

Crafting a Green Legacy

Potential native Plants for Use in GCC Hot & Arid Climate

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CRAFTING A GREEN LEGACY

TRUST

INSTITUTE

ACADEMY

Introduction

Availability of water in the GCC countries is very limited and these countries are situated in one of the most water-stressed regions of the world

Climate change over the next decades is expected to decrease annual precipitation

Using native desert species in landscaping could be the sustainable way to reduce the pressure on limited water resources.

Native species are those that occur in a particular region, ecosystem, and habitat without direct or indirect human actions

Benefits of using native plants

Native plants that are well suited to the site conditions do not require soil modifications or fertilizers and once established can thrive without regular watering

That reduces maintenance costs associated with irrigation, fertilizers, and pesticides.

Native plants are the foundation of the biodiversity that maintains our own life support systems.

They nurture important pollinators like bees, butterflies, and hummingbirds.

Species available in GORD nursery

Tephrosia apollinea

Height - 50.25 cm

Spread - 68.25 cm

Survival : 70.58 %



Tephrosia nubica

Height – 35. 5 cm

Spread - 50.5 cm

Survival : 94.11%



Senna italica

Height – 33.7 cm

Spread – 68.83 cm

Survival : 94.11 %



Senna alexandrina

Height – 36.0 cm

Spread – 51.88 cm

Survival : 50.0%



Indigofera oblongifolia

Height – 81.8 cm

Spread – 83.7 cm

Survival : 100.0%



Indigofera intricata

Height – 26.8 cm

Spread - 71.25 cm

Survival : 58.28 %



Rhynchosia species

Height – 82.5 cm

Spread – 91.5 cm

Survival : 88.0%



Crotalaria aegyptiaca

Height – 52.6 cm

Spread – 64.6 cm

Survival : 100.0%



Crotalaria persica

Height – 34.8 cm

Spread – 46.12 cm

Survival : 76.47%



Lotus garcinii

Height – 40.7 cm

Spread – 58.0 cm

Survival : 58.82 %



Taverniera glabra

Height – 34.8 cm

Spread – 55.8 cm

Survival : 76.47%



Iphiona aucheri

Height – 36.6 cm

Spread – 63.4 cm

Survival : 65.0%



Pulicaria undulata

Height – 28.9 cm

Spread – 52.3 cm

Survival : 88.23 %



Lavandula subnuda

Height – 22.0 cm

Spread – 26.0 cm

Survival : 64.7 %



Vernonia species

Height – 12.0 cm

Spread –23.0 cm

Survival : 23.58 %



Teucrium stocksianum

Height – 20.0 cm

Spread –27.5 cm

Survival : 85.0 %



Salvia aegyptiaca

Height – 24.3 cm

Spread –30.3 cm

Survival : 82.35 %



Gymnocarpus decandrum

Height – 49.1 cm

Spread – 66.7 cm

Survival : 94.11 %



Haplophyllum tuberculatum

Height – 39.0 cm

Spread – 40.75 cm

Survival : 50.76 %



Aerva javanica (Tuwaim)

Height – 59.8 cm

Spread – 51.5 cm

Survival : 100.0 %



Farsetia stylosa

Height – 46.0 cm

Spread – 54.3 cm

Survival : 65 %



Atriplex canescens (Orache)

Height – 44.4 cm

Spread – 70.21 cm

Survival : 85.0 %



Cometes surattensis

Height – 14.9 cm

Spread – 16.35 cm

Survival : 13.33 %



Cleome brachycarpa

Height – 28.8 cm

Spread – 45.3 cm

Survival : 88.23 %



Dipterygium glaucum

Height – 53.3 cm

Spread – 68.3 cm

Survival : 85.71 %



Pennisetum divisum

Height – 151.7 cm

Spread – 139.1 cm

Survival : 100.0 %



Aristida adscensionis (Samaa)

Height – 56.2 cm

Spread – 57.5 cm

Survival : 85.0 %



Cyperus conglomeratus

Height – 49.6 cm

Spread – 62.1 cm

Survival : 85.0 %



Chloris virgata

Height – 69.9 cm

Spread – 73.7 cm

Survival : 100.0 %



Dichanthium annulatum

Height – 70.8 cm

Spread – 80.75 cm

Survival : 50.0 %



Cymbopogon parkeri

Height – 81.1 cm

Spread – 58.38 cm

Survival : 100.0 %



Stipagrostis plumosa

Height – 46.0 cm

Spread – 52.9 cm

Survival : 45.0 %



Halopyrum mucronatum

Height – 61.0 cm

Spread – 66.25 cm

Survival : 50.0 %



Lasiurus scindicus

Height – 106.7 cm

Spread – 101.5 cm

Survival : 75.0 %



Convolvulus virgatus

Height – 41.1 cm

Spread – 59.4 cm

Survival : 65.0 %



Convolvulus deserti

Height – 42.0 cm

Spread – 76.6 cm

Survival : 42.85 %



Rumex vesicarius

Height – 35.7 cm

Spread – 50.6 cm

Survival : 100.0 %



Suaeda vermiculata

Height – 88.3 cm

Spread – 106.4 cm

Survival : 100.0 %



Salsola imbricata

Height – 60.9 cm

Spread – 85.6 cm

Survival : 80.0 %



Zygophyllum qaterensis

Height – 37.5 cm

Spread – 49.6 cm

Survival : 50.0 %



Atriplex halimus (Qataf)

