the total costs of plants intermediate consumption in Jericho and Al-Aghwar governorate (PCBS, 2009). Fertilizers and pesticides accumulated in the soil filter downwards and may reach the groundwater table (ARIJ, 1997).

The soil in Jericho and Al Auja is sandy, high in salinity, and low in clay and organic matter (SWITCH, 2006). The concentration of salts in the Jordan River has reached 5,000 ppm; while it did not exceed 600 ppm in 1925. The concentration of chloride has increased from 24 mg/l to 1,365 mg/l in Jericho and Al-Aghwar Governorate during the past 20 years (PCBS, 2010).

Jericho and Al-Auja as a part of the Jordan valley is intensive-production agriculture area, and its witnessing diversification in agriculture production from citrus and banana to date palm, grapes, herbs and vegetables (EQA & UNCCD, 2012).The production of fruits and vegetables, which is heavily dependent on irrigation in the Jordan Valley due to the arid climate conditions. However, poor water quality, insufficient or lack of soil leaching and drainage and inappropriate nutrient management such as: overuse and abuse of fertilizers, have resulted in the accumulation of some nutrients in the root zones (Ammari, 2011).

Water and soil salinity are continuously increasing due to the fact that soil leaching treatments are not often enough applied. Intensive agriculture techniques, while increasing short term production have negatively affected environment, the intensive usage of pesticides, especially methyl bromide for soil fumigation, has had negative effects on human, the environment in general, the ecological balance of soil profile and groundwater. Also, the increasing quantities of general solid wastes resulting from the extensive usage of soil plastic mulches, tunnels and plastic houses, have negative effects on the environment and livestock. Residues of plastic left in the fields may also hinder soil quality (Isaac*, et al.*, 1995).

The outcome or symptom of desertification in Arid area such as Jericho and Al-Aghwar is land degradation, and its driving forces are climate variation and human activities (del Barrio*, et al.*, 2010). According to the previous Jericho and Al-Aghwar lands suffer from desertification consequences, and the major impacts of desertification, land degradation and drought in the Jericho and Al-Auja in general are the following:

- Increased soil erosion and loss.
- Decrease in soil fertility and productivity.
- Less food and feed production and increased food insecurity mainly in marginal areas and among vulnerable groups.
- Less income and more costs of economic activities mainly livestock and agriculture.
- Fewer jobs, increased poverty, and immigration.

On the other hand the Israeli Occupation exacerbates soil degradation in Jericho and Al-Auja, by confiscating land and closing large swaths of land. The successive Israeli governments encouraged the Israeli settlers to live in the Jordan Valley settlements. More than that, the Israeli occupation authorities encouraged them to cultivate the agriculture lands adjacent to their settlements in attempt to de facto capturing these lands and annexing them to the settlements in the area. To date, the area of agriculture lands that were seized by Israeli settlers in the Eastern Segregation Zone is 64,000 dunums – 64 km^2 (7.4% of the total area of the agriculture lands in

the Eastern Segregation Zone which amounts to "864 km^2) and 3.9 % of the total area of the Eastern Zone; meanwhile the Palestinian residents of the area had been deprived from their legitimate right to exploit and cultivate their lands that were forcibly confiscated from them (ARIJ & LRC, 2012).

Israel has confiscated 2,257 dunums (2.1% of the Al Auja area) (ARIJ, 2012a), and 83 dunums in Jericho (ARIJ, 2012b) in order to build settlements and to construct bypass roads to connect neighborhood settlements to one another.

After meeting with the representatives of local farmers, governmental organizations, and private institutions and cooperative societies from Jericho and Al Auja, it was found that there were laboratories to analyze soil fertility, and irrigation water quality in Jericho and Al-Aghwar governorate, but nowadays there is a lack of laboratories and the famers need to travel to another governorate to analyze their soil samples, which need about a month to be ready.

3. References

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