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Studying of Tamarix growth in the desert and use for animal feed

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Abstract

Seed germination and seedling growth are critical and vital stages of this plant's growth. For this purpose, seed germination and seedling growth at different levels of osmotic potential (caused by the use of sodium chloride) and temperature were carried out in a randomized complete block design around the greenhouse of Semnan University. The secret of the tooth-like model the results of this study showed that the highest tolerance of this plant's seeds to extreme salinity concentrations was observed during germination at a temperature of 15 ° C. So that at a temperature of 25 ° C, the germination percentage at extreme salinity concentrations of -2.8 and -3.2 MPa was 22 and 68 percent, respectively. The seeds of this plant are capable of germination in a wide temperature range (from 1 to 45 °C). These findings can be useful in interpreting the ecological and physiological responses of Tamarix seed germination, in improving the tolerance of seed germination to salinity stress under desert and water deficit conditions, and in increasing the chances of successful establishment in desert ecosystems with water stress. The root system in Tamarix The drier the environment, the greater the tendency for increased root development and reduced crown development. In annual plants, dry root zones may comprise 30-40% of the total dry matter of the plant, while this proportion may reach 90% in perennial desert species of Tamarix**.**

In addition, Tamarix aphylla is a fast-growing, evergreen tree that grows in most soils and tolerates saline conditions. Despite its ecological importance and good distribution in the central and southern regions of Semnan and Iran, the characteristics of the wood of this species have received less attention. However, recently, the use of this species for cellulose industries in dry regions of the Middle East has received attention. Therefore, in order to determine the anatomical, physical and chemical characteristics of Tamarix aphylla wood, three healthy trees located in Semnan province were randomly selected. The anatomical characteristics of the wood and leaves of this species were determined accurately based on the list of microscopic characteristics for the identification of broadleaves of the International Association of Wood Anatomists.

Keywords:

Tamarix wood, water tolerance, medicin properties.

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Properties of the Gaz Tree

The tamarix tree (Persian language, Gaz tree) is a native tree of Iran that has long been familiar to the people of this hot and dry climate and has discovered its medicinal properties. The bark of the above tree contains gallic acid, which is in the category of phenolic compounds, and its leaves contain a substance called squalene, both of which have many benefits for the body. In terms of traditional medicine, the Gaz tree has a warm and dry nature, and its use in this medicine is recommended for some diseases. The most important medicinal properties of this tree include the following:

A mixture of Gaz tree bark and cinnamon is very effective for treating severe coughs. To do this, combine the two together, then pour water over it and let it brew. After brewing, it is ready to serve and treat your coughs with this tea.

Another medicinal use of this shrub is to treat stomach pain. To do this, brew some of the bark of this tree and consume it to relieve your stomach ache.

To strengthen your teeth, you can savour this plant in your mouth for a short time.

For people suffering from jaundice, a decoction of the gaz tree is recommended.

Another property of the gaz tree is to prevent the secretion of sperm, for this purpose, you should brew its bark with cinnamon and drink it.

The tea of this plant is very useful for people with blood disorders.

People suffering from diarrhea can treat their diarrhea by consuming gaz tree tea. For this purpose, mix 8 grams of its bark with 300 cc of boiling water and brew it over the steam of a kettle. Drink three cups of this tea daily until you recover completely.

This plant contains a very useful gum, the gum of which is used to stop bleeding.

Another property of this shrub is to treat scars caused by burns. To do this, apply the ash of this tree to the burn wounds until the burn site is completely healed.

To relieve toothache, crush the bark of the gaz tree, mix it with vinegar, and then swish it in your mouth until your toothache is relieved. This combination also treats gum infection and eliminates the stench caused by the infection.

To relieve hemorrhoids, it is recommended to consume a tea of the bark of this tree in combination with cinnamon.

To improve phlegm, consume the above herbal tea until complete recovery.

Combining the bark of the gaz tree with mastic is useful for improving the liver and spleen. For this purpose, make a tea of the combination of the two and drink it.

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The gaz tree is one of the few trees that grows abundantly in hot and dry climates of desert areas; therefore, the residents of these areas consider the existence of this tree a blessing and use its leaves, gum, bark, and trunk for various purposes. Timber obtained from the sycamore tree has been used for fencing and house building since ancient times. Also, sycamore wood chips are combined alone or with other wood chips to obtain sycamore wood chips. In mountainous areas, the tall and thick trunks of this shrub are used to roof barns and stables, vine scaffolding, gates, etc. Today, to produce various types of industrial wood such as chipboard, sycamore wood is combined with other forest woods to obtain a strong and economical wood board and to produce various types of wooden products with high quality, high strength and long durability.