Height – 49.6 cm

Spread – 54.8 cm

Survival : 95.0 %



Arnebia hispidissima (Kahil)

Height – 22.2 cm

Spread – 26.3 cm

Survival : 77.3 %



***Capparis cartilaginea* (Shafallah)**

Height – 14.6 cm

Spread – 14.35 cm

Survival : 70.0 %



***Alhagi species* (Aaqool)**

Height – 50.1 cm

Spread – 69.9 cm

Survival : 70.0 %



Reseda species

Height – 23.7 cm

Spread – 26.3 cm

Survival : 90.0 %



Tribulus pentandrus

Spread – 158.00 cm

Survival : 70.0 %



Pulicaria glutinosa

Height – 18.8 cm

Spread – 31.0 cm

Survival : 50.0 %



Aizoon canariense (Jafnah)

Height – 49.8 cm

Spread – 51.5 cm

Survival : 100.0 %



Zaleya species

Height – 26.1 cm

Spread – 83.2 cm

Survival : 100.0 %



Blepharis ciliaris (Niqeyl)

Height – 12.5 cm

Spread – 27.5 cm

Survival : 55.0 %



Aeluropus lagopoides (Ikrish)

Height – 19.8 cm

Spread – 66.5 cm

Survival : 100.0 %



Coelachyrum brevifolium

Height – 73.7 cm

Spread – 89.0 cm

Survival : 100.0 %



Withania somnifera

Height – 19.8 cm

Spread – 66.5 cm

Survival : 100.0 %



Limonium axillare

Height – 62.5 cm

Spread – 90.06 cm

Survival : 85.0 %



Salicornia europaea

Height – 21.6 cm

Spread – 26.0 cm

Survival : 60.0 %



Senecio desfontainei

Height – 19.7 cm

Spread – 16.5 cm

Survival : 40.0 %



Haloxylon salicornicum

Height – 29.0 cm

Spread – 24.2 cm

Survival : 50.0 %



Anastatica hierochuntica (Kaf Maryam)

Height – 13.9 cm

Spread – 25.5 cm

Survival : 90.0 %



Sporobolus spicatus

Height – 42.3 cm

Spread – 75.1 cm

Survival : 100.0 %



Sporobolus arabicus

Height – 119.7 cm

Spread – 85.1 cm

Survival : 100.0 %



Sesuvium verrucosum

Height – 32.6 cm

Spread – 125.1 cm

Survival : 95.0 %



Atriplex nummularia (Raghal)

