

ARC '16

مؤتمر مؤسسة قطر
السنوي للبحوث

QATAR FOUNDATION
ANNUAL RESEARCH
CONFERENCE

Towards World-class
Research and Innovation



Energy and Environment Pillar

<http://dx.doi.org/10.5339/qfarc.2016.EEPP2483>

Effective Methods to Improvement Capparis Spinosa L. (Caper) Seeds Germination by Breaking Seed Dormancy in Qatar Gene Bank

Elsayed Mohamed Elazazi

Plant Genetic Resources Expert, Genetic Resources Department, Agricultural Research Department, Ministry of Environment, QA

Email: elazazi_genebank@yahoo.com

This study to identify the best pre-treatments to improve seed germination of *Capparis spinosa* according to standard seeds germination protocols and seeds viability test methods.

Capparis spinosa L. (Capparidaceae) Native to the Mediterranean region and Arabian Peninsula. Locally known 'Shafallah' and also known as 'Caper' both names used throughout the Arab countries for various *Capparis* species. The plant is very common in the rodah in northern Qatar in the deep alluvial soil. But at last 10 years *Capparis spinosa* plants are in danger of extinction from habitat degradation and changes in environmental conditions. The younger flower buds are collected and pickled in salt solutions. They are used as a condiment in many Mediterranean and Arab countries. Young fruits and young shoots with small leaves may be pickled for use as a condiment. *Capers* has a sharp piquant flavor, which comes from methyl isothiocyanate, arising from crushed plant tissues. The tender young shoots and the small leaves may also be cooked and eaten as a vegetable.

Based on the literature author reported that *Capparis spinosa* has high economic and medicinal value in many medicine pharmacies, including Arabian medicine, traditional knowledge, and Chinese medicine. Traditional knowledge of Arabian countries *Capparis* species were used for treatment wounds and problems in the spleen, liver, kidneys and intestines, to dispel gases, for treat skin diseases, to strengthen teeth and relieve backaches. The plant growth accompanied mainly by *Ziziphus nummularia*, *Acacia tortilis* and *Lycium shawii*.

In this study, seeds of Shafallah treated with different dormancy treatments included, concentrated sulfuric acid H_2SO_4 98%, 0.1% and 0.2% potassium nitrate KNO_3 , hydrogen peroxide H_2O_2 , boiling water, tap water 24 hours, mechanical scarification "removing part of the seed coat without damaging the embryo", and gibberellic acid GA3 100 ppm, and 200 ppm to improve seed germination of very important native medicinal plants in Qatar. *Capparis spinosa* seeds used for production and restoration seedling in some protected area and rodah. Pre-treatments have

Cite this article as: Elazazi EM. (2016). Effective Methods to Improvement *Capparis Spinosa* L. (Caper) Seeds Germination by Breaking Seed Dormancy in Qatar Gene Bank. Qatar Foundation Annual Research Conference Proceedings 2016: EEPP2483 <http://dx.doi.org/10.5339/qfarc.2016.EEPP2483>.

been done with old seed stored in standard gene bank conditions, and fresh collected seeds, this study carried out in Genetic resources Department, Agricultural Research Department, Ministry of Environment.

Viability test of old storage seeds using 2,3,5-Triphenyltetrazolium chloride has given 80%, but the germination percentage of seeds without any treatments gave 8% after 30 days in automated growth chamber machines. Fresh collected seed viability test has given 100%.

The highest germination percentages 98% and the fastest germination rate was obtained using mechanical scarification with fresh collected seeds after germinated in 10 days under automated standard germination conditions in laboratory growth chamber machines. Results visibly suggest the fresh seeds of caper have highest viability and germination percentage more than old storage seeds.

Finally, Qatar is home to unique and important plant genetic resources, but due to changes in land use and increased development, habitat reduction has emerged as a significant threat to its biodiversity. *Capparis spinosa* showed in different areas in Qatar as green color to our yellow deserts in the summer, The plant is green and flowering in the very dry regions, and the plant gives fruits two times in Qatar. We can use plant in food security and sustainability programmes. We need more education and public awareness to increase awareness about Qatari native important medicinal plants.

Keywords

Dormancy, *Capparis spinosa* L., Germination, Viability, Germination, Qatar.