Industrial uses of the gaz tree

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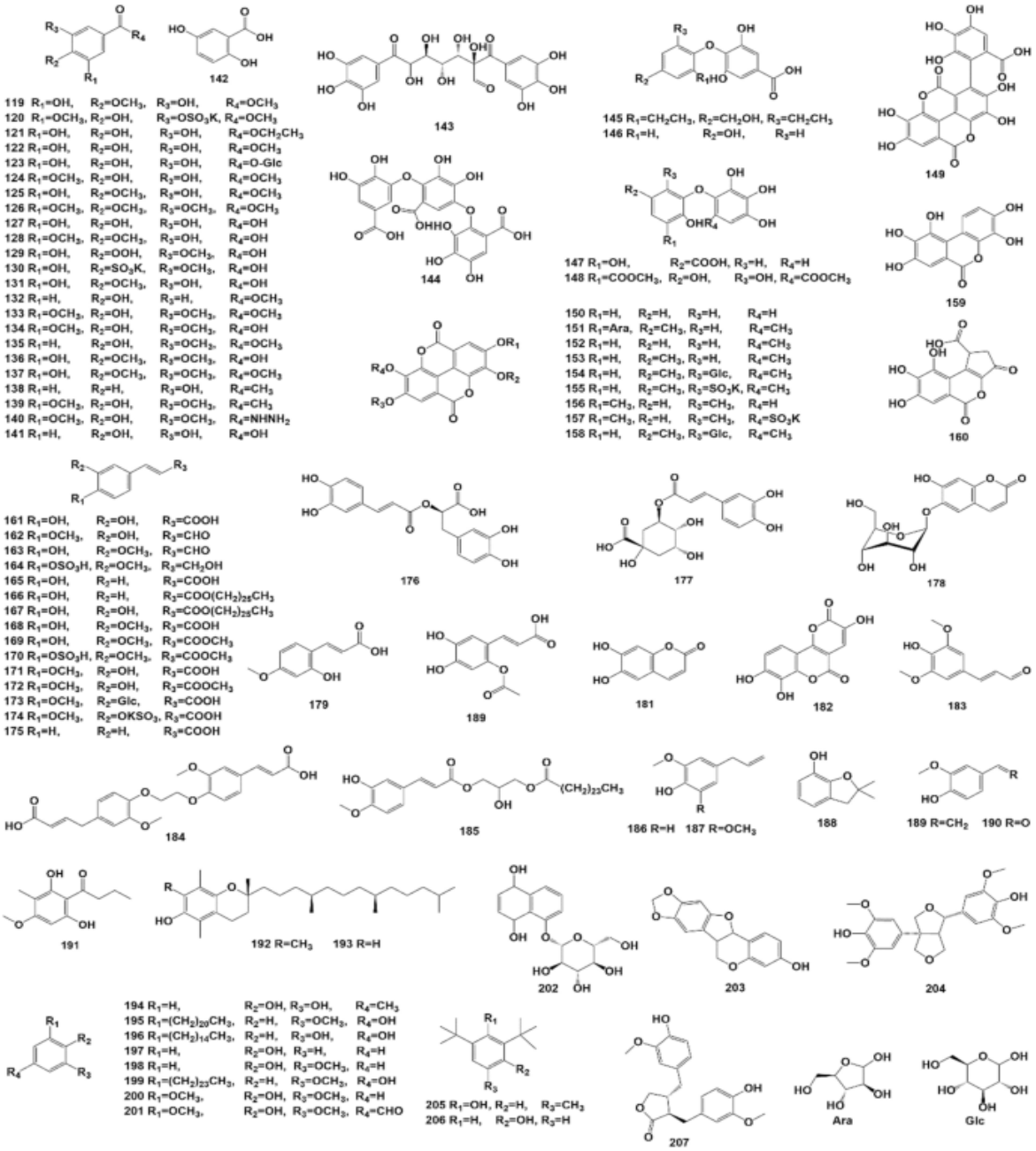