Height – 94.6 cm

Spread – 108.15 cm

Survival : 100.0 %



Helianthemum lippii

Height – 15.0 cm

Spread – 28.2 cm

Survival : 100.0 %



Scrophularia deserti

Height – 59.0 cm

Spread – 52.0 cm

Survival : 55.0 %



Tecomella undulata

Height – 108.9 cm

Spread – 91.1 cm

Survival : 80.0 %



Hyparrhenia hirta

Height – 70.0 cm

Spread – 83.6 cm

Survival : 100.0 %



Lycium shawii

Height – 92.4 cm

Spread – 62.5 cm

Survival : 100.0 %



Leptadenia pyrotechnica

Height – 161.6 cm

Spread – 145.2 cm

Survival : 100.0 %

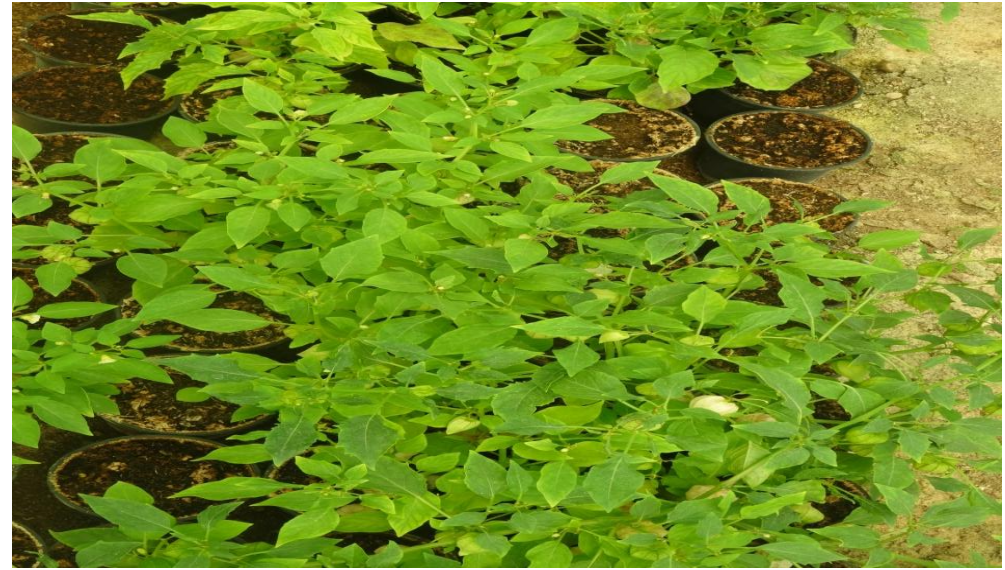


Physalis minima

Height – 46.6 cm

Spread – 76.2 cm

Survival : 96.0 %



Pergularia tomentosa

Height – 73.3 cm

Spread – 66.8 cm

Survival : 100.0 %



Species that can attract pollinators



Species that can improve soil quality

Tephrosia apollinea

Tephrosia nubica

Senna italica

Senna alexandrina

Indigofera oblongifolia

Indigofera intricata

Rhynchosia species

Crotalaria aegyptiaca

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Lotus garcinii

Taverniera glabra

Aromatic species

Lavandula subnuda

Teucrium stocksianum

Cymbopogon parkeri

Salvia aegyptiaca

Ground Cover

Vernonia species

Aizoon canariense

Zaleya species

Blepharis ciliaris

Aeluropus lagopoides

Mesembryanthemum nodiflorum

Sesuvium verrucosum

Grasses

Pennisetum divisum
Aristida adscensionis
Cyperus conglomeratus
Chloris virgata
Dichanthium annulatum
Cymbopogon parkeri
Stipagrostis plumosa
Halopyrum mucronatum
Lasiurus scindicus
Aeluropus lagopoides
Sporobolus spicatus
Sporobolus arabicus
Hyparrhenia hirta

Halophytes

Atriplex canescens
Suaeda vermiculata
Salsola imbricata
Zygophyllum qaterensis
Atriplex halimus
Aeluropus lagopoides
Limonium axillare
Salicornia europaea
Haloxylon salicornicum
Halocnemum strobilaceum
Atriplex nummularia

Conditions of different water treatments

Water Treatments		
Moist	Moderate	Dry
3.43 l/m ² / day	2.52 l/m ² / day	1.59 l/m ² / day

Water requirements of different species

Species	Water requirement		
	Moist	Moderate	Dry
Perrinial	12	31	46
Annual	5	11	8

Ethnobotanically valuable plant species ranked/prioritized for landscaping based on their multipurpose use value and criteria measures of GSAS

Name of plants	Preference based on their use value			Total	Ranking
	Ecological	Economical	Medicinal		
<i>Tecomella undulata</i>	1	5	1	7	I
<i>Dodonaea viscosa</i>	2	6	2	10	II
<i>Nerium oleander</i>	3	7	3	13	III
<i>Capparis cartilaginea</i>	4	8	4	16	IV
<i>Aerva javanica</i>	5	9	5	19	V
<i>Aeluropus lagopoides</i>	6	10	6	22	VI
<i>Suaeda vermiculata</i>	7	11	7	25	VII
<i>Lavandula subnuda</i>	17	1	8	26	VIII
<i>Arnebia hispidissima</i>	9	2	17	28	IX
<i>Leptadenia pyrotechnica</i>	10	12	10	32	X
<i>Lycium shawii</i>	11	13	11	35	XI
<i>Blepharis ciliaris</i>	12	14	12	38	XII
<i>Alhagi graecorum</i>	13	15	13	41	XIII
<i>Aizoon canariense</i>	14	16	14	44	XIV
<i>Rhanterium epapposum</i>	15	17	15	47	XV
<i>Calotropis procera</i>	25	3	20	48	XVI
<i>Calligonum comosum</i>	8	20	21	49	XVII
<i>Senna italica</i>	22	19	9	50	XVIII
<i>Citrullus colocynthis</i>	23	4	24	51	XIX
<i>Cleome brachycarpa</i>	18	18	16	52	XX
<i>Gisekia pharnacioides</i>	16	21	18	55	XXI
<i>Grewia erythraea</i>	19	22	19	60	XXII
<i>Haloxyton salicornicum</i>	20	23	22	65	XXIII
<i>Convolvulus glomeratus</i>	21	24	23	68	XXIV
<i>Zaleya pentandra</i>	24	25	25	74	XXV

Other potential species



Aizoon hispanicum



Frankenia pulverulenta



Tamarix aphylla



Teucrium polium



Bienertia cycloptera



Bienertia cycloptera



Halopaplis perfoliata



Glossonema varians



Zilla spinosa



Andrachne telephiodes

Problems facing by different stakeholders

Currently, very few commercial nursery specialized in the production of indigenous plants of the GCC countries.

Lack of information about the propagation of these plants under nursery conditions.

Most of the native desert plants have innate dormancy and need very specific conditions for germination

Lack of information about the seed storage methods

Thank You

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