

# Botanic Garden's role to meet challenges and threats facing biodiversity

EDITORIAL

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A botanic garden is a common institution holding documented collections of well-tended living plants for the purposes of scientific research, conservation, display and education (Botanic Gardens Conservation International, BGCI). Moreover, the botanic garden is a natural place for enjoyment, exhibition of both live and dry specimens and eco-tourism under full management by experts and skilled staff. The botanic gardens are distinguished from public parks in many approaches including: plants are grown for public show in parks, whereas botanic ones are designed in landscaped sites. The type of activities in both involve public but botanical gardens host more organized, scientific and cultural events.

Although botanic gardens establishment goes to old history of Greek, Romans, Arab and Moslem civilizations, but recent history in the last century has led to more developed and well managed botanical gardens. The most recent beneficial objective of using botanic gardens for *in situ* and *ex situ* conservation approaches. This can be achieved by university in cooperation with non governmental organizations (NGOs), national organizations and local communities.

The types of botanic gardens can be outlined as: classical one with multi-disciplinary garden to perform education, taxonomic and research activities., ornamental gardens with diverse collections, university or institution (i.e. municipality), medicinal plants, ethnobotany and conservation gardens, combined

botanical and zoological gardens are special places to provide host for diverse fauna mainly birds and insects, the agro, horticulture and germplasm gardens provide unique opportunity to breeding and seed production of most economic plants. However, the natural and wild botanic garden is different from natural reserve, where wild native plants are grown for conservation and other economical values. In addition to special type of Quranic botanic gardens to promote religious values for conservation of biodiversity. The botanic garden should consist various sections despite its type: the well managed and constructed garden has diverse botanical beds for growing live plants from the local and global biodiversity, such as herbs and aromatic flora, tree and rose gardens, rock and aquatic gardens, herbarium for dry collections used in plant taxonomy, seed bank to conserve and checking seed viability, green houses and propagation units (i.e. plant tissue culture), research labs to identify natural products and botanical museum.

Botanic gardens have evolved over time to express their functions and role in society. Biodiversity of flora has been used by researchers, scientists and farmers as natural treasure and source of either exploring, developing and/or cultivation new crops for food security. During the second half of the twentieth century, importance was focused on the need for conservation and sustainable use of biodiversity as sources of food and medicines. In the twenty-first century, botanic gardens are foreseen to address issues that go beyond the garden borders by addressing social and environmental responsibility as key mission drivers. The BGCI has outlined the following criteria to recognize as a botanic garden:

(1) an underlying scientific basis for the collections (2) proper documentation and labeling of the collections, including wild origin (3) monitoring of

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the plants in the collections (4) open to the public (5) communication of information to other gardens, institutions and the public (6) undertaking scientific research and exchange of seed or botanical specimens with other herbaria and gardens. The plant displays in the botanic garden consist of diverse species from wide range of ecosystems in a limited and landscaped area. These create unique species assemblages that one would never find in natural environments.

The beauty and arrangement of live plants are source of enjoyment and knowledge. Engaging public and scientific community is vital step towards sustainable research and horticultural practices with positive impacts on environmental health. The level and type of plant research conducted in a botanic garden depends on biodiversity and availability of resources.

Research can be conducted through affiliations with universities, NGO's, industrial firms and government institutes. Moreover, botanic gardens are globally recognized to provide an important role in climate change research, education, tourism because of their diverse plant collections from wide geographic areas and data collection. In the Arab World, the status of botanic gardens is still below the global level. In Palestine as well, the issue of botanic gardens is still developing in early phases of being recognized to reach international standards.

The country enjoys rich biodiversity with diverse

ecosystems which need intensive attention from both governmental and scientists for documentation, research and conservation. The sustainable use of all forms of biodiversity and invest in nature rationally is key step towards conservation. Over and miss uses of natural recourses should be avoided.

Al-Quds University Botanic Gardens (AQUB) were established in 2007 to meet such challenges to conserve nature and biodiversity (Figure 1). AQUB is remarkable botanic place in a country of political unrest Palestine, and a leading institute for education, relaxation and research. Therefore, botanic gardens are important aesthetic, cultural and scientific firms that are fully engaged to the well-being of our society.

## References

Gratzfeld, J. 2016. BGCI's Manual on Planning, Developing and Managing Botanic Gardens. Richmond, Surrey, TW9 3BW, United Kingdom.

Krishnan, S. and Novy, A. 2016. CAB Reviews 11, No. 023 (Online ISSN 1749-8848) The role of botanic gardens in the twenty-first century.

Alkowni R and Sawalha K. 2012. Biotechnology for conservation of Palestinian medicinal plants. *Journal of Agricultural Technology*. V8(4):1285-1299. Online- <http://ijat-aatsea.com>

Sawalha, K. et. al. Genetic diversity studies on wheat land races in Palestine using RAPD markers in comparison to phenotypic classification. *Journal of Applied Biological Sciences*. 2(1):29-34.



**Figure 1.** Andalic garden at the main campus, Al-Quds University's