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COMPARISON OF NORMAL LANDSCAPING AND WATER-WISE LANDSCAPING OF SELECTED FARM IN THE AHMEDABAD AREA

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ABSTRACT

Water-wise landscaping is regarded as an essential landscaping method in countries with water scarcity. Estimating the water demand associated with urban green infrastructure is crucial for the management of water resources and sustainable design in arid campus settings. This study focuses on analyzing urban wise water landscape quantities to help university campus decision-makers reduce urban water consumption and preserve the urban campus water content for asset management and life quality. According to the research, herbaceous flowering plant-only water-efficient landscapes were both significantly more popular and less expensive than other landscape designs. Except for the combination of deciduous and evergreen plants, all water-wise design trends were chosen over water-demanding landscapes.

Keywords: landscaping, sustainable, water-wise, design

INTRODUCTION:

Environmental demands have increased and sustainability has diminished as a result of modern urbanization and population development. As a result of such development, there is an increase in the need for green spaces and the water they require for irrigation. Urban green spaces are essential to the viability of urban growth because of their benefits to the environment and economy. The world is experiencing serious problems about the supply of water due to increased water demand, more frequent droughts, and inadequate management of water resources. In metropolitan settings, about 25% of the water supply is used for watering gardens and landscaping. It follows that the sustainable use of water must be prioritized in urban landscaping.

It is crucial to consistently encourage water conservation. A project to conserve water must take into account several factors in order to be successful. Consistently promoting water conservation is essential. The use of water-saving plumbing fixtures, educational programs, water rate structures that encourage water conservation, and the promotion of xeriscaping, a type of water-efficient landscaping, are a few examples of things that should be considered in a successful water conservation strategy.

Water-wise landscapes can use as low as 60% less water when compared to typical landscapes. Green spaces are essential, but as a result of climate change and other problems, such as reduced water supplies, they are dwindling in number. When developing a sustainable landscape, choose local plants that are native to the region or plants that are well adapted to the local growing circumstances.

The kinds of irrigation systems that can be installed, the hours of the day that watering is allowed, the requirements for soil preparation, the size of artificial waterfalls, the total area of turf (which uses more water than most other vegetation), the ban on narrow strips of turf (which are challenging to water effectively), and the encouragement or requirement of using drip irrigation are all examples of restrictions on the use of water.

METHODOLOGY:

In this comparative study, the farm is taken named Bubly Farm, situated in Lapkaman, Ahmedabad

Bubly Farm :

Location: Lapkaman Ahmedabad

Total Area: 10,800 sq. f t
Total number of plants: 176 plants Water tank capacity: 15000 lit.
Water refill cycle: Every week (in summer)
Per day water usage: 2142 lit (in summer)
Bubly Farm has so many different trees, shrubs, herbs, palms, climbers, etc.. along with that St. Augustine grass lawn is also there. Because of poor maintenance have much h, so much weed has been grown over there, they don't havemuch irrigation methods or schedle, selection of some plants spp. Which needs more water. All these factors ultimately lead ds to water wastage.

List of plants on Bubly farm

Tree list:

No	Scientific name	Common name	Water needs	sunlight
1.	Cordia sebestena	Geiger tree	Less water requires	Full sun
2.	Azadirachta indica	Neem	Less water requires	Full sun
3.	Mangifera indica	Mango	less water	Full sun
4.	Mimussops Eleni L.	Borsalli	less water	Medium
5.	Phoenix dactylifera	Khajoori	less water	Full sun
6.	Pollyalthia longifolium	Asopalav	Medium	Full sun
7.	Ficus religiosa	Peepal	Less water	Full sun
8.	Chamaerops humilis	Fan palm	3 times a week	Full sun
9.	Mimusops elengi	Borsalli	Allow the soil to dry	Full sun

Table 1

Shrubs list:

No	Scientific name	Common name	Water needs	Sunlight
1.	Hibiscus rosasinensis L.	Jasud	Per day	Full sun
2.	Ixora L coccines.	Ixora	3 time per week	Medium
3.	Murraya koenigii	Curry leaf	Twice day	Full sun
4.	Lawsonia inermis	Mehandi	Per day	Medium
5.	Allamanda cathartica	Allamanda	Twice day	Full sun
6.	Catharanthus trichophyllus	Varanasi	Per day	Medium
7.	Jatropha curcas	jatropha	Minimal water	Full sun
8.	Ocimum tenuiflorum	Tulsi	Per day	Medium
9.	Punica granatum	Dadam	Multiply the day	Full sun
10.	Cascabela thevetia	kaner	Per day	Full sun
11.	Tecoma stans	Yellow bignonia	Allow the soil to dry	Full sun
12.	Morus alba	Mulberry	Twice day	Full sun