Figure 1: Phytochemical and pharmacological properties of the genus Tamarix

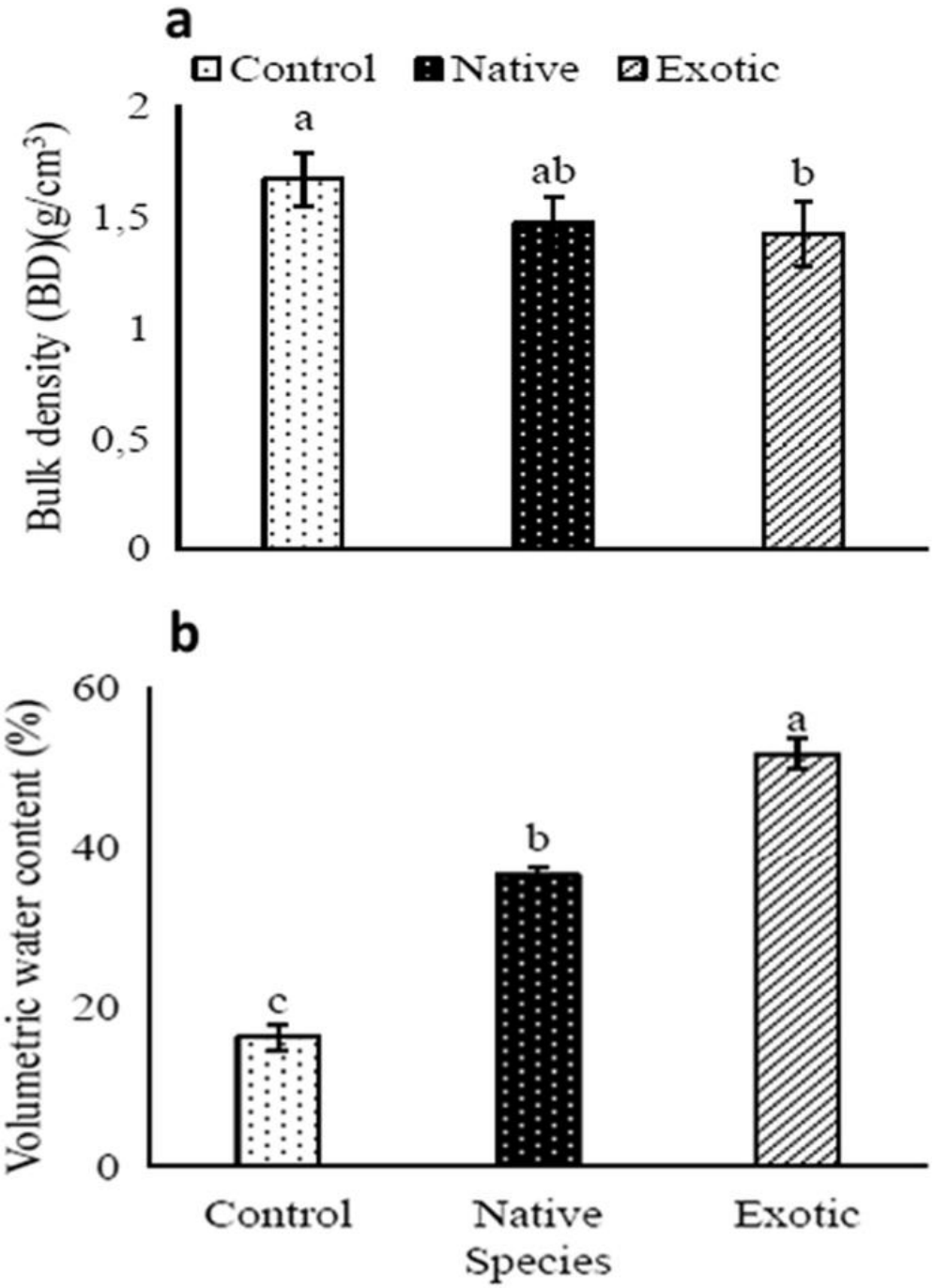


Figure 2: The effects of two different *Tamarix* species on soil bulk density and volumetric water content compared to the controls: (a) Soil bulk density and (b) soil volumetric water content. Means followed by different letters are significantly different from each other (Turkey's test HSD). Bars indicate standard deviation.

Conclusion

The invasion of *Tamarix* species had a significant impact on the underneath soil physicochemical properties. The soil salinity, Na^+, Mg^{2+}, Ca^{2+}, K^+, TC, TN and SOC were greater at the topsoil (0–10 cm) than in the deeper soils (10–20 cm and 20–30 cm) under the *Tamarix* canopes as well as the controls. These results suggest that the effects brought by *Tamarix* species were primarily limited to the topsoil due to the foliar guttation, leaf litter

deposition and decomposition. The magnitude of the cations found in the soils under both *Tamarix* species were in the order of $Ca^{2+} > Na^{+} > Mg^{2+} > K^{+}$ and under the control were in the order $Ca^{2+} > Mg^{2+} > K^{+} > Na^{+}$, which demonstrates that the presence of more Na^{+} in the soils under *Tamarix* species compared to the control. The soils in the study site under the control have generally higher Ca^{2+} and Mg^{2+} compared to the soils underneath the *Tamarix* species. The results revealed that *Tamarix* species could alter the soil properties making it conducive for their growth. There was no significant difference in soil EC under the exotic *Tamarix* compared to the native *Tamarix* species. However, the SOC was significantly higher in soils under the exotic *Tamarix* species than the soils under the native *Tamarix* species because of the higher leaf litter biomass deposition and decomposition under the exotic *Tamarix* species. Similarly, there was higher Na^{+} in summer under exotic as compared to the native *Tamarix* species



Figure 3: cultivation difference between tamarix irrigation and no irrigation.

Compared with normal watering and persistent waterlogging, persistent drought had the lowest leaf relative water content, total chlorophyll content, and sodium ions, and the highest cell membrane permeability, osmoregulatory substances and protective enzyme activity. With increasing treatment time, the relative leaf water content and total chlorophyll content significantly decreased, and cell membrane permeability, osmoregulatory substances and protective enzyme activity increased more significantly than normal watering and persistent waterlogging. NSC increased under normal watering and persistent waterlogging, while significantly decreased under persistent drought. (kheyrodin 2021 and 2026) The seeds of this plant are capable of germination in a wide temperature range (from 1 to 45 °C). These findings can be useful in interpreting the ecological and physiological responses of Tamarix seed germination, in improving the tolerance of seed germination to salinity stress under desert and water deficit condition(Qu et al. 2008).

Acknowledgments

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