Water-Sensitive Landscaping in Desert-Located Egyptian Cities through Sheer Reductions of Turfgrass and Efficient Water Use

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Abstract: Egypt's current per capita water share indicates that the country suffers and has been suffering from water poverty. The abundant utilization of turfgrass in Egypt's new urban settlements, the reliance on freshwater for irrigation, and the inadequate plant selection increase the water demand in such settlements. Decreasing the surface area of turfgrass by using alternative landscape features such as mulching, using ornamental low-maintenance plants, increasing pathways, etc., could significantly decrease the water demand of urban landscapes. The use of Ammochloa palaestina, Cenchrus crientalis (Oriental Fountain Grass), and Cistus parviflorus (with water demands of approximately 0.005m³/m²/day) as alternatives for Cynodon dactylon (0.01m³/m²/day), which is the most commonly used grass species in Egypt's landscape, could decrease an area's water demand by approximately 40-50%. Moreover, creating hydro-zones of similar water demanding plants would enable irrigation facilitation rather than the commonly used uniformed irrigation. Such a practice could further reduce water consumption by 15-20%. These results are based on a case-study analysis of one of Egypt's relatively new urban settlements, Al-Rehab. Such results emphasize the importance of utilizing native, drought-tolerant vegetation in the urban landscapes of Egypt to reduce irrigation demands. Furthermore, proper implementation, monitoring, and maintenance of automated irrigation systems could be an important factor in a space's efficient water use. As most new urban settlements in Egypt adopt sprinkler and drip irrigation systems, the lack of maintenance leads to the manual operation of such systems, and, thereby, excessive irrigation occurs.

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Keywords : alternative landscape, native plants, efficient irrigation, low water demand

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