Table 2

List of creepers:

No	Scientific name	Common name	Water needs	Sunlight
1.	Combretum indicum	Madhumalati	Per day	medium

Table 3

List of grass:

No	Scientific name	Common name	Water needs	Sunlights
1	Stenotaphrum secundatum	Augustine grass	¾ inch of water twice per week	Full sun

Table 4

Here we are suggesting some changes in the plantation & replace shrubs, herbs, grass or lawn, flowering plants, and creepers with fewer water plants. We won't damage well—required established trees in this replacement or redevelopment and from these, we are suggesting some proper irrigation methods d mulching methods for water conservation.

List of plants on water-wise plan:

List of shrubs:

No	Scientific name	Common name	Waters need	Sunlight
2	Lantana camara	Lantana	One inch of water per week	Full sun
4	Juniperus communis	Juniperus	Twice weekly for the first two month	Medium
5	Nerium oleander L.	Oleander	every three days	Full sun
6	Hibiscus syriacus	Hibiscus	3 to 4 times weekly	Full sun
7	Thujopsis dolabrata	Thuja	Once week	Full sun
8	Plumeria rubra	Plumeria	twice week	Full sun
11	Yucca filamentosa	Yucca	every 10 days	Full sun

Table 5

List of herbs:

No	Scientific name	Common name	Water needs	Sunlights
2	Mesembryanthemum cordifolium	Baby sun rose	Once every 3 days	Full sun
7	Zinnia belongs	Zinnia	Every day	Full sun
8	Portulaca oleracea	Portulaca	Alternate day	Full sun
10	Tagetes erecta	Marigold	Every day	Full sun

Table 6

list of succulents:

No	Scientific name	Common name	Water needs	Sunlights
1	Agave spp	Agave	Weekly two times	Full sun
3	Euphorbia milii	Euphorbia	Weekly two times	Full sun
5	Adenium obesum	Adenium	every alternate day	Medium

Table 7

list of creeper :

No	Scientific name	Common name	Water needs	Sunlights
1	Bougainvillea spectabilis	Bougainvillea	Weekly two time	Medium

Table 8

List of grass :

No	Scientific name	Common name	Water needs	Sunlights
1	Cynodon dactylon	Bermuda grass	supplemental irrigation each week.	Full sun
2	Zyosia spp	Zyosia	irrigation per week.	Full sun

Table 9

RESULT AND DISCUSSION

At the end of the research we have a list of plants that have lifewerwater requirements with their water & sun needs, along with that we can have some irrigation systems which can help in reducing water wastage. We have a list of mulching methods/materials which can reduce water evaporation rate & held moisture in the soil.

According to the given data currently farm's per day water requirement is 2142 liter, but after data collection of water-wise landscaping & suggested plants & methods per day water requirements were conserved.

CONCLUSION

My dissertation and data collection of water-wise landscaping concluded with the following:

- Current/ recent landscaping trends can be replaced with some changes and in the end, it gives water better results-wise.

- At first it looks like landscaping is hazardous but a little change can lead you to amazing water conservation.
- Use of native plants in landscaping can attract native fauna but apart from that it can help in water conservation & reduce water wastage.

REFERENCE

1) Rafi, Z. N., Kazemi, F., & Tehranifar, A. (2020). Public preferences toward water-wise landscape design in the summer season. Urban Forestry & Urban Greening, 48, 126563.
2) James M.Santo. LOCALGOVERNMENT'SROLEINWATEREFFICIENTLANDSCAPING Atlanta Regional Commission Policy on Water-Efficient Landscaping.
3) Dr. A. Nirmala and Dr. G. Jyothi 2022. Chapter 4 Xeriscaping: A Method of Garden Designing.
4) Esam M.H.Ismaeil 1,2,* and Abu Elnasr E. Sobaih 3,4,*.Assessing Xeriscaping as a Retrofit Sustainable Water Consumption Approach for a Desert University Campus .
5) Kristin M. Anderson, June 2004 . An Investigation into What Planning Departments and Water Authorities Can Learn from Eleven Communities' Water-wise Landscaping Ordinances.