

# Preliminary surveys of natural plant species tolerant to severe salinity on the Al-Jabbul Lake banks



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## INTRODUCTION

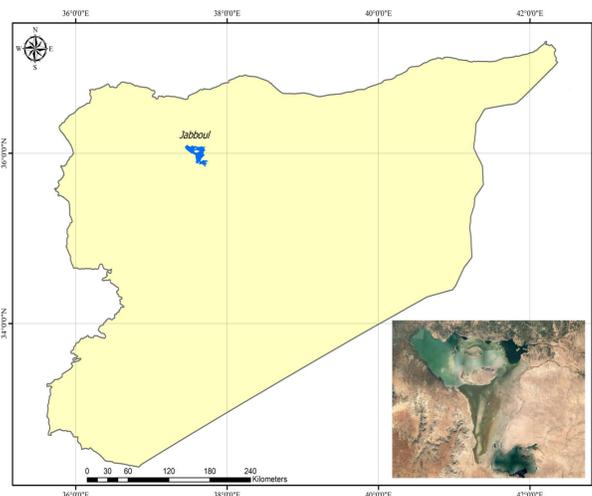
Salinity is one of the most important environmental stresses that threatens the agricultural production in arid and semi-arid areas, which negatively affects plant biodiversity (Ghazanfar et al, 1995), furthermore, the biological method of saline soils reclamation comes to the fore especially in conditions of water scarcity, and becomes the vital solution for reclaiming of saline soils in arid and semi-arid areas (Kamel, 2001). Some studies indicated that the tolerance of some plants to salinity is not related to the concentration of sodium ions  $Na^+$  in the leaves, which confirms the presence of different tolerance levels at cells and plant tissues. The endurance efficiency depends on the nature of the distribution of salt ions between the different parts of the plant, and their storage in the vacuoles (James et al, 2002).

The importance of this study, which aims to detect and investigate high salinity-tolerant plant species that reach the salinity of sea water on the banks of al-Jabbul Lake, in order to draw attention to the importance of these species and their exploitation in sustainable development programs due to their various benefits as well as preserving and protecting them from greedy investment, overgrazing or Woodcutting, as well as developing proposals that contribute to the preservation and protection of these species from various dangers. In addition to the urgent need to conduct research on salt-tolerant plant species.

## METHODOLOGY

Depending on Field survey and reviewing of different references, severe salinity tolerant plant species ( $> 35$  dS/m) were classified, taking in consideration the following factors:

- The taxonomic status of the species, the scientific name according to the genus and families
- Botanical description of these species, leaves, flowers, fruits, and flowering date.
- The use of each of these types.



**Fig 1** Sabkhat (saline lake in Arabic) Al-Jabbul in the North of Syria

## RESULTS & DISCUSSION



**Fig 2.** Natural Plants toletrent to severe salinity surveyed on the study area of the Sabkhat Al-Jabbul Lake banks. (Source, Authors)

The survey of the study area lead to find the following severe salinity tolerant plant species in the bank of Al-Jabbul Lake (Fig 2):

1 - *Aloe vera* (L) *Burm. F.* family *Aloaceae*:

A perennial succulent plant, green color, with upright stems, up to 1 m high. , it can be used for installation of cosmetic and medical preparations.

2 - *Aeluropus littoralis* (Gouan) *Pari* family

*Gramineae*: A perennial herb, recumbent, with aerial stems or rhizomes, in addition to a bunch of hollow stems filled with nodes, and upright flowering stems, up to 20 cm long, it has very high quality as forage for grazing.

3 - *Juncus subulatus*, *Forsk* family *Juncaceae*:

A perennial cylindrical plant, with a strong dark green color, gathered in bunches, smooth, with a creeping upright aerial stem (rhizome), the stems pointy, up to 1.5 cm high, it is used in folk medicine and has multiple industrial uses.

4 - *Arthrocnemum glaucum*, (Del.) *Ung-*

*Sternb* family *Chenopodiaceae*: Succulent shrub, articulated, many branches, up to 80 cm high. The flowers are bisexual, in groups with two or three flowers on the axillary scales of the spikes that resemble a sitting pine, it has medicinal uses, and is also used in the soap industry.

5 - *Seidlitzia rosmarinus* (Ehr.) *Bge* family

*Chenopodiaceae*: Low, smooth shrub, up to 60 cm high. Stems densely branched from a woody base. The lower nodes have longer distances than the upper ones, it has a low feed value, has medicinal uses and in cleaning clothes.

6 - *Salicornia strobilacea* *Pall* family

*Chenopodiaceae*: Bare dwarf shrub, fleshy branches, 20-50 cm long, stems upward to erect, many branching, internodes short, thick,

cylindrical, ending with two opposite leaves, it has nutrition properties and low pastoral value.

7 - *Gressa cretica* *L* family *Convolvulaceae*: Short perennial herb, up to 20 cm high, upright or sprawling, pubescent stems branched from above, it has multiple uses in folk medicine.

8 - *Launaea nudicaulis* (L.) *Hook. F* Family *Compositae*: Perennial plant, up to 60 cm high. The leg is straight or recumbent, branching bilaterally in sequence and branching upwards. Leaves are pink, 3-17 cm long, 2-3 cm wide, it has various medicinal and food uses.

9 - *Pulicaria nuloides* (Poir.) *DC* Family *Compositae*: Perennial, branched, bushy herb, extending up to 50 cm, has medicinal uses as an herbal tea, and is also used as a rash remover.

10 - *Fagonia bruguieri* *DC* Family *Zygophyllaceae*: Perennial, woody, green, with glandular or bare pubescence, 10-30 cm tall. It can be used in folk medicine and as spice.

There are three characteristics of these plants that make them able to tolerate dissolved salts:

**Juiciness:** It means its ability to retain a large amount of water in its stems and leaves, and this phenomenon can be explained by the attempt of these plants to dilute the cellular juice, whose concentration increases due to the absorption of chlorides.

**Secretion of salts:** Some halophytic plants secrete salts through saline glands located on their leaves or stems, and within these glands there are a number of active cells work to pump the concentrated saline solution from the plant cells to the outside. Such as *Aeluropus littoralis* (Gouan) *Pari*, *Juncus subulatus* *Forsk*, *Gressa cretica* *L*.

**Elimination of some parts of the plant:** a phenomenon of partial death for the continuation of life, and the reason for this phenomenon is the concentration of salts in some parts of the plant throughout the growing season, when the concentration of salts reaches the critical level, parts of the plant die and fall off, removing large amount of salt. (Bitanuni,,K. 1986).

## CONCLUSIONS

The region is rich in distinct species of salt-tolerant plants to varying rates. Tolerant species to severe salinity have many uses as nutritional, fodder, medical or industrial, as well as can be used in ornamental gardens. The importance of these types comes from the fact that they can be grown on saline lands outside the scope of agricultural investment, to benefit from them and receive an economic return through the multiple benefits of these plant.

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